CAROLINA POWER & LIGHT COMPANY

ROBINSON NUCLEAR PROJECT

UNIT TWO

EDDY CURRENT EXAMINATION REPORT

MAY, 1987

DOCUMENT NO. IR-ISI-102

STEAM GENERATOR SERVICES
OUTAGE SERVICES DEPARTMENT
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
CHATTANOOGA, TN., WINDSOR, CT.

PREPARED BY: [signature] DATE: 6/26/87

APPROVED BY: Darrell D. Weber DATE: 6/26/87
LEVEL III

APPROVED BY: James D. Ford DATE: 6/26/87
Q.A. ENGINEER

APPROVED BY: Roy N Brown DATE: 6/26/87
REGIONAL MANAGER, EXAMINATION SERVICES

ORIGINAL ISSUE DATE June 26, 1987 REV. NO. 0

ISSUE DATE ________________

FORM NIS-1 OWNER'S REPORT FOR INSERVICE INSPECTIONS
As required by the Provisions of the ASME Code Rules

1. Owner Carolina Power & Light Co., 411 Fayetteville St., P.O. Box 1551
(Name and Address of Owner)

2. Plant H. B. Robinson, Hwy. 151 & SC 23, Hartsville, SC 29550
(Name and Address of Plant)

3. Plant Unit 2 4. Owner Certificate of Authorization (if required) N/A

5. Commercial Service Date 3-7-71 6. National Board Number for Unit N/A

7. Components Inspected

Component or Appurtenance	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Steam Generator A	Westinghouse	93732	N/A	N/A
Steam Generator B	Westinghouse	93733	N/A	N/A
Steam Generator C	Westinghouse	93734	N/A	N/A

Note: Supplemental sheets in form of lists, sketches, or drawings may be used, provided (1) size is 8½ in. x 11 in., (2) information in items 1 through 6 on this report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

FORM NIS-1 (Back)

8. Examination Dates 5/1/87 to 5/31/87 9. Inspection Interval from 3/81 to 3/91

10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval. See Tab "Abstract," Tab 1 Section 1, Tab 3 Section 1
Approximately 10% of tubes required to be examined this interval.

11. Abstract of Conditions Noted See Section 2 Tab 1 and Section 2 Tabs A, B, & C

12. Abstract of Corrective Measures Recommended and Taken None recommended, none taken

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of the ASME Code, Section XI.

Certificate of Authorization No. (if applicable) N/A Expiration Date N/A

Date 8 - 28 19 87 Signed CP&L (Owner) By R E Morgan
R. E. Morgan
General Manager

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of North Carolina and employed by *LMC of Long Grove, IL have inspected the components described in this Owner's Report during the period 5/1/87 to 5/31/87, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owner's Report in accordance with the requirements of the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations and corrective measures described in this Owner's Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection. *Lumbermens Mutual Casualty Company

[signature] Inspector's Signature — Commissions NC 1007 (National Board, State, Province, and Endorsements)

Date 8-31- 19 87

(12/82)

IR-ISI-102
REV. 0

TO: Carolina Power & Light Company

CERTIFICATE OF PERFORMANCE

Carolina Power & Light
Robinson Nuclear Project - Unit 2
C-E Contract 4987
Steam Generator Eddy Current Examination

Combustion Engineering, Inc. hereby certifies that the Robinson Unit 2 steam generator eddy current examinations performed during May 1987 were in compliance with CP&L Work Authorization Number ZS6001001, Item 4. Documentation attesting to this conformance is contained within the data of this QC Records Package.

James D. Ford

Q.A. Engineer

ABSTRACT

This document summarizes the examination program and results and presents information concerning examination procedures, personnel and equipment used to perform the eddy current examinations at Robinsion Nuclear Project Unit Two during the 1987 refueling outage.

The examination was conducted in accordance with Combustion Engineering Procedures approved by Carolina Power and Light Co. as listed in Section VI of this report.

Ten percent random sample examinations were conducted in all three generators which included some tubes that were inspected in the 1986 outage program and all tubes with previously identified indications. Specific details are contained in the text of this report.

Status of Work Required for Current Interval:

The percentage inspection was selected to meet the requirements of the Plant Technical Specifications. This practice is in keeping with 10CFR50.55a (b)(2)(iii). All Technical Specification requirements relating to inspection scope have been met.

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	Attachment A Dated 5/8/87	Customer Specific Data Analysis Requirements
4.	ROB-410-006 Rev. 0	Procedure for Control of Eddy Current Examination Data for using the Personal Computer (PC) Based Data System.
5.	ROB-410-008 Rev. 0	Procedure for the Installation and Removal of Temporary Nozzle Covers.

SECTION VII

PERSONNEL AND EQUIPMENT CERTIFICATION

1.	NDE Personnel	NDE Personnel List, Certification Records, Platform Worker Certification Records
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3.	Nuclear Quality Assurance Plan	Quality Assurance Plan for H.B. Robinson Refueling Outage
4.	Equipment	Certification Records

INTRODUCTION

INTRODUCTION

During May 1987, Combustion Engineering conducted an eddy current examination in Steam Generators A, B and C at Carolina Power & Light Company's Robinson Nuclear Project Unit 2. The examination was conducted in accordance with the following procedures which meet the intent of USNRC Regulatory Guide 1.83 and the ASME Boiler and Pressure Vessel Code, Section XI, 1977 Edition with Summer 1978 Addenda.

1.	ROB-410-001 REV. 0	Remote Installation, Calibration and Removal of SM-10 Manipulator in Westinghouse Steam Generator.
2.	ROB-410-004 REV. 0	Procedure for Multi Frequency Eddy Current Examination of Non Ferromagnetic Steam Generator Tubing using MIZ-18 Equipment.
3.	ROB-410-005 REV. 0	Eddy Current Data Analysis Procedure Evaluation of Westinghouse Steam Generator.
	Attachment A Dated 5/7/87	Customer Specific Data Analysis Requirements
	Attachment A Dated 5/8/87	Customer Specific Data Analysis Requirements
4.	ROB-410-006 Rev. 0	Procedure for Control of Eddy Current Examination Data for using the Personal Computer (PC) Based Data System.
5.	ROB-410-008 Rev. 0	Procedure for the Installation and Removal of Temporary Nozzle Covers.

The above procedures can be found in Section VI of this report.

Tab 3 of this Section I contains the customer specified inspection plan of slightly over half of the tubes to be inspected. This list contains tubes previously inspected during the 1986 outage program and all tubes with previously identified indications.

Tab 4 of this Section I contains the Examination Plan map and the total list of tubes for examination including those randomly selected by Combustion Engineering.

Approximately a ten (10) percent random sample (330 to 333 tubes) was examined in each generator. An exact listing can be found in Section II.

INTRODUCTION (Cont'd)

All tubes examined, received a primary and secondary analysis as required by customer specification HBR-SG-86 in accordance with the Eddy Current Data Analysis Procedure ROB-410-005 Revision 0 and the Customer Specific Data Analysis Requirements listed with Procedure Number 3 above. These Specific Data Analysis Requirements can be found attached to the Procedure in Section VI of this report.

EDDY CURRENT TECHNIQUE

EDDY CURRENT TECHNIQUES DESCIPTION

Steam generator tubing constitutes a substantial portion of the primary pressure retaining boundary. In order to function as an effective barrier, this tubing must be free from cracks, perforations and general deterioration. Inadequate secondary coolant chemistry control has been identified as a principal source of steam generator tube degradation and failure. Steam side corrosion attach has also become a major mode of failure. Eddy current inspection has been accepted as the best inservice inspection technique available to meet the acceptance criteria established by USNRC Regulatory Guide 1.83. This Regulatory Guide is the basic reference used by the utilities to determine the number of tubes to be inspected during an outage, the type of inspection pattern to be performed and the criteria for acceptance or expansion of the inspection program project.

The eddy current examination is designed to evaluate the integrity of the tube pressure boundary. Multi frequency eddy current testing equipment allows filtering of unwanted secondary side tube support signals permitting tube imperfections to be detected. Multi frequency equipment also permits limited dent assessment to be performed in a single pass of the probe through the tube. While these tests are not mandated by the Regulatory Guide, the licensees have generally requested these examinations to be performed in order to provide supporting information.

The following is a list of tube degradation problems which can lead to defects:

1. Intergranular caustic stress corrosion cracking.
2. Phosphate induced wastage.
3. Sulphur included intergranular cracking.
4. Tube denting.
5. Corrosion cracking.
6. Erosion corrosion.
7. Pitting.
8. Fretting wear.
9. Fatigue.

Eddy current testing is used to detect the presence of defects caused by these mechanisms or processes.

ECT CONCEPTS

A differential bobbin coil is presently used for ECT defect testing. This probe is wound with two coils in series opposition which enhance detection of localized discontinuities and suppress variations in material properties, temperature effects and probe wobble. The differential bobbin coil compares one segment of a tube to another to produce a signal which measures the average change. It is therefore more sensitive to rapid changes in tube characteristics. Thus, tube degradation problems which result in a loss of material or large non-uniform dents would be detected more easily.

The ECT coils in the probe are energized by several excitation frequencies, each of which is sensitive to a particular condition of interest. During the analysis phase, the appropriate test frequencies are reviewed individually or combining the multi frequency eddy current data using one or more mixers. With one push or pull of the probe through the tube and the use of multi frequency techniques, the following data can be provided:

1. Tube defect size and location.

2. ECT dent size and location.*

3. Sludge height.

*Note that ECT dent data only provides measurement of the average radius change.

Standards for defect and dent testing are developed in accordance with ASME, Section XI. The standards provide the bench marks to which the data is compared to establish magnitudes. The defect standard is a series of know partially drilled holes in the tube wall. The standard is tested and recorded producing known signal outputs. These outputs are then compared to actual tube signals to determine defect magnitudes.

ECT EQUIPMENT

The complete eddy current inspection system can be broken down into two categories, inspection equipment and probe positioning equipment. The eddy current inspection equipment consisted of:

- Zetec MIZ-18 Multi Frequency Digital Testing System

- Digital Data Cartridge Recorder

- Eddy Current Test Probes

ECT EQUIPMENT (Cont'd)

- Calibration Standards
- Zetec Digital Data Analyzer (DDA-4)

The pertinent certification sheets for the above equipment are included in this report.

The probe positioning and drive system consists of:

- A Remote Positioner (Zetec SM-10)
- A Closed Circuit Television System
- A Probe Drive Mechanism
- A Communication System

The probe positioning device (SM-10) is a remote control mechanical arm which can be positioned to feed the probe into any tube in the steam generator. It consists of a manway mounting trunk and two mechanical arms driven by motors with encoders to measure the resulting arm movement. With this feedback - controlled mechanical arm, all of the tube positions in the steam generator are avilable. A remote camera and lighting system is mounted on the manipulator allowing the operator to see probe insertion into the tube being tested.

ECT EQUIPMENT OPERATION

The signal generated from the differential bobbin coil is fed into MIZ-18 Multi Frequency Eddy Current Tester.

The MIZ-18 multi frequency eddy current tester uses eddy currents as the probing media to measure variations in effective conductivity and/or permeability of the tube being tested. In non-magnetic materials, such as Inconel, conductivity is usually the only significant variable. When the effective conductivity decreases due to discontinuity in the tube wall, the test coil voltage increases in direct relationship with the effective conductivity change. Thus, the amount of increase in coil voltage is related to the size of the discontinuity. The coil voltage is sinusoidal, thus it can be described with a single vector. In addition, the MIZ-18 multi frequency eddy current tester is a highly versatile and compact eddy current inspection system. Utilizing the "Time Sharing" technique, the operator may test at several frequencies simultaneously.

EC EQUIPMENT OPERATION (Cont'd)

The MIZ-18 digital data acquisition aystem includes an HP-9836A computer with a HCD-75Z or equivalent data cartridge recorder. The MIZ-18 tester provides test frequency generation, coil multiplexing, signal digitization and data communications with the HP-9836A computer.

The MIZ-18 acquisition system is designed so that the instrument sensitivity and signal phase control are internally established. The operator determines the size and the rotation of the signals to be displayed during the data collection.

The data is then recorded on the digital cartridge which includes the actual test data plus a summary of information related to the inspection setup. The MIZ-18 continuously displays either the vertical or horizontal strip chart response from any two frequencies selected on the screen.

Finally, the recorded data, is analyzed with the aid of the Zetec, DDA-4 digital data analyzer.

The examination procedures are included in Section VI of this report.

CUSTOMER TUBE LIST

REQUIREMENTS

Total tube list including random tubes selected by Combustion Engineering can be found in Section I, Tab 4.

DARREL WEBER

MEMO TO: [redacted]
FROM: WARREN FARMER

SUBJECT: 1987 S/G EDDY CURRENT INSPECTION PLAN

ATTACHED YOU WILL FIND A PARTIAL LISTING OF TUBES TO BE INSPECTED DURING THE UPCOMING REFUELING OUTAGE. ALL TUBES LISTED WERE PREVIOUSLY INSPECTED IN THE 1986 OUTAGE PROGRAM. ALSO LISTED ARE ALL TUBES WITH PREVIOUSLY IDENTIFIED INDICATIONS. THE TOTAL OF TUBES LISTED ON THE ATTACHED BREAKDOWN AS FOLLOWS:

"A" S/G: 166 TUBES
"B" S/G: 171 TUBES
"C" S/G: 166 TUBES

DARRELL WEBER HAS AGREED TO RANDOMLY SELECT THE REMAINING TUBES TO COMPLETE THE 10% (330 TUBES) PROGRAM. THIS WILL AMOUNT TO THE FOLLOWING NUMBER TO BE RANDOMLY SELECTED BY C-E:

"A" S/G: 164
"B" S/G: 159
"C" 164: 164

OF THE TOTAL NUMBER SELECTED FOR INSPECTION DURING THE OUTAGE, C-E SHOULD ENSURE THAT NO LESS THAN 20 TUBES PER GENERATOR ARE SELECTED FROM ROWS 1 AND 2.
IF YOU HAVE ANY QUESTIONS CONCERNING THE PROGRAM SELECTIONS, PLEASE CONTACT ME.

2/25/87

CC: [redacted]AY CHAMBERS, W/O ATTACHMENT
MAX MARQUICK
DICK MILLER

"A" STEAM GENERATOR

R6C2
R10C3
R2C5
R8C5
R8C6
R10C6
R14C6
R21C7
R3C8
R16C8
R22C9
R8C11
R24C11
R15C12
R21C12
R3C13
R29C13
R4C15
R24C16
R8C17
R1C18
R24C18
R13C19
R24C19
R4C21
R16C21
R37C21
R15C22
R34C22
R33C23
R4C24
R13C24
R7C25
R13C25
R33C25
R8C26
R37C26
R34C27
R13C28
R19C28
R41C28
R18C29
R28C29
R8C30
R30C30
R37C30
R1C32
R13C33
R36C33
R9C34
R32C34

R1C35
R27C35
R5C36
R19C36
R41C36
R23C37
R26C38
R39C38
R5C39
R6C40
R41C40
R24C41
R43C41
R14C42
R20C42
R38C42
R41C42
R1C43
R7C43
R11C43
R26C43
R35C43
R44C43
R16C44
R26C44
R42C44
R22C45
R42C45
R12C46
R30C46
R41C46
R31C47
R18C48
R37C48
R1C49
R18C49
R8C50
R20C50
R6C51
R28C51
R45C51
R6C52
R18C52
R39C52
R13C53
R19C53
R21C54
R25C54
R17C55
R4C56
R15C56
R31C56

R13C57
R24C57
R33C57
R13C58
R28C58
R34C58
R13C59
R39C59
R2C60
R12C60
R25C60
R39C60
R10C62
R24C63
R3C64
R31C64
R27C65
R1C66
R15C66
R5C67
R18C67
R14C68
R19C68
R18C69
R27C69
R34C70
R5C71
R11C71
R29C71
R2C72
R13C72
R20C72
R3C73
R16C73
R37C73
R27C75
R30C76
R27C77
R30C77
R14C78
R10C79
R13C80
R5C81
R20C81
R29C81
R17C82
R3C84
R14C85
R6C88
R9C89

INDICATIONS FROM LAST OUTAGE

R12C25
R12C41
R13C37
R21C61
R33C71
R34C69
R6C53
R11C11
R11C12
R11C17
R21C81
R23C77
R31C72

MIS:87-858(1)

"B" STEAM GENERATOR

R4C2
R3C4
R10C4
R5C5
R16C6
R6C7
R17C7
R7C9
R18C10
R5C11
R17C11
R21C12
R11C14
R15C14
R22C15
R5C16
R20C16
R18C17
R17C18
R23C19
R22C20
R25C20
R12C21
R28C21
R10C22
R6C23
R26C23
R14C24
R34C24
R13C25
R27C25
R5C26
R37C26
R13C27
R18C27
R26C28
R36C29
R14C30
R17C30
R31C30
R30C31
R13C32
R26C32
R29C33
R25C34
R32C34
R33C35
R15C36
R25C36
R40C37
R16C38

R29C38
R15C39
R19C40
R34C40
R13C42
R37C42
R34C43
R11C44
R38C44
R2C45
R40C45
R15C46
R36C46
R5C47
R14C47
R41C47
R4C48
R31C48
R14C49
R25C49
R33C49
R3C50
R12C50
R41C50
R6C51
R13C51
R17C52
R23C52
R13C53
R8C54
R6C55
R44C55
R12C56
R33C56
R17C57
R44C57
R31C58
R19C59
R30C59
R39C59
R22C60
R42C60
R12C62
R21C62
R37C62
R8C63
R21C63
R37C63
R5C64
R10C65
R24C65
R29C65

R36C65
R21C66
R15C68
R39C68
R4C69
R14C70
R31C70
R33C70
R5C71
R16C71
R8C72
R13C73
R24C74
R14C75
R5C76
R12C76
R20C76
R25C76
R28C76
R1C77
R31C77
R18C78
R10C79
R30C79
R25C80
R12C81
R15C81
R18C81
R21C82
R27C83
R20C84
R16C85
R2C86
R18C86
R4C87
R3C88
R10C88
R13C88
R5C89
R12C89
R16C89
R1C91

INDICATIONS FROM LAST OUTAGE

R3C19
R12C7
R17C43
R22C22
R22C61

R38C54
R39C32
R40C30
R41C36
R42C33
R42C46
R43C33
R43C36
R1C70
R32C15
R31C42
R31C32
R29C39
R4C44
R7C41
R7C46
R14C22
R16C5
R16C13
R20C87
R23C50

"C" STEAM GENERATOR

R13C3
R16C4
R17C5
R8C6
R3C7
R11C9
R15C9
R14C10
R24C10
R4C11
R22C11
R14C12
R19C12
R23C12
R26C13
R9C14
R21C14
R28C14
R16C15
R18C15
R10C16
R21C16
R17C17
R8C18
R34C18
R13C19
R32C19
R13C20
R31C20
R4C21
428C21
R35C21
R24C22
R14C23
R37C23
R15C24
R22C24
R3C25
R32C25
R18C26
R38C26
R3C28
R27C28
R23C29
R6C30
R22C30
R19C31
R5C32
R10C32
R16C32
R26C32

R33C32
R12C33
R12C34
R21C34
R6C35
R39C35
R3C36
R13C36
R10C37
R21C37
R26C37
R43C37
R21C38
R4C39
R43C39
R14C40
R30C40
R39C40
R24C41
R39C41
R11C42
R29C42
R43C42
R16C43
R26C43
R29C43
R13C44
R37C44
R22C45
R41C45
R12C46
R16C47
R29C47
R39C47
R13C48
R22C48
R15C49
R20C49
R9C50
R7C51
R31C51
R12C52
R17C52
R42C53
R2C54
R11C54
R36C54
R7C55
R16C55
R40C55
R36C56
R5C57

R16C57
R30C57
R2C58
R16C58
R33C58
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R14C59
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R1C60
R13C60
R6C61
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R33C63
R20C64
R27C64
R6C65
R25C65
R2C66
R17C66
R31C67
R12C68
R11C69
R20C69
R39C69
R30C71
R19C72
R25C72
R5C73
R20C73
R12C74
R24C74
R32C74
R36C74
R24C75
R33C76
R1C78
R15C78
R1C79
R6C80
R5C81
R24C81
R28C81
R19C82
R13C83
R13C84
R24C84
R5C85
R8C85
R1C86
R16C87
R10C88

R4C90

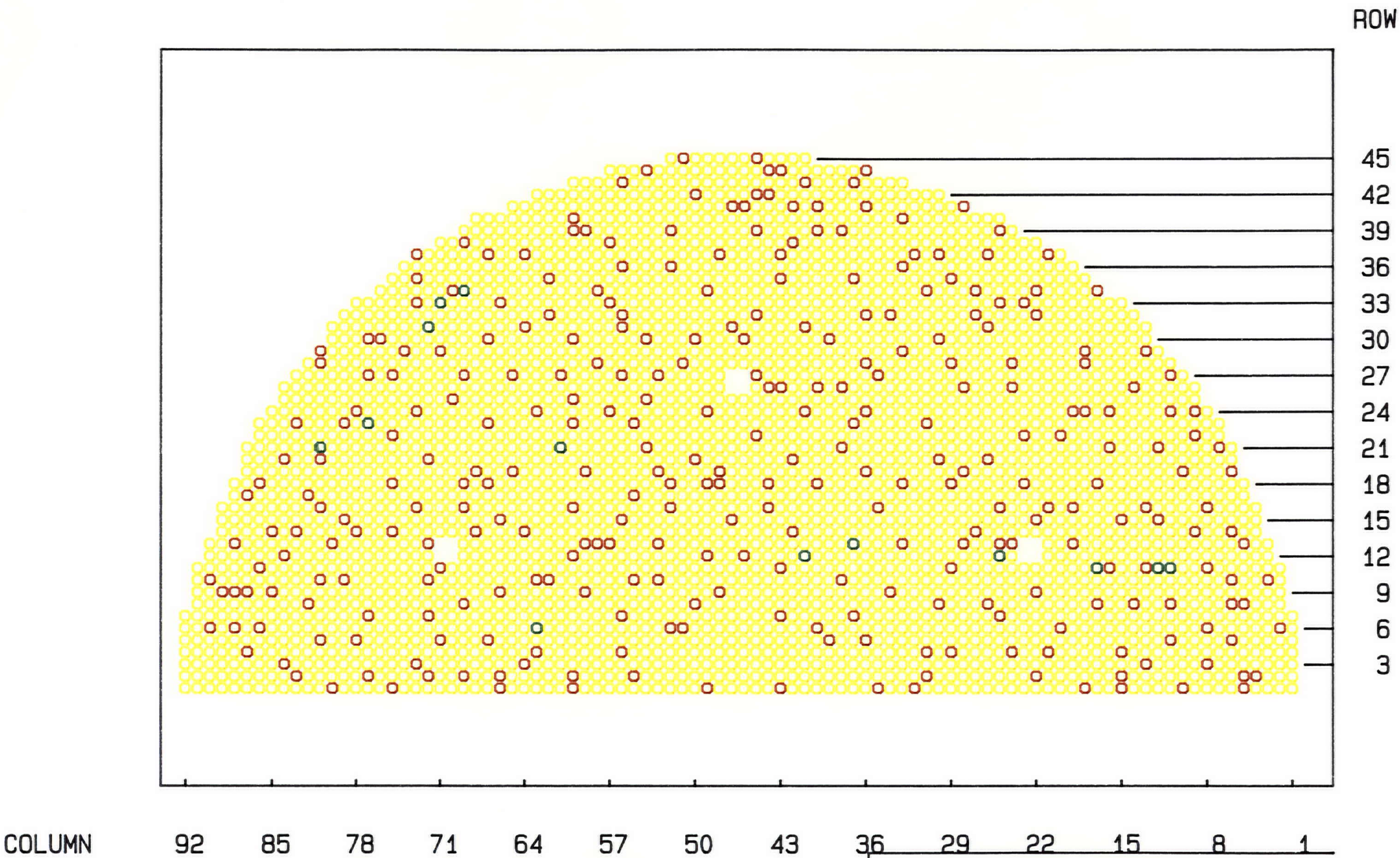
INDICATIONS FROM LAST OUTAGE

R8C73
R11C24
R12C19
R28C43
R34C59
R38C71
R45C48
R38C68
R41C59
R3C43
R4C6
R4C78
R8C30
R37C52

EXAMINATION PLAN

GENERATOR A

TOTAL TUBE LIST



317 Random 10% Sample Tubes Examined
13 Previous Indication Tubes 330 Total

Westinghouse Ser. 44F

STEAM GENERATOR A

Combustion Engineering

TUBEROW	TUBECOL	EXAMINSP
11	11	AH-PI
11	12	AH-PI
11	17	AH-PI
12	25	AH-PI
13	37	AH-PI
12	41	AH-PI
21	61	AH-PI
6	63	AH-PI
34	69	AH-PI
33	71	AH-PI
31	72	AH-PI
23	77	AH-PI
21	81	AH-PI
6	2	AH-RD
10	3	AH-RD
2	4	AH-RD
1	5	AH-RD
2	5	AH-RD
8	5	AH-RD
13	5	AH-RD
5	6	AH-RD
8	6	AH-RD
10	6	AH-RD
14	6	AH-RD
19	6	AH-RD
21	7	AH-RD
3	8	AH-RD
6	8	AH-RD
11	8	AH-RD
16	8	AH-RD
14	9	AH-RD
22	9	AH-RD
24	9	AH-RD
1	10	AH-RD
19	10	AH-RD
5	11	AH-RD
8	11	AH-RD
24	11	AH-RD
27	11	AH-RD
15	12	AH-RD
21	12	AH-RD
3	13	AH-RD
11	13	AH-RD
16	13	AH-RD
29	13	AH-RD
8	14	AH-RD
26	14	AH-RD
1	15	AH-RD
2	15	AH-RD
4	15	AH-RD
15	15	AH-RD
11	16	AH-RD
21	16	AH-RD
24	16	AH-RD
8	17	AH-RD

TUBEROW	TUBECOL	EXAMINSP
18	17	AH-RD
34	17	AH-RD
1	18	AH-RD
24	18	AH-RD
28	18	AH-RD
29	18	AH-RD
13	19	AH-RD
16	19	AH-RD
24	19	AH-RD
6	20	AH-RD
22	20	AH-RD
4	21	AH-RD
16	21	AH-RD
37	21	AH-RD
2	22	AH-RD
9	22	AH-RD
15	22	AH-RD
32	22	AH-RD
34	22	AH-RD
18	23	AH-RD
22	23	AH-RD
33	23	AH-RD
4	24	AH-RD
13	24	AH-RD
26	24	AH-RD
28	24	AH-RD
7	25	AH-RD
13	25	AH-RD
16	25	AH-RD
33	25	AH-RD
39	25	AH-RD
8	26	AH-RD
20	26	AH-RD
31	26	AH-RD
37	26	AH-RD
14	27	AH-RD
32	27	AH-RD
34	27	AH-RD
13	28	AH-RD
19	28	AH-RD
26	28	AH-RD
41	28	AH-RD
4	29	AH-RD
11	29	AH-RD
18	29	AH-RD
28	29	AH-RD
35	29	AH-RD
8	30	AH-RD
20	30	AH-RD
30	30	AH-RD
37	30	AH-RD
2	31	AH-RD
4	31	AH-RD
23	31	AH-RD
34	31	AH-RD

TUBEROW	TUBECOL	EXAMINSP
1	32	AH-RD
37	32	AH-RD
13	33	AH-RD
18	33	AH-RD
29	33	AH-RD
36	33	AH-RD
40	33	AH-RD
9	34	AH-RD
32	34	AH-RD
1	35	AH-RD
16	35	AH-RD
27	35	AH-RD
5	36	AH-RD
19	36	AH-RD
24	36	AH-RD
28	36	AH-RD
32	36	AH-RD
41	36	AH-RD
44	36	AH-RD
7	37	AH-RD
23	37	AH-RD
35	37	AH-RD
43	37	AH-RD
10	38	AH-RD
21	38	AH-RD
26	38	AH-RD
39	38	AH-RD
5	39	AH-RD
30	39	AH-RD
6	40	AH-RD
18	40	AH-RD
26	40	AH-RD
39	40	AH-RD
41	40	AH-RD
24	41	AH-RD
31	41	AH-RD
43	41	AH-RD
14	42	AH-RD
20	42	AH-RD
38	42	AH-RD
41	42	AH-RD
1	43	AH-RD
7	43	AH-RD
11	43	AH-RD
26	43	AH-RD
35	43	AH-RD
37	43	AH-RD
44	43	AH-RD
16	44	AH-RD
18	44	AH-RD
26	44	AH-RD
42	44	AH-RD
44	44	AH-RD
22	45	AH-RD
27	45	AH-RD

TUBEROW	TUBECOL	EXAMINSP
32	45	AH-RD
39	45	AH-RD
42	45	AH-RD
45	45	AH-RD
12	46	AH-RD
30	46	AH-RD
41	46	AH-RD
15	47	AH-RD
31	47	AH-RD
41	47	AH-RD
9	48	AH-RD
18	48	AH-RD
19	48	AH-RD
37	48	AH-RD
1	49	AH-RD
12	49	AH-RD
18	49	AH-RD
24	49	AH-RD
34	49	AH-RD
8	50	AH-RD
20	50	AH-RD
30	50	AH-RD
42	50	AH-RD
6	51	AH-RD
28	51	AH-RD
45	51	AH-RD
6	52	AH-RD
16	52	AH-RD
18	52	AH-RD
36	52	AH-RD
39	52	AH-RD
10	53	AH-RD
13	53	AH-RD
19	53	AH-RD
27	53	AH-RD
21	54	AH-RD
25	54	AH-RD
30	54	AH-RD
44	54	AH-RD
2	55	AH-RD
10	55	AH-RD
17	55	AH-RD
23	55	AH-RD
4	56	AH-RD
7	56	AH-RD
15	56	AH-RD
27	56	AH-RD
31	56	AH-RD
32	56	AH-RD
36	56	AH-RD
43	56	AH-RD
13	57	AH-RD
24	57	AH-RD
33	57	AH-RD
38	57	AH-RD

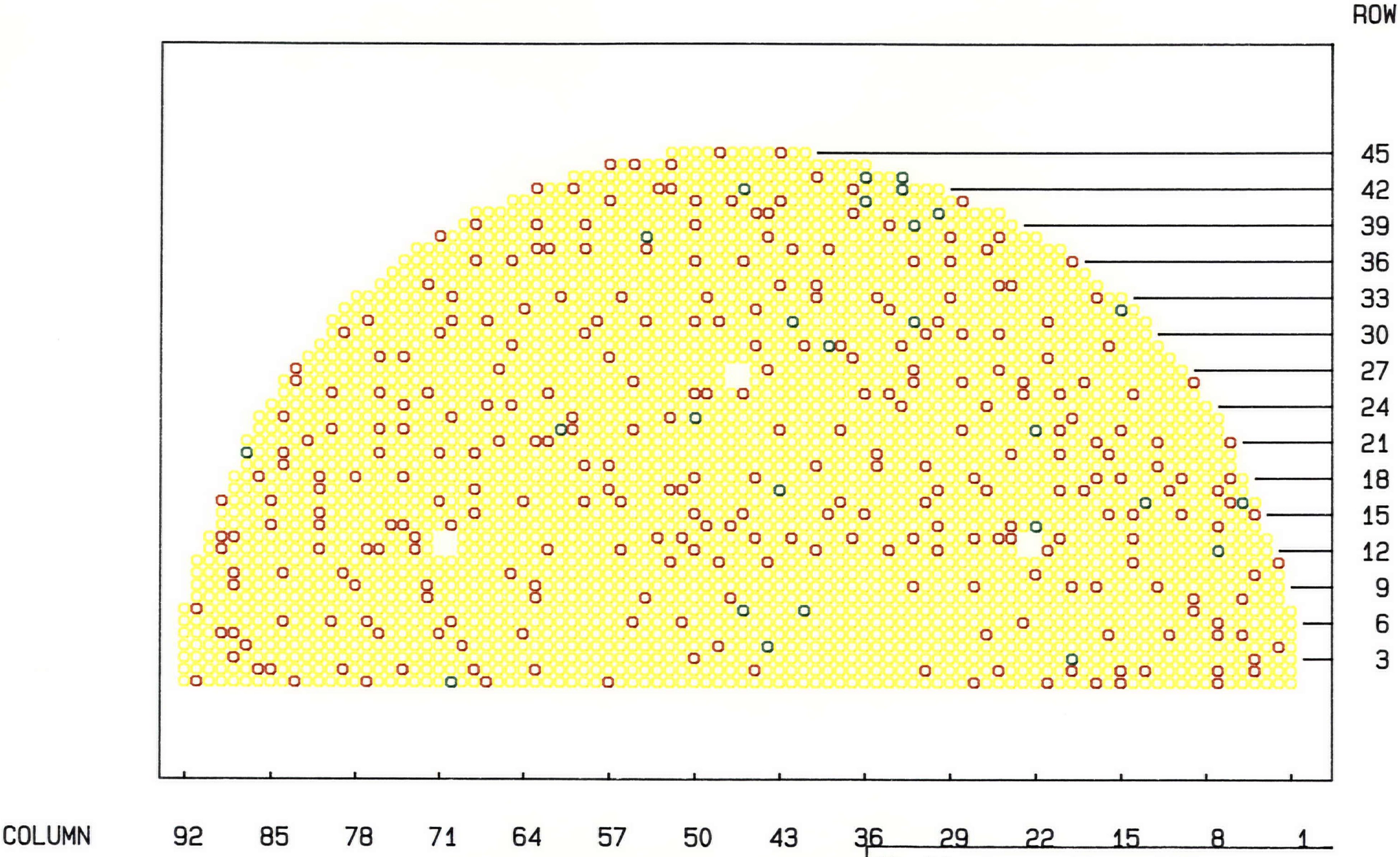
TUBEROW	TUBECOL	EXAMINSP
13	58	AH-RD
28	58	AH-RD
34	58	AH-RD
9	59	AH-RD
13	59	AH-RD
19	59	AH-RD
39	59	AH-RD
1	60	AH-RD
2	60	AH-RD
12	60	AH-RD
16	60	AH-RD
23	60	AH-RD
25	60	AH-RD
30	60	AH-RD
39	60	AH-RD
40	60	AH-RD
27	61	AH-RD
10	62	AH-RD
32	62	AH-RD
35	62	AH-RD
4	63	AH-RD
10	63	AH-RD
24	63	AH-RD
3	64	AH-RD
14	64	AH-RD
31	64	AH-RD
37	64	AH-RD
19	65	AH-RD
27	65	AH-RD
1	66	AH-RD
2	66	AH-RD
9	66	AH-RD
15	66	AH-RD
33	66	AH-RD
5	67	AH-RD
18	67	AH-RD
23	67	AH-RD
30	67	AH-RD
37	67	AH-RD
14	68	AH-RD
19	68	AH-RD
2	69	AH-RD
8	69	AH-RD
16	69	AH-RD
18	69	AH-RD
27	69	AH-RD
38	69	AH-RD
25	70	AH-RD
34	70	AH-RD
5	71	AH-RD
11	71	AH-RD
29	71	AH-RD
2	72	AH-RD
7	72	AH-RD
10	72	AH-RD

TUBEROW	TUBECOL	EXAMINSP
13	72	AH-RD
20	72	AH-RD
3	73	AH-RD
16	73	AH-RD
24	73	AH-RD
33	73	AH-RD
35	73	AH-RD
37	73	AH-RD
29	74	AH-RD
1	75	AH-RD
14	75	AH-RD
18	75	AH-RD
22	75	AH-RD
27	75	AH-RD
30	76	AH-RD
2	77	AH-RD
7	77	AH-RD
27	77	AH-RD
30	77	AH-RD
5	78	AH-RD
14	78	AH-RD
24	78	AH-RD
10	79	AH-RD
15	79	AH-RD
23	79	AH-RD
1	80	AH-RD
13	80	AH-RD
5	81	AH-RD
10	81	AH-RD
16	81	AH-RD
20	81	AH-RD
28	81	AH-RD
29	81	AH-RD
8	82	AH-RD
17	82	AH-RD
2	83	AH-RD
14	83	AH-RD
23	83	AH-RD
3	84	AH-RD
12	84	AH-RD
20	84	AH-RD
9	85	AH-RD
14	85	AH-RD
6	86	AH-RD
11	86	AH-RD
18	86	AH-RD
4	87	AH-RD
9	87	AH-RD
17	87	AH-RD
6	88	AH-RD
9	88	AH-RD
13	88	AH-RD
9	89	AH-RD
6	90	AH-RD
10	90	AH-RD

EXAMINATION PLAN

GENERATOR B

TOTAL TUBE LIST



304 Random 10% Sample Tubes Examined

26 Previous Indication Tubes 330 Total

Westinghouse Ser. 44F

STEAM GENERATOR B

Combustion Engineering

TUBEROW	TUBECOL	EXAMINSP
16	5	BH-PI
12	7	BH-PI
16	13	BH-PI
32	15	BH-PI
3	19	BH-PI
14	22	BH-PI
22	22	BH-PI
40	30	BH-PI
31	32	BH-PI
39	32	BH-PI
42	33	BH-PI
43	33	BH-PI
41	36	BH-PI
43	36	BH-PI
29	39	BH-PI
7	41	BH-PI
31	42	BH-PI
17	43	BH-PI
4	44	BH-PI
7	46	BH-PI
42	46	BH-PI
23	50	BH-PI
38	54	BH-PI
22	61	BH-PI
1	70	BH-PI
20	87	BH-PI
4	2	BH-RD
11	2	BH-RD
2	4	BH-RD
3	4	BH-RD
10	4	BH-RD
15	4	BH-RD
5	5	BH-RD
8	5	BH-RD
16	6	BH-RD
18	6	BH-RD
21	6	BH-RD
1	7	BH-RD
2	7	BH-RD
5	7	BH-RD
6	7	BH-RD
14	7	BH-RD
17	7	BH-RD
7	9	BH-RD
8	9	BH-RD
26	9	BH-RD
15	10	BH-RD
18	10	BH-RD
5	11	BH-RD
17	11	BH-RD
9	12	BH-RD
19	12	BH-RD
21	12	BH-RD
2	13	BH-RD
11	14	BH-RD

TUBEROW	TUBECOL	EXAMINSP
13	14	BH-RD
15	14	BH-RD
25	14	BH-RD
1	15	BH-RD
2	15	BH-RD
18	15	BH-RD
22	15	BH-RD
5	16	BH-RD
15	16	BH-RD
20	16	BH-RD
29	16	BH-RD
1	17	BH-RD
9	17	BH-RD
18	17	BH-RD
21	17	BH-RD
33	17	BH-RD
17	18	BH-RD
26	18	BH-RD
2	19	BH-RD
9	19	BH-RD
23	19	BH-RD
36	19	BH-RD
13	20	BH-RD
17	20	BH-RD
20	20	BH-RD
22	20	BH-RD
25	20	BH-RD
1	21	BH-RD
12	21	BH-RD
28	21	BH-RD
31	21	BH-RD
10	22	BH-RD
6	23	BH-RD
25	23	BH-RD
26	23	BH-RD
13	24	BH-RD
14	24	BH-RD
20	24	BH-RD
34	24	BH-RD
2	25	BH-RD
13	25	BH-RD
27	25	BH-RD
30	25	BH-RD
34	25	BH-RD
38	25	BH-RD
5	26	BH-RD
17	26	BH-RD
24	26	BH-RD
37	26	BH-RD
1	27	BH-RD
9	27	BH-RD
13	27	BH-RD
18	27	BH-RD
22	28	BH-RD
26	28	BH-RD

TUBEROW	TUBECOL	EXAMINSP
30	28	BH-RD
41	28	BH-RD
33	29	BH-RD
36	29	BH-RD
38	29	BH-RD
12	30	BH-RD
14	30	BH-RD
17	30	BH-RD
31	30	BH-RD
2	31	BH-RD
16	31	BH-RD
19	31	BH-RD
30	31	BH-RD
9	32	BH-RD
13	32	BH-RD
26	32	BH-RD
27	32	BH-RD
36	32	BH-RD
24	33	BH-RD
29	33	BH-RD
12	34	BH-RD
25	34	BH-RD
32	34	BH-RD
39	34	BH-RD
19	35	BH-RD
20	35	BH-RD
33	35	BH-RD
15	36	BH-RD
25	36	BH-RD
13	37	BH-RD
28	37	BH-RD
40	37	BH-RD
42	37	BH-RD
16	38	BH-RD
22	38	BH-RD
29	38	BH-RD
15	39	BH-RD
37	39	BH-RD
12	40	BH-RD
19	40	BH-RD
33	40	BH-RD
34	40	BH-RD
43	40	BH-RD
29	41	BH-RD
13	42	BH-RD
37	42	BH-RD
22	43	BH-RD
34	43	BH-RD
41	43	BH-RD
45	43	BH-RD
11	44	BH-RD
27	44	BH-RD
38	44	BH-RD
40	44	BH-RD
2	45	BH-RD

TUBEROW	TUBECOL	EXAMINSP
13	45	BH-RD
18	45	BH-RD
29	45	BH-RD
32	45	BH-RD
40	45	BH-RD
15	46	BH-RD
25	46	BH-RD
36	46	BH-RD
8	47	BH-RD
14	47	BH-RD
41	47	BH-RD
4	48	BH-RD
11	48	BH-RD
31	48	BH-RD
45	48	BH-RD
14	49	BH-RD
25	49	BH-RD
33	49	BH-RD
3	50	BH-RD
12	50	BH-RD
15	50	BH-RD
18	50	BH-RD
25	50	BH-RD
31	50	BH-RD
36	50	BH-RD
39	50	BH-RD
41	50	BH-RD
6	51	BH-RD
13	51	BH-RD
17	51	BH-RD
11	52	BH-RD
17	52	BH-RD
23	52	BH-RD
42	52	BH-RD
44	52	BH-RD
13	53	BH-RD
42	53	BH-RD
8	54	BH-RD
31	54	BH-RD
37	54	BH-RD
6	55	BH-RD
22	55	BH-RD
26	55	BH-RD
44	55	BH-RD
12	56	BH-RD
16	56	BH-RD
33	56	BH-RD
1	57	BH-RD
17	57	BH-RD
19	57	BH-RD
28	57	BH-RD
41	57	BH-RD
44	57	BH-RD
31	58	BH-RD
16	59	BH-RD

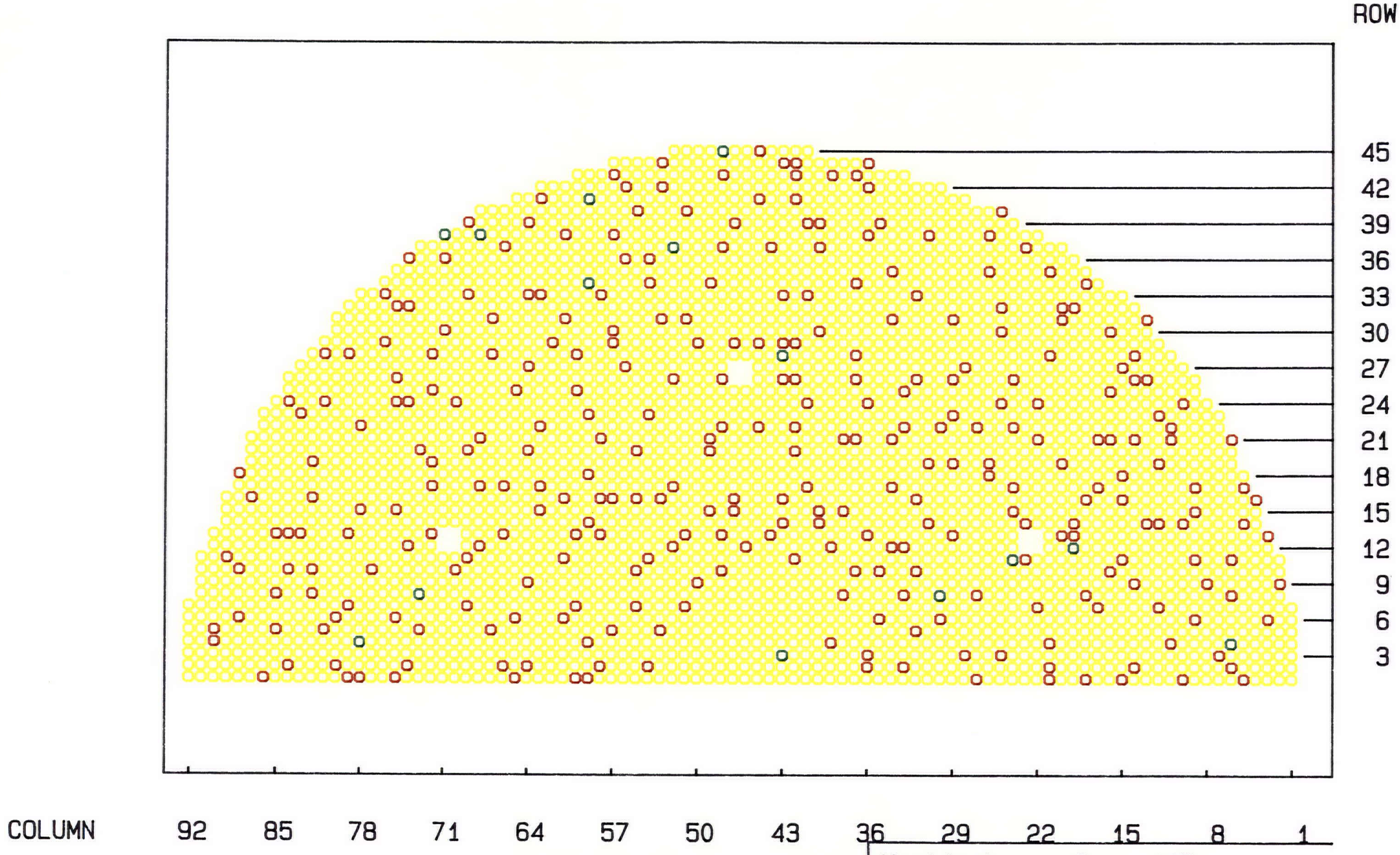
TUBEROW	TUBECOL	EXAMINSP
19	59	BH-RD
30	59	BH-RD
37	59	BH-RD
39	59	BH-RD
22	60	BH-RD
23	60	BH-RD
42	60	BH-RD
33	61	BH-RD
12	62	BH-RD
21	62	BH-RD
25	62	BH-RD
37	62	BH-RD
2	63	BH-RD
8	63	BH-RD
9	63	BH-RD
21	63	BH-RD
37	63	BH-RD
39	63	BH-RD
42	63	BH-RD
5	64	BH-RD
16	64	BH-RD
32	64	BH-RD
10	65	BH-RD
24	65	BH-RD
29	65	BH-RD
36	65	BH-RD
21	66	BH-RD
27	66	BH-RD
1	67	BH-RD
24	67	BH-RD
31	67	BH-RD
2	68	BH-RD
15	68	BH-RD
17	68	BH-RD
20	68	BH-RD
36	68	BH-RD
39	68	BH-RD
4	69	BH-RD
6	70	BH-RD
14	70	BH-RD
23	70	BH-RD
31	70	BH-RD
33	70	BH-RD
5	71	BH-RD
16	71	BH-RD
20	71	BH-RD
30	71	BH-RD
38	71	BH-RD
8	72	BH-RD
9	72	BH-RD
25	72	BH-RD
34	72	BH-RD
12	73	BH-RD
13	73	BH-RD
2	74	BH-RD

TUBEROW	TUBECOL	EXAMINSP
14	74	BH-RD
18	74	BH-RD
22	74	BH-RD
24	74	BH-RD
28	74	BH-RD
14	75	BH-RD
5	76	BH-RD
12	76	BH-RD
20	76	BH-RD
22	76	BH-RD
25	76	BH-RD
28	76	BH-RD
1	77	BH-RD
6	77	BH-RD
12	77	BH-RD
31	77	BH-RD
9	78	BH-RD
18	78	BH-RD
2	79	BH-RD
10	79	BH-RD
30	79	BH-RD
6	80	BH-RD
22	80	BH-RD
25	80	BH-RD
12	81	BH-RD
14	81	BH-RD
15	81	BH-RD.
17	81	BH-RD
18	81	BH-RD
21	82	BH-RD
1	83	BH-RD
26	83	BH-RD
27	83	BH-RD
6	84	BH-RD
10	84	BH-RD
19	84	BH-RD
20	84	BH-RD
23	84	BH-RD
2	85	BH-RD
14	85	BH-RD
16	85	BH-RD
2	86	BH-RD
18	86	BH-RD
4	87	BH-RD
3	88	BH-RD
5	88	BH-RD
9	88	BH-RD
10	88	BH-RD
13	88	BH-RD
5	89	BH-RD
12	89	BH-RD
13	89	BH-RD
16	89	BH-RD
1	91	BH-RD
7	91	BH-RD

EXAMINATION PLAN

GENERATOR C

TOTAL TUBE LIST



319 Random 10% Sample Tubes Examined

14 Previous Indication Tubes 333 Total

Westinghouse Ser. 44F

STEAM GENERATOR C

Combustion Engineering

TUBEROW	TUBECOL	EXAMINSP
4	6	CH-PI
12	19	CH-PI
11	24	CH-PI
8	30	CH-PI
3	43	CH-PI
28	43	CH-PI
45	48	CH-PI
37	52	CH-PI
34	59	CH-PI
41	59	CH-PI
38	68	CH-PI
38	71	CH-PI
8	73	CH-PI
4	78	CH-PI
9	2	CH-RD
6	3	CH-RD
13	3	CH-RD
16	4	CH-RD
1	5	CH-RD
14	5	CH-RD
17	5	CH-RD
2	6	CH-RD
8	6	CH-RD
11	6	CH-RD
21	6	CH-RD
3	7	CH-RD
9	8	CH-RD
6	9	CH-RD
11	9	CH-RD
15	9	CH-RD
17	9	CH-RD
1	10	CH-RD
14	10	CH-RD
24	10	CH-RD
4	11	CH-RD
21	11	CH-RD
22	11	CH-RD
7	12	CH-RD
14	12	CH-RD
19	12	CH-RD
23	12	CH-RD
14	13	CH-RD
26	13	CH-RD
31	13	CH-RD
2	14	CH-RD
9	14	CH-RD
21	14	CH-RD
26	14	CH-RD
28	14	CH-RD
1	15	CH-RD
11	15	CH-RD
16	15	CH-RD
18	15	CH-RD
27	15	CH-RD
10	16	CH-RD

TUBEROW	TUBECOL	EXAMINSP
21	16	CH-RD
25	16	CH-RD
30	16	CH-RD
7	17	CH-RD
17	17	CH-RD
21	17	CH-RD
1	18	CH-RD
8	18	CH-RD
16	18	CH-RD
34	18	CH-RD
13	19	CH-RD
14	19	CH-RD
32	19	CH-RD
13	20	CH-RD
19	20	CH-RD
31	20	CH-RD
32	20	CH-RD
1	21	CH-RD
2	21	CH-RD
4	21	CH-RD
28	21	CH-RD
35	21	CH-RD
7	22	CH-RD
21	22	CH-RD
24	22	CH-RD
11	23	CH-RD
14	23	CH-RD
37	23	CH-RD
15	24	CH-RD
17	24	CH-RD
22	24	CH-RD
26	24	CH-RD
3	25	CH-RD
24	25	CH-RD
30	25	CH-RD
32	25	CH-RD
40	25	CH-RD
18	26	CH-RD
19	26	CH-RD
35	26	CH-RD
38	26	CH-RD
1	27	CH-RD
8	27	CH-RD
22	27	CH-RD
3	28	CH-RD
27	28	CH-RD
13	29	CH-RD
19	29	CH-RD
23	29	CH-RD
26	29	CH-RD
31	29	CH-RD
6	30	CH-RD
22	30	CH-RD
14	31	CH-RD
19	31	CH-RD

TUBEROW	TUBECOL	EXAMINSP
38	31	CH-RD
5	32	CH-RD
10	32	CH-RD
16	32	CH-RD
26	32	CH-RD
33	32	CH-RD
2	33	CH-RD
8	33	CH-RD
12	33	CH-RD
22	33	CH-RD
25	33	CH-RD
12	34	CH-RD
17	34	CH-RD
21	34	CH-RD
31	34	CH-RD
35	34	CH-RD
6	35	CH-RD
10	35	CH-RD
39	35	CH-RD
2	36	CH-RD
3	36	CH-RD
13	36	CH-RD
24	36	CH-RD
38	36	CH-RD
42	36	CH-RD
44	36	CH-RD
10	37	CH-RD
21	37	CH-RD
26	37	CH-RD
28	37	CH-RD
34	37	CH-RD
43	37	CH-RD
8	38	CH-RD
15	38	CH-RD
21	38	CH-RD
4	39	CH-RD
12	39	CH-RD
43	39	CH-RD
14	40	CH-RD
15	40	CH-RD
30	40	CH-RD
37	40	CH-RD
39	40	CH-RD
17	41	CH-RD
24	41	CH-RD
33	41	CH-RD
39	41	CH-RD
11	42	CH-RD
20	42	CH-RD
22	42	CH-RD
26	42	CH-RD
29	42	CH-RD
41	42	CH-RD
43	42	CH-RD
44	42	CH-RD

TUBEROW	TUBECOL	EXAMINSP
14	43	CH-RD
16	43	CH-RD
26	43	CH-RD
29	43	CH-RD
33	43	CH-RD
44	43	CH-RD
13	44	CH-RD
37	44	CH-RD
22	45	CH-RD
29	45	CH-RD
41	45	CH-RD
45	45	CH-RD
12	46	CH-RD
15	47	CH-RD
16	47	CH-RD
29	47	CH-RD
39	47	CH-RD
10	48	CH-RD
13	48	CH-RD
22	48	CH-RD
26	48	CH-RD
37	48	CH-RD
43	48	CH-RD
15	49	CH-RD
20	49	CH-RD
21	49	CH-RD
34	49	CH-RD
9	50	CH-RD
29	50	CH-RD
7	51	CH-RD
13	51	CH-RD
31	51	CH-RD
40	51	CH-RD
12	52	CH-RD
17	52	CH-RD
26	52	CH-RD
5	53	CH-RD
16	53	CH-RD
31	53	CH-RD
42	53	CH-RD
44	53	CH-RD
2	54	CH-RD
11	54	CH-RD
23	54	CH-RD
34	54	CH-RD
36	54	CH-RD
7	55	CH-RD
10	55	CH-RD
16	55	CH-RD
20	55	CH-RD
40	55	CH-RD
27	56	CH-RD
36	56	CH-RD
42	56	CH-RD
5	57	CH-RD

TUBEROW	TUBECOL	EXAMINSP
16	57	CH-RD
29	57	CH-RD
30	57	CH-RD
38	57	CH-RD
43	57	CH-RD
2	58	CH-RD
13	58	CH-RD
16	58	CH-RD
21	58	CH-RD
33	58	CH-RD
1	59	CH-RD
4	59	CH-RD
14	59	CH-RD
18	59	CH-RD
23	59	CH-RD
1	60	CH-RD
7	60	CH-RD
13	60	CH-RD
25	60	CH-RD
28	60	CH-RD
6	61	CH-RD
11	61	CH-RD
16	61	CH-RD
31	61	CH-RD
38	61	CH-RD
29	62	CH-RD
15	63	CH-RD
17	63	CH-RD
22	63	CH-RD
33	63	CH-RD
41	63	CH-RD
2	64	CH-RD
9	64	CH-RD
20	64	CH-RD
27	64	CH-RD
33	64	CH-RD
39	64	CH-RD
1	65	CH-RD
6	65	CH-RD
25	65	CH-RD
2	66	CH-RD
13	66	CH-RD
17	66	CH-RD
37	66	CH-RD
5	67	CH-RD
28	67	CH-RD
31	67	CH-RD
12	68	CH-RD
17	68	CH-RD
21	68	CH-RD
7	69	CH-RD
11	69	CH-RD
20	69	CH-RD
33	69	CH-RD
39	69	CH-RD

TUBEROW	TUBECOL	EXAMINSP
10	70	CH-RD
24	70	CH-RD
30	71	CH-RD
36	71	CH-RD
13	72	CH-RD
17	72	CH-RD
19	72	CH-RD
25	72	CH-RD
28	72	CH-RD
5	73	CH-RD
20	73	CH-RD
2	74	CH-RD
12	74	CH-RD
24	74	CH-RD
32	74	CH-RD
36	74	CH-RD
1	75	CH-RD
6	75	CH-RD
15	75	CH-RD
24	75	CH-RD
26	75	CH-RD
32	75	CH-RD
29	76	CH-RD
33	76	CH-RD
10	77	CH-RD
1	78	CH-RD
15	78	CH-RD
22	78	CH-RD
1	79	CH-RD
7	79	CH-RD
13	79	CH-RD
28	79	CH-RD
2	80	CH-RD
6	80	CH-RD
5	81	CH-RD
24	81	CH-RD
28	81	CH-RD
8	82	CH-RD
10	82	CH-RD
16	82	CH-RD
19	82	CH-RD
13	83	CH-RD
23	83	CH-RD
2	84	CH-RD
10	84	CH-RD
13	84	CH-RD
24	84	CH-RD
5	85	CH-RD
8	85	CH-RD
13	85	CH-RD
1	86	CH-RD
16	87	CH-RD
6	88	CH-RD
10	88	CH-RD
18	88	CH-RD

TUBEROW	TUBECOL	EXAMINSP
11	89	CH-RD
4	90	CH-RD
5	90	CH-RD

EXAMINATION SUMMARY AND RESULTS

EXAMINATION SUMMARY AND RESULTS

During May 1987 Combustion Engineering performed parallel eddy current examinations on all 3 steam generators (approximately 330 tubes each) for a total of 993 tubes at Robinson Nuclear Project Unit Two. A summary of the extent of examination in relation to each steam generator along with tabulated results of total indications with detectable percent through wall degradation are listed on the next page.

There were three (3) indications greater than twenty percent (20%) through wall identified. In steam generator A, two (2) indications were evaluated to be twenty two percent (22%) through wall in tube number, Row 33, Column 25. The other indication was on steam generator B in tube number, Row 14, Column 22. This indication was evaluated to be thirty three percent (33%) through wall. It should be noted that these indications were investigated by reviewing previous data which indicated their origin to be manufacture processing flaws, and not service induced flaws.

Another interesting characteristic was contained in steam generator C in tube number, Row 6, Column 3 which indicated that the tube was expanded above the top of the secondary face of the tube sheet.

A listing of all indications for each steam generator along with tube sheet plots are included under Tabs A, B and C of this section. The row column sorts with results of all tubes examined along with the actual data analysis and acquisition sheets are included in Section III of this report.

A primary and secondary analysis was performed on all tubes examined. The DDA-4 analysis sheets from both reviews are included in this report. The primary results are considered final for all tubes except where resolutions were required. Resolutions were conducted in accordance with the Data Analysis Procedure ROB-410-005, Rev. 0. These indications were resolved by the Level III and recorded as a resolution on the primary DDA-4 sheet. Any discrepancy in calibration records detected by the Data Analyst were resolved in accordance with ROB-410-004, Rev. 0, Paragraph 11.0. by verifying the quality of the data was unchanged.

Summary of Steam Generator Tubing Eddy Current Examination

Robinson Nuclear Project - Unit Two May 1987

Steam Generator Examined: SG #1 (A)

NUMBER TUBES	EXTENT	DEFECTS<20	>20OR<40	>40	PROBE
13	6C-HTE	0	0	0	A680BJF
16	6C-HTE	0	0	0	A680SLDF
1	CTE-HTE	0	0	0	A680BJF
13	CTE-HTE	1	0	0	A680SLDF
287	CTE-HTE	5	2	0	A720SFRM
330 Total					

Steam Generator Examined: SG #2 (B)

NUMBER TUBES	EXTENT	DEFECTS<20	>20OR<40	>40	PROBE
1	3C-HTE	0	0	0	A680BJF
16	6C-HTE	0	0	0	A680BJF
3	6C-HTE	0	0	0	A680SLDF
7	6C-HTE	0	0	0	A700SFRM
2	6C-HTE	0	0	0	A720SFRM
1	CTE-HTE	0	0	0	A680SLDF
8	CTE-HTE	0	0	0	A700SFRM
292	CTE-HTE	0	1	0	A720SFRM
330 Total					

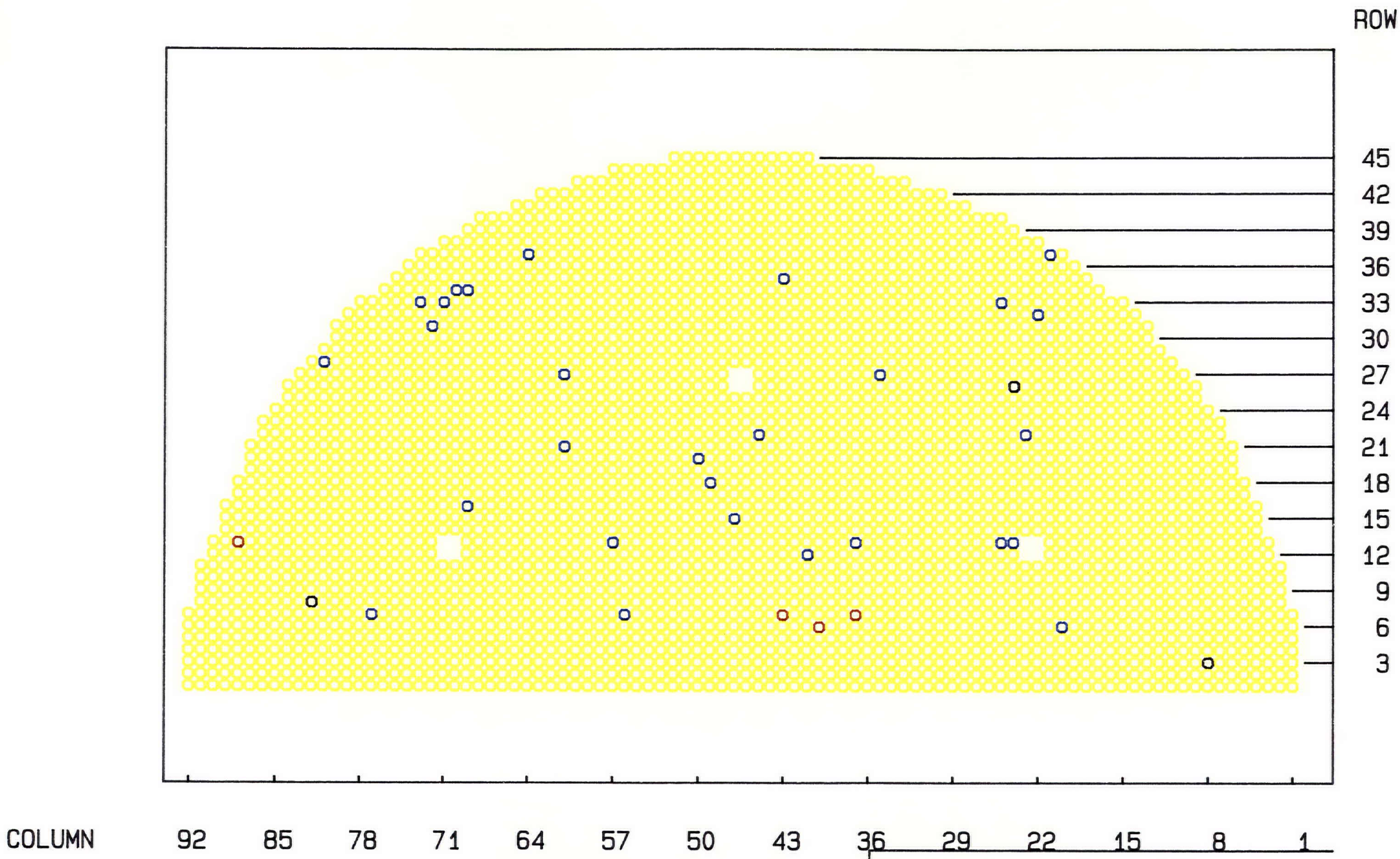
Steam Generator Examined: SG #3 (C)

NUMBER TUBES	EXTENT	DEFECTS<20	>20OR<40	>40	PROBE
37	6C-HTE	0	0	0	A680BJFRMWF
296	CTE-HTE	4	0	0	A720SFRM
333 Total					

TUBE SHEET MAPS

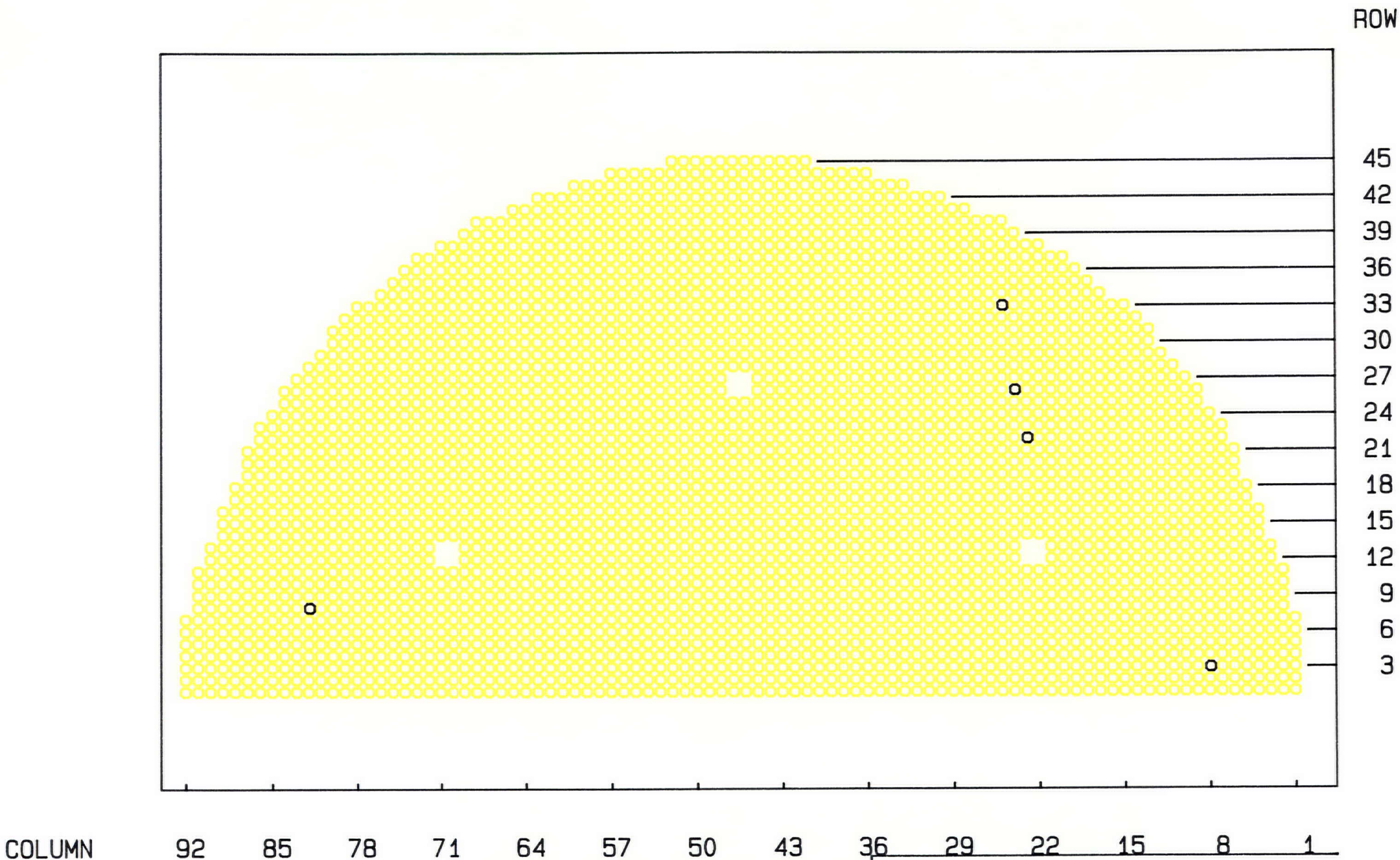
WITH

INDICATION LISTINGS



Plot of all Through-wall indications
Plot of all Copper indications
Plot of all Dent indications 6-10-87

Westinghouse Ser. 44F
STEAM GENERATOR A
Combustion Engineering



Plot of all Through-wall indications 6-10-87

Westinghouse Ser. 44F

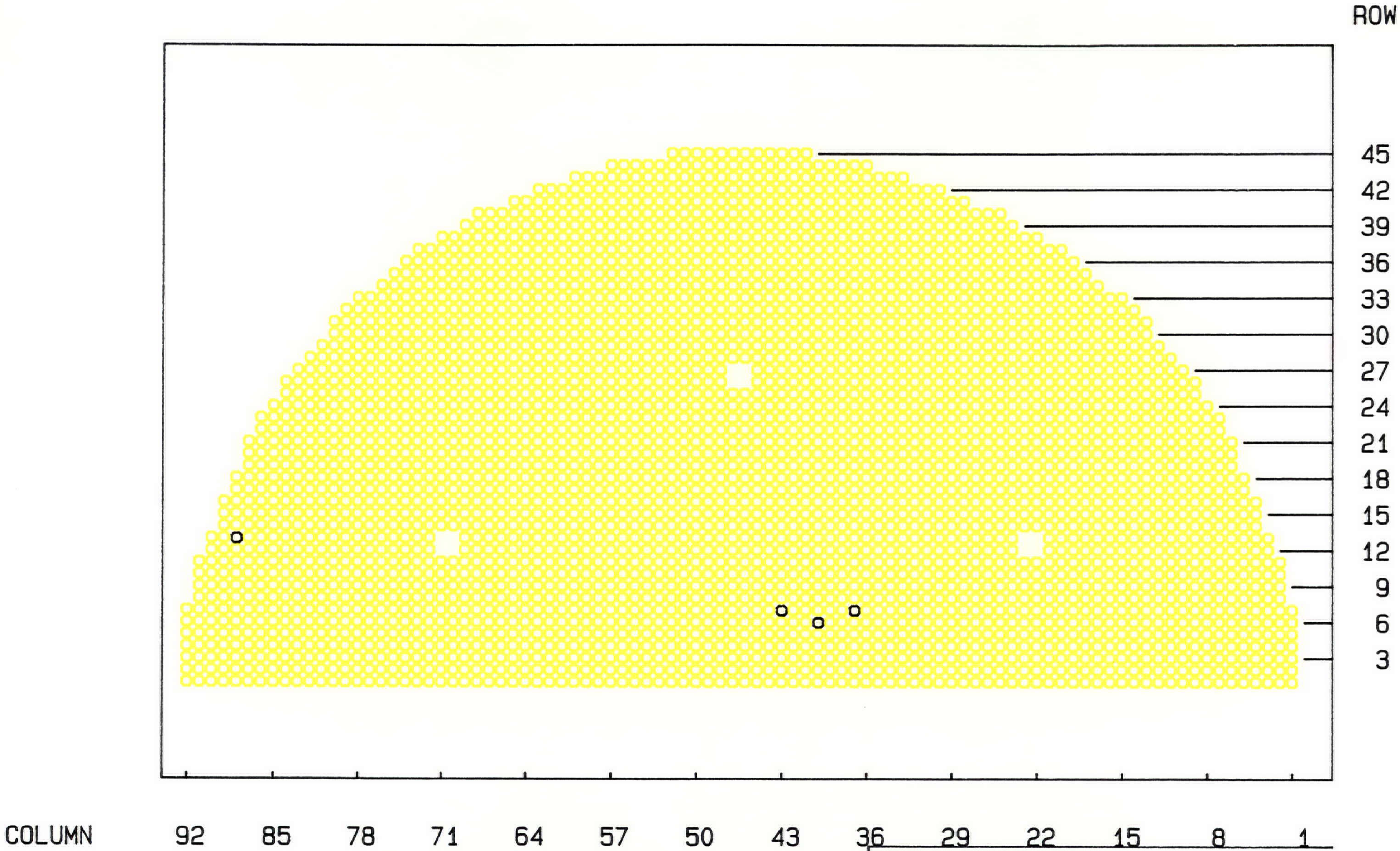
STEAM GENERATOR A

Combustion Engineering

CE - CPL - H.B. ROBINSON
COMPONENT : SG #1(A)
OUTAGE : 8705RB
ALL TWD INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD		Indication Location		Test Leg	Extent Tested
3	8	05/09/87	AH06	0.6		18	3C	26.2To	0.0	H	CTE-HTE
8	82	05/09/87	AH05	1.2		12	1C	25.2To	0.0	H	CTE-HTE
22	23	05/08/87	AH01	1.9		1	1H	23.1To	0.0	H	CTE-HTE
26	24	05/08/87	AH01	1.5		3	5H	37.7To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	0.8		22	4C	4.5To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	1.4		22	5C	23.7To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	1.4		13	5C	33.8To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	3.2		14	5H	43.1To	0.0	H	CTE-HTE

Number of Indications : 8



Plot of all Copper indications 6-10-87

Westinghouse Ser. 44F

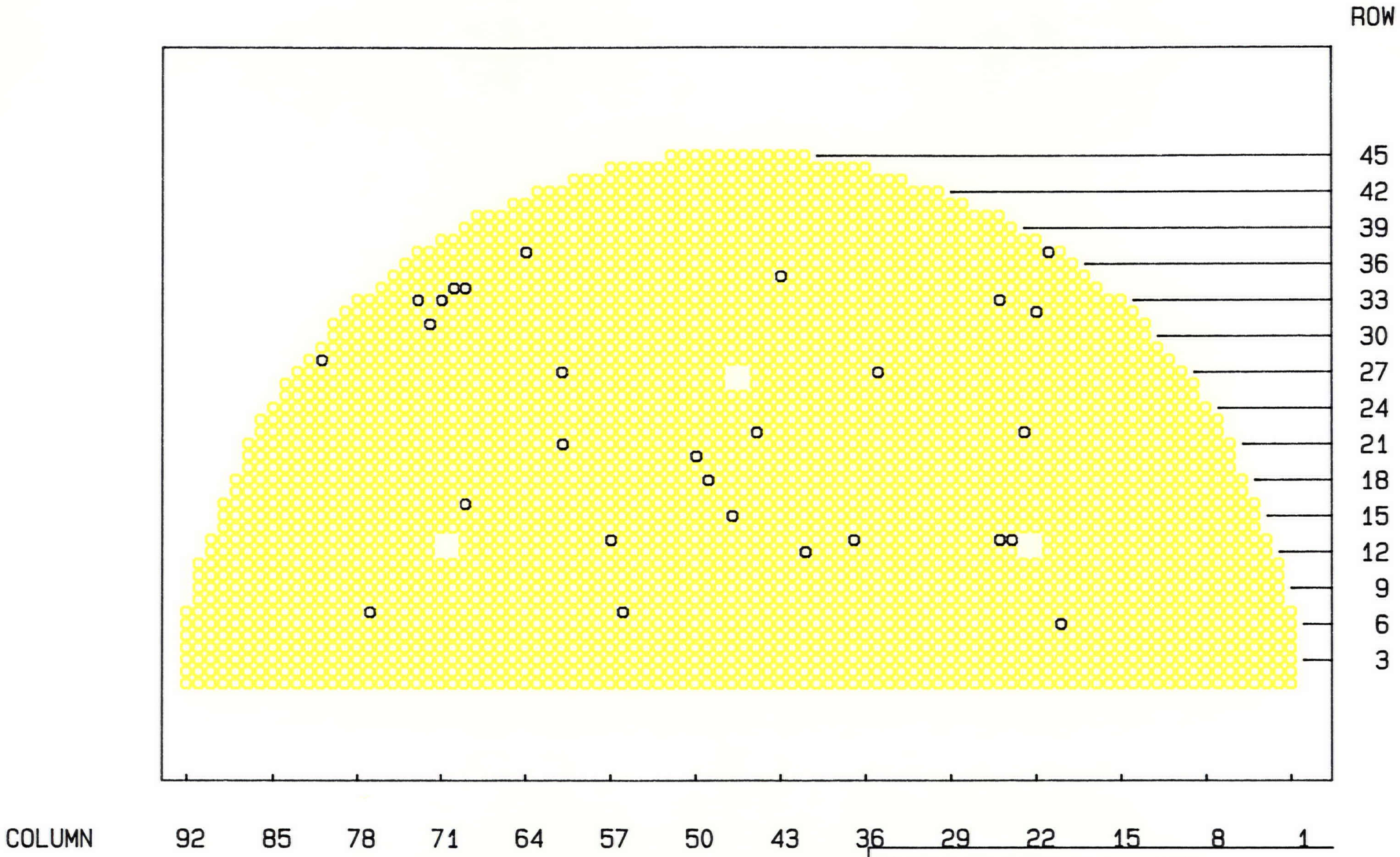
STEAM GENERATOR A

Combustion Engineering

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1(A)
OUTAGE : 8705RB
ALL COPPER INDICATIONS

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
6	40	05/08/87	AH02	4.0	CU	0	HTS	1.4To	0.0	H	CTE-HTE
7	37	05/08/87	AH02	1.1	CU	0	HTS	2.7To	0.0	H	CTE-HTE
7	43	05/08/87	AH02	0.8	CU	0	HTS	1.7To	0.0	H	CTE-HTE
13	88	05/09/87	AH07	3.4	CU	0	CTS	9.4To	0.0	H	CTE-HTE

Number of Indications : 4



Plot of all Dent indications 6-10-87

Westinghouse Ser. 44F

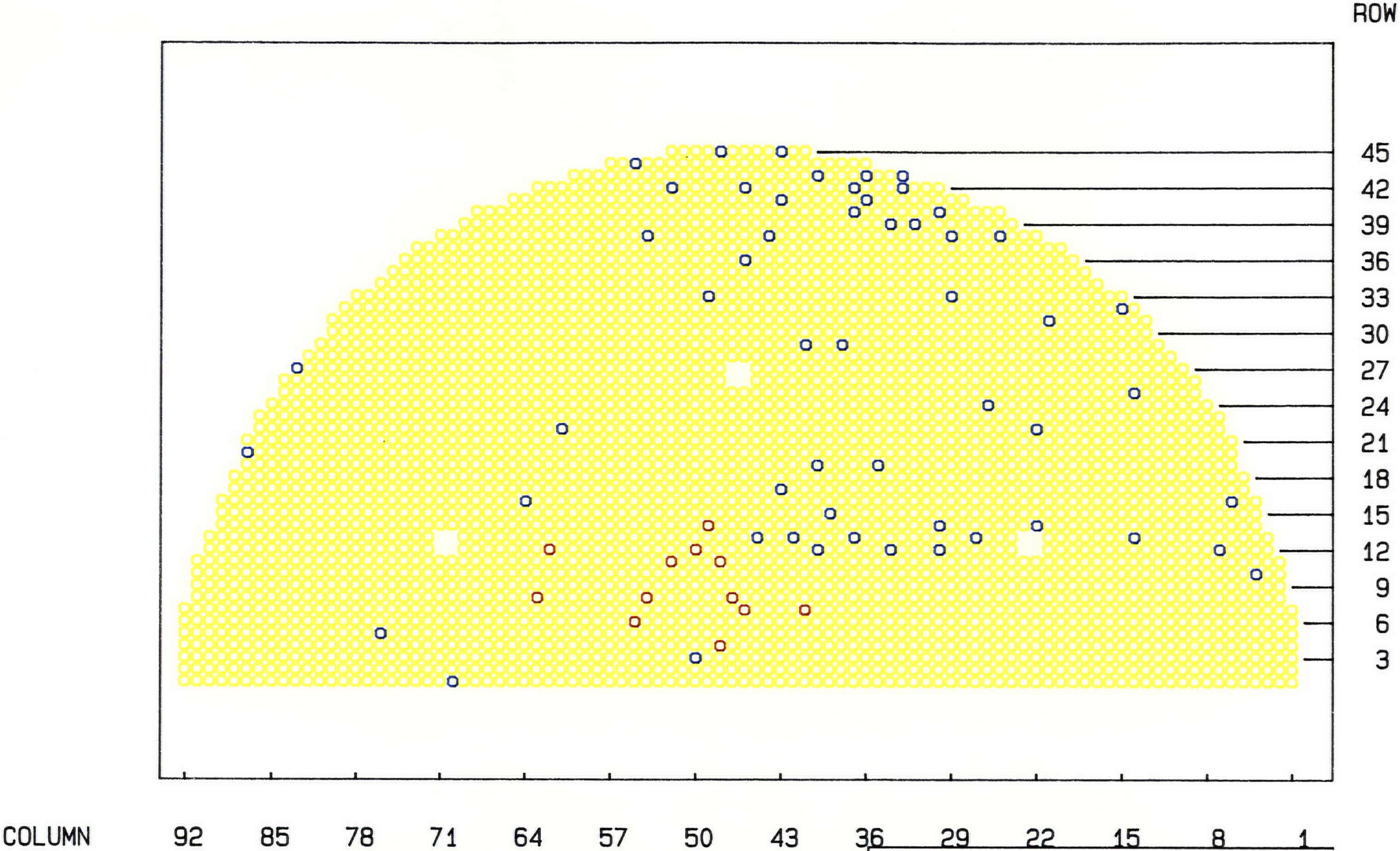
STEAM GENERATOR A

Combustion Engineering

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1(A)
OUTAGE : 8705RB
ALL DENT INDICATIONS

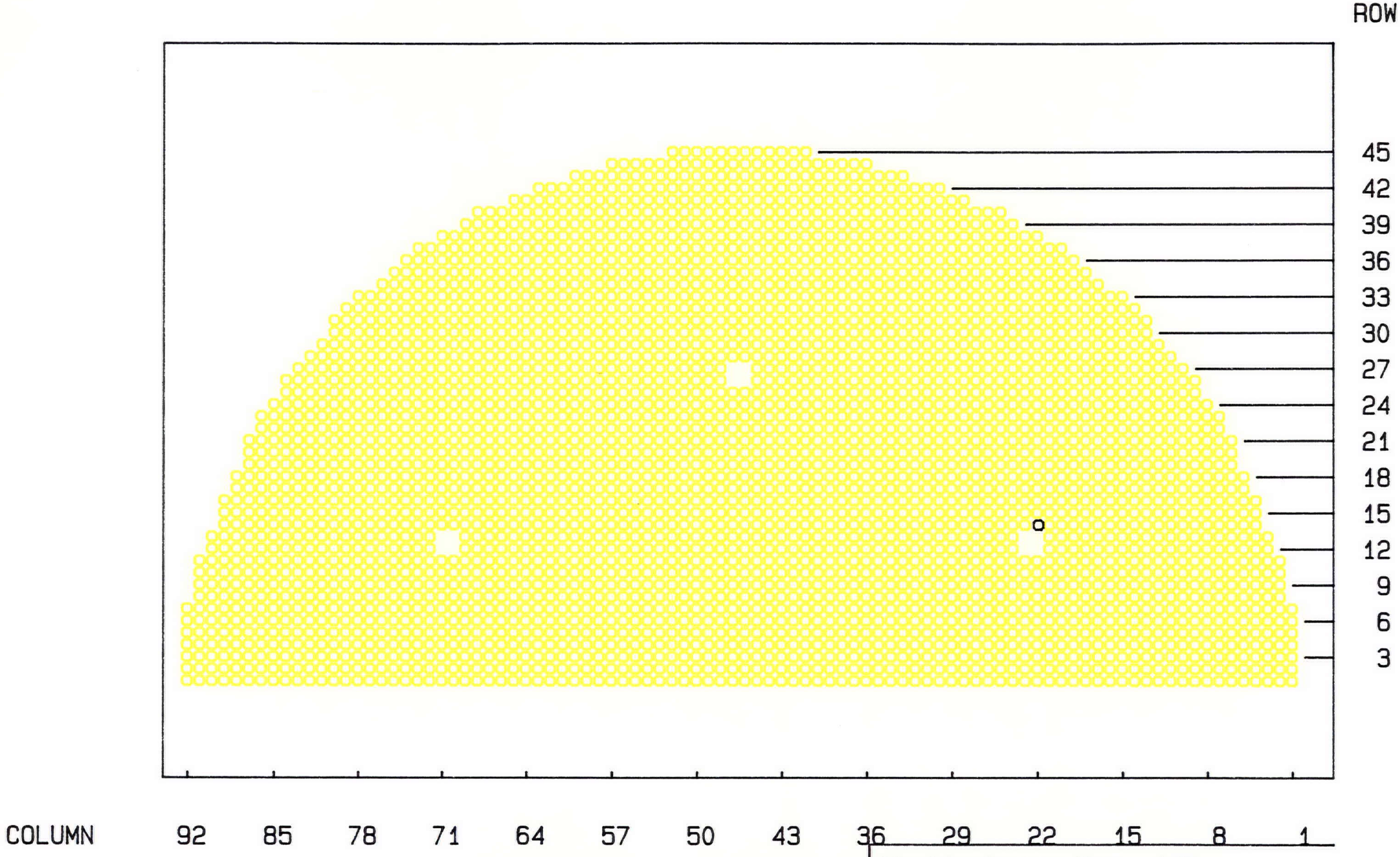
Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
6	20	05/08/87	AH01	1.9	DNT	0	FBH	4.1To	0.0	H	CTE-HTE
6	20	05/08/87	AH01	1.2	DNT	0	1H	33.6To	0.0	H	CTE-HTE
7	56	05/09/87	AH06	1.0	DNT	0	1C	47.7To	0.0	H	CTE-HTE
7	56	05/09/87	AH06	3.1	DNT	0	3C	25.7To	0.0	H	CTE-HTE
7	77	05/09/87	AH04	1.7	DNT	0	5C	38.7To	0.0	H	CTE-HTE
12	41	05/09/87	AH05	3.9	DNT	0	3H	27.7To	0.0	H	CTE-HTE
13	24	05/08/87	AH01	2.3	DNT	0	HTS	0.0To	0.0	H	CTE-HTE
13	25	05/08/87	AH01	1.9	DNT	0	1H	30.8To	0.0	H	CTE-HTE
13	37	05/09/87	AH05	3.5	DNT	0	2H	25.7To	0.0	H	CTE-HTE
13	57	05/09/87	AH04	1.5	DNT	0	2H	22.2To	0.0	H	CTE-HTE
15	47	05/09/87	AH06	2.6	DNT	0	6C	4.4To	0.0	H	CTE-HTE
16	69	05/09/87	AH04	7.2	DNT	0	1H	14.3To	0.0	H	CTE-HTE
16	69	05/09/87	AH04	1.9	DNT	0	2H	21.1To	0.0	H	CTE-HTE
18	49	05/08/87	AH03	7.3	DNT	0	6H	0.0To	0.0	H	CTE-HTE
20	50	05/08/87	AH03	1.1	DNT	0	HTS	2.4To	0.0	H	CTE-HTE
21	61	05/09/87	AH05	2.5	DNT	0	2H	9.0To	0.0	H	CTE-HTE
22	23	05/08/87	AH01	1.6	DNT	0	3H	37.4To	0.0	H	CTE-HTE
22	45	05/08/87	AH03	2.7	DNT	0	HTS	24.9To	0.0	H	CTE-HTE
22	45	05/08/87	AH03	2.0	DNT	0	HTS	23.8To	0.0	H	CTE-HTE
27	35	05/08/87	AH02	3.4	DNT	0	FBH	18.1To	0.0	H	CTE-HTE
27	61	05/09/87	AH04	1.5	DNT	0	5C	40.1To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	2.0	DNT	0	4H	9.5To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	1.5	DNT	0	4H	4.0To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	1.3	DNT	0	4C	11.2To	0.0	H	CTE-HTE
31	72	05/09/87	AH05	1.9	DNT	0	1H	37.4To	0.0	H	CTE-HTE
31	72	05/09/87	AH05	1.2	DNT	0	1C	33.3To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	1.4	DNT	0	HTS	14.5To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	4.1	DNT	0	HTS	15.2To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	1.4	DNT	0	HTS	16.9To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	2.3	DNT	0	4C	5.7To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	8.3	DNT	0	5H	44.1To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	2.4	DNT	0	5C	34.6To	0.0	H	CTE-HTE
33	71	05/09/87	AH05	3.9	DNT	0	6H	10.8To	0.0	H	CTE-HTE
33	73	05/09/87	AH04	3.8	DNT	0	6H	11.2To	0.0	H	CTE-HTE
34	69	05/09/87	AH05	17.3	DNT	0	1H	22.6To	0.0	H	CTE-HTE
34	70	05/09/87	AH04	2.9	DNT	0	4A	-8.3To	0.0	H	CTE-HTE
35	43	05/08/87	AH03	1.8	DNT	0	2C	30.2To	0.0	H	CTE-HTE
37	21	05/08/87	AH01	9.7	DNT	0	3A	0.0To	0.0	H	CTE-HTE
37	64	05/09/87	AH04	1.0	DNT	0	1C	33.7To	0.0	H	CTE-HTE
37	64	05/09/87	AH04	2.1	DNT	0	1H	6.1To	0.0	H	CTE-HTE

Number of Indications : 40



Plot of all Through-wall indications
Plot of all Copper indications
Plot of all Dent indications 6-10-87

Westinghouse Ser. 44F
STEAM GENERATOR B
Combustion Engineering



Plot of all Through-wall indications 6-10-87

Westinghouse Ser. 44F

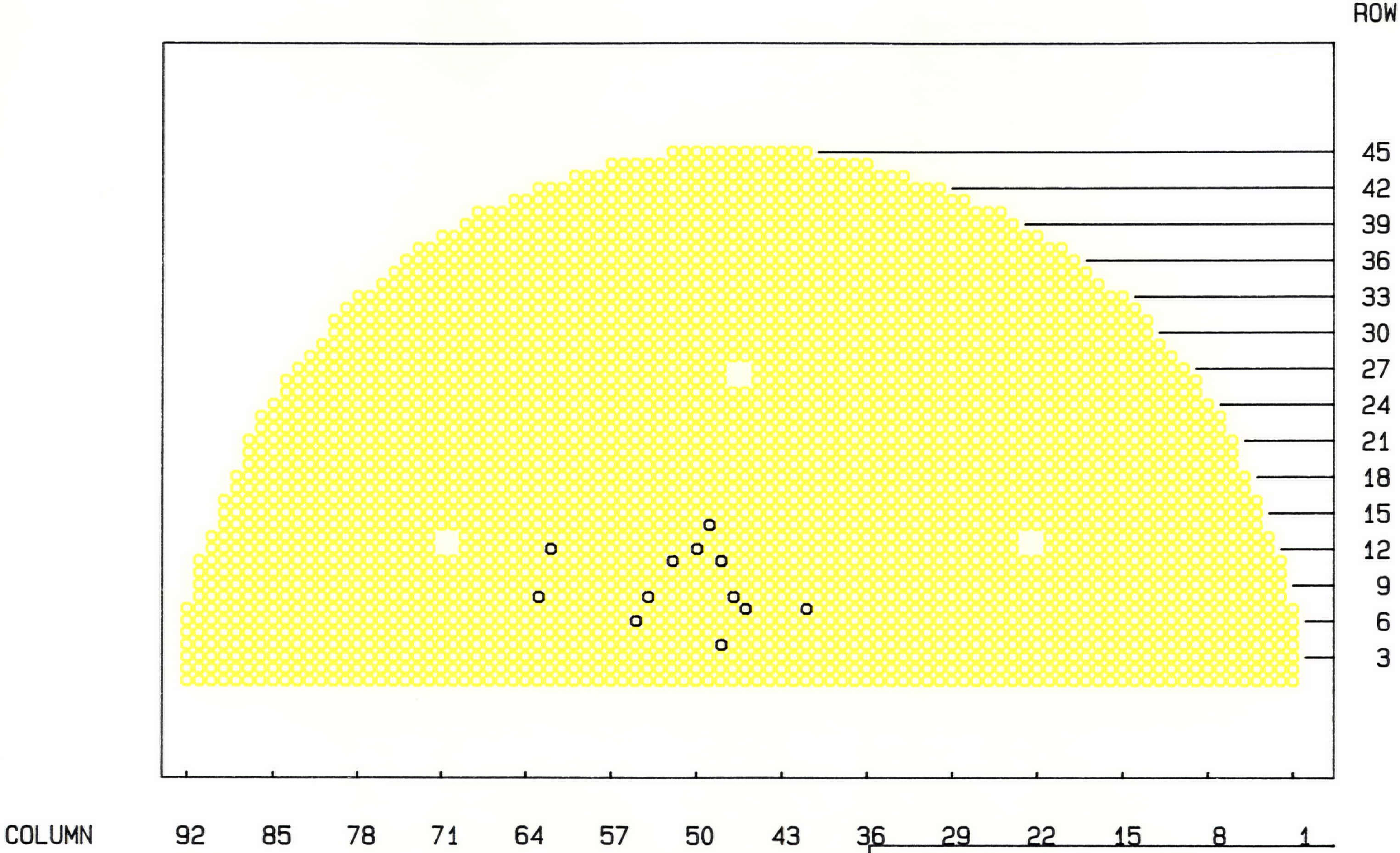
STEAM GENERATOR B

Combustion Engineering

CE - CPL - H.B. ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TWD INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD		Indication Location		Test Leg	Extent Tested
14	22	05/09/87	BH05	1.0		33	3H	15.1To	0.0	H	CTE-HTE

Number of Indications : 1



Plot of all Copper indications 6-10-87

Westinghouse Ser. 44F

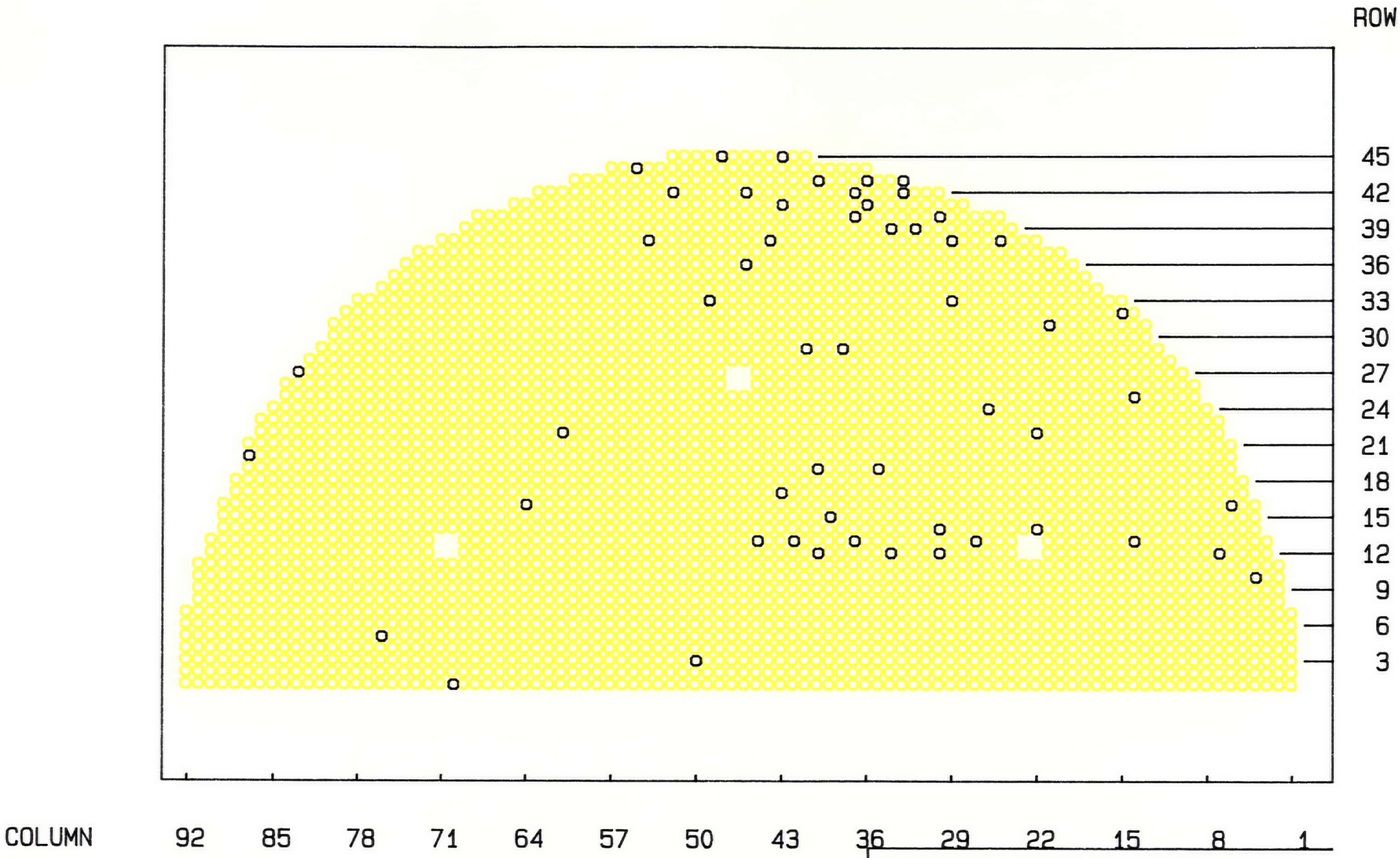
STEAM GENERATOR B

Combustion Engineering

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL COPPER INDICATIONS

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
4	48	05/09/87	BH07	0.0	CU	0	HTS	1.0To	0.0	H	6C-HTE
6	55	05/08/87	BH03	1.2	CU	0	HTS	0.5To	0.0	H	CTE-HTE
6	55	05/08/87	BH03	6.0	CU	0	CTS	3.1To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	6.5	CU	0	HTS	1.2To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	5.2	CU	0	CTS	1.2To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	1.6	CU	0	HTS	3.0To	0.0	H	CTE-HTE
7	46	05/09/87	BH05	5.8	CU	0	CTS	1.3To	0.0	H	CTE-HTE
8	47	05/08/87	BH03	3.4	CU	0	HTS	1.4To	0.0	H	CTE-HTE
8	54	05/08/87	BH03	3.7	CU	0	HTS	1.1To	0.0	H	CTE-HTE
8	54	05/08/87	BH03	6.2	CU	0	CTS	3.1To	0.0	H	CTE-HTE
8	63	05/08/87	BH03	2.4	CU	0	HTS	1.0To	0.0	H	CTE-HTE
11	48	05/08/87	BH03	0.6	CU	0	HTS	1.6To	0.0	H	CTE-HTE
11	52	05/08/87	BH03	5.8	CU	0	CTS	1.7To	0.0	H	CTE-HTE
11	52	05/08/87	BH03	7.1	CU	0	HTS	1.1To	0.0	H	CTE-HTE
12	50	05/08/87	BH03	5.1	CU	0	HTS	1.1To	0.0	H	CTE-HTE
12	62	05/08/87	BH03	4.2	CU	0	CTS	1.1To	0.0	H	CTE-HTE
12	62	05/08/87	BH03	4.1	CU	0	HTS	0.9To	0.0	H	CTE-HTE
14	49	05/08/87	BH03	19.2	CU	0	HTS	0.8To	0.0	H	CTE-HTE

Number of Indications : 18



Plot of all Dent indications 6-10-87

Westinghouse Ser. 44F

STEAM GENERATOR B

Combustion Engineering

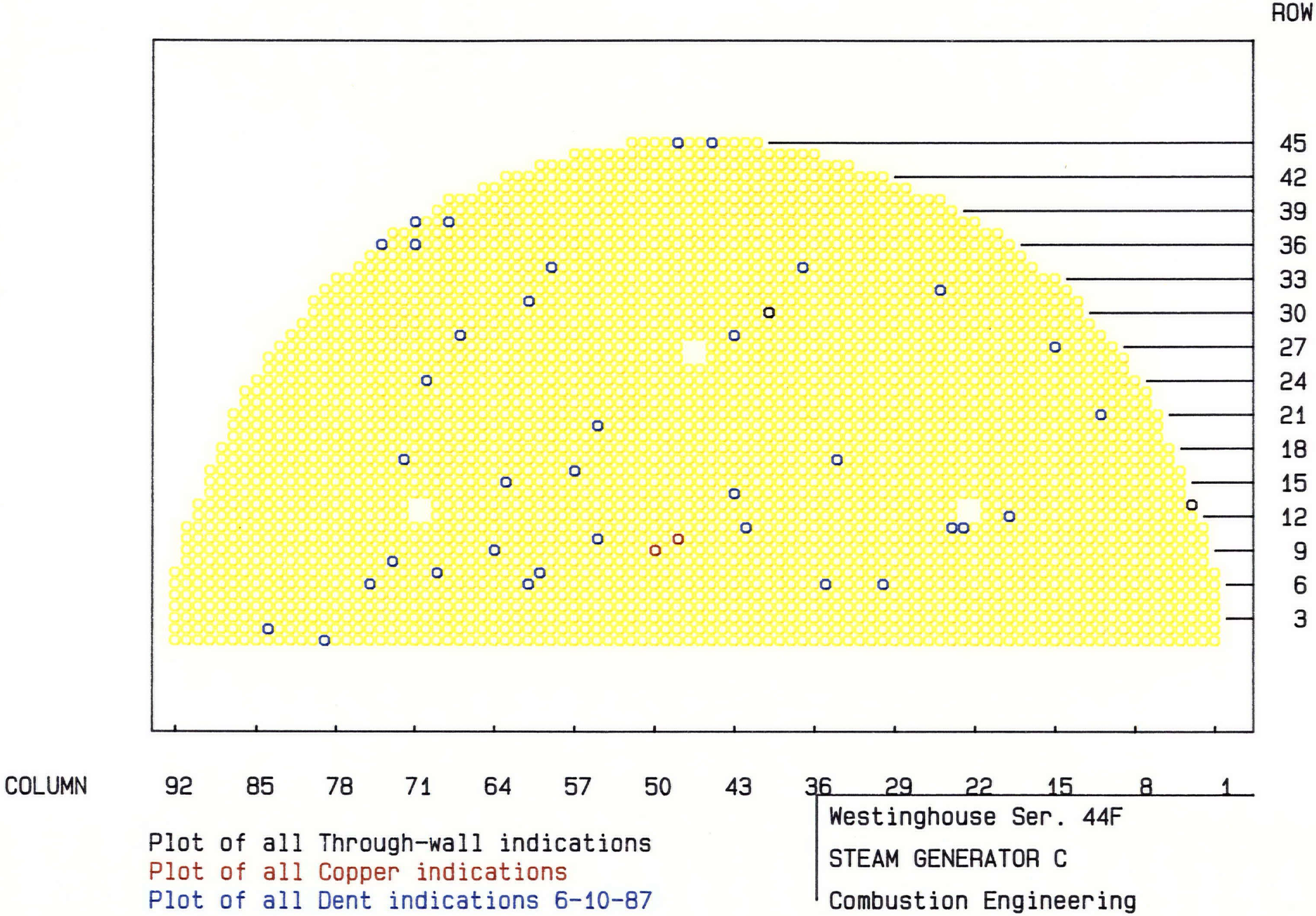
CE - CPL - H.B.ROBINSON
COMPONENT : SG #2(B)
OUTAGE : 8705RB
ALL DENT INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
1	70	05/09/87	BH07	1.6	DNT	0	5H	11.4To	0.0	H	6C-HTE
3	50	05/09/87	BH06	26.6	DNT	0	5C	46.9To	0.0	H	CTE-HTE
5	76	05/08/87	BH04	1.8	DNT	0	FBH	24.5To	0.0	H	CTE-HTE
10	4	05/08/87	BH01	1.2	DNT	0	1C	26.4To	0.0	H	CTE-HTE
12	7	05/09/87	BH05	3.3	DNT	0	5C	31.5To	0.0	H	CTE-HTE
12	7	05/09/87	BH05	2.0	DNT	0	5C	25.6To	0.0	H	CTE-HTE
12	30	05/08/87	BH02	1.5	DNT	0	HTS	0.0To	303.0	H	CTE-HTE
12	30	05/08/87	BH02	1.5	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
12	34	05/08/87	BH02	0.9	DNT	0	5C	48.1To	0.0	H	CTE-HTE
12	40	05/08/87	BH02	1.2	DNT	0	4C	48.9To	0.0	H	CTE-HTE
13	14	05/08/87	BH01	0.7	DNT	0	3H	45.5To	0.0	H	CTE-HTE
13	27	05/08/87	BH02	1.7	DNT	0	4A	-3.5To	0.0	H	CTE-HTE
13	37	05/08/87	BH02	1.7	DNT	0	6H	7.8To	0.0	H	CTE-HTE
13	37	05/08/87	BH02	2.0	DNT	0	6C	15.4To	0.0	H	CTE-HTE
13	42	05/08/87	BH02	1.9	DNT	0	6H	7.9To	0.0	H	CTE-HTE
13	42	05/08/87	BH02	1.6	DNT	0	6C	13.0To	0.0	H	CTE-HTE
13	45	05/08/87	BH02	1.6	DNT	0	6H	7.8To	0.0	H	CTE-HTE
14	22	05/09/87	BH05	7.4	DNT	0	5C	29.4To	0.0	H	CTE-HTE
14	30	05/08/87	BH02	0.7	DNT	0	2H	24.8To	0.0	H	CTE-HTE
15	39	05/08/87	BH02	0.9	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
16	6	05/08/87	BH01	1.2	DNT	0	5C	28.4To	0.0	H	CTE-HTE
16	64	05/08/87	BH04	2.3	DNT	0	5H	27.7To	0.0	H	CTE-HTE
17	43	05/09/87	BH05	1.3	DNT	0	4H	3.2To	0.0	H	CTE-HTE
19	35	05/08/87	BH02	2.2	DNT	0	1A	4.0To	0.0	H	CTE-HTE
19	35	05/08/87	BH02	3.0	DNT	0	HTS	3.9To	0.0	H	CTE-HTE
19	40	05/08/87	BH02	1.0	DNT	0	HTS	41.0To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	5.2	DNT	0	5C	30.9To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	2.4	DNT	0	5C	4.8To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	3.9	DNT	0	5C	29.7To	0.0	H	CTE-HTE
22	22	05/09/87	BH05	3.4	DNT	0	3C	22.4To	0.0	H	CTE-HTE
22	61	05/09/87	BH05	3.7	DNT	0	1H	45.9To	0.0	H	CTE-HTE
24	26	05/08/87	BH02	0.6	DNT	0	3H	5.5To	0.0	H	CTE-HTE
25	14	05/09/87	BH05	9.3	DNT	0	3C	8.4To	0.0	H	CTE-HTE
25	14	05/09/87	BH05	17.3	DNT	0	FBC	20.8To	0.0	H	CTE-HTE
27	83	05/09/87	BH05	5.9	DNT	0	4A	0.0To	0.0	H	CTE-HTE
29	38	05/08/87	BH02	6.0	DNT	0	6H	9.3To	0.0	H	CTE-HTE
29	41	05/08/87	BH02	2.2	DNT	0	1H	16.6To	0.0	H	CTE-HTE
31	21	05/08/87	BH01	1.3	DNT	0	2C	6.6To	0.0	H	CTE-HTE
32	15	05/09/87	BH05	2.5	DNT	0	2H	35.4To	0.0	H	CTE-HTE
33	29	05/08/87	BH02	1.2	DNT	0	1H	22.0To	0.0	H	CTE-HTE
33	49	05/08/87	BH03	1.5	DNT	0	1H	8.9To	0.0	H	CTE-HTE
36	46	05/08/87	BH03	2.9	DNT	0	6H	18.6To	0.0	H	CTE-HTE
38	25	05/08/87	BH02	3.5	DNT	0	6H	0.0To	0.0	H	CTE-HTE
38	29	05/08/87	BH02	4.5	DNT	0	6H	0.0To	0.0	H	CTE-HTE
38	44	05/08/87	BH02	0.9	DNT	0	1C	39.2To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL DENT INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
38	54	05/09/87	BH05	10.1	DNT	0	1C	41.8To	0.0	H	CTE-HTE
39	32	05/09/87	BH05	8.1	DNT	0	5H	46.5To	0.0	H	CTE-HTE
39	32	05/09/87	BH05	1.6	DNT	0	6H	0.3To	0.0	H	CTE-HTE
39	34	05/08/87	BH02	2.7	DNT	0	6H	0.0To	0.0	H	CTE-HTE
40	30	05/09/87	BH05	13.1	DNT	0	5H	46.5To	0.0	H	CTE-HTE
40	30	05/09/87	BH05	6.7	DNT	0	6H	0.5To	0.0	H	CTE-HTE
40	37	05/08/87	BH02	0.9	DNT	0	4C	5.4To	0.0	H	CTE-HTE
41	36	05/09/87	BH05	8.1	DNT	0	5H	46.3To	0.0	H	CTE-HTE
41	43	05/08/87	BH02	1.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE
42	33	05/09/87	BH05	11.4	DNT	0	5H	46.4To	0.0	H	CTE-HTE
42	33	05/09/87	BH05	7.7	DNT	0	6H	0.3To	0.0	H	CTE-HTE
42	37	05/08/87	BH02	4.1	DNT	0	6H	0.0To	0.0	H	CTE-HTE
42	46	05/09/87	BH05	4.3	DNT	0	5H	46.2To	0.0	H	CTE-HTE
42	52	05/08/87	BH03	3.0	DNT	0	6H	0.2To	0.0	H	CTE-HTE
42	52	05/08/87	BH03	3.7	DNT	0	6H	0.3To	0.0	H	CTE-HTE
43	33	05/09/87	BH05	17.2	DNT	0	5H	46.5To	0.0	H	CTE-HTE
43	33	05/09/87	BH05	14.5	DNT	0	6H	0.4To	0.0	H	CTE-HTE
43	36	05/09/87	BH05	9.9	DNT	0	5H	46.3To	0.0	H	CTE-HTE
43	36	05/09/87	BH05	6.3	DNT	0	6H	0.3To	0.0	H	CTE-HTE
43	40	05/08/87	BH02	3.7	DNT	0	6H	0.0To	0.0	H	CTE-HTE
44	55	05/08/87	BH03	2.7	DNT	0	4H	23.2To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	10.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	10.4	DNT	0	6H	0.0To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	1.2	DNT	0	5H	0.0To	0.0	H	CTE-HTE
45	48	05/08/87	BH03	6.9	DNT	0	6H	0.3To	0.0	H	CTE-HTE
45	48	05/08/87	BH03	8.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE

Number of Indications : 71


ROW
45
42
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12
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3
COLUMN
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71
64
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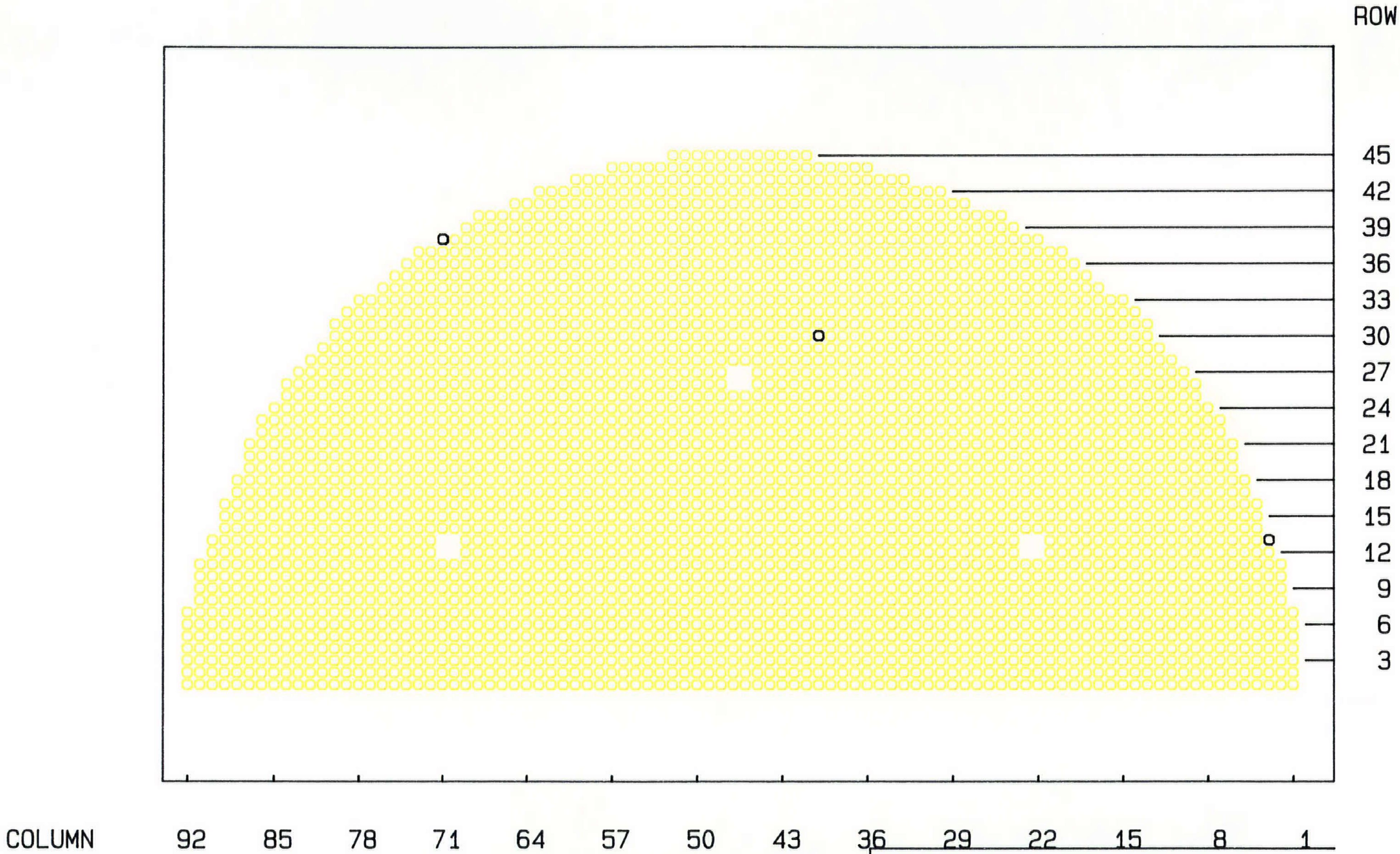
8
1
Plot of all Through-wall indications
Plot of all Copper indications
Plot of all Dent indications 6-10-87
Westinghouse Ser. 44F
STEAM GENERATOR C
Combustion Engineering



Plot of all Through-wall indications 6-10-87

Westinghouse Ser. 44F

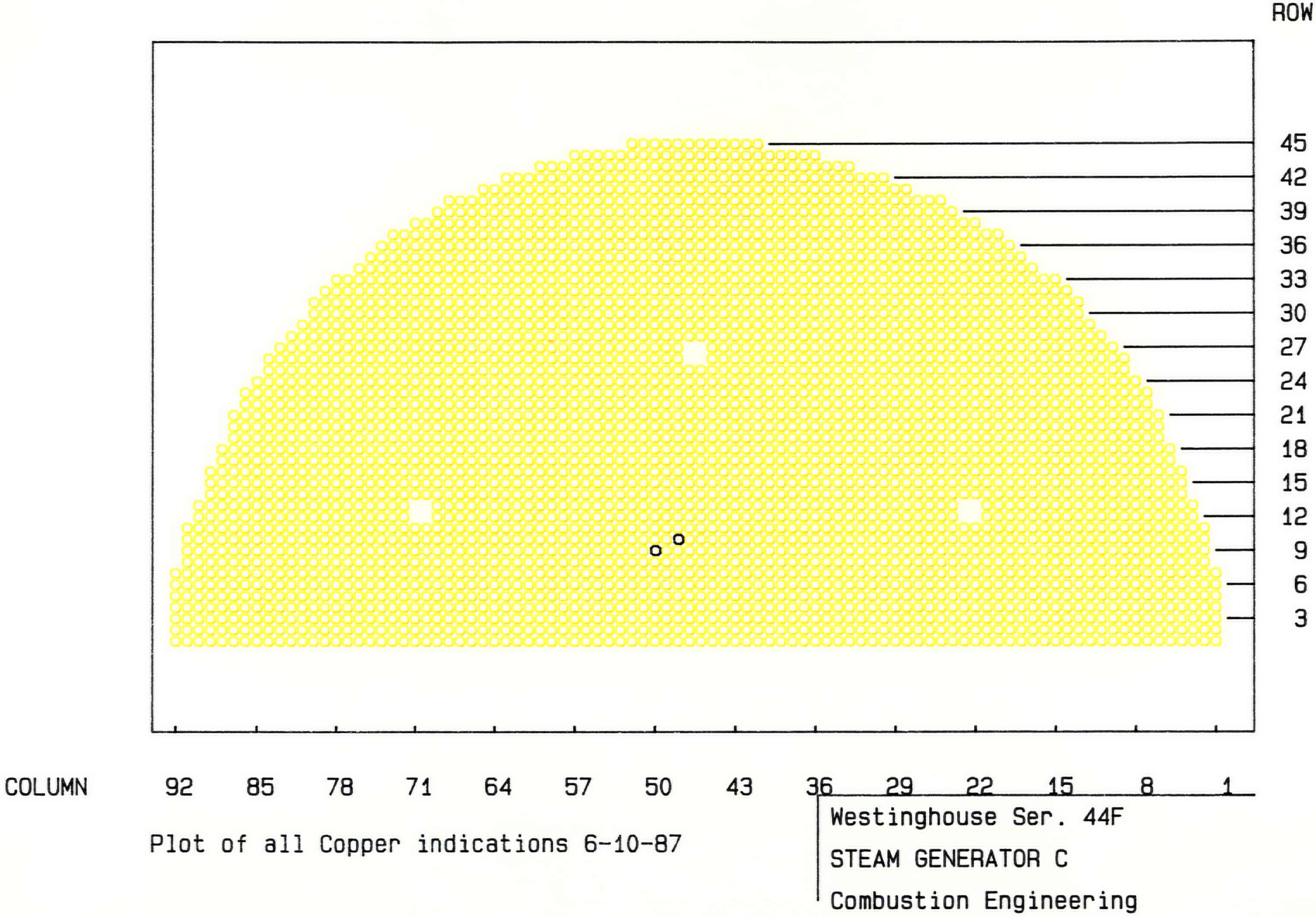
STEAM GENERATOR C

Combustion Engineering

CE - CPL - H.B. ROBINSON
COMPONENT : SG #3(C)
OUTAGE : 8705RB
ALL TWD INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
13	3	05/08/87	CH01	0.8		19	CTS	11.1To	0.0	H	CTE-HTE
13	3	05/08/87	CH01	1.1		15	CTS	12.0To	0.0	H	CTE-HTE
30	40	05/08/87	CH02	1.8		2	CTS	13.4To	0.0	H	CTE-HTE
38	71	05/09/87	CH06	2.9		4	FBC	9.9To	0.0	H	CTE-HTE

Number of Indications : 4

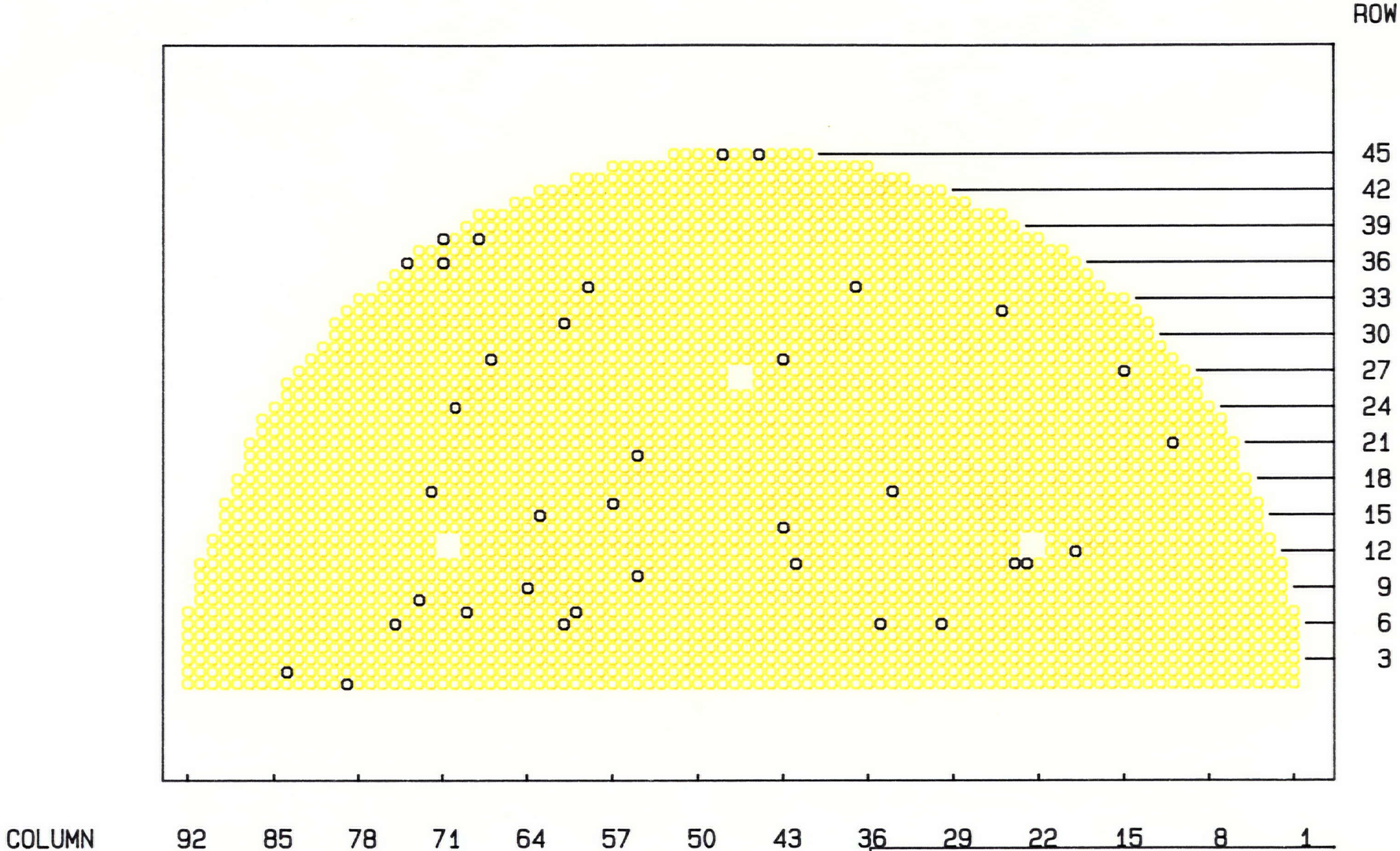


Plot of all Copper indications 6-10-87

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3(C)
OUTAGE : 8705RB
ALL COPPER INDICATIONS

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
9	50	05/10/87	CH08	0.0	CU	0	HTS	1.3To	0.0	H	CTE-HTE
10	48	05/10/87	CH08	0.0	CU	0	HTS	0.8To	0.0	H	CTE-HTE

Number of Indications : 2



Plot of all Dent indications 6-10-87

Westinghouse Ser. 44F

STEAM GENERATOR C

Combustion Engineering

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL DENT INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD	Indication Location			Test Leg	Extent Tested
1	79	05/10/87	CH07	1.9	DNT	0	HTS	20.1To	0.0	H	6C-HTE
2	84	05/10/87	CH07	2.2	DNT	0	HTS	8.3To	0.0	H	6C-HTE
6	30	05/08/87	CH02	1.1	DNT	0	2H	6.9To	0.0	H	CTE-HTE
6	30	05/08/87	CH02	2.3	DNT	0	3C	25.9To	0.0	H	CTE-HTE
6	30	05/08/87	CH02	1.9	DNT	0	4H	39.5To	0.0	H	CTE-HTE
6	35	05/08/87	CH02	1.7	DNT	0	HTS	16.2To	0.0	H	CTE-HTE
6	61	05/09/87	CH05	3.4	DNT	0	1C	32.5To	0.0	H	CTE-HTE
6	61	05/09/87	CH05	8.8	DNT	0	6C	4.2To	0.0	H	CTE-HTE
6	75	05/09/87	CH05	11.9	DNT	0	6C	4.7To	0.0	H	CTE-HTE
7	60	05/09/87	CH05	9.9	DNT	0	6C	3.9To	0.0	H	CTE-HTE
7	69	05/09/87	CH05	8.5	DNT	0	6C	4.8To	0.0	H	CTE-HTE
8	73	05/10/87	CH07	4.3	DNT	0	3C	25.2To	0.0	H	CTE-HTE
9	64	05/09/87	CH05	5.9	DNT	0	6C	5.9To	0.0	H	CTE-HTE
10	55	05/10/87	CH07	1.9	DNT	0	1C	39.1To	0.0	H	CTE-HTE
11	23	05/08/87	CH01	2.4	DNT	0	1C	27.3To	0.0	H	CTE-HTE
11	24	05/09/87	CH06	3.2	DNT	0	6C	0.0To	0.0	H	CTE-HTE
11	24	05/09/87	CH06	2.8	DNT	0	4H	22.5To	0.0	H	CTE-HTE
11	42	05/08/87	CH03	3.8	DNT	0	CTS	10.5To	0.0	H	CTE-HTE
12	19	05/09/87	CH06	3.8	DNT	0	HTS	14.8To	0.0	H	CTE-HTE
14	43	05/08/87	CH03	1.8	DNT	0	3C	11.9To	0.0	H	CTE-HTE
15	63	05/09/87	CH05	1.4	DNT	0	2C	47.4To	0.0	H	CTE-HTE
16	57	05/08/87	CH03	2.5	DNT	0	4C	15.2To	0.0	H	CTE-HTE
17	34	05/08/87	CH02	9.6	DNT	0	CTS	4.9To	0.0	H	CTE-HTE
17	72	05/09/87	CH05	1.0	DNT	0	1H	13.0To	0.0	H	CTE-HTE
20	55	05/10/87	CH07	1.3	DNT	0	1C	43.1To	0.0	H	CTE-HTE
20	55	05/10/87	CH07	1.3	DNT	0	1C	43.1To	0.0	H	CTE-HTE
21	11	05/08/87	CH01	1.3	DNT	0	HTS	20.4To	0.0	H	CTE-HTE
24	70	05/09/87	CH05	1.4	DNT	0	1C	44.5To	0.0	H	CTE-HTE
27	15	05/08/87	CH01	1.3	DNT	0	4H	40.9To	0.0	H	CTE-HTE
28	43	05/09/87	CH06	1.0	DNT	0	HTS	0.0To	303.0	H	CTE-HTE
28	43	05/09/87	CH06	1.0	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
28	43	05/09/87	CH06	5.3	DNT	0	2H	36.9To	0.0	H	CTE-HTE
28	67	05/09/87	CH05	4.8	DNT	0	6H	7.2To	0.0	H	CTE-HTE
31	61	05/09/87	CH05	1.6	DNT	0	3C	0.0To	0.0	H	CTE-HTE
32	25	05/08/87	CH01	5.2	DNT	0	6C	0.0To	0.0	H	CTE-HTE
34	37	05/08/87	CH02	1.2	DNT	0	4H	41.8To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	3.1	DNT	0	FBH	8.0To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	3.5	DNT	0	1C	24.8To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	2.6	DNT	0	3H	25.6To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	6.7	DNT	0	1H	17.3To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	5.7	DNT	0	1C	21.6To	0.0	H	CTE-HTE
36	71	05/09/87	CH05	1.5	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
36	74	05/09/87	CH05	23.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE
38	68	05/09/87	CH06	1.2	DNT	0	6C	3.4To	0.0	H	CTE-HTE
38	71	05/09/87	CH06	5.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3(C)
OUTAGE : 8705RB
ALL DENT INDICATIONS

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	TWD		Indication Location		Test Leg	Extent Tested
45	45	05/08/87	CH03	5.0	DNT	0	4A	1.2To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	8.5	DNT	0	4A	0.1To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	6.2	DNT	0	1H	3.7To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	11.2	DNT	0	1H	4.6To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	4.6	DNT	0	4A	2.8To	0.0	H	CTE-HTE
45	48	05/09/87	CH06	14.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE

Number of Indications : 51

IR-ISI-102
REV. 0

DDA-4 NOTATIONS

NOTATION	DESCRIPTION
BLANK	NO INDICATION
DS	DISTORTED SIGNAL
DNT	DENT
PV	PERMEABILITY VARIATION
IDV	ID VARIATION
ND	NO DATA
ADR	ABSOLUTE DRIFT
SPN	INDICATES SPAN OF LOCATION RANGES
M## (Insert %TWD)	INDICATES MULTIPLE INDICATIONS
I## (Insert %TWD)	INDICATES ID FLAW
OBS	OBSTRUCTED
DTS	DISTORTED TUBE SHEET SIGNAL
NT	NO TEST
APT	ABSOLUTE POSITIVE TRACE
UDS	UNIDENTIFIED DISTORTED SIGNAL
BLG	BULGE
FDS	FREESPAN DISTORTED SIGNAL
DSS	DISTORTED STRAP SIGNAL/SUPPORT
PLG	PLUG
INF	INDICATION NOT FOUND
PID	POSITIVE IDENTIFICATION
CU	COPPER
SLG	SLUDGE
HT	HEAT TREATED
NHT	NO HEAT TREATMENT
HTM	MARGINAL HEAT TREATMENT
SHT	STRAIGHT LEG HEAT TREATMENT
POP	POP-UP HEAT TREATMENT
1PT	ROW 1 POSITIVE TRACE
2PT	ROW 2 POSITIVE TRACE
1ST	ROW 1 SUSPECTED TRACE
2ST	ROW 2 SUSPECTED TRACE
RDS	RETEST - DISTORTED SIGNAL
RTI	RETEST - INCOMPLETE
RPV	RETEST - PERMEABILITY VARIATION
RDS	RETEST - DISTORTED SIGNAL
RBD	RETEST - BAD DATA
RTP	RETEST - TEMPLATE PLUG
RFX	RETEST - FIXTURE
RPS	RETEST - POSITIVE TRACE
RPI	RETEST - POSITIVE INDICATION
RTO	RETEST - OBSTRUCTION
RCU	RETEST - COPPER

FIGURE 4
LIST OF APPROVED DDA-4 NOTATIONS

Date: 5/8/87

Change the Example in paragraph 10.4 to read as follows:

Example: A tube being tested from the cold leg 6th support to the hot leg tube end shall be entered using the nomenclature indicated on the S/G cross sectional view (6C-HTE).

Modify Figure 9, Steam Generator cross sectional view as shown on the attached page.

Modify Figure 4, List of DDA-4 Notations as follows;

	Notation	Description
Add	OVR	Tube Rolled above top of tube sheet
Change	ND to RND	Retest - No Data
Change	NT to RNT	Retest - No Test

Darrell D. Weber 5/8/87

CE ET LEVEL III DATE

5/13/87

CUSTOMER REPRESENTATIVE CONCURRENCE/ DATE

ATTACHMENT A
DATA SHEET DOCUMENTING
CUSTOMER SPECIFIC DATA ANALYSIS REQUIREMENTS

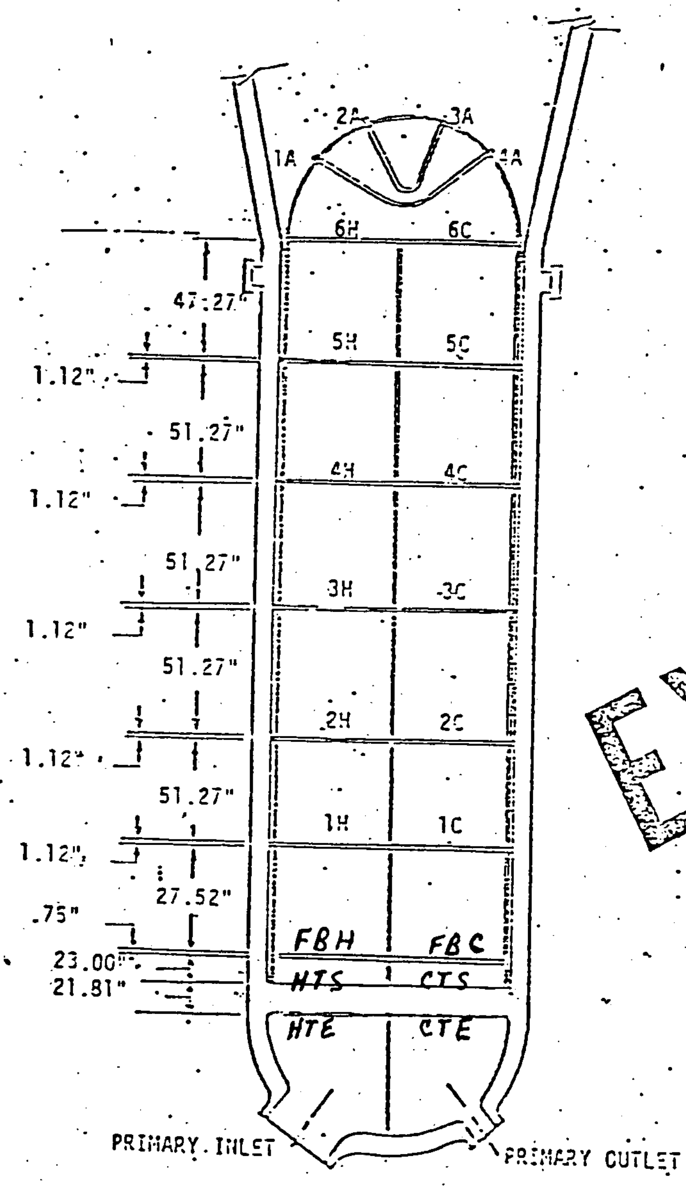


FIGURE 9
TYPICAL W SERIES 44 S/G CROSS SECTIONAL VIEW

DATA DOCUMENTS

STEAM GENERATOR A

DATA DOCUMENTS

DATA BASE REPORT

ALL TUBES SORTED BY ROW COLUMN

GENERATOR A

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
1	5	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	10	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	15	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	18	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	32	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	35	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	43	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	49	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	60	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	66	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	75	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
1	80	05/09/87	AH07	0.0		0		0.0To	0.0	H	6C-HTE
2	4	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	5	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	15	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	22	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	31	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	55	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	60	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	66	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	69	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	72	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
2	77	05/09/86	AH08	0.0		0		0.0To	0.0	H	6C-HTE
2	83	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
3	8	05/09/87	AH06	0.6		18	3C	26.2To	0.0	H	CTE-HTE
3	13	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
3	64	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
3	73	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
3	84	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
4	15	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
4	21	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
4	24	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
4	29	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
4	31	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
4	56	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
4	63	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
4	87	05/09/87	AH06	0.0		0		0.0To	0.0	H	6C-HTE
5	6	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
5	11	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
5	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
5	39	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
5	67	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
5	71	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
5	78	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
5	81	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row	/Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
6	2	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
6	8	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
6	20	05/08/87	AH01	1.2	DNT	0	1H	33.6To	0.0	H	CTE-HTE
6	20	05/08/87	AH01	1.9	DNT	0	FBH	4.1To	0.0	H	CTE-HTE
6	40	05/08/87	AH02	4.0	CU	0	HTS	1.4To	0.0	H	CTE-HTE
6	51	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
6	52	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
6	63	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
6	86	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
6	88	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
6	90	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
7	25	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
7	37	05/08/87	AH02	1.1	CU	0	HTS	2.7To	0.0	H	CTE-HTE
7	43	05/08/87	AH02	0.8	CU	0	HTS	1.7To	0.0	H	CTE-HTE
7	56	05/09/87	AH06	3.1	DNT	0	3C	25.7To	0.0	H	CTE-HTE
7	56	05/09/87	AH06	1.0	DNT	0	1C	47.7To	0.0	H	CTE-HTE
7	72	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
7	77	05/09/87	AH04	1.7	DNT	0	5C	38.7To	0.0	H	CTE-HTE
8	5	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	6	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	11	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	14	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	17	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	26	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	30	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
8	50	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
8	69	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
8	82	05/09/87	AH05	1.2		12	1C	25.2To	0.0	H	CTE-HTE
9	22	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	34	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
9	48	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
9	59	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
9	66	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
9	85	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
9	87	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
9	88	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
9	89	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	3	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
10	6	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
10	38	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
10	53	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
10	55	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
10	62	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
10	63	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
10	72	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
10	79	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	81	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	90	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	8	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	11	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	12	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	13	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	16	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	17	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	29	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
11	43	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
11	71	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
11	86	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
12	25	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
12	41	05/09/87	AH05	3.9	DNT	0	3H	27.7To	0.0	H	CTE-HTE
12	46	05/09/87	AH06	0.0		0		0.0To	0.0	H	CTE-HTE
12	49	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
12	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
12	84	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	5	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
13	19	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
13	24	05/08/87	AH01	2.3	DNT	0	HTS	0.0To	0.0	H	CTE-HTE
13	25	05/08/87	AH01	1.9	DNT	0	1H	30.8To	0.0	H	CTE-HTE
13	28	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
13	33	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
13	37	05/09/87	AH05	3.5	DNT	0	2H	25.7To	0.0	H	CTE-HTE
13	53	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
13	57	05/09/87	AH04	1.5	DNT	0	2H	22.2To	0.0	H	CTE-HTE
13	58	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
13	59	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
13	72	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
13	80	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	88	05/09/87	AH07	3.4	CU	0	CTS	9.4To	0.0	H	CTE-HTE
14	6	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	9	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	27	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	42	05/08/87	AH02	4.6	APT	0	1C	17.9To	0.0	H	CTE-HTE
14	64	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	68	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	75	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	78	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
14	83	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
14	85	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
15	12	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	15	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
15	22	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	47	05/09/87	AH06	2.6	DNT	0	6C	4.4To	0.0	H	CTE-HTE
15	56	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
15	66	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
15	79	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
16	8	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	13	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	19	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	21	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	25	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	35	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
16	44	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	52	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
16	69	05/09/87	AH04	1.9	DNT	0	2H	21.1To	0.0	H	CTE-HTE
16	69	05/09/87	AH04	7.2	DNT	0	1H	14.3To	0.0	H	CTE-HTE
16	73	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
16	81	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	55	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
17	82	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	87	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
18	17	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	23	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	29	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
18	33	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
18	40	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
18	44	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
18	48	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
18	49	05/08/87	AH03	7.3	DNT	0	6H	0.0To	0.0	H	CTE-HTE
18	52	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
18	67	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	69	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	75	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	86	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
19	6	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
19	10	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
19	28	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	48	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
19	53	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
19	59	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
19	65	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
19	68	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
20	26	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
20	30	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
20	42	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
20	50	05/08/87	AH03	1.1	DNT	0	HTS	2.4To	0.0	H	CTE-HTE
20	72	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
20	81	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
20	84	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
21	7	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	12	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	16	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	38	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
21	54	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
21	61	05/09/87	AH05	2.5	DNT	0	2H	9.0To	0.0	H	CTE-HTE
21	81	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
22	9	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	20	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	23	05/08/87	AH01	1.9		1	1H	23.1To	0.0	H	CTE-HTE
22	23	05/08/87	AH01	1.6	DNT	0	3H	37.4To	0.0	H	CTE-HTE
22	45	05/08/87	AH03	2.7	DNT	0	HTS	24.9To	0.0	H	CTE-HTE
22	45	05/08/87	AH03	2.0	DNT	0	HTS	23.8To	0.0	H	CTE-HTE
22	75	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
23	31	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
23	37	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
23	55	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
23	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
23	67	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
23	77	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
23	79	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
23	83	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
24	9	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	11	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	16	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	18	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	19	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
24	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
24	41	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
24	49	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
24	57	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
24	63	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
24	73	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
24	78	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
25	54	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
25	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
25	70	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
26	14	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
26	24	05/08/87	AH01	1.5		3	5H	37.7To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
26	28	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
26	38	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
26	40	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
26	43	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
26	44	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
27	11	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
27	35	05/08/87	AH02	3.4	DNT	0	FBH	18.1To	0.0	H	CTE-HTE
27	45	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
27	53	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
27	56	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
27	61	05/09/87	AH04	1.5	DNT	0	5C	40.1To	0.0	H	CTE-HTE
27	65	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
27	69	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
27	75	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
27	77	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
28	18	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
28	24	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
28	29	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
28	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
28	51	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
28	58	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	1.5	DNT	0	4H	4.0To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	1.3	DNT	0	4C	11.2To	0.0	H	CTE-HTE
28	81	05/09/87	AH05	2.0	DNT	0	4H	9.5To	0.0	H	CTE-HTE
29	13	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
29	18	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
29	33	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
29	71	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
29	74	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
29	81	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
30	30	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
30	39	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
30	46	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
30	50	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
30	54	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
30	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
30	67	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
30	76	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
30	77	05/09/87	AH05	0.0		0		0.0To	0.0	H	CTE-HTE
31	26	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
31	41	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
31	47	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	56	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	64	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
31	72	05/09/87	AH05	1.2	DNT	0	1C	33.3To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
31	72	05/09/87	AH05	1.9	DNT	0	1H	37.4To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	1.4	DNT	0	HTS	16.9To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	1.4	DNT	0	HTS	14.5To	0.0	H	CTE-HTE
32	22	05/08/87	AH01	4.1	DNT	0	HTS	15.2To	0.0	H	CTE-HTE
32	27	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
32	34	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
32	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
32	45	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
32	56	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
32	62	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
33	23	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	0.8		22	4C	4.5To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	1.4		13	5C	33.8To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	1.4		22	5C	23.7To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	3.2		14	5H	43.1To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	2.3	DNT	0	4C	5.7To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	8.3	DNT	0	5H	44.1To	0.0	H	CTE-HTE
33	25	05/08/87	AH01	2.4	DNT	0	5C	34.6To	0.0	H	CTE-HTE
33	57	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
33	66	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
33	71	05/09/87	AH05	3.9	DNT	0	6H	10.8To	0.0	H	CTE-HTE
33	73	05/09/87	AH04	3.8	DNT	0	6H	11.2To	0.0	H	CTE-HTE
34	17	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
34	22	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
34	27	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
34	31	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
34	49	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
34	58	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
34	69	05/09/87	AH05	17.3	DNT	0	1H	22.6To	0.0	H	CTE-HTE
34	70	05/09/87	AH04	2.9	DNT	0	4A	-8.3To	0.0	H	CTE-HTE
35	29	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
35	37	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
35	43	05/08/87	AH03	1.8	DNT	0	2C	30.2To	0.0	H	CTE-HTE
35	62	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
35	73	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
36	33	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
36	52	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
36	56	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	21	05/08/87	AH01	9.7	DNT	0	3A	0.0To	0.0	H	CTE-HTE
37	26	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
37	30	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	32	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	43	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	48	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	64	05/09/87	AH04	1.0	DNT	0	1C	33.7To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #1 (A)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
37	64	05/09/87	AH04	2.1	DNT	0	1H	6.1To	0.0	H	CTE-HTE
37	67	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
37	73	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
38	42	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
38	57	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
38	69	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
39	25	05/08/87	AH01	0.0		0		0.0To	0.0	H	CTE-HTE
39	38	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
39	40	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
39	45	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
39	52	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
39	52	05/08/87	AH03	2.9	PV	0	1C	16.8To	0.0	H	CTE-HTE
39	59	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
39	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
40	33	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
40	60	05/09/87	AH04	0.0		0		0.0To	0.0	H	CTE-HTE
41	28	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
41	36	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
41	40	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
41	42	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
41	46	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	47	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	44	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	45	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	50	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
43	37	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
43	41	05/08/87	AH02	0.0		0		0.0To	0.0	H	CTE-HTE
43	56	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	36	05/08/87	AH02	3.0	APT	0	1H	2.9To	0.0	H	CTE-HTE
44	43	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	44	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	54	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
45	45	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE
45	51	05/08/87	AH03	0.0		0		0.0To	0.0	H	CTE-HTE

Number of Listings : 349
Number of Tubes : 330
Number of Indications : 55

PRIMARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR A

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH01_	2	A__	HOT __	AH01		AH01	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL AH01	
							CIRCOSTA SA	IIA 05/08/87
							OPER: BIPES TU	II 05/08/87
							CAL STD: Z-3922	
11	6	2						CTE-HTE
11	10	3						CTE-HTE
11	8	5						CTE-HTE
11	13	5						CTE-HTE
11	19	6						CTE-HTE
11	14	6						CTE-HTE
11	10	6						CTE-HTE
11	8	6						CTE-HTE
11	5	6						CTE-HTE
11	21	7						CTE-HTE
11	16	8						CTE-HTE
11	11	8						CTE-HTE
11	6	8						CTE-HTE
11	14	9						CTE-HTE
11	22	9						CTE-HTE
11	24	9						CTE-HTE
							OPER: KLATT M	II 05/08/87
11	19	10						CTE-HTE
11	5	11						CTE-HTE
11	8	11						CTE-HTE
11	24	11						CTE-HTE
11	27	11						CTE-HTE
11	21	12						CTE-HTE
11	15	12						CTE-HTE
11	11	13						CTE-HTE
11	16	13						CTE-HTE
11	29	13						CTE-HTE
11	26	14						CTE-HTE
11	8	14						CTE-HTE
11	15	15						CTE-HTE
11	24	16						CTE-HTE
11	21	16						CTE-HTE
11	11	16						CTE-HTE
11	8	17						CTE-HTE
11	18	17						CTE-HTE
11	34	17						CTE-HTE
11	29	18						CTE-HTE
11	28	18						CTE-HTE
11	24	18						CTE-HTE
11	13	19						CTE-HTE
11	16	19						CTE-HTE
11	24	19						CTE-HTE
11	22	20						CTE-HTE

PAGE 1 OF 2	EVALUATOR S A Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH01_	2	A__	HOT __	AH01		AH01	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION		EXTENT
11	6	20	1.94	191	DNT	1	FBH	+ 4.1	CTE-HTE
			1.16	193	DNT	1	1H	+ 33.6	CTE-HTE
11	16	21							CTE-HTE
11	37	21	9.73	186	DNT	1	3A	+ 0.0	CTE-HTE
11	34	22							CTE-HTE
11	32	22	1.43	198	DNT	1	HTS	+ 14.5	CTE-HTE
			4.08	190	DNT	1	HTS	+ 15.2	CTE-HTE
			1.40	192	DNT	1	HTS	+ 16.9	CTE-HTE
11	15	22							CTE-HTE
11	9	22							CTE-HTE
11	18	23							CTE-HTE
11	22	23	1.59	194	DNT	1	3H	+ 37.4	CTE-HTE
			1.89	193	<20	1	1H	+ 23.1	CTE-HTE
11	33	23							CTE-HTE
11	28	24							CTE-HTE
11	26	24	1.48	179	<20	1	5H	+ 37.7	CTE-HTE
11	13	24	2.26	197	DNT	1	HTS	+ 0.0	CTE-HTE
11	7	25							CTE-HTE
11	13	25	1.88	191	DNT	1	1H	+ 30.8	CTE-HTE
							OPER: WITT RM	II	05/08/87
11	16	25							CTE-HTE
11	33	25	0.84	160	22	1	4C	+ 4.5	CTE-HTE
			2.25	180	DNT	1	4C	+ 5.7	CTE-HTE
			1.35	160	22	1	5C	+ 23.7	CTE-HTE
			1.38	169	<20	1	5C	+ 33.8	CTE-HTE
			2.36	186	DNT	1	5C	+ 34.6	CTE-HTE
			8.30	189	DNT	1	5H	+ 44.1	CTE-HTE
			3.20	168	<20	1	5H	+ 43.1	CTE-HTE
11	39	25							CTE-HTE
11	37	26							CTE-HTE
11	31	26							CTE-HTE
11	20	26							CTE-HTE
11	8	26							CTE-HTE
11	14	27							CTE-HTE
11	32	27							CTE-HTE
11	34	27							CTE-HTE

END REEL AH01

PAGE 2 OF 2 EVALUATOR St Ricosta LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH01_	2	A__	HOT __	AH01		AH01	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	6	20	1.94	191	DNT	1	FBH + 4.1	CTE-HTE
			1.16	193	DNT	1	1H + 33.6	CTE-HTE
11	16	21						CTE-HTE
11	37	21	9.73	186	DNT	1	3A + 0.0	CTE-HTE
11	34	22						CTE-HTE
11	32	22	1.43	198	DNT	1	HTS + 14.5	CTE-HTE
			4.08	190	DNT	1	HTS + 15.2	CTE-HTE
			1.40	192	DNT	1	HTS + 16.9	CTE-HTE
11	15	22						CTE-HTE
11	9	22						CTE-HTE
11	18	23						CTE-HTE
11	22	23	1.59	194	DNT	1	3H + 37.4	CTE-HTE
			1.89	193	<20	1	1H + 23.1	CTE-HTE
11	33	23						CTE-HTE
11	28	24						CTE-HTE
11	26	24	1.48	179	<20	1	5H + 37.7	CTE-HTE
11	13	24	2.26	197	DNT	1	HTS + 0.0	CTE-HTE
11	7	25						CTE-HTE
11	13	25	1.88	191	DNT	1	1H + 30.8	CTE-HTE
							OPER: WITT RM II	05/08/87
11	16	25						CTE-HTE
11	33	25	0.84	160	22	1	4C + 4.5	CTE-HTE
			2.25	180	DNT	1	4C + 5.7	CTE-HTE
			1.35	160	22	1	5C + 23.7	CTE-HTE
			1.38	169	<20	1	5C + 33.8	CTE-HTE
			2.36	186	DNT	1	5C + 34.6	CTE-HTE
			8.30	189	DNT	1	5H + 44.1	CTE-HTE
			3.20	168	<20	1	5H + 43.1	CTE-HTE
11	39	25						CTE-HTE
11	37	26						CTE-HTE
11	31	26						CTE-HTE
11	20	26						CTE-HTE
11	8	26						CTE-HTE
11	14	27						CTE-HTE
11	32	27						CTE-HTE
11	34	27						CTE-HTE
							END REEL AH01	
							INDICATION RESOLUTION	
11	33	25	0.84	160	22	1	4C + 4.5	PS
			1.35	160	22	1	5C + 23.7	PS

END RESOLUTIONS BY : WEBER DD LIII 05/10/87

PAGE 2 OF 2	EVALUATOR Darrell D. Weber	LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH02_	2	A__	HOT __	AH02		AH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL AH02	
							CIRCOSTA SA	IIA 05/08/87
							OPER: WITT RM	II 05/08/87
							CAL STD: Z-3922	
11	41	28						CTE-HTE
11	26	28						CTE-HTE
11	19	28						CTE-HTE
11	13	28						CTE-HTE
11	4	29						CTE-HTE
11	11	29						CTE-HTE
11	18	29						CTE-HTE
11	28	29						CTE-HTE
11	35	29						CTE-HTE
11	37	30						CTE-HTE
11	30	30						CTE-HTE
11	20	30						CTE-HTE
11	8	30						CTE-HTE
11	23	31						CTE-HTE
							END CIRCOSTA	
							START TIERNEY	
11	34	31						CTE-HTE
11	37	32						CTE-HTE
11	1	32			RND			
11	13	33						CTE-HTE
11	18	33						CTE-HTE
11	29	33						CTE-HTE
11	36	33						CTE-HTE
11	40	33						CTE-HTE
11	32	34						CTE-HTE
11	9	34						CTE-HTE
11	1	35			RND			
11	16	35						CTE-HTE
11	27	35	3.44	190	DNT	1	FBH + 18.1	CTE-HTE
11	44	36	3.01	59	APT	6	1H + 2.9	CTE-HTE
11	41	36						CTE-HTE
11	32	36						CTE-HTE
11	28	36						CTE-HTE
11	24	36						CTE-HTE
								CTE-HTE
11	19	36						CTE-HTE
11	5	36						CTE-HTE
11	7	37	1.10	354	CU	1	HTS + 2.7	CTE-HTE
11	23	37						CTE-HTE
11	35	37						CTE-HTE
11	43	37						CTE-HTE
11	39	38						CTE-HTE
11	26	38						CTE-HTE

PAGE 1 OF 2	EVALUATOR Mark L. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH02_	2	A__	HOT __	AH02		AH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	21	38						CTE-HTE
11	10	38						CTE-HTE
11	5	39						CTE-HTE
11	30	39						CTE-HTE
11	41	40						CTE-HTE
11	39	40						CTE-HTE
11	26	40						CTE-HTE
11	18	40						CTE-HTE
11	6	40	4.03	13	CU	1	HTS + 1.4	CTE-HTE
11	24	41						CTE-HTE
11	31	41						CTE-HTE
11	43	41						CTE-HTE
11	41	42						CTE-HTE
11	38	42						CTE-HTE
11	20	42						CTE-HTE
11	14	42	4.58	57	APT	6	1C + 17.9	CTE-HTE
11	1	43			RND			
11	7	43	0.83	11	CU	1	HTS + 1.7	CTE-HTE
							END REEL AH02	

PAGE 2 OF 2 EVALUATOR M. Tierney by Darrell D. Vale LEVEL IIA/III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03_	2	A__	HOT __	AH03		AH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH03 TERNING GA LIIA 05/08/87 OPER:WITT R LII 05/08/87 CAL STD:Z-3922	
11	11	43						CTE-HTE
11	26	43						CTE-HTE
11	35	43	1.83	187	DNT	1	2C + 30.2	CTE-HTE
11	37	43						CTE-HTE
11	44	43						CTE-HTE
11	44	44						CTE-HTE
11	42	44						CTE-HTE
11	26	44						CTE-HTE
11	18	44						CTE-HTE
11	16	44						CTE-HTE
11	22	45	2.72	182	DNT	1	HTS + 24.9	CTE-HTE
			2.03	182	DNT	1	HTS + 23.8	CTE-HTE
11	27	45						CTE-HTE
11	32	45						CTE-HTE
11	39	45						CTE-HTE
11	42	45						CTE-HTE
11	45	45						CTE-HTE
11	41	46						CTE-HTE
11	30	46						CTE-HTE
11	12	46			RND			
11	15	47			RND			
							OPER:ATKINSON B	
11	31	47						CTE-HTE
11	41	47						CTE-HTE
11	37	48						CTE-HTE
11	19	48						CTE-HTE
11	18	48						CTE-HTE
11	9	48						CTE-HTE
11	1	49			RNT			
11	12	49						CTE-HTE
11	18	49	7.25	191	DNT	1	6H + 0.0	CTE-HTE
11	24	49						CTE-HTE
11	34	49						CTE-HTE
11	42	50						CTE-HTE
11	30	50						CTE-HTE
11	20	50	1.07	189	DNT	1	HTS + 2.4	CTE-HTE
11	8	50						CTE-HTE
11	6	51						CTE-HTE
11	28	51						CTE-HTE
11	45	51						CTE-HTE
11	39	52	2.94	195	PV	1	1C + 16.8	CTE-HTE
								CTE-HTE
11	36	52						CTE-HTE

PAGE 1 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03_	2	A__	HOT __	AH03		AH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	18	52						CTE-HTE
11	16	52						CTE-HTE
11	6	52						CTE-HTE
11	10	53						CTE-HTE
11	13	53						CTE-HTE
11	19	53						CTE-HTE
11	27	53						CTE-HTE
11	44	54						CTE-HTE
11	30	54						CTE-HTE
11	25	54						CTE-HTE
11	21	54						CTE-HTE
11	2	55			RNT			
11	10	55						CTE-HTE
11	17	55						CTE-HTE
11	23	55						CTE-HTE
11	43	56						CTE-HTE
11	36	56						CTE-HTE
11	32	56						CTE-HTE
11	31	56						CTE-HTE
11	27	56						CTE-HTE
							END REEL AH03	

PAGE 2 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03_	2	A__	HOT __	AH04		AH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH04 TERNING GA OPER:KLATT MJ CAL STD:Z-3922	LIIA 05/09/87 LII 05/08/87
11	15	56						CTE-HTE
11	7	56			RBD		PARTIAL DATA HOT LEG	CTE-HTE
11	4	56			RNT			
11	13	57	1.45	187	DNT	1	2H + 22.2	CTE-HTE
11	24	57						CTE-HTE
11	33	57						CTE-HTE
11	38	57						CTE-HTE
11	34	58						CTE-HTE
11	28	58						CTE-HTE
11	13	58						CTE-HTE
11	9	59						CTE-HTE
11	13	59						CTE-HTE
11	19	59						CTE-HTE
11	39	59						CTE-HTE
11	40	60						CTE-HTE
11	39	60						CTE-HTE
11	30	60						CTE-HTE
11	25	60						CTE-HTE
11	23	60						CTE-HTE
11	16	60						CTE-HTE
11	12	60						CTE-HTE
11	2	60			RNT			
11	1	60			RNT			
11	27	61	1.50	193	DNT	1	5C + 40.1	CTE-HTE
11	35	62						CTE-HTE
11	32	62						CTE-HTE
11	10	62						CTE-HTE
11	4	63			RNT			
11	10	63						CTE-HTE
11	24	63						CTE-HTE
11	37	64	1.02	195	DNT	1	1C + 33.7	CTE-HTE
			2.06	192	DNT	1	1H + 6.1	CTE-HTE
11	31	64						CTE-HTE
11	14	64						CTE-HTE
11	3	64			RNT			
11	19	65						CTE-HTE
11	27	65						CTE-HTE
11	33	66						CTE-HTE
11	15	66						CTE-HTE
11	9	66						CTE-HTE
11	2	66			RNT			
11	1	66			RNT			
							OPER:ATKINSON B	

PAGE 1 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03_	2	A__	HOT __	AH04		AH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION			EXTENT
11	5	67								CTE-HTE
11	18	67								CTE-HTE
11	23	67								CTE-HTE
11	30	67								CTE-HTE
11	37	67								CTE-HTE
11	19	68								CTE-HTE
11	14	68								CTE-HTE
11	2	69			RNT					
11	8	69								CTE-HTE
11	16	69	7.19	191	DNT	1	1H	+	14.3	CTE-HTE
			1.88	191	DNT	1	2H	+	21.1	CTE-HTE
11	18	69								CTE-HTE
11	27	69								CTE-HTE
11	38	69								CTE-HTE
11	34	70	2.90	193	DNT	1	4A	-	8.3	CTE-HTE
11	25	70								CTE-HTE
11	5	71			RNT					
11	11	71								CTE-HTE
11	29	71								CTE-HTE
11	20	72								CTE-HTE
11	13	72								CTE-HTE
11	10	72								CTE-HTE
11	7	72								CTE-HTE
11	2	72			RNT					
11	3	73			RNT					
11	16	73								CTE-HTE
11	24	73								CTE-HTE
11	33	73	3.82	191	DNT	1	6H	+	11.2	CTE-HTE
11	35	73								CTE-HTE
11	37	73								CTE-HTE
11	29	74								CTE-HTE
11	1	75			RNT					
11	14	75								CTE-HTE
11	18	75								CTE-HTE
11	22	75								CTE-HTE
11	27	75								CTE-HTE
11	30	76								CTE-HTE
11	2	77			RNT					
11	7	77	1.71	193	DNT	1	5C	+	38.7	CTE-HTE
11	27	77								CTE-HTE
							END REEL AH04			

PAGE 2 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH05_	2	A__	HOT __	AH05		AH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH05 CIRCOSTA SA OPER: ATKINSON BM CAL STD: Z-3922	 LIIA 05/09/87 LII 05/09/87
11	30	77						CTE-HTE
11	24	78						CTE-HTE
11	14	78						CTE-HTE
11	5	78			RND			
11	10	79						CTE-HTE
11	15	79						CTE-HTE
11	23	79						CTE-HTE
11	13	80						CTE-HTE
11	1	80			RND			
11	5	81			RND			
11	10	81						CTE-HTE
11	16	81						CTE-HTE
11	20	81						CTE-HTE
11	28	81	1.26	190	DNT	1	4C + 11.2	CTE-HTE
			2.02	192	DNT	1	4H + 9.5	CTE-HTE
			1.45	192	DNT	1	4H + 4.0	CTE-HTE
11	29	81						CTE-HTE
11	17	82						CTE-HTE
11	8	82	1.17	172	<20	1	1C + 25.2	CTE-HTE
11	2	83			RND			
11	14	83						CTE-HTE
11	23	83						CTE-HTE
11	20	84						CTE-HTE
11	12	84						CTE-HTE
11	3	84			RND			
11	9	85						CTE-HTE
11	14	85						CTE-HTE
11	18	86						CTE-HTE
11	11	86						CTE-HTE
11	6	86						CTE-HTE
11	4	87			RND			
11	9	87						CTE-HTE
11	17	87						CTE-HTE
11	13	88			RBD		POSSIBLE INDICATION AT 5H +12.5".	
11	9	88						CTE-HTE
11	6	88						CTE-HTE
11	9	89						CTE-HTE
11	10	90						CTE-HTE
11	6	90						CTE-HTE
11	21	81						CTE-HTE
11	23	77						CTE-HTE

PAGE 1 OF 2	EVALUATOR S Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH05_	2	A__	HOT __	AH05		AH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	31	72	1.18	192	DNT	1	1C + 33.3	CTE-HTE
			1.89	196	DNT	1	1H + 37.4	CTE-HTE
11	33	71	3.88	190	DNT	1	6H + 10.8	CTE-HTE
11	34	69	17.31	187	DNT	1	1H + 22.6	CTE-HTE
11	6	63						CTE-HTE
11	21	61	2.45	192	DNT	1	2H + 9.0	CTE-HTE
11	12	41	3.85	191	DNT	1	3H + 27.7	CTE-HTE
11	13	37	3.52	195	DNT	1	2H + 25.7	CTE-HTE
11	12	25						CTE-HTE
11	11	17						CTE-HTE
11	11	12						CTE-HTE
11	11	11						CTE-HTE

END REEL AH05

PAGE 2 OF 2	EVALUATOR SIL CIRCOSTA by Thomas U. Bipes	LEVEL II A

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH06_	2	A__	HOT __	AH06		AH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680SLDF	
							REEL AH06	
							LYNCH DE	LIIA 05/09/87
							OPER: WITT RW	LII 05/09/87
							CAL STD: Z-3922	
11	2	4						6C-HTE
11	1	5			RTI			6H-HTE
11	2	5						6C-HTE
11	3	8	0.57	163	<20	1	3C + 26.2	CTE-HTE
11	1	10			RTI			6H-HTE
11	3	13						CTE-HTE
11	1	15			RTI			6H-HTE
11	2	15						6C-HTE
11	4	15						6C-HTE
11	1	18			RTI			6H-HTE
11	4	21						6C-HTE
11	2	22						6C-HTE
11	4	24						CTE-HTE
11	2	31						6C-HTE
11	4	31						CTE-HTE
11	1	32			RTI			6H-HTE
11	1	35			RTI			6H-HTE
11	1	43			RTI			6H-HTE
11	12	46						CTE-HTE
11	15	47	2.64	183	DNT	1	6C + 4.4	CTE-HTE
11	1	49			RTI			6H-HTE
11	2	55						6C-HTE
11	4	56						CTE-HTE
11	2	60						6C-HTE
11	1	60			RTI			6H-HTE
11	4	63						CTE-HTE
11	3	64						CTE-HTE
11	2	66						6C-HTE
11	1	66			RTI			6H-HTE
11	2	69						6C-HTE
11	5	71						CTE-HTE
11	2	72						6C-HTE
11	1	75			RND			
11	2	77			RTI			6H-HTE
11	3	73						6C-HTE
11	7	56	1.04	192	DNT	1	1C + 47.7	CTE-HTE
			3.08	195	DNT	3	3C + 25.7	CTE-HTE
11	5	78						CTE-HTE
11	1	80			RTI			6H-HTE
11	5	81						CTE-HTE
11	2	83						6C-HTE
11	3	84						6C-HTE
11	4	87						6C-HTE

PAGE 1 OF 2 | EVALUATOR | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH06_	2	A__	HOT __	AH06		AH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
							END REEL AH06	

PAGE 2 OF 2	EVALUATOR [signature]	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH07_	2	A__	HOT __	AH07		AH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF	
							REEL AH07	
							TERNING GA	LIIA 05/09/87
							OPER:WITT R	LII 05/09/87
							CAL STD.:Z-3922	
11	13	88	3.44	18	CU	1	CTS + 9.4	CTE-HTE
11	1	80						6C-HTE
11	2	77			RBD			6C-HTE
11	1	75						6C-HTE
11	1	66						6C-HTE
11	1	60						6C-HTE
11	1	49						6C-HTE
11	1	43						6C-HTE
11	1	35						6C-HTE
11	1	32						6C-HTE
11	1	18						6C-HTE
11	1	15						6C-HTE
11	1	10						6C-HTE
11	1	5						6C-HTE
							END REEL AH07	

PAGE 1 OF 1 | EVALUATOR Gary Terning | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH08_	2	A__	HOT __	AH08		AH08	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF REEL AH08 TERNING GA OPER:ATKINSON B CAL STD.:Z-3922	 LIIA 05/09/86 LII 05/09/87
11	2	77						6C-HTE
							END REEL AH08	

PAGE 1 OF 1	EVALUATOR Gary Terning	LEVEL IIA

SECONDARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR A

NOTE: These secondary data analysis sheets are provided for information and have no effect on the results listings except where differences were resolved as required by the analysis procedure. Resolutions are identified on the primary DDA-4 sheets.

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH01S	2	A__	HOT __	AH01		AH01	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH01 TIERNEY MG OPER: BIPES TU CAL STD: Z-3922	 IIA 05/09/87 II 05/08/87
11	6	2						CTE-HTE
11	10	3						CTE-HTE
11	2	4			RNT			
11	1	5			RNT			
11	2	5			RNT			
11	8	5						CTE-HTE
11	13	5						CTE-HTE
11	19	6	2.30	195	DNT	1	CTS + 15.1	CTE-HTE
11	14	6						CTE-HTE
11	10	6						CTE-HTE
11	8	6						CTE-HTE
11	5	6						CTE-HTE
11	21	7						CTE-HTE
11	16	8						CTE-HTE
11	11	8						CTE-HTE
11	6	8						CTE-HTE
11	3	8			RNT			
11	14	9						CTE-HTE
11	22	9						CTE-HTE
11	24	9						CTE-HTE
11	19	10						CTE-HTE
11	1	10			RNT			
11	5	11						CTE-HTE
11	8	11						CTE-HTE
11	24	11						CTE-HTE
11	27	11						CTE-HTE
11	21	12						CTE-HTE
11	15	12						CTE-HTE
11	11	13						CTE-HTE
11	3	13			RNT			
11	16	13						CTE-HTE
11	29	13	5.56	77	APT	6	2C + 16.9	CTE-HTE
11	26	14						CTE-HTE
11	8	14						CTE-HTE
11	1	15			RNT			
11	2	15			RNT			
11	4	15			RNT			
11	15	15						CTE-HTE
11	24	16						CTE-HTE
11	21	16						CTE-HTE
11	11	16						CTE-HTE
11	8	17						CTE-HTE
11	18	17						CTE-HTE

PAGE 1 OF 2 | EVALUATOR *Mark G. Tierney* | LEVEL *IIA*

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH01S	2	A__	HOT __	AH01		AH01	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	34	17						CTE-HTE
11	29	18						CTE-HTE
11	28	18						CTE-HTE
11	24	18						CTE-HTE
11	1	18			RNT			
11	13	19						CTE-HTE
11	16	19						CTE-HTE
11	24	19						CTE-HTE
11	22	20						CTE-HTE
11	6	20			DNT			CTE-HTE
11	4	21			RNT			
11	16	21						CTE-HTE
11	37	21	10.29	177	DNT	M 1	3A + 0.0	CTE-HTE
			3.46	173	DNT	M 1	2A + 0.0	CTE-HTE
11	34	22						CTE-HTE
11	32	22						CTE-HTE
11	15	22						CTE-HTE
11	9	22						CTE-HTE
11	2	22			RNT			
11	18	23						CTE-HTE
11	22	23	1.89	193	DNT	1	1H + 23.0	CTE-HTE
11	33	23						CTE-HTE
11	28	24						CTE-HTE
11	26	24	4.53	68	APT	6	1H + 23.7	CTE-HTE
11	13	24						CTE-HTE
11	4	24			RNT			
11	7	25						CTE-HTE
11	13	25	1.88	191	<20	1	2C + 31.1	CTE-HTE
							OPER: HANCOCK R LII	05/08/87
11	16	25						CTE-HTE
11	33	25	8.26	190	DNT	1	6H - 3.1	CTE-HTE
11	39	25						CTE-HTE
11	37	26						CTE-HTE
11	31	26						CTE-HTE
11	20	26						CTE-HTE
11	8	26						CTE-HTE
11	14	27						CTE-HTE
11	32	27						CTE-HTE
11	34	27						CTE-HTE
							END REEL AH01	

PAGE 2 OF 2	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH02S	2	A__	HOT __	AH02		AH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION		EXTENT
					PRO		A720SFRM REEL AH02 TERNING GA OPER: WITT R STD: Z-3922		LIIA 05/10/87 LII 05/10/87
11	41	28							CTE-HTE
11	26	28							CTE-HTE
11	19	28							CTE-HTE
11	13	28							CTE-HTE
11	4	29	3.19	18	CU	1	HTS	+ 4.2	CTE-HTE
11	11	29							CTE-HTE
11	18	29							CTE-HTE
11	28	29							CTE-HTE
11	35	29							CTE-HTE
11	37	30							CTE-HTE
11	30	30							CTE-HTE
11	20	30							CTE-HTE
11	8	30							CTE-HTE
11	2	31			RNT				
11	4	31			RNT				
11	23	31							CTE-HTE
11	34	31							CTE-HTE
11	37	32							CTE-HTE
11	1	32			RNT				
11	13	33							CTE-HTE
11	18	33							CTE-HTE
11	29	33							CTE-HTE
11	36	33							CTE-HTE
11	40	33	21.73	18	PV	1	HTE	+ 15.9	CTE-HTE
11	32	34							CTE-HTE
11	9	34							CTE-HTE
11	1	35			RNT				
11	16	35							CTE-HTE
11	27	35	3.44	189	DNT	1	FBH	+ 17.8	CTE-HTE
11	44	36							CTE-HTE
11	41	36							CTE-HTE
11	32	36							CTE-HTE
11	28	36	1.50	190	DNT	1	1C	+ 10.5	CTE-HTE
11	24	36							CTE-HTE
11	19	36							CTE-HTE
11	5	36							CTE-HTE
11	7	37	1.54	191	CU	1	HTS	+ 2.0	CTE-HTE
11	23	37							CTE-HTE
11	35	37	10.26	20	PV	1	CTE	+ 16.1	CTE-HTE
11	43	37							CTE-HTE
11	39	38							CTE-HTE
11	26	38							CTE-HTE
11	21	38							CTE-HTE

PAGE 1 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH02S	2	A__	HOT __	AH02		AH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	10	38						CTE-HTE
11	5	39						CTE-HTE
11	30	39						CTE-HTE
11	41	40						CTE-HTE
11	39	40						CTE-HTE
11	26	40						CTE-HTE
11	18	40						CTE-HTE
11	6	40	4.01	14	CU	1	HTS + 1.3	CTE-HTE
11	24	41						CTE-HTE
11	31	41						CTE-HTE
11	43	41						CTE-HTE
11	41	42						CTE-HTE
11	38	42						CTE-HTE
11	20	42						CTE-HTE
11	14	42						CTE-HTE
11	1	43			RNT			
11	7	43	0.83	12	CU	1	HTS + 1.3	CTE-HTE
							END REEL AH02	

PAGE 2 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03S	2	A__	HOT __	AH03		AH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL AH03	
							TIERNEY MG LIIA	05/10/87
							OPER:WITT R	05/08/87
							CAL STD:Z-3922	
11	11	43						CTE-HTE
11	26	43						CTE-HTE
11	35	43						CTE-HTE
11	37	43						CTE-HTE
11	44	43						CTE-HTE
11	44	44						CTE-HTE
11	42	44						CTE-HTE
11	26	44						CTE-HTE
11	18	44						CTE-HTE
11	16	44						CTE-HTE
11	22	45	2.72	183	DNT	1	HTS + 24.9	CTE-HTE
			2.03	182	DNT	1	HTS + 23.8	CTE-HTE
							4 HR. CALIBRATION MISSED	
11	27	45						CTE-HTE
11	32	45						CTE-HTE
11	39	45						CTE-HTE
11	42	45						CTE-HTE
11	45	45						CTE-HTE
11	41	46						CTE-HTE
11	30	46						CTE-HTE
11	12	46			RNT			
11	15	47			RNT			
							OPER: ATKINSON B LII	05/08/87
11	31	47						CTE-HTE
11	41	47						CTE-HTE
11	37	48						CTE-HTE
11	19	48						CTE-HTE
11	18	48						CTE-HTE
11	9	48						CTE-HTE
11	12	49						CTE-HTE
11	1	49			RNT			
11	18	49	7.10	191	DNT	1	6H + 1.3	CTE-HTE
11	24	49						CTE-HTE
11	34	49						CTE-HTE
11	42	50						CTE-HTE
11	30	50						CTE-HTE
11	20	50						CTE-HTE
11	8	50						CTE-HTE
11	6	51						CTE-HTE
11	28	51						CTE-HTE
11	45	51						CTE-HTE
11	39	52	2.94	195	DNT	1	1C + 17.0	CTE-HTE
11	36	52						CTE-HTE

PAGE 1 OF 2	EVALUATOR Mark G Tierney	LEVEL II-A

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH03S	2	A__	HOT __	AH03		AH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	18	52						CTE-HTE
11	16	52						CTE-HTE
11	6	52						CTE-HTE
11	10	53						CTE-HTE
11	13	53						CTE-HTE
11	19	53						CTE-HTE
11	27	53						CTE-HTE
11	44	54						CTE-HTE
11	30	54						CTE-HTE
11	25	54						CTE-HTE
11	21	54						CTE-HTE
11	2	55			RNT			
11	10	55						CTE-HTE
11	17	55						CTE-HTE
11	23	55						CTE-HTE
11	43	56						CTE-HTE
11	36	56						CTE-HTE
11	32	56						CTE-HTE
11	31	56						CTE-HTE
11	27	56						CTE-HTE

END REEL AH03

PAGE 2 OF 2	EVALUATOR Mark S. Varney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH04S	2	A__	HOT __	AH04		AH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH04 TIERNEY MG LIIA 05/10/87 OPER:KLATT MJ LII 05/08/87 CAL STD:Z-3922	
11	15	56						CTE-HTE
11	7	56	4.38	197	DNT	1	3C + 26.1	CTE-HTE
11	4	56			RNT			
11	13	57						CTE-HTE
11	24	57						CTE-HTE
11	33	57						CTE-HTE
11	38	57						CTE-HTE
11	34	58						CTE-HTE
11	28	58						CTE-HTE
11	13	58						CTE-HTE
11	9	59						CTE-HTE
11	13	59						CTE-HTE
11	19	59						CTE-HTE
11	39	59						CTE-HTE
11	40	60						CTE-HTE
11	39	60						CTE-HTE
11	30	60						CTE-HTE
11	25	60						CTE-HTE
11	23	60						CTE-HTE
11	16	60						CTE-HTE
11	12	60						CTE-HTE
11	2	60			RNT			
11	1	60			RNT			
11	27	61	1.43	192	DNT	1	5C + 40.2	CTE-HTE
11	35	62						CTE-HTE
11	32	62						CTE-HTE
11	10	62						CTE-HTE
11	4	63			RNT			
11	10	63						CTE-HTE
11	24	63						CTE-HTE
11	37	64	2.06	192	DNT	1	2H + 7.1	CTE-HTE
11	31	64						CTE-HTE
11	14	64						CTE-HTE
11	3	64			RNT			
11	19	65						CTE-HTE
11	27	65						CTE-HTE
11	33	66						CTE-HTE
11	15	66						CTE-HTE
11	9	66						CTE-HTE
							OPER: ATKINSON B LII	05/08/87
11	2	66			RNT			
11	1	66			RNT			
11	5	67						CTE-HTE

PAGE 1 OF 2 EVALUATOR *Mark G. Tierney* LEVEL *IIA*

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH04S	2	A__	HOT __	AH04		AH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
11	18	67						CTE-HTE
11	23	67						CTE-HTE
11	30	67						CTE-HTE
11	37	67						CTE-HTE
11	19	68						CTE-HTE
11	14	68						CTE-HTE
11	2	69			RNT			
11	8	69						CTE-HTE
11	16	69	7.19	192	DNT	1	1H + 13.9	CTE-HTE
			1.92	192	DNT	1	2H + 21.1	CTE-HTE
11	18	69						CTE-HTE
11	27	69						CTE-HTE
11	38	69						CTE-HTE
11	34	70	2.90	193	DNT	1	3A + 8.2	CTE-HTE
11	25	70						CTE-HTE
11	5	71			RNT			
11	11	71						CTE-HTE
11	29	71						CTE-HTE
11	20	72						CTE-HTE
11	13	72						CTE-HTE
11	10	72						CTE-HTE
11	7	72						CTE-HTE
11	2	72			RNT			
11	3	73			RNT			
11	16	73						CTE-HTE
11	24	73						CTE-HTE
11	33	73	3.82	191	DNT	1	6H + 11.3	CTE-HTE
11	35	73						CTE-HTE
11	37	73						CTE-HTE
11	29	74						CTE-HTE
11	1	75			RNT			
11	14	75						CTE-HTE
11	18	75						CTE-HTE
11	22	75						CTE-HTE
11	27	75						CTE-HTE
11	30	76						CTE-HTE
11	2	77			RNT			
11	7	77						CTE-HTE
11	27	77						CTE-HTE
							END REEL AH04	

PAGE 2 OF 2 | EVALUATOR Mark L. Tierney | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH05S	2	A__	HOT __	AH05		AH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH05 TIERNEY MG LIIA 05/10/87 OPER: ATKINSON BM LII 05/09/87 STD: Z-3922	
11	30	77						CTE-HTE
11	24	78						CTE-HTE
11	14	78						CTE-HTE
11	5	78			RNT			
11	10	79						CTE-HTE
11	15	79						CTE-HTE
11	23	79						CTE-HTE
11	13	80						CTE-HTE
11	1	80			RNT			
11	5	81			RNT			
11	10	81						CTE-HTE
11	16	81						CTE-HTE
11	20	81						CTE-HTE
11	28	81						CTE-HTE
11	29	81						CTE-HTE
11	17	82						CTE-HTE
11	8	82	1.17	172	DNT	1	1C + 25.4	CTE-HTE
11	2	83			RNT			
11	14	83						CTE-HTE
11	23	83						CTE-HTE
11	20	84						CTE-HTE
11	12	84						CTE-HTE
11	3	84			RNT			
11	9	85						CTE-HTE
11	14	85						CTE-HTE
11	18	86						CTE-HTE
11	11	86						CTE-HTE
11	6	86						CTE-HTE
11	4	87			RNT			
11	9	87						CTE-HTE
11	17	87						CTE-HTE
11	13	88						CTE-HTE
11	9	88						CTE-HTE
11	6	88						CTE-HTE
11	9	89						CTE-HTE
11	10	90						CTE-HTE
11	6	90						CTE-HTE
							END DDAH05S	

PAGE 1 OF 1	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDAH05S/A	2	A__	HOT __	AH05		AH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL AH05 TIERNEY MG LIIA 05/10/87 OPER: ATKINSON BM LII 05/09/87 STD: Z-3922	
11	21	81						CTE-HTE
11	23	77						CTE-HTE
11	31	72	1.21	195	DNT	1	2C + 33.5	CTE-HTE
			1.89	197	DNT	1	2H + 37.3	CTE-HTE
11	33	71	3.88	190	DNT	1	6H + 10.6	CTE-HTE
11	34	69	17.32	186	DNT	1	1H + 22.9	CTE-HTE
11	6	63						CTE-HTE
11	21	61	2.45	192	DNT	1	2H + 8.7	CTE-HTE
11	12	41	3.85	191	DNT	1	3H + 27.5	CTE-HTE
11	13	37	3.52	195	DNT	1	2H + 25.6	CTE-HTE
11	12	25						CTE-HTE
11	11	17	5.84	181	IDV	1	CTS + 0.1TO+ 345.5	CTE-HTE
11	11	12						CTE-HTE
11	11	11	4.00	182	IDV	1	CTS + 0.0TO+ 350.0	CTE-HTE
							END REEL AH05	

PAGE 1 OF 1	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH06S	2	A__	HOT __	AH06		AH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO .		A680SLDF	
							REEL AH06	
							TIERNEY MG	LIIA 05/10/87
							OPER: WITT R	LII 05/09/87
							STD: Z-3922	
11	2	4						6C-HTE
11	1	5			RTI			6H-HTE
11	2	5						6C-HTE
11	3	8						CTE-HTE
11	1	10			RTI			6H-HTE
11	3	13						CTE-HTE
11	1	15			RTI			6H-HTE
11	2	15						6C-HTE
11	4	15						6C-HTE
11	1	18			RTI			6H-HTE
11	4	21						6C-HTE
11	2	22						6C-HTE
11	4	24						CTE-HTE
11	2	31						6C-HTE
11	4	31						CTE-HTE
11	1	32			RTI			6H-HTE
11	1	35			RTI			6H-HTE
11	1	43			RTI			6H-HTE
11	12	46						CTE-HTE
11	15	47						CTE-HTE
11	1	49			RTI			6H-HTE
11	2	55						6C-HTE
11	4	56						CTE-HTE
11	2	60						6C-HTE
11	1	60			RTI			6H-HTE
11	4	63						CTE-HTE
11	3	64						CTE-HTE
11	2	66						6C-HTE
11	1	66			RTI			6H-HTE
11	2	69						6C-HTE
11	5	71						CTE-HTE
11	2	72						6C-HTE
11	1	75			RND			
11	2	77			RTI			6H-HTE
11	3	73						6C-HTE
11	7	56	3.04	192	DNT	1	3C + 26.2	CTE-HTE
11	5	78						CTE-HTE
11	1	80			RTI			6H-HTE
11	5	81						CTE-HTE
11	2	83						6C-HTE
11	3	84						6C-HTE
11	4	87						6C-HTE
							END REEL AH06	

PAGE 1 OF 1	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CPL/HBR DDAH07S	2	A__	HOT __	AH07		AH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		680BJFRM REEL AH07 TIERNEY MG OPER: WITT R STD: Z-3922	 LIIA 05/10/87 LII 05/09/87
11	13	88						CTE-HTE
11	1	80						6C-HTE
11	2	77						6C-HTE
11	1	75						6C-HTE
11	1	66						6C-HTE
11	1	60						6C-HTE
11	1	49						6C-HTE
11	1	43						6C-HTE
11	1	35						6C-HTE
11	1	32						6C-HTE
11	1	18						6C-HTE
11	1	15						6C-HTE
11	1	10						6C-HTE
11	1	5						6C-HTE
							END REEL AH07	

PAGE 1 OF 1	EVALUATOR Mark M. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDAH08_	2	A__	HOT __	AH08		AH08	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF REEL AH08 WEBER DD OPER:ATKINSON B CAL STD.:Z-3922	 LIII 05/10/86 LII 05/09/87
11	2	77						6C-HTE
							END REEL AH08	

PAGE 1 OF 1	EVALUATOR Darrell D. Weber	LEVEL III

IR-ISI-102
REV. 0

EDDY CURRENT DATA SHEET

ACQUISITION LOG

GENERATOR A

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 1

OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #1

PROBE: A-720-SFRM   CAL. STD.: ASME Z-3922   EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 RO   LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20   REEL NO.: AH01

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET		TESTED	ANALYZED	INDEX	COMMENTS
1	6	2	AH-RD	PV	JRB	SJC		
2	10	3	AH-RD		JRB	SJC		
168	2	4	AH-RD	NO TEST				
331	1	5	AH-RD	NO TEST				
3	2	5	AH-RD	NO TEST				
4	8	5	AH-RD		JRB	SJC		
221	13	5	AH-RD		JRB	SJC		
247	19	6	AH-RD		JRB	SJC		
7	14	6	AH-RD		JRB	SJC		
6	10	6	AH-RD		JRB	SJC		
5	8	6	AH-RD		JRB	SJC		
186	5	6	AH-RD		JRB	SJC		
8	21	7	AH-RD		JRB	SJC		
10	16	8	AH-RD		JRB	SJC		
214	11	8	AH-RD		JRB	SJC		
189	6	8	AH-RD		JRB	SJC		
9	3	8	AH-RD	NO TEST				
223	14	9	AH-RD		JRB	SJC		
11	22	9	AH-RD		JRB	SJC		
266	24	9	AH-RD	PV	JRB	SJC		

Shift Supervisor: JRB   Data Controller: JRB   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 2

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
248	19	10	AH-RD	MK	SP		
332	1	10	AH-RD	NO TEST			
187	5	11	AH-RD	MK	SC		
12	8	11	AH-RD	MK	SC		
13	24	11	AH-RD	MK	SC		
276	27	11	AH-RD	MK	SC		
15	21	12	AH-RD	MK	SC		
14	15	12	AH-RD	MK	SC		
16	3	13	AH-RD	NO TEST	S		
215	11	13	AH-RD	MK	SC		
231	16	13	AH-RD	MK	SC		
17	29	13	AH-RD	MK	SC		
272	26	14	AH-RD	MK	SC		
197	8	14	AH-RD	MK	SC		
333	1	15	AH-RD	NO TEST			
170	2	15	AH-RD	NO TEST			
18	4	15	AH-RD	NO TEST			
228	15	15	AH-RD	MK	SC		
19	24	16	AH-RD	MK	SC		
255	21	16	AH-RD PV	MK	SC		

Shift Supervisor: JMB Data Controller: JMB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 3

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
216	11	16	AH-RD	MK	SO		
20	8	17	AH-RD	MK	SO		
240	18	17	AH-RD	MK	SO		
303	34	17	AH-RD	MK	SO		
285	29	18	AH-RD	MK	SO		
281	28	18	AH-RD	MK	SO		
22	24	18	AH-RD	MK	SO		
21	1	18	AH-RD	NO TEST			
23	13	19	AH-RD	MK	SO		
232	16	19	AH-RD	MK	SO		
24	24	19	AH-RD	MK	SO		
257	22	20	AH-RD	MK	SO		
190	6	20	AH-RD	MK	SO		
25	4	21	AH-RD	NO TEST			
26	16	21	AH-RD	MK	SO		
27	37	21	AH-RD	MK	SO		
29	34	22	AH-RD	MK	SO		
295	32	22	AH-RD	MK	SO		
28	15	22	AH-RD	MK	SO		
200	9	22	AH-RD PV	MK	SO		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 4

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
171	2	22	AH-RD	NO TEST			
241	18	23	AH-RD	MK	SC		
258	22	23	AH-RD	MK	SC		
30	33	23	AH-RD	MK	SC		
282	28	24	AH-RD	MK	SC		
273	26	24	AH-RD	MK	SC		
32	13	24	AH-RD	MK	SC		
31	4	24	AH-RD	NO TEST			
33	7	25	AH-RD	MK	SC		
34	13	25	AH-RD	MK	SC		
233	16	25	AH-RD	RHH	SC		
35	33	25	AH-RD	RHH	SC		
318	39	25	AH-RD	RHH	SC		
37	37	26	AH-RD	RHH	SC		
293	31	26	AH-RD	RHH	SC		
252	20	26	AH-RD	RHH	SC		
36	8	26	AH-RD	RHH	SC		
224	14	27	AH-RD	RHH	SC		
296	32	27	AH-RD	RHH	SC		
38	34	27	AH-RD	RHH	SC		

VV

Shift Supervisor: JR Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 5

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
41	41	28	AH-RD				
274	26	28	AH-RD				
40	19	28	AH-RD				
39	13	28	AH-RD				
182	4	29	AH-RD				
217	11	29	AH-RD				
42	18	29	AH-RD				
43	28	29	AH-RD				
306	35	29	AH-RD				
46	37	30	AH-RD				
45	30	30	AH-RD				
253	20	30	AH-RD				
44	8	30	AH-RD				
173	2	31	AH-RD				NoTest ~~incomplete~~ 5-8-87
183	4	31	AH-RD				NoTest
260	23	31	AH-RD				
304	34	31	AH-RD				
312	37	32	AH-RD				
47	1	32	AH-RD				NoTest
48	13	33	AH-RD				

Shift Supervisor: JR Data Controller: ______ Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 6

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1

PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH-02

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
242	18	33	AH-RD				
286	29	33	AH-RD				
49	36	33	AH-RD				
321	40	33	AH-RD				
51	32	34	AH-RD				
50	9	34	AH-RD				
52	1	35	AH-RD				no Test
234	16	35	AH-RD				
53	27	35	AH-RD				
327	44	36	AH-RD				
56	41	36	AH-RD				
297	32	36	AH-RD				
283	28	36	AH-RD				
267	24	36	AH-RD				
55	19	36	AH-RD				
54	5	36	AH-RD				
193	7	37	AH-RD				
57	23	37	AH-RD				
307	35	37	AH-RD				
325	43	37	AH-RD				AV

Shift Supervisor: JR Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH-02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
59	39	38	AH-RD				
58	26	38	AH-RD				
256	21	38	AH-RD				
207	10	38	AH-RD				
60	5	39	AH-RD				
288	30	39	AH-RD				
62	41	40	AH-RD				
319	39	40	AH-RD				
275	26	40	AH-RD				
243	18	40	AH-RD				
61	6	40	AH-RD				
63	24	41	AH-RD				
294	31	41	AH-RD				
64	43	41	AH-RD				
68	41	42	AH-RD				
67	38	42	AH-RD				
66	20	42	AH-RD				
65	14	42	AH-RD				
69	1	43	AH-RD				Not tested
70	7	43	AH-RD				

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 8

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1

PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 RO LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH-02

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
71	11 ✓	43	AH-RD	RW	GAT		
72	26 ✓	43	AH-RD	RW	GAT		
73	35 ✓	43	AH-RD	RW	GAT		
313	37 ✓	43	AH-RD	RW	GAT		
74	44 x	43	AH-RD	RW	GAT		
328	44 x	44	AH-RD	RW	GAT		
77	42 x	44	AH-RD	RW	GAT		
76	26 ✓	44	AH-RD	RW	GAT		end of tape cal
244	18 ✓	44	AH-RD	RW	GAT		new Tape AH-03
75	16 ✓	44	AH-RD	RW	GAT		
78	22 x	45	AH-RD	RW	GAT		4 hour Cal pull
277	27 ✓	45	AH-RD	RW	GAT		
298	32 ✓	45	AH-RD	RW	GAT		
320	39 ✓	45	AH-RD	RW	GAT		
79	42 x	45	AH-RD	RW	GAT		
330	45 x	45	AH-RD	RW	GAT		
82	41 ✓	46	AH-RD	RW	GAT		
81	30	46	AH-RD	RW	GAT		
80	12	46	AH-RD	RW	GAT		No Test
229	15	47	AH-RD	RW	GAT		No Test RV

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

This page was retested from tube 11-43 through 15-47

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH03
ECT DESCRIPTION: 10% RANDOM SAMPLE.

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
83	31	47	AH-RD	Bms	GAT		
323	41	47	AH-RD	Bms	GAT		
85	37	48	AH-RD	Bms	GAT		
249	19	48	AH-RD	Bms	GAT		
84	18	48	AH-RD	Bms	GAT		
201	9	48	AH-RD	Bms	GAT		
86	1	49	AH-RD	NO TEST	GAT		
219	12	49	AH-RD	Bms	GAT		
87	18	49	AH-RD	Bms	GAT		
268	24	49	AH-RD	Bms	GAT		
305	34	49	AH-RD	Bms	GAT		
324	42	50	AH-RD	Bms	GAT		
289	30	50	AH-RD	Bms	GAT		
89	20	50	AH-RD	Bms	GAT		
88	8	50	AH-RD	Bms	GAT		
90	6	51	AH-RD	Bms	GAT		
91	28	51	AH-RD	Bms	GAT		
92	45	51	AH-RD	Bms	GAT		
95	39	52	AH-RD	Bms	GAT		
310	36	52	AH-RD	Bms	GAT		

Shift Supervisor: JLB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH03
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
94	18	52	AH-RD				
235	16	52	AH-RD				
93	6	52	AH-RD				
208	10	53	AH-RD				
96	13	53	AH-RD				
97	19	53	AH-RD				
278	27	53	AH-RD				
329	44	54	AH-RD				
290	30	54	AH-RD				
99	25	54	AH-RD				
98	21	54	AH-RD				
175	2	55	AH-RD	NO TEST			
209	10	55	AH-RD				
100	17	55	AH-RD				
261	23	55	AH-RD				
326	43	56	AH-RD				
311	36	56	AH-RD				
299	32	56	AH-RD				
103	31	56	AH-RD				
279	27	56	AH-RD				

PV

Shift Supervisor: Data Controller: Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 11

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH04
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET		TESTED	ANALYZED	INDEX	COMMENTS
102	15	56	AH-RD	PV	MK	GAT		
194	7	56	AH-RD		MK	GAT		
101	4	56	AH-RD		NO TEST	GAT		
104	13	57	AH-RD		MK	GAT		
105	24	57	AH-RD		MK	GAT		
106	33	57	AH-RD		MK	GAT		
316	38	57	AH-RD		MK	GAT		
109	34	58	AH-RD		MK	GAT		
108	28	58	AH-RD		MK	GAT		
107	13	58	AH-RD		MK	GAT		
202	9	59	AH-RD		MK	GAT		
110	13	59	AH-RD		MK	GAT		
250	19	59	AH-RD		MK	GAT		
111	39	59	AH-RD		MK	GAT		
322	40	60	AH-RD		MK	GAT		
115	39	60	AH-RD		MK	GAT		
291	30	60	AH-RD		MK	GAT		
114	25	60	AH-RD		MK	GAT		
262	23	60	AH-RD		MK	GAT		
236	16	60	AH-RD	PV	MK	GAT		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH04
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
113	12	60	AH-RD	MK	GAT		
112	2	60	AH-RD	NO TEST	GAT		
334	1	60	AH-RD	NO TEST	GAT		
280	27	61	AH-RD	MK	GAT		
308	35	62	AH-RD	MK	GAT		
300	32	62	AH-RD	MK	GAT		
116	10	62	AH-RD	MK	GAT		
184	4	63	AH-RD	NO TEST	GAT		
210	10	63	AH-RD	MK	GAT		
117	24	63	AH-RD	MK	GAT		
314	37	64	AH-RD	MK	GAT		
119	31	64	AH-RD	MK	GAT		
225	14	64	AH-RD	MK	GAT		
118	3	64	AH-RD	NO TEST	GAT		
251	19	65	AH-RD	MK	GAT		
120	27	65	AH-RD	MK	GAT		
301	33	66	AH-RD	MK	GAT		
122	15	66	AH-RD	MK	GAT		
203	9	66	AH-RD N	MK	GAT		
177	2	66	AH-RD	NO TEST	GAT		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 13

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1

PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 RO LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH04

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
121	1	66	AH-RD	NO TEST	GAT		
123	5	67	AH-RD	BMB	GAT		
124	18	67	AH-RD	BMB	GAT		
263	23	67	AH-RD	BMB	GAT		
292	30	67	AH-RD	BMB	GAT		
315	37	67	AH-RD	BMB	GAT		
126	19	68	AH-RD	BMB	GAT		
125	14	68	AH-RD	BMB	GAT		
178	2	69	AH-RD	NO TEST	GAT		
198	8	69	AH-RD	BMB	GAT		
237	16	69	AH-RD	BMB	GAT		
127	18	69	AH-RD	BMB	GAT		
128	27	69	AH-RD	BMB	GAT		
317	38	69	AH-RD	BMB	GAT		
129	34	70	AH-RD	BMB	GAT		
271	25	70	AH-RD	BMB	GAT		
130	5	71	AH-RD	NO TEST	GAT		
131	11	71	AH-RD	BMB	GAT		
132	29	71	AH-RD	BMB	GAT		
135	20	72	AH-RD	PV BMB	GAT		

Shift Supervisor: TMB Data Controller: TMB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH04
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
134	13	72	AH-RD	Bms	GAT		
211	10	72	AH-RD	Bms	GAT		
195	7	72	AH-RD	Bms	GAT		
133	2	72	AH-RD	NO TEST	GAT		
136	3	73	AH-RD	NO TEST	GAT		
137	16	73	AH-RD	Bms	GAT		
269	24	73	AH-RD	Bms	GAT		
302	33	73	AH-RD	Bms	GAT		
309	35	73	AH-RD	Bms	GAT		
138	37	73	AH-RD	Bms	GAT		
287	29	74	AH-RD	Bms	GAT		
335	1	75	AH-RD	NOTEST	GAT		
226	14	75	AH-RD	Bms	GAT		
245	18	75	AH-RD	Bms	GAT		
259	22	75	AH-RD	Bms	GAT		
139	27	75	AH-RD	Bms	GAT		
140	30	76	AH-RD	Bms	GAT		
179	2	77	AH-RD	NO TEST	GAT		
196	7	77	AH-RD	Bms	GAT		
141	27	77	AH-RD	Bms	GAT		

PY

Shift Supervisor: HB Data Controller: HB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 REEL NO.: AH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
142	30	77	AH-RD	Bms	SC		
270	24	78	AH-RD	Bms	SC		
143	14	78	AH-RD	Bms	SC		
188	5	78	AH-RD	NO TEST			
144	10	79	AH-RD	Bms	SC		
230	15	79	AH-RD	Bms	SC		
264	23	79	AH-RD	Bms	SC		
145	13	80	AH-RD	Bms	SC		
167	1	80	AH-RD	NO TEST			
146	5	81	AH-RD	NO TEST			
212	10	81	AH-RD	Bms	SC		
238	16	81	AH-RD	Bms	SC		
147	20	81	AH-RD	Bms	SC		
284	28	81	AH-RD	Bms	SC		
148	29	81	AH-RD	Bms	SC		
149	17	82	AH-RD	Bms	SC		
199	8	82	AH-RD	Bms	SC		
180	2	83	AH-RD	NO TEST			
227	14	83	AH-RD	Bms	SC		
265	23	83	AH-RD PV	Bms	SC		

Shift Supervisor: TLB Data Controller: TLB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 16

OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #1
PROBE: A-720-SFRM   CAL. STD.: ASME Z-3922   EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0   LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20   REEL NO.: AH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
254	20	84	AH-RD	BMS	SC		
220	12	84	AH-RD	BMS	SC		
150	3	84	AH-RD	NOT TESTED			
204	9	85	AH-RD	BMS	SC		
151	14	85	AH-RD	BMS	SC		
246	18	86	AH-RD	BMS	SC		
218	11	86	AH-RD	BMS	SC		
191	6	86	AH-RD	BMS	SC		
185	4	87	AH-RD	NOT TESTED			
205	9	87	AH-RD	BMS	SC		
239	17	87	AH-RD	BMS	SC		
222	13	88	AH-RD	BMS	SC	RBD	
206	9	88	AH-RD	BMS	SC		
153	6	88	AH-RD	BMS	SC		
152	9	89	AH-RD	BMS	SC		
213	10	90	AH-RD	BMS	SC		
192	6	90	AH-RD	BMS	SC		

Shift Supervisor: TB   Data Controller: TB   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #1
PROBE: A-720-SFRM CAL. STD.: ASME Z-3922 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: AH05
ECT DESCRIPTION: PREVIOUS INDICATIONS

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
161	11	11	AH-PI		BMS	SC	
162	11	12	AH-PI		BMS	SC	
163	11	17	AH-PI		BMS	SC	
154	12	25	AH-PI		BMS	SC	
156	13	37	AH-PI		BMS	SC	
155	12	41	AH-PI		BMS	SC	
157	21	61	AH-PI		BMS	SC	
160	6	63	AH-PI		BMS	SC	
159	34	69	AH-PI		BMS	SC	
158	33	71	AH-PI		BMS	SC	
166	31	72	AH-PI		BMS	SC	
165	23	77	AH-PI		BMS	SC	
164	21	81	AH-PI		BMS	SC	

Shift Supervisor: JB Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. Robinson SG #: A
PROBE: A680 5LDE CAL. STD.: 2-3922 EXTENT TESTED: 07E-HTE 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: A106
ECT DESCRIPTION: RERUN

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	1	49	AHRD	Rett	DEL	inc	inc
	2	55		Rett	DEL		
	4	56		Rett	DEL		
	2	60		Rett	DEL		inc C-6
	1	60		Rett	DEL	inc	inc
	4	63		Rett	DEL		
	3	64		Rett	DEL		
	2	66		Rett	DEL		inc C-6
	1	66		Rett	DEL	inc	inc
	2	69		Rett	DEL		inc C-6
	5	71		Rett	DEL		
	2	72		Rett	DEL		inc C-6
	1	75		Rett	ND		inc
	2	77		Rett	DEL	inc	inc
	3	73		Rett	DEL		inc C-6
	7	56		Rett	DEL		
	5	78		Rett	DEL		
	1	80		Rett	DEL	inc	inc
	5	81		Rett	DEL		5-9-87 ~~inc C-6~~
	2	83		Rett	DEL	PI	inc C-6

Shift Supervisor: JG Data Controller: CB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG # A
PROBE: A 680 SLDF CAL. STD.: E-3922 EXTENT TESTED: CTE-HTE 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHz REEL NO.: AH06
ECT DESCRIPTION: RERUN

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
2-4	*	*	AH-RD	*	~~RHH~~ *	DEL	*
1-5	*	*		*	~~RHH~~ *	DEL ✓	* inc
2-5	*	*		*	RHH *	DEL	*
3-8	*	*		*	RHH *	DEL	*
1-10	*	*		*	~~RHH~~ *	DEL	* inc not getting 6C support
3-13	*	*		*	RHH *	DEL	*
1-15	*	*		*	~~RHH~~ *	DEL	* inc inc.
2-15	*	*		*	~~RHH~~ *	DEL	*
4-15	*	*		*	~~RHH~~ *	DEL	* inc C-6
1-18	*	*		*	RHH *	DEL	* inc inc
4-21	*	*		*	RHH *	DEL	* inc C-6
2-22	*	*		*	RHH *	DEL	* inc C-6
4-24	*	*		*	RHH *	DEL	*
2-31	*	*		*	RHH *	DEL	* inc C-6
4-31	*	*		*	RHH *	DEL	*
1-32	*	*		*	RHH *	DEL	* inc inc
1-35	*	*		*	RHH *	DEL	* inc inc
1-43	*	*		*	~~RHH~~ *	DEL	* inc inc
12-46	*	*		*	RHH *	DEL	*
15-47	*	*		*	RHH *	DEL	* RH

Shift Supervisor: JB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. Robinson SG # A
PROBE: A680 SLDF CAL. STD.: Z-3922 EXTENT TESTED: CTE-HTE 6C-HTE
PROCEDURE: RB-410-004 LEG: Hot
FREQUENCY: 400/200/100/20 REEL NO.: AH06
ECT DESCRIPTION: RERN

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	3 *	84 *	AHRD *	[illegible] *	DEL	*	mc C-6
	4 *	87 *	*	[illegible] *	DEL	*	mc C-6
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG # A
PROBE: A680-BJF/RM/WF CAL. STD.: ASME Z3922 EXTENT TESTED: 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: AH07
ECT DESCRIPTION: RE-RUNS

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	1	5	AH-RD	[illegible]	[illegible]		
	1	10	AH-RD	[illegible]	[illegible]		
	1	15	AH-RD	[illegible]	[illegible]		
	1	18	AH-RD	[illegible]	[illegible]		
	1	32	AHRD	[illegible]	[illegible]		
	1	35	AH-RD	[illegible]	[illegible]		
	1	43	AH-RD	[illegible]	[illegible]		
	1	49	AH-RD	[illegible]	[illegible]		
	1	60	AH-RD	[illegible]	[illegible]		
	1	66	AH-RD	[illegible]	[illegible]		
	1	75	AH-RD	[illegible]	[illegible]		
	2	77	AH-RD	[illegible]	[illegible]		
	1	80	AH-RD	[illegible]	[illegible]		
	13	88	AH-RD N	[illegible]	[illegible]		

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #: A
PROBE: A-680-BJF CAL. STD.: ASME-7-3922 EXTENT TESTED: 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHz REEL NO.: AH08
ECT DESCRIPTION: RE-RUN

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	2	77	AH-RD	[illegible]	[illegible]		TESTED FROM C-6

Shift Supervisor: [illegible] Data Controller: [illegible] Date: 5-13-87

STEAM GENERATOR B

DATA DOCUMENTS

DATA BASE REPORT

ALL TUBES SORTED BY ROW COLUMN

GENERATOR B

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location	Test Leg	Extent Tested
1	7	05/09/87	BH05	0.0		0	0.0To 0.0	H	6C-HTE
1	15	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
1	17	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
1	21	05/09/87	BH08	0.0		0	0.0To 0.0	H	6C-HTE
1	27	05/09/87	BH08	0.0		0	0.0To 0.0	H	6C-HTE
1	57	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
1	67	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
1	70	05/09/87	BH07	1.6	DNT	0	5H 11.4To 0.0	H	6C-HTE
1	77	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
1	83	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
1	91	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	4	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	7	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	13	05/09/87	BH05	0.0		0	0.0To 0.0	H	6C-HTE
2	15	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	19	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	25	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	31	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	45	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	63	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
2	68	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
2	74	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
2	79	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
2	85	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
2	86	05/09/87	BH07	0.0		0	0.0To 0.0	H	6C-HTE
3	4	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
3	19	05/09/87	BH08	0.0		0	0.0To 0.0	H	6C-HTE
3	50	05/09/87	BH06	26.6	DNT	0	5C 46.9To 0.0	H	CTE-HTE
3	88	05/09/87	BH06	0.0		0	0.0To 0.0	H	6C-HTE
4	2	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
4	44	05/09/87	BH07	0.0		0	0.0To 0.0	H	3C-HTE
4	48	05/09/87	BH07	0.0	CU	0	HTS 1.0To 0.0	H	6C-HTE
4	69	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
4	87	05/09/87	BH06	0.0		0	0.0To 0.0	H	CTE-HTE
5	5	05/08/87	BH01	0.0		0	0.0To 0.0	H	CTE-HTE
5	7	05/08/87	BH01	0.0		0	0.0To 0.0	H	CTE-HTE
5	11	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
5	16	05/08/87	BH01	0.0		0	0.0To 0.0	H	CTE-HTE
5	26	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
5	64	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
5	71	05/08/87	BH04	7.8	APT	0	5C 0.9To 0.0	H	CTE-HTE
5	76	05/08/87	BH04	1.8	DNT	0	FBH 24.5To 0.0	H	CTE-HTE
5	88	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
5	89	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE
6	7	05/09/87	BH05	0.0		0	0.0To 0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
6	23	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
6	51	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
6	55	05/08/87	BH03	1.2	CU	0	HTS	0.5To	0.0	H	CTE-HTE
6	55	05/08/87	BH03	6.0	CU	0	CTS	3.1To	0.0	H	CTE-HTE
6	70	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
6	77	05/08/87	BH04	3.8	APT	0	HTS	2.1To	0.0	H	CTE-HTE
6	80	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
6	84	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
7	9	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	1.6	CU	0	HTS	3.0To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	5.2	CU	0	CTS	1.2To	0.0	H	CTE-HTE
7	41	05/09/87	BH05	6.5	CU	0	HTS	1.2To	0.0	H	CTE-HTE
7	46	05/09/87	BH05	5.8	CU	0	CTS	1.3To	0.0	H	CTE-HTE
7	46	05/09/87	BH05	1.5	PV	0	3C	31.5To	36.6	H	CTE-HTE
7	46	05/09/87	BH05	2.2	PV	0	5C	7.2To	10.4	H	CTE-HTE
7	46	05/09/87	BH05	3.4	PV	0	2C	43.2To	47.6	H	CTE-HTE
7	91	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
8	5	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
8	9	05/08/87	BH01	0.7	APT	0	FBH	11.5To	0.0	H	CTE-HTE
8	47	05/08/87	BH03	3.4	CU	0	HTS	1.4To	0.0	H	CTE-HTE
8	54	05/08/87	BH03	3.7	CU	0	HTS	1.1To	0.0	H	CTE-HTE
8	54	05/08/87	BH03	6.2	CU	0	CTS	3.1To	0.0	H	CTE-HTE
8	63	05/08/87	BH03	2.4	CU	0	HTS	1.0To	0.0	H	CTE-HTE
8	72	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
9	12	05/08/87	BH01	1.0	APT	0	2H	25.0To	0.0	H	CTE-HTE
9	17	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	19	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	27	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
9	32	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
9	63	05/08/87	BH03	1.3	APT	0	CTE	1.5To	0.0	H	CTE-HTE
9	72	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
9	78	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
9	88	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	4	05/08/87	BH01	1.2	DNT	0	1C	26.4To	0.0	H	CTE-HTE
10	22	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
10	65	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
10	79	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
10	84	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	88	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	2	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	14	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	44	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
11	48	05/08/87	BH03	0.6	CU	0	HTS	1.6To	0.0	H	CTE-HTE
11	52	05/08/87	BH03	5.8	CU	0	CTS	1.7To	0.0	H	CTE-HTE
11	52	05/08/87	BH03	7.1	CU	0	HTS	1.1To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
12	7	05/09/87	BH05	2.0	DNT	0	5C	25.6To	0.0	H	CTE-HTE
12	7	05/09/87	BH05	3.3	DNT	0	5C	31.5To	0.0	H	CTE-HTE
12	21	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
12	30	05/08/87	BH02	1.5	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
12	30	05/08/87	BH02	1.5	DNT	0	HTS	0.0To	303.0	H	CTE-HTE
12	34	05/08/87	BH02	0.9	DNT	0	5C	48.1To	0.0	H	CTE-HTE
12	40	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
12	40	05/08/87	BH02	1.2	DNT	0	4C	48.9To	0.0	H	CTE-HTE
12	50	05/08/87	BH03	5.1	CU	0	HTS	1.1To	0.0	H	CTE-HTE
12	56	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
12	62	05/08/87	BH03	4.1	CU	0	HTS	0.9To	0.0	H	CTE-HTE
12	62	05/08/87	BH03	4.2	CU	0	CTS	1.1To	0.0	H	CTE-HTE
12	73	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
12	76	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
12	77	05/08/87	BH04	2.8	ADR	0	FBH	7.7To	16.0	H	CTE-HTE
12	81	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
12	89	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	14	05/08/87	BH01	0.7	DNT	0	3H	45.5To	0.0	H	CTE-HTE
13	20	05/08/87	BH01	0.8	APT	0	2H	36.4To	0.0	H	CTE-HTE
13	24	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
13	25	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	27	05/08/87	BH02	1.7	DNT	0	4A	-3.5To	0.0	H	CTE-HTE
13	32	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
13	37	05/08/87	BH02	1.7	DNT	0	6H	7.8To	0.0	H	CTE-HTE
13	37	05/08/87	BH02	2.0	DNT	0	6C	15.4To	0.0	H	CTE-HTE
13	42	05/08/87	BH02	1.9	DNT	0	6H	7.9To	0.0	H	CTE-HTE
13	42	05/08/87	BH02	1.6	DNT	0	6C	13.0To	0.0	H	CTE-HTE
13	45	05/08/87	BH02	1.6	DNT	0	6H	7.8To	0.0	H	CTE-HTE
13	51	05/10/87	BH09	0.0		0		0.0To	0.0	H	CTE-HTE
13	53	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
13	73	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
13	88	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	89	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
14	7	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	22	05/09/87	BH05	-1.0		33	3H	15.1To	0.0	H	CTE-HTE
14	22	05/09/87	BH05	7.4	DNT	0	5C	29.4To	0.0	H	CTE-HTE
14	24	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	30	05/08/87	BH02	0.7	DNT	0	2H	24.8To	0.0	H	CTE-HTE
14	47	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
14	49	05/08/87	BH03	19.2	CU	0	HTS	0.8To	0.0	H	CTE-HTE
14	70	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	74	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	75	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	81	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
14	85	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
15	4	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	10	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	14	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	16	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	36	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
15	39	05/08/87	BH02	0.9	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
15	46	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
15	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
15	68	05/08/87	BH04	2.2	APT	0	4C	21.6To	0.0	H	CTE-HTE
15	81	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
16	5	05/09/87	BH05	10.7	PV	0	5H	33.0To	0.0	H	CTE-HTE
16	6	05/08/87	BH01	1.2	DNT	0	5C	28.4To	0.0	H	CTE-HTE
16	13	05/09/87	BH05	4.1	PV	0	1C	2.2To	0.0	H	CTE-HTE
16	31	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
16	38	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
16	56	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	59	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	64	05/08/87	BH04	2.3	DNT	0	5H	27.7To	0.0	H	CTE-HTE
16	71	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
16	85	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
16	89	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	7	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	11	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	18	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	20	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	26	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
17	30	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
17	43	05/09/87	BH05	1.3	DNT	0	4H	3.2To	0.0	H	CTE-HTE
17	51	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
17	52	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
17	57	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
17	68	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
17	81	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	6	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	10	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	15	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	17	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
18	27	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
18	45	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
18	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
18	74	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	78	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	81	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
18	86	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
19	12	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
19	31	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	35	05/08/87	BH02	2.2	DNT	0	1A	4.0To	0.0	H	CTE-HTE
19	35	05/08/87	BH02	3.0	DNT	0	HTS	3.9To	0.0	H	CTE-HTE
19	40	05/08/87	BH02	1.0	DNT	0	HTS	41.0To	0.0	H	CTE-HTE
19	57	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
19	59	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
19	84	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
20	16	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
20	20	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
20	24	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
20	35	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
20	68	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
20	71	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
20	76	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
20	84	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	5.2	DNT	0	5C	30.9To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	3.9	DNT	0	5C	29.7To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	2.4	DNT	0	5C	4.8To	0.0	H	CTE-HTE
20	87	05/09/87	BH05	6.8	IDV	0	HTS	15.9To	23.1	H	CTE-HTE
21	6	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	12	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	17	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	62	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
21	63	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
21	66	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
21	82	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
22	15	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	20	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	22	05/09/87	BH05	5.0	APT	0	CTS	15.1To	0.0	H	CTE-HTE
22	22	05/09/87	BH05	3.4	DNT	0	3C	22.4To	0.0	H	CTE-HTE
22	28	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	38	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	43	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	55	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
22	60	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
22	61	05/09/87	BH05	3.7	DNT	0	1H	45.9To	0.0	H	CTE-HTE
22	74	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
22	76	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
22	80	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
23	19	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
23	50	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
23	52	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
23	60	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
23	70	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
23	84	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
24	26	05/08/87	BH02	0.6	DNT	0	3H	5.5To	0.0	H	CTE-HTE
24	33	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
24	65	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
24	67	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
24	74	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
25	14	05/09/87	BH05	17.3	DNT	0	FBC	20.8To	0.0	H	CTE-HTE
25	14	05/09/87	BH05	9.3	DNT	0	3C	8.4To	0.0	H	CTE-HTE
25	20	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
25	23	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
25	34	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
25	36	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
25	46	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
25	49	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
25	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
25	62	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
25	72	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
25	76	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
25	80	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
26	9	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
26	18	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
26	23	05/09/87	BH08	0.0		0		0.0To	0.0	H	CTE-HTE
26	28	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
26	32	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
26	55	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
26	83	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
27	25	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
27	32	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
27	44	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
27	66	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
27	83	05/09/87	BH05	5.9	DNT	0	4A	0.0To	0.0	H	CTE-HTE
28	21	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
28	37	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
28	57	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
28	74	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
28	76	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
29	16	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
29	33	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
29	38	05/08/87	BH02	6.0	DNT	0	6H	9.3To	0.0	H	CTE-HTE
29	39	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
29	41	05/08/87	BH02	2.2	DNT	0	1H	16.6To	0.0	H	CTE-HTE
29	45	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
29	65	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
30	25	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
30	28	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
30	31	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
30	59	05/10/87	BH09	0.0		0		0.0To	0.0	H	CTE-HTE
30	71	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
30	79	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
31	21	05/08/87	BH01	1.3	DNT	0	2C	6.6To	0.0	H	CTE-HTE
31	30	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
31	32	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
31	42	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
31	48	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	54	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	58	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	67	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
31	70	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
31	77	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
32	15	05/09/87	BH05	2.5	DNT	0	2H	35.4To	0.0	H	CTE-HTE
32	34	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
32	45	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
32	64	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
33	17	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
33	29	05/08/87	BH02	1.2	DNT	0	1H	22.0To	0.0	H	CTE-HTE
33	35	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
33	40	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
33	49	05/08/87	BH03	1.5	DNT	0	1H	8.9To	0.0	H	CTE-HTE
33	56	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
33	61	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
33	70	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
34	24	05/08/87	BH01	0.0		0		0.0To	0.0	H	CTE-HTE
34	25	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
34	40	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
34	43	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
34	72	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
36	19	05/08/87	BH01	0.6	APT	0	4C	25.6To	0.0	H	CTE-HTE
36	29	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
36	32	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
36	46	05/08/87	BH03	2.9	DNT	0	6H	18.6To	0.0	H	CTE-HTE
36	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
36	65	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
36	68	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
37	26	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	39	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	42	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	54	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	59	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	62	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	63	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
38	25	05/08/87	BH02	3.5	DNT	0	6H	0.0To	0.0	H	CTE-HTE
38	29	05/08/87	BH02	4.5	DNT	0	6H	0.0To	0.0	H	CTE-HTE
38	44	05/08/87	BH02	0.9	DNT	0	1C	39.2To	0.0	H	CTE-HTE
38	54	05/09/87	BH05	10.1	DNT	0	1C	41.8To	0.0	H	CTE-HTE
38	71	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
39	32	05/09/87	BH05	1.6	DNT	0	6H	0.3To	0.0	H	CTE-HTE
39	32	05/09/87	BH05	8.1	DNT	0	5H	46.5To	0.0	H	CTE-HTE
39	34	05/08/87	BH02	2.7	DNT	0	6H	0.0To	0.0	H	CTE-HTE
39	50	05/10/87	BH09	0.0		0		0.0To	0.0	H	CTE-HTE
39	59	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
39	63	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
39	68	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
40	30	05/09/87	BH05	13.1	DNT	0	5H	46.5To	0.0	H	CTE-HTE
40	30	05/09/87	BH05	6.7	DNT	0	6H	0.5To	0.0	H	CTE-HTE
40	37	05/08/87	BH02	0.9	DNT	0	4C	5.4To	0.0	H	CTE-HTE
40	44	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
40	45	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	28	05/08/87	BH02	0.0		0		0.0To	0.0	H	CTE-HTE
41	36	05/09/87	BH05	8.1	DNT	0	5H	46.3To	0.0	H	CTE-HTE
41	43	05/08/87	BH02	1.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE
41	47	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	50	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	57	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	33	05/09/87	BH05	11.4	DNT	0	5H	46.4To	0.0	H	CTE-HTE
42	33	05/09/87	BH05	7.7	DNT	0	6H	0.3To	0.0	H	CTE-HTE
42	37	05/08/87	BH02	4.1	DNT	0	6H	0.0To	0.0	H	CTE-HTE
42	46	05/09/87	BH05	4.3	DNT	0	5H	46.2To	0.0	H	CTE-HTE
42	52	05/08/87	BH03	3.7	DNT	0	6H	0.3To	0.0	H	CTE-HTE
42	52	05/08/87	BH03	3.0	DNT	0	6H	0.2To	0.0	H	CTE-HTE
42	53	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	60	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	63	05/08/87	BH04	0.0		0		0.0To	0.0	H	CTE-HTE
43	33	05/09/87	BH05	17.2	DNT	0	5H	46.5To	0.0	H	CTE-HTE
43	33	05/09/87	BH05	14.5	DNT	0	6H	0.4To	0.0	H	CTE-HTE
43	36	05/09/87	BH05	6.3	DNT	0	6H	0.3To	0.0	H	CTE-HTE
43	36	05/09/87	BH05	9.9	DNT	0	5H	46.3To	0.0	H	CTE-HTE
43	40	05/08/87	BH02	3.7	DNT	0	6H	0.0To	0.0	H	CTE-HTE
44	52	05/08/87	BH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	55	05/08/87	BH03	2.7	DNT	0	4H	23.2To	0.0	H	CTE-HTE
44	57	05/09/87	BH05	0.0		0		0.0To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	10.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	10.4	DNT	0	6H	0.0To	0.0	H	CTE-HTE
45	43	05/08/87	BH02	1.2	DNT	0	5H	0.0To	0.0	H	CTE-HTE
45	48	05/08/87	BH03	6.9	DNT	0	6H	0.3To	0.0	H	CTE-HTE
45	48	05/08/87	BH03	8.6	DNT	0	6H	0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #2 (B)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location	Test Leg	Extent Tested

Number of Listings : 360
Number of Tubes : 330
Number of Indications : 105

PRIMARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR B

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH01		BH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH01	
							TERNING GA LIIA	05/08/87
							OPER:BROWN MW LII	05/07/87
							CAL STD:Z-3923	
21	11	2						CTE-HTE
21	4	2			RTI			5C-HTE
21	15	4						CTE-HTE
21	10	4	1.17	191	DNT	1	1C + 26.4	CTE-HTE
21	3	4			RTI			6H-HTE
21	2	4			RTI			6H-HTE
21	5	5						CTE-HTE
21	8	5			RTI			2C-HTE
21	21	6						CTE-HTE
21	18	6						CTE-HTE
							OPER:MCKEE B LI	05/07/87
21	16	6	1.21	190	DNT	1	5C + 28.4	CTE-HTE
21	1	7			RTI			6H-HTE
21	2	7			RTI			6H-HTE
21	5	7						CTE-HTE
21	6	7			RTI			6C-HTE
21	14	7						CTE-HTE
21	17	7						CTE-HTE
21	7	9						CTE-HTE
21	8	9	0.74	169	APT	1	FBH + 11.5	CTE-HTE
21	26	9						CTE-HTE
21	18	10						CTE-HTE
21	15	10						CTE-HTE
21	5	11			RTI			6H-HTE
21	17	11						CTE-HTE
21	21	12						CTE-HTE
21	19	12						CTE-HTE
21	9	12	1.01	166	APT	1	2H + 25.0	CTE-HTE
21	2	13			RTI			5H-HTE
21	25	14			RBD			CTE-HTE
21	15	14						CTE-HTE
21	13	14	0.71	187	DNT	1	3H + 45.5	CTE-HTE
21	11	14						CTE-HTE
21	1	15			RTI			6H-HTE
21	2	15			RTI			6H-HTE
21	18	15						CTE-HTE
21	22	15						CTE-HTE
21	29	16						CTE-HTE
21	20	16						CTE-HTE
21	15	16						CTE-HTE
							ANALYST:WEBER DD LIII	05/08/87
21	5	16						CTE-HTE
21	1	17			RTI			6H-HTE

PAGE 1 OF 2	EVALUATOR Gary Terning / Darrell D. Weber	LEVEL IIA/III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH01		BH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	9	17						CTE-HTE
21	21	17						CTE-HTE
21	33	17						CTE-HTE
21	26	18						CTE-HTE
21	17	18						CTE-HTE
21	2	19			RTI			6H-HTE
21	9	19						CTE-HTE
21	23	19						CTE-HTE
21	36	19	0.62	161	APT	1	4C + 25.6	CTE-HTE
21	25	20						CTE-HTE
21	22	20						CTE-HTE
21	20	20						CTE-HTE
21	17	20						CTE-HTE
21	13	20	0.78	177	APT	1	2H + 36.4	CTE-HTE
21	1	21			RTI			6H-HTE
21	12	21						CTE-HTE
21	28	21						CTE-HTE
21	31	21	1.33	193	DNT	1	2C + 6.6	CTE-HTE
21	10	22						CTE-HTE
21	6	23						CTE-HTE
21	25	23						CTE-HTE
21	34	24						CTE-HTE
21	20	24						CTE-HTE
21	14	24						CTE-HTE
21	13	24						CTE-HTE
21	2	25			RTI			6H-HTE
21	13	26			RTI		ENCODED WRONG	6C-HTE
							OPER:ATKINSON BM LII	05/08/87
21	27	25						CTE-HTE
21	30	25						CTE-HTE
							END REEL BH01	

PAGE 2 OF 2	EVALUATOR Darrell D. Weber	LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH02		BH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH02	
							CIRCOSTA SA LIIA 05/08/87	
							OPER: ATKINSON BA LII 05/07/87	
							CAL STD: Z-3923	
21	34	25						CTE-HTE
21	38	25	3.48	182	DNT	1	6H + 0.0	CTE-HTE
21	37	26						CTE-HTE
21	24	26	0.56	182	DNT	1	3H + 5.5	CTE-HTE
21	17	26						CTE-HTE
21	5	26			RTI			1A-HTE
21	9	27						CTE-HTE
21	13	27	1.67	190	DNT	1	4A - 3.5	CTE-HTE
21	18	27						CTE-HTE
21	41	28						CTE-HTE
21	30	28						CTE-HTE
21	26	28						CTE-HTE
21	22	28						CTE-HTE
21	33	29	1.23	191	DNT	1	1H + 22.0	CTE-HTE
21	36	29						CTE-HTE
21	38	29	4.51	185	DNT	1	6H + 0.0	CTE-HTE
21	31	30						CTE-HTE
21	17	30						CTE-HTE
21	14	30	0.69	184	DNT	1	2H + 24.8	CTE-HTE
21	12	30	1.52	190	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
			1.52	190	DNT	1	HTS + 0.0TO+ 303.0	CTE-HTE
21	16	31						CTE-HTE
21	19	31						CTE-HTE
21	30	31						CTE-HTE
21	36	32						CTE-HTE
21	27	32						CTE-HTE
21	26	32						CTE-HTE
21	13	32						CTE-HTE
21	9	32						CTE-HTE
21	24	33						CTE-HTE
21	29	33						CTE-HTE
21	39	34	2.70	182	DNT	1	6H + 0.0	CTE-HTE
21	32	34						CTE-HTE
21	25	34						CTE-HTE
21	12	34	0.90	190	DNT	1	5C + 48.1	CTE-HTE
21	19	35	2.95	189	DNT	1	HTS + 3.9	CTE-HTE
			2.17	192	DNT	1	1A + 4.0	CTE-HTE
21	20	35						CTE-HTE
21	33	35						CTE-HTE
21	25	36						CTE-HTE
21	15	36						CTE-HTE
21	13	37	1.65	190	DNT	1	6H + 7.8	CTE-HTE
			1.95	193	DNT	1	6C + 15.4	CTE-HTE

PAGE 1 OF 2	EVALUATOR SA Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH02		BH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	28	37						CTE-HTE
21	40	37	0.91	191	DNT	1	4C + 5.4	CTE-HTE
21	42	37	4.06	182	DNT	1	6H + 0.0	CTE-HTE
21	29	38	6.00	187	DNT	1	6H + 9.3	CTE-HTE
21	22	38						CTE-HTE
21	16	38						CTE-HTE
21	15	39	0.89	192	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
21	37	39						CTE-HTE
21	43	40	3.70	183	DNT	1	6H + 0.0	CTE-HTE
21	34	40						CTE-HTE
21	33	40						CTE-HTE
21	19	40	1.01	187	DNT	1	HTS + 41.0	CTE-HTE
21	12	40	1.20	191	DNT	1	4C + 48.9	CTE-HTE
								CTE-HTE
21	29	41	2.22	187	DNT	1	1H + 16.6	CTE-HTE
21	37	42						CTE-HTE
21	13	42	1.85	190	DNT	1	6H + 7.9	CTE-HTE
			1.62	191	DNT	1	6C + 13.0	CTE-HTE
21	22	43						CTE-HTE
21	34	43						CTE-HTE
21	41	43	1.55	181	DNT	1	6H + 0.0	CTE-HTE
21	45	43	1.17	185	DNT	1	5H + 0.0	CTE-HTE
			10.59	186	DNT	1	6H + 0.0	CTE-HTE
			10.41	185	DNT	1	6H + 0.0	CTE-HTE
21	40	44						CTE-HTE
21	38	44	0.88	192	DNT	1	1C + 39.2	CTE-HTE
21	27	44						CTE-HTE
21	11	44						CTE-HTE
21	13	45	1.61	190	DNT	1	6H + 7.8	CTE-HTE
							END REEL BH02	

PAGE 2 OF 2	EVALUATOR St Cicco[illegible]	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH03		BH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH03	
							WEBER DD LIII	05/08/87
							OPER:MCKEE B LI	05/08/87
							CAL STD:Z-3923	
21	18	45						CTE-HTE
21	32	45						CTE-HTE
21	40	45						CTE-HTE
21	36	46	2.94	187	DNT	1	6H + 18.6	CTE-HTE
21	25	46						CTE-HTE
21	15	46						CTE-HTE
21	8	47	3.40	46	CU	1	HTS + 1.4	CTE-HTE
21	14	47						CTE-HTE
21	41	47						CTE-HTE
							ANALYST:TERNING GA LIIA	05/08/87
21	45	48	8.61	186	DNT	1	6H + 0.0	CTE-HTE
			6.92	185	DNT	1	6H - 0.3	CTE-HTE
21	31	48						CTE-HTE
21	11	48	0.55	0	CU	1	HTS + 1.6	CTE-HTE
21	4	48			RTI			6C-HTE
21	14	49	19.18	320	CU	3	HTS + 0.8	CTE-HTE
21	25	49						CTE-HTE
							OPER:BROWN MW LII	
21	33	49	1.46	192	DNT	1	1H + 8.9	CTE-HTE
21	41	50						CTE-HTE
21	39	50			RTI			CTS-HTE
21	36	50						CTE-HTE
21	31	50						CTE-HTE
21	25	50						CTE-HTE
21	15	50						CTE-HTE
21	12	50	5.12	16	CU	1	HTS + 1.1	CTE-HTE
21	18	50						CTE-HTE
21	3	50			RNT			CTE-HTE
21	6	51			RNT			CTE-HTE
21	13	51			RTI			CTS-HTE
21	17	51						CTE-HTE
21	44	52						CTE-HTE
21	42	52	3.05	187	DNT	1	6H - 0.2	CTE-HTE
			3.72	183	DNT	1	6H + 0.3	CTE-HTE
21	23	52						CTE-HTE
21	17	52						CTE-HTE
21	11	52	5.80	12	CU	1	CTS + 1.7	CTE-HTE
			7.06	289	CU	5	HTS + 1.1	CTE-HTE
21	13	53						CTE-HTE
21	42	53						CTE-HTE
21	37	54						CTE-HTE
21	31	54						CTE-HTE
21	8	54	6.23	7	CU	1	CTS + 3.1	CTE-HTE

PAGE 1 OF 2	EVALUATOR Darrell D. Weber / GA Terning by Darrell D. Weber	LEVEL III / IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH03		BH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	8	54	3.67	27	CU	1	HTS + 1.1	CTE-HTE
21	6	55	5.96	4	CU	1	CTS + 3.1	CTE-HTE
			1.18	189	CU	1	HTS + 0.5	CTE-HTE
21	22	55						CTE-HTE
21	26	55						CTE-HTE
21	44	55	2.66	182	DNT	1	4H + 23.2	CTE-HTE
21	33	56						CTE-HTE
21	16	56						CTE-HTE
21	12	56						CTE-HTE
21	1	57			RNT			CTE-HTE
21	17	57						CTE-HTE
21	19	57						CTE-HTE
21	28	57						CTE-HTE
21	41	57						CTE-HTE
21	44	57			RNT			CTE-HTE
21	31	58						CTE-HTE
21	16	59						CTE-HTE
21	19	59						CTE-HTE
21	30	59			RTI			CTS-HTE
21	37	59						CTE-HTE
21	39	59						CTE-HTE
21	42	60						CTE-HTE
21	23	60						CTE-HTE
21	22	60						CTE-HTE
21	33	61						CTE-HTE
21	37	62						CTE-HTE
21	25	62						CTE-HTE
21	21	62						CTE-HTE
21	12	62	4.23	4	CU	1	CTS + 1.1	CTE-HTE
			4.07	2	CU	1	HTS + 0.9	CTE-HTE
21	2	63			RNT			CTE-HTE
21	8	63	2.37	347	CU	1	HTS + 1.0	CTE-HTE
21	9	63	1.31	180	APT	1	CTE + 1.5	CTE-HTE
							END OF BH03	

 EVALUATOR G.A. Terning by Darrell D. Wiley LEVEL IIA / III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH04P	2	B__	HOT __	BH04		BH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION		EXTENT
					PRO		A720SFRM REEL BH04 TIERNEY MG OPER: BROWN MW STD: Z-3923		LIIA 05/08/87 LII 05/08/87
21	21	63							CTE-HTE
21	37	63							CTE-HTE
21	39	63							CTE-HTE
21	42	63							CTE-HTE
21	32	64							CTE-HTE
21	16	64	2.26	195	DNT	1	5H	+ 27.7	CTE-HTE
21	5	64			RND				
21	10	65							CTE-HTE
21	24	65							CTE-HTE
21	29	65							CTE-HTE
21	36	65							CTE-HTE
21	27	66							CTE-HTE
21	21	66							CTE-HTE
21	1	67			RND				
21	24	67							CTE-HTE
21	31	67							CTE-HTE
21	39	68							CTE-HTE
21	36	68							CTE-HTE
21	20	68							CTE-HTE
21	17	68							CTE-HTE
21	2	68			RND				
21	4	69			RND				
21	15	68	2.15	69	APT	6	4C	+ 21.6	CTE-HTE
21	31	70							CTE-HTE
21	33	70							CTE-HTE
21	23	70							CTE-HTE
21	14	70							CTE-HTE
21	6	70							CTE-HTE
21	5	71	7.75	95	APT	6	5C	+ 0.9	CTE-HTE
21	16	71							CTE-HTE
21	20	71							CTE-HTE
21	30	71							CTE-HTE
21	38	71							CTE-HTE
21	34	72							CTE-HTE
21	25	72							CTE-HTE
21	9	72							CTE-HTE
21	8	72							CTE-HTE
21	12	73							CTE-HTE
21	13	73							CTE-HTE
21	28	74							CTE-HTE
21	24	74							CTE-HTE
21	22	74							CTE-HTE
21	18	74							CTE-HTE

PAGE 1 OF 2	EVALUATOR Mark G Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH04P	2	B__	HOT __	BH04		BH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	14	74						CTE-HTE
21	2	74			RND			
21	14	75						CTE-HTE
21	28	76			RND			
21	25	76						CTE-HTE
21	22	76						CTE-HTE
21	20	76						CTE-HTE
21	12	76						CTE-HTE
21	5	76	1.84	192	DNT	1	FBH + 24.5	CTE-HTE
21	1	77			RND			
21	6	77	3.77	66	APT	6	HTS + 2.1	CTE-HTE
21	31	77						CTE-HTE
21	12	77	2.75	57	ADR	6	FBH + 7.7TO+ 16.0	CTE-HTE
21	18	78						CTE-HTE
21	9	78						CTE-HTE
21	2	79			RND			
21	10	79						CTE-HTE
21	30	79						CTE-HTE
21	25	80						CTE-HTE
21	22	80						CTE-HTE
21	6	80						CTE-HTE
21	12	81						CTE-HTE
21	14	81						CTE-HTE
21	15	81						CTE-HTE
21	17	81						CTE-HTE
21	18	81						CTE-HTE
21	21	82						CTE-HTE
21	1	83			RND			

END REEL BH04

PAGE 2 OF 2 EVALUATOR Mark G Tierney LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH05P	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL BH05 TIERNEY MG LIIA OPER: BROWN MW LII STD: Z-3923	 05/09/87 05/08/87
21	26	83						CTE-HTE
21	27	83	5.89	186	DNT	1	4A + 0.0	CTE-HTE
21	23	84						CTE-HTE
21	20	84						CTE-HTE
21	19	84						CTE-HTE
21	10	84						CTE-HTE
21	6	84						CTE-HTE
21	2	85			RNT			
21	14	85						CTE-HTE
21	16	85						CTE-HTE
21	18	86						CTE-HTE
21	2	86			RNT			
21	4	87			RNT			
21	13	88						CTE-HTE
21	10	88						CTE-HTE
21	9	88						CTE-HTE
21	5	88						CTE-HTE
21	3	88			RNT			
21	5	89						CTE-HTE
21	12	89						CTE-HTE
21	13	89						CTE-HTE
21	16	89						CTE-HTE
21	1	91			RNT			
21	7	91						CTE-HTE
							OPER: MCKEE B LI	05/08/87
21	4	2						CTE-HTE
21	3	4						CTE-HTE
21	2	4			RNT			
21	8	5						CTE-HTE
21	6	7						CTE-HTE
21	5	11						CTE-HTE
21	25	14	17.34	185	DNT	1	FBC + 20.8	CTE-HTE
			9.30	180	DNT	1	3C + 8.4	CTE-HTE
21	18	17						CTE-HTE
21	2	7			RNT			
21	1	15			RNT			
21	2	15			RNT			
21	1	17			RNT			
21	2	19			RNT			
21	1	21			RNT			
21	2	25			RNT			
21	13	25						CTE-HTE
21	5	26						CTE-HTE

PAGE 1 OF 2	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH05P	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	2	31			RNT			
21	1	7						6C-HTE
21	2	13						6C-HTE
							END DDBH05P	

PAGE 2 OF 2	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/A	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH05	
							TIERNEY MG LIIA 05/09/87	
							OPER: BROWN MW LII 05/08/87	
							STD: Z-3923	
21	20	87	2.43	177	DNT	1	5C + 4.8	CTE-HTE
			3.88	175	DNT	1	5C + 29.7	CTE-HTE
			5.22	188	DNT	1	5C + 30.9	CTE-HTE
			6.81	189	IDV	1	HTS + 15.9TO+ 23.1	CTE-HTE
21	1	70			RNT			
21	22	61	3.72	195	DNT	1	1H + 45.9	CTE-HTE
21	38	54	10.05	186	DNT	1	1C + 41.8	CTE-HTE
21	23	50						CTE-HTE
21	42	46	4.35	183	DNT	1	5H + 46.2	CTE-HTE
21	4	44			RNT			
21	31	42						CTE-HTE
21	29	39						CTE-HTE
21	41	36	8.14	187	DNT	1	5H + 46.3	CTE-HTE
21	43	36	9.92	185	DNT	1	5H + 46.3	CTE-HTE
			6.34	183	DNT	1	6H + 0.3	CTE-HTE
21	43	33	17.20	186	DNT	1	5H + 46.5	CTE-HTE
			14.46	185	DNT	1	6H + 0.4	CTE-HTE
21	42	33	11.35	184	DNT	1	5H + 46.4	CTE-HTE
			7.71	184	DNT	1	6H + 0.3	CTE-HTE
21	40	30	13.06	186	DNT	1	5H + 46.5	CTE-HTE
			6.74	187	DNT	1	6H + 0.5	CTE-HTE
21	39	32	8.14	189	DNT	1	5H + 46.5	CTE-HTE
			1.59	177	DNT	1	6H + 0.3	CTE-HTE
21	31	32						CTE-HTE
21	17	43	1.31	189	DNT	1	4H + 3.2	CTE-HTE
21	22	22	5.03	68	APT	6	CTS + 15.1	CTE-HTE
			3.38	189	DNT	1	3C + 22.4	CTE-HTE
21	14	22	7.36	177	DNT	1	5C + 29.4	CTE-HTE
			0.97	147	33	1	3H + 15.1	CTE-HTE
21	32	15	2.50	193	DNT	1	2H + 35.4	CTE-HTE
21	16	13	4.13	18	PV	1	1C + 2.2	CTE-HTE
21	16	5	10.68	17	PV	1	5H + 33.0	CTE-HTE
21	12	7	2.01	190	DNT	1	5C + 25.6	CTE-HTE
			3.34	193	DNT	1	5C + 31.5	CTE-HTE
21	7	46	5.79	2	CU	1	CTS + 1.3	CTE-HTE
			3.37	28	PV	1	2C + 43.2TO+ 47.6	CTE-HTE
			1.51	53	PV	1	3C + 31.5TO+ 36.6	CTE-HTE
			2.18	5	PV	1	5C + 7.2TO+ 10.4	CTE-HTE
21	7	41	5.22	11	CU	1	CTS + 1.2	CTE-HTE
			1.62	35	CU	1	HTS + 3.0	CTE-HTE
			6.50	13	CU	1	HTS + 1.2	CTE-HTE
21	3	19			RND			
							END DDBH05P/A	

PAGE 1 OF 1	EVALUATOR *Mark G. Tierney*	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/A	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
							INDICATION RESOLUTION	
21	14	22	0.97	147	33	1	3H + 15.1	PS

INDICATION RESOLUTION BY WEBER DD LIII 05/10/87

PAGE 2 OF 2 | EVALUATOR Darrell P. Weber | LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/B	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A700SFRM REEL BH05 TIERNEY MG OPER: MCKEE B STD: Z-3923	 LIIA 05/09/87 LI 05/08/87
21	6	51						CTE-HTE
21	3	50			RNT			
21	2	45			RND			
21	1	57			RNT			
21	44	57						CTE-HTE
21	4	48			RNT			
21	2	63			RNT			
21	28	76						CTE-HTE
21	4	69						CTE-HTE
21	5	64						CTE-HTE
21	29	45						CTE-HTE
21	1	67			RNT			
21	2	68			RNT			
21	2	74			RNT			
21	1	77			RNT			
21	2	79			RNT			
21	1	83			RNT			
							END REEL BH05	

PAGE 1 OF 1	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH06A	2	B__	HOT __	BH06		BH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A700SFRM REEL BH06 CIRCOSTA SA LIIA 05/09/87 OPER: MCKEE B LII 05/09/87 CAL STD: Z-3923	
21	1	67						6C-HTE
21	2	68						6C-HTE
21	2	63						6C-HTE
21	1	57						6C-HTE
21	3	50	26.58	189	DNT	1	5C + 46.9	CTE-HTE
21	2	79						6C-HTE
21	1	83						6C-HTE
21	2	85						6C-HTE
21	4	87						CTE-HTE
21	2	45			RTI			6H-HTE
21	2	31			RTI			6H-HTE
21	2	25			RTI			6H-HTE
21	1	21			RND			
21	2	19			RTI			6H-HTE
21	2	74			RND			
21	1	77			RND			
21	2	86			RND			
21	1	91			RND			
							END REEL BH06 AND DD-6A	

PAGE 1 OF 1 | EVALUATOR SA Circosta | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH06_	2	B__	HOT __	BH06		BH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF	
							REEL BH06	
							CIRCOSTA SA LIIA	05/09/87
							OPER: BIPES TU LII	05/09/87
							CAL STD: Z-3923	
21	1	70			RTI			5H-HTE
21	3	88						6C-HTE
							OPER: MCKEE B LII	05/09/87
							END DD-6 WILL CONT. ON DD-6A.	

PAGE 1 OF 1	EVALUATOR SA Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH07_	2	B__	HOT __	BH07		BH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF REEL BH07 CIRCOSTA SA OPER: BROWN MW CAL STD: Z-3923	 LIIA 05/09/87 LII 05/09/87
21	2	4						6C-HTE
21	2	7						6C-HTE
21	2	15						6C-HTE
21	1	15						6C-HTE
21	1	17						6C-HTE
21	2	19						6C-HTE
21	1	21			RND			
21	2	25						6C-HTE
21	2	31						6C-HTE
21	2	45						6C-HTE
21	4	44						3C-HTE
21	4	48			CU	1	HTS + 1.0	6C-HTE
21	2	86						6C-HTE
21	2	74						6C-HTE
21	1	70	1.62	185	DNT	1	5H + 11.4	6C-HTE
21	1	77						6C-HTE
21	1	91						6C-HTE
							END REEL BH07	

PAGE 1 OF 1 | EVALUATOR SA Circosta | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH08_	2	B__	HOT __	BH08		BH08	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680SLDF	
							REEL BH08	
							CIRCOSTA SA	LIIA 05/09/87
							OPER: BROWN MW	LII 05/09/87
							CAL STD: Z-3923	
21	1	21						6C-HTE
21	1	27						6C-HTE
21	26	23						CTE-HTE
21	3	19						6C-HTE
							END REEL BH08	

PAGE 1 OF 1 | EVALUATOR SA Circosta | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH08_	2	B__	HOT __	BH09		BH09	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH09	
							TERNING GA	LIIA 05/10/87
							OPER:MCKEE B	LII 05/10/87
							CAL STD.:Z-3923	
21	39	50						CTE-HTE
21	13	51						CTE-HTE
21	30	59						CTE-HTE
							END REEL BH09	

PAGE 1 OF 1	EVALUATOR Gary Terning	LEVEL IIA

SECONDARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR B

NOTE: These secondary data analysis sheets are provided for information and <u>have</u> <u>no</u> effect on the results listings except where differences were resolved as required by the analysis procedure. Resolutions are identified on the primary DDA-4 sheets.

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01S	2	B__	HOT __	BH01		BH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION			EXTENT
					PRO		A720SFRM			
							REEL BH01			
							TIERNEY MG			LIIA 05/08/87
							OPER:BROWN MW			LII 05/07/87
							CAL STD:Z-3923			
21	11	2								CTE-HTE
21	4	2			RTI					5C-HTE
21	15	4								CTE-HTE
21	10	4	1.27	191	DNT	1	1C	+	26.5	CTE-HTE
21	3	4			RTI					6H-HTE
21	2	4			RTI					5H-HTE
21	5	5								CTE-HTE
21	8	5								CTE-HTE
21	21	6								CTE-HTE
							OPER:MCKEE B			LI 05/07/87
21	18	6								CTE-HTE
21	16	6	1.21	190	DNT	1	5C	+	28.7	CTE-HTE
21	1	7			RTI					6H-HTE
21	2	7			RTI					6H-HTE
21	5	7								CTE-HTE
21	6	7			RTI					6H-HTE
21	14	7								CTE-HTE
21	17	7								CTE-HTE
21	7	9								CTE-HTE
21	8	9	0.46	177	APT	1	3H	+	31.8	CTE-HTE
			0.74	164	APT	1	FBH	+	11.5	CTE-HTE
21	26	9								CTE-HTE
21	18	10								CTE-HTE
21	15	10								CTE-HTE
21	5	11			RTI					6H-HTE
21	17	11								CTE-HTE
21	21	12								CTE-HTE
21	19	12								CTE-HTE
21	9	12	0.92	162	APT	1	1H	+	26.4	CTE-HTE
21	2	13			RTI					5H-HTE
21	25	14	16.04	187	DNT	1	FBC	+	21.0	CTE-HTE
			10.05	181	DNT	1	3C	+	7.9	CTE-HTE
21	15	14								CTE-HTE
21	13	14								CTE-HTE
21	11	14								CTE-HTE
21	1	15			RTI					6H-HTE
21	2	15			RTI					5H-HTE
21	18	15								CTE-HTE
21	22	15								CTE-HTE
21	29	16								CTE-HTE
21	20	16								CTE-HTE
21	15	16								CTE-HTE
21	5	16								CTE-HTE

PAGE 1 OF 2	EVALUATOR Mark G Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01S	2	B__	HOT __	BH01		BH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	1	17			RTI			5H-HTE
21	9	17						CTE-HTE
21	21	17						CTE-HTE
21	33	17						CTE-HTE
21	26	18						CTE-HTE
21	17	18						CTE-HTE
21	2	19			RTI			5H-HTE
21	9	19						CTE-HTE
21	23	19						CTE-HTE
21	36	19	0.62	158	APT	1	4C + 25.6	CTE-HTE
21	25	20						CTE-HTE
21	22	20						CTE-HTE
21	20	20						CTE-HTE
21	17	20						CTE-HTE
21	13	20	0.74	167	APT	1	2C + 36.5	CTE-HTE
21	1	21			RTI			6H-HTE
21	12	21						CTE-HTE
21	28	21						CTE-HTE
21	31	21						CTE-HTE
21	10	22						CTE-HTE
21	6	23						CTE-HTE
21	25	23						CTE-HTE
21	26	23						CTE-HTE
21	34	24						CTE-HTE
21	20	24						CTE-HTE
21	14	24						CTE-HTE
21	13	24						CTE-HTE
21	2	25			RTI			6H-HTE
21	13	25			RTI		ENCODED WRONG	6H-HTE
							OPER:ATKINSON BM LIIA	05/08/87
21	27	25						CTE-HTE
21	30	25						CTE-HTE
							END REEL BH01	

PAGE 2 OF 2 | EVALUATOR *Mark S. Tierney* | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH02		BH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH02	
							TERNING GA LIIA	05/09/87
							OPER:ATKINSON B	05/08/87
							CAL STD.:Z-3923	
21	34	25						CTE-HTE
21	38	25	3.19	183	DNT	1	6H + 0.3	CTE-HTE
			1.28	6	DNT	1	6H - 0.6	CTE-HTE
21	37	26						CTE-HTE
21	24	26						CTE-HTE
21	17	26						CTE-HTE
21	5	26			RTI			6C-HTE
21	1	27			RNT			
21	9	27						CTE-HTE
21	13	27						CTE-HTE
21	18	27						CTE-HTE
21	41	28	6.99	185	DNT	1	6H - 0.4	CTE-HTE
			13.27	193	DNT	1	6H + 0.4	CTE-HTE
21	30	28						CTE-HTE
21	26	28						CTE-HTE
21	22	28						CTE-HTE
21	33	29	1.23	190	DNT	1	2H - 29.6	CTE-HTE
21	36	29						CTE-HTE
21	38	29	4.63	185	DNT	1	6H - 0.5	CTE-HTE
21	31	30						CTE-HTE
21	17	30						CTE-HTE
21	14	30						CTE-HTE
21	12	30	1.56	193	DNT	1	FBH - 0.5	CTE-HTE
			1.52	190	DNT	1	FBH + 5.2	CTE-HTE
21	2	31			RNT			
21	16	31						CTE-HTE
21	19	31						CTE-HTE
21	30	31						CTE-HTE
21	36	32						CTE-HTE
21	27	32						CTE-HTE
21	26	32						CTE-HTE
21	13	32	1.57	190	DNT	1	6H + 7.9	CTE-HTE
21	9	32						CTE-HTE
21	24	33						CTE-HTE
21	29	33						CTE-HTE
21	39	34	2.38	185	DNT	1	6H - 0.4	CTE-HTE
21	32	34						CTE-HTE
21	25	34						CTE-HTE
21	12	34						CTE-HTE
21	19	35	2.96	188	DNT	1	HTS + 3.2	CTE-HTE
21	20	35						CTE-HTE
21	33	35						CTE-HTE
21	25	36						CTE-HTE

PAGE 1 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH01_	2	B__	HOT __	BH02		BH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	15	36						CTE-HTE
21	13	37	1.52	190	DNT	1	6H + 7.8	CTE-HTE
21	28	37						CTE-HTE
21	40	37						CTE-HTE
21	42	37	3.15	178	DNT	1	6H + 0.5	CTE-HTE
			4.06	182	DNT	1	6H - 0.4	CTE-HTE
21	29	38	6.00	187	DNT	1	6H + 10.3	CTE-HTE
21	22	38						CTE-HTE
21	16	38						CTE-HTE
21	15	39	1.66	12	DNT	1	6H + 6.0	CTE-HTE
			2.23	2	CU	1	HTS + 0.8	CTE-HTE
21	37	39						CTE-HTE
21	43	40	3.82	185	DNT	1	6H - 0.7	CTE-HTE
21	34	40						CTE-HTE
21	33	40						CTE-HTE
21	19	40	1.06	189	DNT	1	HTS + 41.0	CTE-HTE
21	12	40	2.62	11	CU	1	HTS + 1.7	CTE-HTE
21	29	41	2.22	187	DNT	1	2H - 34.9	CTE-HTE
21	37	42						CTE-HTE
21	13	42	6.57	10	CU	1	HTS + 0.0	CTE-HTE
			1.85	191	DNT	1	6H + 7.8	CTE-HTE
21	22	43						CTE-HTE
21	34	43						CTE-HTE
21	41	43	1.32	184	DNT	1	6H - 0.4	CTE-HTE
			1.28	177	DNT	1	6H + 0.4	CTE-HTE
21	45	43	8.96	189	DNT	1	6H - 0.5	CTE-HTE
			9.54	188	DNT	1	6H + 0.4	CTE-HTE
21	40	44						CTE-HTE
21	38	44						CTE-HTE
21	27	44						CTE-HTE
21	11	44	2.00	6	CU	1	6H + 1.4	CTE-HTE
21	2	45			RNT			
21	13	45	2.06	11	CU	1	HTS + 0.8	CTE-HTE
							END REEL BH02	

PAGE 2 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH03S	2	B__	HOT __	BH03		BH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL BH03 LYNCH DE OPER: McKEE B STD: Z-3923	LIIA 05/09/87 LI 05/09/87
21	18	45						CTE-HTE
21	32	45						CTE-HTE
21	40	45	1.39	191	DNT	1	5C + 44.8	CTE-HTE
21	36	46	2.58	187	DNT	1	6H + 17.3	CTE-HTE
21	25	46						CTE-HTE
21	15	46						CTE-HTE
21	8	47	3.40	44	CU	1	HTS + 1.0	CTE-HTE
21	14	47						CTE-HTE
21	41	47						CTE-HTE
21	45	48	1.34	187	DNT	1	3C + 8.1	CTE-HTE
			3.62	189	DNT	M 1	3A + 0.0	CTE-HTE
			2.17	189	DNT	M 1	2A + 0.0	CTE-HTE
			8.29	188	DNT	M 1	6H + 0.0	CTE-HTE
21	31	48						CTE-HTE
21	11	48	2.76	26	CU	1	HTS + 0.3	CTE-HTE
21	4	48	1.00	187	DNT	1	5H + 35.4	6C-HTE
			7.52	15	CU	1	HTS + 0.9	6C-HTE
21	14	49	8.01	11	CU	1	HTS + 1.4	CTE-HTE
21	25	49						CTE-HTE
21	33	49	1.46	194	DNT	1	1H + 9.0	CTE-HTE
21	41	50						CTE-HTE
21	39	50			RTI			CTS-HTE
21	36	50						CTE-HTE
21	31	50						CTE-HTE
21	25	50						CTE-HTE
21	15	50						CTE-HTE
21	12	50	4.68	16	CU	1	HTS + 0.7	CTE-HTE
21	18	50						CTE-HTE
21	13	51			RTI			CTS-HTE
21	17	51						CTE-HTE
21	44	52	5.36	184	DNT	1	6H + 0.2	CTE-HTE
			4.29	184	DNT	1	6H - 0.4	CTE-HTE
21	42	52	3.72	183	DNT	1	6H + 0.4	CTE-HTE
			3.96	182	DNT	1	6H - 0.4	CTE-HTE
21	23	52						CTE-HTE
21	17	52						CTE-HTE
21	11	52	5.80	12	CU	1	CTS + 0.9	CTE-HTE
			3.59	11	CU	1	HTS + 0.9	CTE-HTE
21	13	53	10.41	13	CU	1	HTS + 0.7	CTE-HTE
21	42	53						CTE-HTE
21	37	54						CTE-HTE
21	31	54	2.03	183	DNT	1	6H + 0.2	CTE-HTE
21	8	54	3.67	27	CU	1	HTS + 0.7	CTE-HTE

PAGE 1 OF 2	EVALUATOR DQ E [illegible] / Mark [illegible]	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH03S	2	B__	HOT __	BH03		BH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	6	55	5.65	5	CU	1	CTS + 2.8	CTE-HTE
							ANALYST: TIERNEY MG LIIA	05/09/87
21	22	55						CTE-HTE
21	26	55						CTE-HTE
21	44	55	2.66	183	DNT	1	4H + 23.1	CTE-HTE
21	33	56						CTE-HTE
21	16	56						CTE-HTE
21	12	56						CTE-HTE
21	17	57						CTE-HTE
21	19	57						CTE-HTE
21	28	57						CTE-HTE
21	41	57						CTE-HTE
21	17	51						CTE-HTE
21	31	58						CTE-HTE
21	16	59						CTE-HTE
21	19	59						CTE-HTE
21	30	59			RTI			CTS-HTE
21	37	59						CTE-HTE
21	39	59						CTE-HTE
21	42	60						CTE-HTE
21	23	60						CTE-HTE
21	22	60						CTE-HTE
21	33	61						CTE-HTE
21	37	62						CTE-HTE
21	25	62						CTE-HTE
21	21	62						CTE-HTE
21	12	62	4.07	2	CU	1	HTS + 0.9	CTE-HTE
21	8	63	2.37	347	CU	1	HTS + 0.9	CTE-HTE
21	9	63						CTE-HTE
							END REEL BH03	

PAGE 2 OF 2	EVALUATOR	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH04_	2	B__	HOT __	BH04		BH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL BH04 TERNING GA OPER: BROWN MW STD: Z-3923	 LIIA 05/09/87 LII 05/08/87
21	21	63						CTE-HTE
21	37	63						CTE-HTE
21	39	63						CTE-HTE
21	42	63						CTE-HTE
21	32	64						CTE-HTE
21	16	64	2.26	196	DNT	1	5H + 25.7	CTE-HTE
21	5	64			RNT			
21	10	65						CTE-HTE
21	24	65						CTE-HTE
21	29	65						CTE-HTE
21	36	65						CTE-HTE
21	27	66						CTE-HTE
21	21	66						CTE-HTE
21	1	67			RNT			
21	24	67						CTE-HTE
21	31	67						CTE-HTE
21	39	68						CTE-HTE
21	36	68						CTE-HTE
21	20	68						CTE-HTE
21	17	68						CTE-HTE
21	15	68						CTE-HTE
21	2	68			RNT			
21	4	69			RNT			
21	31	70						CTE-HTE
21	33	70	1.48	183	DNT	1	1H + 43.7	CTE-HTE
21	23	70						CTE-HTE
21	14	70	1.81	178	DNT	1	2C + 12.4	CTE-HTE
21	6	70						CTE-HTE
21	5	71						CTE-HTE
21	16	71						CTE-HTE
21	20	71						CTE-HTE
21	30	71						CTE-HTE
21	38	71						CTE-HTE
21	34	72						CTE-HTE
21	25	72						CTE-HTE
21	9	72						CTE-HTE
21	8	72						CTE-HTE
21	12	73						CTE-HTE
21	13	73						CTE-HTE
21	28	74						CTE-HTE
21	24	74						CTE-HTE
21	22	74						CTE-HTE
21	18	74						CTE-HTE

PAGE 1 OF 2 | EVALUATOR Gary Terning | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH04_	2	B__	HOT __	BH04		BH04	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	14	74						CTE-HTE
21	2	74			RNT			
21	14	75						CTE-HTE
21	28	76			RNT			
21	25	76						CTE-HTE
21	22	76						CTE-HTE
21	20	76	1.28	190	DNT	1	1H + 9.8	CTE-HTE
21	12	76						CTE-HTE
21	5	76	1.80	192	DNT	1	FBH + 24.9	CTE-HTE
21	1	77			RNT			
21	6	77						CTE-HTE
21	31	77						CTE-HTE
21	12	77						CTE-HTE
21	18	78						CTE-HTE
21	9	78						CTE-HTE
21	2	79			RNT			
21	10	79						CTE-HTE
21	30	79						CTE-HTE
21	25	80						CTE-HTE
21	22	80						CTE-HTE
21	6	80						CTE-HTE
21	12	81	2.32	7	DNT	1	HTS + 1.2	CTE-HTE
21	14	81						CTE-HTE
21	15	81						CTE-HTE
21	17	81						CTE-HTE
21	18	81						CTE-HTE
21	21	82						CTE-HTE
21	1	83			RNT			
							END REEL BH04	

PAGE 2 OF 2	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/A	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH05	
							TERNING GA	LIIA 05/10/87
							OPER:MCKEE B	LII 05/08/87
							CAL STD.:Z-3923	
21	20	87	2.44	179	DNT	1	5C + 4.7	CTE-HTE
			3.88	176	DNT	1	5C + 29.5	CTE-HTE
			5.23	189	DNT	1	5C + 30.3	CTE-HTE
			6.73	187	DNT	1	FBH - 1.2	CTE-HTE
			6.88	189	DNT	1	FBH - 2.2	CTE-HTE
			5.45	190	DNT	1	FBH - 3.2	CTE-HTE
			2.64	193	DNT	1	FBH - 4.1	CTE-HTE
			1.99	193	DNT	1	FBH - 5.4	CTE-HTE
			1.16	193	DNT	1	FBH - 6.4	CTE-HTE
			2.00	189	DNT	1	FBH - 12.0	CTE-HTE
			5.35	190	DNT	1	FBH - 13.2	CTE-HTE
			3.86	192	DNT	1	FBH - 14.3	CTE-HTE
			1.33	195	DNT	1	FBH - 18.1	CTE-HTE
21	1	70			RNT			
21	22	61	3.72	196	DNT	1	1H + 46.1	CTE-HTE
			2.22	348	CU	1	HTS + 0.5	CTE-HTE
21	38	54	10.05	187	DNT	1	FBC + 22.3	CTE-HTE
21	23	50						CTE-HTE
21	42	46	2.31	183	DNT	1	6H + 0.2	CTE-HTE
			4.35	184	DNT	1	6H - 0.2	CTE-HTE
21	4	44			RNT			
21	31	42						CTE-HTE
21	29	39						CTE-HTE
21	41	36	1.98	186	DNT	1	6H + 0.1	CTE-HTE
			8.14	187	DNT	1	6H - 0.4	CTE-HTE
21	43	36	6.34	185	DNT	1	6H + 0.2	CTE-HTE
			9.93	186	DNT	1	6H - 0.2	CTE-HTE
21	43	33	5.94	187	DNT	1	6H + 2.6	CTE-HTE
			14.47	186	DNT	1	6H + 0.2	CTE-HTE
			17.83	186	DNT	1	6H - 0.3	CTE-HTE
21	42	33	7.71	185	DNT	1	6H + 0.4	CTE-HTE
			11.35	185	DNT	1	6H - 0.4	CTE-HTE
21	40	30	9.01	186	DNT	1	6H + 0.4	CTE-HTE
			13.06	186	DNT	1	6H - 0.4	CTE-HTE
21	39	32	5.85	17	CU	1	CTS - 4.0	CTE-HTE
			7.61	18	CU	1	CTS - 17.1	CTE-HTE
			2.87	179	DNT	1	6H + 0.4	CTE-HTE
			8.14	188	DNT	1	6H - 0.4	CTE-HTE
21	31	32						CTE-HTE
21	17	43						CTE-HTE
21	22	22	3.38	191	DNT	1	3C + 22.3	CTE-HTE
21	14	22	7.36	177	DNT	1	5C + 29.5	CTE-HTE
21	3	19			RNT			

PAGE 1 OF 2 | EVALUATOR *Gary Terning* | LEVEL *IIA*

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/A	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
21	32	15						CTE-HTE
21	16	13	4.13	18	PV	1	1C + 2.4	CTE-HTE
21	16	5	10.76	22	PV	1	5H + 33.0	CTE-HTE
21	12	7	3.34	193	DNT	1	5C + 31.0	CTE-HTE
			19.34	37	PV	1	HTS - 8.7	CTE-HTE
21	7	46	5.72	2	CU	1	CTS + 1.5	CTE-HTE
			3.07	30	PV	1	2C + 44.0	CTE-HTE
			1.53	224	PV	1	3C + 34.3	CTE-HTE
			2.01	95	PV	5	5C + 8.9	CTE-HTE
			2.95	189	PV	1	5H + 45.4	CTE-HTE
			10.71	191	DNT	1	2H + 10.8	CTE-HTE
			6.25	15	PV	1	2H + 12.0	CTE-HTE
			3.14	186	PV	1	2H + 48.9	CTE-HTE
			2.57	25	PV	1	1H + 19.6	CTE-HTE
			19.41	35	PV	1	HTE + 13.6	CTE-HTE
21	7	41	6.50	13	CU	1	HTS + 1.2	CTE-HTE
							END OF BH-PI DATA SET	

PAGE 2 OF 2 | EVALUATOR Gary Terning | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH05_	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL BH05 TERNING GA OPER:BROWN MW CAL STD.:Z-3923	 LIIA 05/10/87 LII 05/08/87
21	26	83						CTE-HTE
21	27	83	6.14	186	DNT	1	4A + 0.0	CTE-HTE
21	24	84						CTE-HTE
21	23	84						CTE-HTE
21	20	84						CTE-HTE
21	19	84						CTE-HTE
21	10	84						CTE-HTE
21	6	84						CTE-HTE
21	2	85			RNT			
21	14	85						CTE-HTE
21	16	85						CTE-HTE
21	18	86						CTE-HTE
21	2	86			RNT			
21	4	87			RNT			
21	13	88						CTE-HTE
21	10	88						CTE-HTE
21	9	88						CTE-HTE
21	5	88						CTE-HTE
21	3	88			RNT			
21	5	89						CTE-HTE
21	12	89						CTE-HTE
21	13	89						CTE-HTE
21	16	89						CTE-HTE
21	1	91			RNT			
21	7	91						CTE-HTE
							END DATA SET BH-RD	

PAGE 1 OF 1	EVALUATOR Gary Terning	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/B	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A-720SFRM REEL BH05 TERNING GA OPER:MCKEE B CAL STD.:Z-3923	LIIA 05/10/87 LII 05/08/87
21	4	2						CTE-HTE
21	3	4						CTE-HTE
21	2	4			RNT			
21	8	5						CTE-HTE
21	2	7			RNT			
21	6	7						CTE-HTE
21	5	11						CTE-HTE
21	25	14	17.04	197	DNT	1	FBC + 20.8	CTE-HTE
			1.21	192	DNT	1	2C + 7.7	CTE-HTE
			8.78	183	DNT	1	3C + 8.3	CTE-HTE
21	1	15			RNT			
21	2	15			RNT			
21	1	17			RNT			
21	18	17						CTE-HTE
21	2	19			RNT			
21	1	21			RNT			
21	2	25			RNT			
21	13	25						CTE-HTE
21	5	26						CTE-HTE
21	2	31			RNT			
21	1	7						6C-HTE
21	2	13						6C-HTE
21	3	50			RNT			
21	2	45			RNT			
							END OF BH-RD A720SFRM	

 EVALUATOR Gary Terning LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH05P/B	2	B__	HOT __	BH05		BH05	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A700SFRM REEL BH05 TERNING GA OPER:MCKEE B CAL STD.:Z-3923	LIIA 05/10/87 LII 05/08/87
21	6	51	6.18	12	CU	1	CTS + 2.3	CTE-HTE
21	1	57			RNT			
21	44	57						CTE-HTE
21	4	48			RNT			
21	2	63			RNT			
21	28	76						CTE-HTE
21	4	69						CTE-HTE
21	5	64	3.19	12	CU	1	CTS + 0.9	CTE-HTE
			1.22	298	CU	3	HTS + 0.4	CTE-HTE
21	29	45						CTE-HTE
21	1	67			RNT			
21	2	68			RNT			
21	2	74			RNT			
21	1	77			RNT			
21	2	79			RNT			
21	1	83			RNT			
							END REEL BH05	

PAGE 1 OF 1 EVALUATOR Gary Terning LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH06S	2	B__	HOT __	BH06		BH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJF	
							REEL BH06	
							TIERNEY MG	LIIA 05/09/87
							OPER: BIPES TU	LII 05/09/87
							STD: Z-3923	
21	1	70			RTI			6H-HTE
21	3	88						6C-HTE
							OPER: MCKEE B	LI 05/09/87
							END DDBH06S	

PAGE 1 OF 1	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
HBR DDBH06S/A	2	B__	HOT __	BH06		BH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A700SFRM	
							REEL BH06	
							TIERNEY MG	LIIA 05/09/87
							OPER: MCKEE B	LI 05/09/87
							STD: Z-=3923	
21	1	67						6C-HTE
21	2	68						6C-HTE
21	2	63						6C-HTE
21	1	57						6C-HTE
21	3	50						CTE-HTE
21	2	79						6C-HTE
21	1	83						6C-HTE
21	2	74			RNT			
21	1	77			RNT			
21	2	85						6C-HTE
21	4	87						CTE-HTE
21	2	86			RNT			
21	2	45			RTI			6H-HTE
21	2	31			RTI			6H-HTE
21	2	25			RTI			6H-HTE
21	1	21			RND			
21	2	19			RTI			6H-HTE
21	2	4			RNT			
21	2	7			RNT			
21	1	15			RNT			
21	2	15			RNT			
21	1	17			RNT			
21	1	91			RNT			
							END REEL BH06	

PAGE 1 OF 1	EVALUATOR Mark J Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH07S	2	B__	HOT __	BH07		BH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		680SLDF REEL BH07 TIERNEY MG OPER: BROWN MW STD: Z-3923	 LIIA 05/09/87 LII 05/09/87
21	2	4						6C-HTE
21	2	7						6C-HTE
21	2	15						6C-HTE
21	1	15						6C-HTE
21	1	17						6C-HTE
21	2	19						6C-HTE
21	2	25						6C-HTE
21	2	31						6C-HTE
21	2	45	3.22	31	CU	1	HTS + 1.0	6C-HTE
21	4	44	1.87	20	CU	1	HTS + 1.2	3C-HTE
21	4	48	5.21	15	CU	1	HTS + 0.9	6C-HTE
21	2	86						6C-HTE
21	2	74						6C-HTE
21	1	70						6C-HTE
21	1	77						6C-HTE
21	1	91						6C-HTE
							END REEL BH07	

PAGE 1 OF 1 | EVALUATOR *Mark Le Tierney* | LEVEL *IIA*

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH08S	2	B__	HOT __	BH08		BH08	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		680SLDF REEL BH08 TIERNEY MG OPER: BROWN MW STD: Z-3923	 LIIA 05/09/87 LII 05/09/87
21	1	21						6C-HTE
21	1	27						6C-HTE
21	26	23						CTE-HTE
21	3	19						5C-HTE
							END REEL BH08	

PAGE 1 OF 1	EVALUATOR Mark G Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDBH08S	2	B__	HOT __	BH09		BH09	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL BH09	
							TIERNEY MG	LIIA 05/10/87
							OPER:MCKEE B	LII 05/10/87
							CAL STD.:Z-3923	
21	39	50						CTE-HTE
21	13	51						CTE-HTE
21	30	59						CTE-HTE
							END REEL BH09	

PAGE 1 OF 1	EVALUATOR Mark L. Tierney	LEVEL II A

EDDY CURRENT DATA SHEET

ACQUISITION LOG

GENERATOR B

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 1

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH01

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-7-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
211	11	2	BH-RD	PV MWB	GAT		~~PV~~ MWB
1	4	2	BH-RD	MWB	GAT		Incomplete
229	15	4	BH-RD	MWB	GAT		
3	10	4	BH-RD	MWB	GAT		
2	3	4	BH-RD	MWB	GAT		Incomplete
174	2	4	BH-RD	MWB	GAT		Incomplete
4	5	5	BH-RD	MWB	GAT		~~I~~ MWB
199	8	5	BH-RD	MWB	GAT		
252	21	6	BH-RD	MWB	GAT		
240	18	6	BH-RD	BM	GAT		
5	16	6	BH-RD	BM	GAT		~~Incomplete~~ BM 5/14/87
331	1	7	BH-RD	BM	GAT		Incomplete
175	2	7	BH-RD	BM	GAT		Incomplete
192	5	7	BH-RD	BM	GAT		
6	6	7	BH-RD	BM	GAT		Incomplete
225	14	7	BH-RD	BM	GAT		
7	17	7	BH-RD	BM	GAT		
8	7	9	BH-RD	BM	GAT		
200	8	9	BH-RD	BM	GAT		
273	26	9	BH-RD[PV]	BM	GAT		

Shift Supervisor: JR Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 2

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/6/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
9	18	10	BH-RD	BM	MAT		
230	15	10	BH-RD	BM	MAT		
10	5	11	BH-RD	BM	MAT		Incomplete
11	17	11	BH-RD	BM	MAT		
12	21	12	BH-RD	BM	MAT		
245	19	12	BH-RD	BM	MAT		
201	9	12	BH-RD	BM	MAT		
176	2	13	BH-RD	BM	MAT		Incomplete
267	25	14	BH-RD	BM	MAT		
14	15	14	BH-RD	BM	MAT		
219	13	14	BH-RD	BM	MAT		
13	11	14	BH-RD	BM	MAT		
172	1	15	BH-RD	BM	MAT		
177	2	15	BH-RD	BM	MAT		Incomplete
241	18	15	BH-RD	BM	MAT		
15	22	15	BH-RD	BM	MAT		
283	29	16	BH-RD	BM	MAT		
17	20	16	BH-RD	BM	MAT		
231	15	16	BH-RD	BM	MAT		
16	5	16	BH-RD pr	BM	DJ		

Shift Supervisor: JR Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 3

OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #2
PROBE: A-720-SFRM   CAL. STD.: ASME Z-3923   EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz   REEL NO.: BH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/7/81

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
332	1	17	BH-RD	Bm	DJ		Incomplete
202	9	17	BH-RD	Bm	DJ		
18	18	17	BH-RD	Bm			No DATA on Tape
253	21	17	BH-RD	Bm	DJ		
295	33	17	BH-RD	Bm	DJ		
274	26	18	BH-RD	Bm	DJ		
19	17	18	BH-RD	Bm	DJ		
178	2	19	BH-RD	Bm	DJ		Incomplete
203	9	19	BH-RD	Bm	DJ		
20	23	19	BH-RD	Bm	DJ		
301	36	19	BH-RD	Bm	DJ		
22	25	20	BH-RD	Bm	DJ		
21	22	20	BH-RD	Bm	DJ		
326	20	20	BH-RD	Bm	DJ		
237	17	20	BH-RD	Bm	DJ		
220	13	20	BH-RD	Bm	DJ		
173	1	21	BH-RD	Bm	DJ		Incomplete
23	12	21	BH-RD	Bm	DJ		
24	28	21	BH-RD	Bm	DJ		
289	31	21	BH-RD PV	Bm	DJ		

Shift Supervisor: JR   Data Controller: TB   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/7/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
25	10	22	BH-RD	Bm	DJ		
26	6	23	BH-RD	Bm	DJ		
268	25	23	BH-RD	Bm	DJ		
27	26	23	BH-RD	Bm	DJ		
29	34	24	BH-RD	Bm	DJ		
250	20	24	BH-RD	Bm	DJ		
28	14	24	BH-RD	Bm	DJ		
221	13	24	BH-RD	Bm	DJ		
179	2	25	BH-RD	Bm	DJ		Incomplete
30	13	25	BH-RD	Bm	DJ		Incomplete Exam on 13-26 / No Exam of 13-25
31	27	25	BH-RD	Bmd	DJ		~~Incomplete~~ DJ
286	30	25	BH-RD	Bmd	DJ		END REEL BH01
299	34	25	BH-RD	Bmd	SJC		START REEL BH02
308	38	25	BH-RD	Bmd	SJC		
33	37	26	BH-RD	Bmd	SJC		
264	24	26	BH-RD	Bmd	SJC		
324	17	26	BH-RD	Bmd	SJC		
32	5	26	BH-RD	Bmd	SJC		
333	1	27	BH-RD	Bmd	SJC		
204	9	27	BH-RD	N Bmd	SJC		

Shift Supervisor: RB Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 5

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
34	13	27	BH-RD	Bms	SC		
35	18	27	BH-RD	Bms	SC		
315	41	28	BH-RD	Bms	SC		
287	30	28	BH-RD	Bms	SC		
36	26	28	BH-RD	Bms	SC		
254	22	28	BH-RD	Bms	SC		
296	33	29	BH-RD	Bms	SC		
37	36	29	BH-RD	Bms	SC		
309	38	29	BH-RD	Bms	SC		
40	31	30	BH-RD	Bms	SC		
39	17	30	BH-RD	Bms	SC		
38	14	30	BH-RD	Bms	SC		
214	12	30	BH-RD	Bms	SC		
180	2	31	BH-RD	NO TEST			
233	16	31	BH-RD	Bms	SC		
246	19	31	BH-RD	Bms.	SC		
41	30	31	BH-RD	Bms	SC		
302	36	32	BH-RD	Bms	SC		
277	27	32	BH-RD	Bms	SC		
43	26	32	BH-RD	Bms	SC		

PV

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 6

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH02

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
42	13	32	BH-RD	BMA	SC		
205	9	32	BH-RD	BMA	SC		
265	24	33	BH-RD	BMA	SC		
44	29	33	BH-RD	BMA	SC		
311	39	34	BH-RD	BMA	SC		
46	32	34	BH-RD	BMA	SC		
45	25	34	BH-RD	BMA	SC		
215	12	34	BH-RD	BMA	SC		
247	19	35	BH-RD	BMA	SC		
327	20	35	BH-RD	BMA	SC		
47	33	35	BH-RD	BMA	SC		
49	25	36	BH-RD	BMA	SC		
48	15	36	BH-RD	BMA	SC		
222	13	37	BH-RD	BMA	SC		
280	28	37	BH-RD	BMA	SC		
50	40	37	BH-RD	BMA	SC		
317	42	37	BH-RD	BMA	SC		
52	29	38	BH-RD	BMA	SC		
255	22	38	BH-RD	BMA	SC		
51	16	38	BH-RD	BMA	SC		

PV

Shift Supervisor: VB Data Controller: PB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 7

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/7/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
53	15	39	BH-RD	BMS	SC		
305	37	39	BH-RD	BMS	SC		
320	43	40	BH-RD	BMS	SC		
55	34	40	BH-RD	BMS	SC		
297	33	40	BH-RD	BMS	SC		
54	19	40	BH-RD	BMS	SC		
216	12	40	BH-RD	BMS	SC		
284	29	41	BH-RD	BMS	SC		
57	37	42	BH-RD	BMS	SC		
56	13	42	BH-RD	BMS	SC		
256	22	43	BH-RD	BMS	SC		
58	34	43	BH-RD	BMS	SC		
329	41	43	BH-RD	BMS	SC		
322	45	43	BH-RD	BMS	SC		
314	40	44	BH-RD	BMS	SC		
60	38	44	BH-RD	BMS	SC		
278	27	44	BH-RD	BMS	SC		
59	11	44	BH-RD	BMS	SC		
61	2	45	BH-RD	NO TEST			
223	13	45	BH-RD	PV BMS	SC		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH03
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET		TESTED	ANALYZED	INDEX	COMMENTS
242	18	45	BH-RD		Bm	DJ		
285	29	45	BH-RD	PV	Bm	DJ		
293	32	45	BH-RD		Bm	DJ		
62	40	45	BH-RD		Bm	DJ		
64	36	46	BH-RD		Bm	DJ		
269	25	46	BH-RD		Bm	DJ		
63	15	46	BH-RD		Bm	DJ		
337	8	47	BH-RD		Bm	DJ		
66	14	47	BH-RD		Bm	DJ		
67	41	47	BH-RD		Bm	DJ		
323	45	48	BH-RD		Bm	MAT		
69	31	48	BH-RD		Bm	MAT		
212	11	48	BH-RD		Bm	MAT		
68	4	48	BH-RD		Bm	MAT		Incomplete
70	14	49	BH-RD		Bm	MAT		
71	25	49	BH-RD		Bm	MAT		
72	33	49	BH-RD		MUB	MAT		
75	41	50	BH-RD		MUB	MAT		
312	39	50	BH-RD		MUB	MAT		
303	36	50	BH-RD	P.V.	MUB	MAT		

Shift Supervisor: JR Data Controller: VB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 9

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH03
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
290	31	50	BH-RD	PV MWB	GAT		
270	25	50	BH-RD	MWB	GAT		
243	18	50	BH-RD	MWB	GAT		~~No Test~~ Weld Roll[illegible]
232	15	50	BH-RD	MWB	GAT		
74	12	50	BH-RD	MWB	GAT		
73	3	50	BH-RD		GAT		No Test
76	6	51	BH-RD		GAT		No Test Fixture
77	13	51	BH-RD	MWB	GAT		
325	17	51	BH-RD	MWB	GAT		
321	44	52	BH-RD	MWB	GAT		
318	42	52	BH-RD	MWB	GAT		
79	23	52	BH-RD	MWB	GAT		
78	17	52	BH-RD	MWB	GAT		
213	11	52	BH-RD	MWB	GAT		
80	13	53	BH-RD	MWB	GAT		
330	42	53	BH-RD	MWB	GAT		
306	37	54	BH-RD	MWB	GAT		
291	31	54	BH-RD	MWB	GAT		
81	8	54	BH-RD	MWB	GAT		
82	6	55	BH-RD	PV. MWB	GAT		

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 10

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH03

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
257	22	55	BH-RD	PV. MWB	GAT		
275	26	55	BH-RD	MWB	GAT		
83	44	55	BH-RD	MWB	GAT		
85	33	56	BH-RD	MWB	GAT		
234	16	56	BH-RD	MWB	GAT		
84	12	56	BH-RD	MWB	GAT		
335	1	57	BH-RD		GAT		No Test
86	17	57	BH-RD	MWB	GAT		
248	19	57	BH-RD	MWB	GAT		
281	28	57	BH-RD	MWB	GAT		
316	41	57	BH-RD	MWB	GAT		
87	44	57	BH-RD	MWB	GAT		No Test
88	31	58	BH-RD	MWB	GAT		
235	16	59	BH-RD	MWB	GAT		
89	19	59	BH-RD	MWB	GAT		
90	30	59	BH-RD	MWB	GAT		
307	37	59	BH-RD	MWB	GAT		
91	39	59	BH-RD	MWB	GAT		
93	42	60	BH-RD	MWB	GAT		
261	23	60	BH-RD	PV MWB	GAT		

Shift Supervisor: JR Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH03/BH04
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
92	22	60	BH-RD PV	MWB	GAT		
298	33	61	BH-RD	MWB	GAT		
96	37	62	BH-RD	MWB	GAT		
271	25	62	BH-RD	MWB	GAT		
95	21	62	BH-RD	MWB	GAT		
94	12	62	BH-RD	MWB	GAT		
184	2	63	BH-RD	~~MWB~~ MWB	GAT		No Test
97	8	63	BH-RD	MWB	GAT		
206	9	63	BH-RD	MWB	GAT		
98	21	63	BH-RD	MWB	[illegible]		First Tube on BH04
99	37	63	BH-RD	MWB	[illegible]		
313	39	63	BH-RD	MWB	[illegible]		
319	42	63	BH-RD	MWB	[illegible]		
294	32	64	BH-RD	MWB	[illegible]		
236	16	64	BH-RD	MWB	[illegible]		
100	5	64	BH-RD		[illegible]		No Test
101	10	65	BH-RD	MWB	[illegible]		
102	24	65	BH-RD	MWB	[illegible]		
103	29	65	BH-RD	MWB	[illegible]		
104	36	65	BH-RD PV.	MWB	[illegible]		

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 12

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH04

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
279	27	66	BH-RD	R.V. MWB	[illegible]		
105	21	66	BH-RD	MWB	[illegible]		
334	1	67	BH-RD		[illegible]		NO Test
266	24	67	BH-RD	MWB	[illegible]		
292	31	67	BH-RD	MWB	[illegible]		
107	39	68	BH-RD	MWB	[illegible]		
304	36	68	BH-RD	MWB	[illegible]		
251	20	68	BH-RD	MWB	[illegible]		
238	17	68	BH-RD	MWB	[illegible]		
106	15	68	BH-RD	MWB	[illegible]		
186	2	68	BH-RD		[illegible]		No Test
108	4	69	BH-RD		[illegible]		NO Test
111	33	70	BH-RD	MWB	[illegible]		
110	31	70	BH-RD	MWB	[illegible]		
262	23	70	BH-RD	MWB	[illegible]		
109	14	70	BH-RD	MWB	[illegible]		
194	6	70	BH-RD	MWB	[illegible]		
112	5	71	BH-RD	MWB	[illegible]		
113	16	71	BH-RD	MWB	[illegible]		
328	20	71	BH-RD	R.V. MWB	[illegible]		

Shift Supervisor: JR Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 13

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.O LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH04

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
288	30	71	BH-RD	P.V.	MWB	[illegible]	
310	38	71	BH-RD		MWB	[illegible]	
300	34	72	BH-RD		MWB	[illegible]	
272	25	72	BH-RD		MWB	[illegible]	
207	9	72	BH-RD		MWB	[illegible]	
114	8	72	BH-RD		MWB	[illegible]	
217	12	73	BH-RD		MWB	[illegible]	
115	13	73	BH-RD		MWB	[illegible]	
282	28	74	BH-RD		MWB	[illegible]	
116	24	74	BH-RD		MWB	[illegible]	
258	22	74	BH-RD		MWB	[illegible]	
244	18	74	BH-RD		MWB	[illegible]	
226	14	74	BH-RD		MWB	[illegible]	
187	2	74	BH-RD			[illegible]	NO TEST
117	14	75	BH-RD		MWB	[illegible]	
122	28	76	BH-RD		MWB	[illegible]	NO DATA [illegible]
121	25	76	BH-RD		MWB	[illegible]	
259	22	76	BH-RD		MWB	[illegible]	
120	20	76	BH-RD		MWB	[illegible]	
119	12	76	BH-RD	P.V.	MWB	[illegible]	

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 14

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH04

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
118	5	76	BH-RD	PV MWB			
123	1	77	BH-RD				No Test
195	6	77	BH-RD	MWB			Message on Tape These
218	12	77	BH-RD	MWB			3 Three Tubes HAVE wrong
124	31	77	BH-RD	MWB			I.D. ON TAPE
125	18	78	BH-RD	MWB			
208	9	78	BH-RD	MWB			
189	2	79	BH-RD				No Test
126	10	79	BH-RD	MWB			
127	30	79	BH-RD	MWB			
128	25	80	BH-RD	MWB			
260	22	80	BH-RD	MWB			
196	6	80	BH-RD	MWB			
129	12	81	BH-RD	MWB			
227	14	81	BH-RD	MWB			
130	15	81	BH-RD	MWB			
239	17	81	BH-RD	MWB			
131	18	81	BH-RD	MWB			
132	21	82	BH-RD	W MWB			
336	1	83	BH-RD				No Test

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R.0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
276	26	83	BH-RD	PV	MWB	[illegible]	
133	27	83	BH-RD		MWB	[illegible]	
263	23	84	BH-RD		MWB	[illegible]	
134	20	84	BH-RD		MWB	[illegible]	
249	19	84	BH-RD		MWB	[illegible]	
210	10	84	BH-RD		MWB	[illegible]	
197	6	84	BH-RD		MWB	[illegible]	
190	2	85	BH-RD			[illegible]	NO Test
228	14	85	BH-RD		MWB	[illegible]	
135	16	85	BH-RD		MWB	[illegible]	
137	18	86	BH-RD		MWB	[illegible]	
136	2	86	BH-RD			[illegible]	NO Test
138	4	87	BH-RD			[illegible]	NO Test
141	13	88	BH-RD		MWB	[illegible]	
140	10	88	BH-RD		MWB	[illegible]	
209	9	88	BH-RD		MWB	[illegible]	
193	5	88	BH-RD		MWB	[illegible]	
139	3	88	BH-RD			[illegible]	NoTest
142	5	89	BH-RD		MWB	[illegible]	
143	12	89	BH-RD	P.V.	MWB	[illegible]	

Shift Supervisor: JR Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 16

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2

PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R.0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH05

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
224	13	89	BH-RD	P.V.	MWB	[illegible]	
144	16	89	BH-RD		MWB	[illegible]	
145	1	91	BH-RD			[illegible]	NO Test
198	7	91	BH-RD	PV	MWB	[illegible]	

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 1

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH05
ECT DESCRIPTION: PREVIOUS INDICATIONS

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
168	16	5	BH-PI	BM	[illegible]		
147	12	7	BH-PI	BM	[illegible]		
169	16	13	BH-PI	BM	[illegible]		
160	32	15	BH-PI	BM	[illegible]		
146	3	19	BH-PI	BM	[illegible]		RND [illegible]
149	22	22	BH-PI	BM	[illegible]		
167	14	22	BH-PI	BM	[illegible]		
153	40	30	BH-PI	BM	[illegible]		
152	39	32	BH-PI	BM	[illegible]		
162	31	32	BH-PI	BM	[illegible]		
155	42	33	BH-PI	BM	[illegible]		
157	43	33	BH-PI	BM	[illegible]		
158	43	36	BH-PI	BM	[illegible]		
154	41	36	BH-PI	BM	[illegible]		
163	29	39	BH-PI	BM	[illegible]		
165	7	41	BH-PI	BM	[illegible]		
161	31	42	BH-PI	BM	[illegible]		
148	17	43	BH-PI	BM	[illegible]		
164	4	44	BH-PI		[illegible]		ND
156	42	46	BH-PI PV	BM	[illegible]		

Shift Supervisor: JB Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #2
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH05
ECT DESCRIPTION: PREVIOUS INDICATIONS

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
166	* 7	46	BH-PI	Bm	[illegible]		
171	23	50	BH-PI	Bm	[illegible]		
151	38	54	BH-PI	Bm	[illegible]		
150	22	61	BH-PI	Bm	[illegible]		
159	1	70	BH-PI		[illegible]		ND
170	20	87	BH-PI PV	Bm	[illegible]		

Shift Supervisor: [illegible] Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P&L PLANT/UNIT: H. B. ROBINSON SG # B
PROBE: A-720-SFRM CAL. STD.: ASME Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHZ REEL NO.: BH05
ECT DESCRIPTION: RERUN TUBES

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	2	45	BH-RD		[illegible]		
	3	50			[illegible]		ND
	6	51		Bm	[illegible]		
	1	57			[illegible]		ND
	44	57		Bm	[illegible]		
	4	48			[illegible]		
	2	63			[illegible]		ND
	5	64		Bm	[illegible]		
	1	67			[illegible]		ND
	2	68			[illegible]		ND
	4	69		Bm	[illegible]		
	2	74			[illegible]		ND
	28	76		Bm	[illegible]		
	1	77			[illegible]		ND
	2	79			[illegible]		ND
	1	83			[illegible]		ND
	29	45		Bm	[illegible]		

Shift Supervisor: JB Data Controller: JB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG # B
PROBE: A-720-SFRM CAL. STD.: ASME Z 3423 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHz REEL NO.: BH05
ECT DESCRIPTION: RERUN TUBES

TEST DATE: 5/8/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	4	2	BH-RD	Bm			
	3	4		Bm			
	2	4					ND
	8	5	pv	Bm			
	1	7		Bm			Not F/L
	2	7					ND
	6	7		Bm			
	5	11		Bm			
	2	13		Bm			~~ND~~ Bm Not F/L
	25	14		Bm			
	1	15					ND
	2	15					ND
	1	17					ND
	18	17		Bm			
	2	19					ND
	1	21					ND
	2	25					ND
	13	25		Bm			
	5	26		Bm			
	2	31					ND

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG # B
PROBE: A-680-BJF CAL. STD.: ASME-Z3923 EXTENT TESTED: C06-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHz REEL NO.: BH-06
ECT DESCRIPTION: ROW 1,2 & RERUN DATA

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	2	4	BH-RO				
	2	7					
	1	15					
	2	15					
	1	17					
	2	19		Bm	SC		INC
	1	21		Bm	SC ND		INC
	2	25		Bm	SC		INC
	2	31		Bm	SC		INC
	2	45		Bm	SC		INC
	3	56		Bm	SC		
	1	57		Bm	SC		
	4	48		Bm	ND		
	2	63		Bm	SC		
	1	67		Bm	SC		
	2	68		Bm	SC		
	2	74					ND
	1	77					ND
	2	79		Bm	SC		
	1	83		Bm RDA	SC		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG #: B
PROBE: A-680-BJF CAL. STD.: ASME-Z-3923 EXTENT TESTED: C06-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 KHz REEL NO.: BH-06
ECT DESCRIPTION: ROW 1,2 & RERUN DATA

TEST DATE: 5/9/87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	2 *	85 *	BH-RD *	BM *	SC	*	
	4 *	87 *	*	BM *	SC	*	
	2 *	86 *	*	*		*	NO TEST
	3 *	88 *	*	TB *	SC	*	
	1 *	91 *	*	*		*	NO TEST
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	4 *	44 *	BH-PI *	*		*	
	1 *	70 *	BH-PF *	TB *	SC	*	P.V. COULDN'T TRAVERSE BEND
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON SG #: B
PROBE: A680-SLDF CAL. STD.: ASME-Z3923 EXTENT TESTED: COL-HTE
PROCEDURE: ROB-410-004 LEG: Hot
FREQUENCY: 400/200/100/20 REEL NO.: BH-07
ECT DESCRIPTION: Row 1, 2 & Rerun Data

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	2	4	BH-RD	PV. MWB	SC		~~INC.~~ DD
	2	7	BH-RD	MWB	SC		~~INC.~~ DD
	1	15	BH-RD	MWB	SC		~~INC.~~ DD
	2	15	BH-RD	MWB	SC		~~INC.~~ DD
	1	17	BH-RD	MWB	SC		~~INC.~~ DD
	2	19	BH-RD	MWB	SC		~~INC.~~ DD
	1	21	BH-RD	MWB	SC ND		~~INC. DD~~
	2	25	BH-RD	MWB	SC		~~INC.~~ DD
	2	31	BH-RD	MWB	SC		~~INC.~~ DD
	2	45	BH-RD	MWB	SC		~~INC.~~ DD
	4	48	BH-RD	MWB	SC		~~INC.~~ SC
	2	74	BH-RD	MWB	SC		~~INC.~~ SC
	1	77	BH-RD	MWB	SC		~~CAN not~~ Reach SC
	2	86	BH-RD	PV. MWB	SC		~~INC.~~ SC
	1	91	BH-RD	MWB	SC		~~CAN not Reach~~ SC
	4	44	BH-~~RD~~ PI-ES	MWB	~~RFT~~ SC		~~INC.~~ SC
	1	70	BH PI-ES	MWB N	SC		~~CAN not Reach~~ SC
							Moved Trunk of SM-10
							AND RAN Tubes # R1-C77
							R1-C91
							R1-C70

Shift Supervisor: JR Data Controller: DB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. Robinson SG #: B
PROBE: A680-SLDF CAL. STD.: ASME-Z3923 EXTENT TESTED: COL HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: BH-08
ECT DESCRIPTION: RE-RUN

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	1 *	21 *	BH-RD *	MWB *	SC	*	
	1 *	27 *	BH-RD *	MWB *	SC	*	
	26 *	23 *	BH-RD *	MWB *	SC	*	
	3 *	19 *	BH-PI *	MWB *	SC	*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

Shift Supervisor: JR Data Controller: [illegible] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #: B
PROBE: A-720-SFRM CAL. STD.: ASME-Z-3923 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: BH09
ECT DESCRIPTION: RE-RUN

TEST DATE: 5-10-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	39	50	BH-RD	BM	DAG		
	13	51	BH-RD	BM	DAG		
	30	59	BH-RD	BM	DAG		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

STEAM GENERATOR C

DATA DOCUMENTS

DATA BASE REPORT

ALL TUBES SORTED BY ROW COLUMN

GENERATOR C

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
1	5	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	10	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	15	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
1	18	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
1	21	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
1	27	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
1	59	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	60	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	65	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	75	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	78	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
1	79	05/10/87	CH07	1.9	DNT	0	HTS	20.1To	0.0	H	6C-HTE
1	86	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	6	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	14	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	21	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
2	33	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
2	36	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
2	54	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	58	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	64	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	66	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	74	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	80	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
2	84	05/10/87	CH07	2.2	DNT	0	HTS	8.3To	0.0	H	6C-HTE
3	7	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
3	25	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
3	28	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
3	36	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
3	43	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
4	6	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
4	11	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
4	21	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
4	39	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
4	59	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
4	78	05/10/87	CH07	0.0		0		0.0To	0.0	H	6C-HTE
4	90	05/10/87	CH08	0.0		0		0.0To	0.0	H	6C-HTE
5	32	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
5	53	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
5	57	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
5	67	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
5	73	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
5	81	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
5	85	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
5	90	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
6	3	05/08/87	CH01	81.9	OVR	0	HTS	0.3To	0.0	H	CTE-HTE
6	9	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
6	30	05/08/87	CH02	1.1	DNT	0	2H	6.9To	0.0	H	CTE-HTE
6	30	05/08/87	CH02	2.3	DNT	0	3C	25.9To	0.0	H	CTE-HTE
6	30	05/08/87	CH02	1.9	DNT	0	4H	39.5To	0.0	H	CTE-HTE
6	35	05/08/87	CH02	1.7	DNT	0	HTS	16.2To	0.0	H	CTE-HTE
6	61	05/09/87	CH05	3.4	DNT	0	1C	32.5To	0.0	H	CTE-HTE
6	61	05/09/87	CH05	8.8	DNT	0	6C	4.2To	0.0	H	CTE-HTE
6	65	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
6	75	05/09/87	CH05	11.9	DNT	0	6C	4.7To	0.0	H	CTE-HTE
6	80	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
6	88	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
7	12	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
7	17	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
7	22	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
7	51	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
7	55	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
7	60	05/09/87	CH05	9.9	DNT	0	6C	3.9To	0.0	H	CTE-HTE
7	69	05/09/87	CH05	8.5	DNT	0	6C	4.8To	0.0	H	CTE-HTE
7	79	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
8	6	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	18	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
8	27	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
8	30	05/10/87	CH08	0.0	ADR	0	2H	0.0To	32.5	H	CTE-HTE
8	30	05/10/87	CH08	0.0	APT	0	1C	38.5To	0.0	H	CTE-HTE
8	33	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
8	38	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
8	73	05/10/87	CH07	4.3	DNT	0	3C	25.2To	0.0	H	CTE-HTE
8	82	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
8	85	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
9	2	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	8	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	14	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
9	50	05/10/87	CH08	0.0	CU	0	HTS	1.3To	0.0	H	CTE-HTE
9	64	05/09/87	CH05	5.9	DNT	0	6C	5.9To	0.0	H	CTE-HTE
10	16	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
10	32	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
10	35	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
10	37	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
10	48	05/10/87	CH08	0.0	CU	0	HTS	0.8To	0.0	H	CTE-HTE
10	55	05/10/87	CH07	1.9	DNT	0	1C	39.1To	0.0	H	CTE-HTE
10	70	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
10	77	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
10	82	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
10	84	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3(C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
10	88	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
11	6	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	9	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	15	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
11	23	05/08/87	CH01	2.4	DNT	0	1C	27.3To	0.0	H	CTE-HTE
11	24	05/09/87	CH06	3.2	DNT	0	6C	0.0To	0.0	H	CTE-HTE
11	24	05/09/87	CH06	2.8	DNT	0	4H	22.5To	0.0	H	CTE-HTE
11	42	05/08/87	CH03	3.8	DNT	0	CTS	10.5To	0.0	H	CTE-HTE
11	54	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
11	61	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	69	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
11	89	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
12	19	05/09/87	CH06	3.8	DNT	0	HTS	14.8To	0.0	H	CTE-HTE
12	33	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
12	34	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
12	39	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
12	46	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
12	52	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
12	68	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
12	74	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	3	05/08/87	CH01	0.8		19	CTS	11.1To	0.0	H	CTE-HTE
13	3	05/08/87	CH01	1.1		15	CTS	12.0To	0.0	H	CTE-HTE
13	19	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
13	20	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
13	29	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
13	36	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
13	44	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
13	48	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
13	51	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
13	58	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	60	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	66	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	72	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
13	79	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
13	83	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
13	84	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
13	85	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
14	5	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	10	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	12	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	13	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	19	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	23	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
14	31	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
14	40	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
14	43	05/08/87	CH03	1.8	DNT	0	3C	11.9To	0.0	H	CTE-HTE
14	59	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
15	9	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	24	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
15	38	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
15	40	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
15	47	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
15	49	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
15	63	05/09/87	CH05	1.4	DNT	0	2C	47.4To	0.0	H	CTE-HTE
15	75	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
15	78	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
16	4	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	15	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	18	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
16	32	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
16	43	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	47	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	53	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
16	55	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
16	57	05/08/87	CH03	2.5	DNT	0	4C	15.2To	0.0	H	CTE-HTE
16	58	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
16	61	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
16	82	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
16	87	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
17	5	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	9	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	17	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	24	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
17	34	05/08/87	CH02	9.6	DNT	0	CTS	4.9To	0.0	H	CTE-HTE
17	41	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
17	52	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
17	63	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	66	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	68	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
17	72	05/09/87	CH05	1.0	DNT	0	1H	13.0To	0.0	H	CTE-HTE
18	15	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
18	26	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
18	59	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
18	88	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
19	12	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
19	20	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
19	26	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	29	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	31	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
19	72	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
19	82	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
20	42	05/08/87	CH03	3.3	APT	0	5H	39.9To	0.0	H	CTE-HTE
20	49	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
20	55	05/10/87	CH07	1.3	DNT	0	1C	43.1To	0.0	H	CTE-HTE
20	55	05/10/87	CH07	1.3	DNT	0	1C	43.1To	0.0	H	CTE-HTE
20	64	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
20	69	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
20	73	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
21	6	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	11	05/08/87	CH01	1.3	DNT	0	HTS	20.4To	0.0	H	CTE-HTE
21	14	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	16	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	17	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	22	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
21	34	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
21	37	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
21	38	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
21	49	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
21	58	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
21	68	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
22	11	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	24	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
22	27	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	30	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	33	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
22	42	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
22	45	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
22	48	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
22	63	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
22	78	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
23	12	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
23	29	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
23	54	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
23	59	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
23	83	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
24	10	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	22	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	25	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
24	36	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
24	41	05/10/87	CH08	0.0		0		0.0To	0.0	H	CTE-HTE
24	70	05/09/87	CH05	1.4	DNT	0	1C	44.5To	0.0	H	CTE-HTE
24	74	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
24	75	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
24	81	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
24	84	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location	Test Leg	Extent Tested
25	16	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
25	33	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
25	60	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
25	65	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
25	72	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
26	13	05/10/87	CH08	0.0		0	0.0To 0.0	H	CTE-HTE
26	14	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
26	24	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
26	29	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
26	32	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
26	37	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
26	42	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
26	43	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
26	48	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
26	52	05/10/87	CH07	0.0		0	0.0To 0.0	H	CTE-HTE
26	75	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
27	15	05/08/87	CH01	1.3	DNT	0	4H 40.9To 0.0	H	CTE-HTE
27	28	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
27	56	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
27	64	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
28	14	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
28	21	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
28	37	05/08/87	CH02	0.0		0	0.0To 0.0	H	CTE-HTE
28	43	05/09/87	CH06	1.0	DNT	0	HTS 0.0To303.0	H	CTE-HTE
28	43	05/09/87	CH06	5.3	DNT	0	2H 36.9To 0.0	H	CTE-HTE
28	43	05/09/87	CH06	1.0	DNT	0	CTS 0.0To303.0	H	CTE-HTE
28	60	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
28	67	05/09/87	CH05	4.8	DNT	0	6H 7.2To 0.0	H	CTE-HTE
28	72	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
28	79	05/09/87	CH06	0.0		0	0.0To 0.0	H	CTE-HTE
28	81	05/09/87	CH06	0.0		0	0.0To 0.0	H	CTE-HTE
29	42	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
29	43	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
29	45	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
29	47	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
29	50	05/10/87	CH08	0.0		0	0.0To 0.0	H	CTE-HTE
29	57	05/08/87	CH03	0.0		0	0.0To 0.0	H	CTE-HTE
29	62	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
29	76	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
30	16	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
30	25	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE
30	40	05/08/87	CH02	1.8		2	CTS 13.4To 0.0	H	CTE-HTE
30	57	05/10/87	CH07	0.0		0	0.0To 0.0	H	CTE-HTE
30	71	05/09/87	CH05	0.0		0	0.0To 0.0	H	CTE-HTE
31	13	05/08/87	CH01	0.0		0	0.0To 0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row/Col		Complete Date	Reel	Volts	Ind. Desc.	%TWD		Indication Location		Test Leg	Extent Tested
31	20	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
31	29	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
31	34	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
31	51	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	53	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
31	61	05/09/87	CH05	1.6	DNT	0	3C	0.0To	0.0	H	CTE-HTE
31	67	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
32	19	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
32	20	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
32	25	05/08/87	CH01	5.2	DNT	0	6C	0.0To	0.0	H	CTE-HTE
32	74	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
32	75	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
33	32	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
33	41	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
33	43	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
33	58	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
33	63	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
33	64	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
33	69	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
33	76	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
34	18	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
34	37	05/08/87	CH02	1.2	DNT	0	4H	41.8To	0.0	H	CTE-HTE
34	49	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
34	54	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	0.0	ADR	0	3C	21.4To	36.9	H	CTE-HTE
34	59	05/09/87	CH06	2.6	DNT	0	3H	25.6To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	5.7	DNT	0	1C	21.6To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	3.1	DNT	0	FBH	8.0To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	6.7	DNT	0	1H	17.3To	0.0	H	CTE-HTE
34	59	05/09/87	CH06	3.5	DNT	0	1C	24.8To	0.0	H	CTE-HTE
35	21	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
35	26	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
35	34	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
36	54	05/10/87	CH07	0.0		0		0.0To	0.0	H	CTE-HTE
36	56	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
36	71	05/09/87	CH05	1.5	DNT	0	CTS	0.0To	303.0	H	CTE-HTE
36	74	05/09/87	CH05	23.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE
37	23	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
37	40	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
37	44	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	48	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
37	52	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
37	66	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
38	26	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
38	31	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE

CE - CPL - H.B.ROBINSON
COMPONENT : SG #3 (C)
OUTAGE : 8705RB
ALL TUBES SORTED BY ROW/COLUMN

Row	Col	Complete Date	Reel	Volts	Ind. Desc.	%TWD	Indication Location			Test Leg	Extent Tested
38	36	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
38	57	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
38	61	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
38	68	05/09/87	CH06	1.2	DNT	0	6C	3.4To	0.0	H	CTE-HTE
38	71	05/09/87	CH06	2.9		4	FBC	9.9To	0.0	H	CTE-HTE
38	71	05/09/87	CH06	5.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE
39	35	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
39	40	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
39	41	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
39	47	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
39	64	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
39	69	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
40	25	05/08/87	CH01	0.0		0		0.0To	0.0	H	CTE-HTE
40	51	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
40	55	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	42	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	45	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
41	59	05/09/87	CH06	0.0		0		0.0To	0.0	H	CTE-HTE
41	63	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
42	36	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
42	53	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
42	56	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
43	37	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
43	39	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
43	42	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
43	48	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
43	57	05/09/87	CH05	0.0		0		0.0To	0.0	H	CTE-HTE
44	36	05/08/87	CH02	0.0		0		0.0To	0.0	H	CTE-HTE
44	42	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	43	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
44	53	05/08/87	CH03	0.0		0		0.0To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	4.6	DNT	0	4A	2.8To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	8.5	DNT	0	4A	0.1To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	5.0	DNT	0	4A	1.2To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	11.2	DNT	0	1H	4.6To	0.0	H	CTE-HTE
45	45	05/08/87	CH03	6.2	DNT	0	1H	3.7To	0.0	H	CTE-HTE
45	48	05/09/87	CH06	14.7	DNT	0	1A	0.0To	0.0	H	CTE-HTE

Number of Listings : 352
Number of Tubes : 333
Number of Indications : 57

PRIMARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR C

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH01_	2	_C_	HOT __	CH01		CH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL CH01	
							WEBER DD	LIII 05/08/87
							OPER:TEAGUE MB	LII 05/07/87
							CAL STD:Z-3924	
31	9	2						CTE-HTE
31	6	3	81.94	320	OVR	6	HTS + 0.3	CTE-HTE
31	13	3	0.79	163	<20	1	CTS + 11.1	CTE-HTE
			1.08	167	<20	1	CTS + 12.0	CTE-HTE
31	16	4						CTE-HTE
31	14	5						CTE-HTE
31	17	5						CTE-HTE
31	21	6						CTE-HTE
31	11	6						CTE-HTE
31	8	6						CTE-HTE
31	9	8						CTE-HTE
31	6	9						CTE-HTE
31	11	9						CTE-HTE
31	15	9						CTE-HTE
31	17	9						CTE-HTE
31	24	10						CTE-HTE
31	14	10						CTE-HTE
31	4	11			RTI			6C-HTE
31	21	11	1.25	192	DNT	1	HTS + 20.4	CTE-HTE
31	22	11						CTE-HTE
31	23	12						CTE-HTE
31	19	12						CTE-HTE
31	14	12						CTE-HTE
31	7	12						CTE-HTE
31	14	13						CTE-HTE
31	26	13			RBD			
							^CONFIG FLIP	
31	31	13						CTE-HTE
31	28	14						CTE-HTE
31	26	14						CTE-HTE
31	21	14						CTE-HTE
31	9	14						CTE-HTE
31	11	15						CTE-HTE
31	16	15						CTE-HTE
31	18	15						CTE-HTE
31	27	15	1.32	191	DNT	1	4H + 40.9	CTE-HTE
							OPER:MCKEE B	LI 05/08/87
31	30	16						CTE-HTE
31	25	16						CTE-HTE
31	21	16						CTE-HTE
31	10	16						CTE-HTE
							OPER:TEAGUE MB	LII 05/08/87
31	7	17						CTE-HTE

PAGE 1 OF 2 EVALUATOR *Darrell D. Weber* LEVEL *III*

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH01_	2	_C_	HOT __	CH01		CH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	17	17						CTE-HTE
31	21	17						CTE-HTE
31	34	18						CTE-HTE
31	16	18						CTE-HTE
31	8	18						CTE-HTE
31	13	19						CTE-HTE
31	14	19						CTE-HTE
31	32	19						CTE-HTE
31	32	20						CTE-HTE
31	31	20						CTE-HTE
31	19	20						CTE-HTE
31	13	20						CTE-HTE
31	4	21			RTI			6H-HTE
31	28	21						CTE-HTE
31	35	21						CTE-HTE
31	24	22						CTE-HTE
31	21	22						CTE-HTE
31	7	22						CTE-HTE
31	11	23	2.36	186	DNT	1	1C + 27.3	CTE-HTE
31	14	23						CTE-HTE
31	37	23						CTE-HTE
31	26	24						CTE-HTE
31	22	24						CTE-HTE
31	17	24						CTE-HTE
31	15	24						CTE-HTE
31	3	25			RTI			6H-HTE
31	24	25						CTE-HTE
31	30	25						CTE-HTE
31	32	25	5.17	189	DNT	1	6C + 0.0	CTE-HTE
31	40	25						CTE-HTE
31	38	26						CTE-HTE
31	35	26						CTE-HTE
							END REEL CH01	

PAGE 2 OF 2 EVALUATOR Darrell D Weber LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH02_	2	_C_	HOT __	CH02		CH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH02 CIRCOSTA SA OPER: HANCOCK CAL STD: Z-3924	 LIIA 05/08/87 LII 05/08/87
31	19	26						CTE-HTE
31	18	26						CTE-HTE
31	8	27						CTE-HTE
31	22	27						CTE-HTE
31	27	28						CTE-HTE
31	3	28			RTI			6C-HTE
31	13	29						CTE-HTE
31	19	29						CTE-HTE
31	23	29						CTE-HTE
31	26	29						CTE-HTE
31	31	29						CTE-HTE
31	22	30						CTE-HTE
31	6	30	2.28	192	DNT	1	3C + 25.9	CTE-HTE
			1.86	193	DNT	1	4H + 39.5	CTE-HTE
			1.09	193	DNT	1	2H + 6.9	CTE-HTE
31	14	31						CTE-HTE
31	19	31						CTE-HTE
31	38	31						CTE-HTE
31	33	32						CTE-HTE
31	26	32						CTE-HTE
31	16	32						CTE-HTE
31	10	32						CTE-HTE
31	5	32						CTE-HTE
31	2	33			RTI			6H-HTE
31	8	33						CTE-HTE
31	12	33						CTE-HTE
31	22	33						CTE-HTE
31	25	33						CTE-HTE
31	35	34						CTE-HTE
31	31	34						CTE-HTE
31	21	34						CTE-HTE
31	17	34	9.65	190	DNT	1	CTS + 4.9	CTE-HTE
31	12	34						CTE-HTE
31	6	35	1.73	189	DNT	1	HTS + 16.2	CTE-HTE
31	10	35						CTE-HTE
31	39	35						CTE-HTE
31	44	36						CTE-HTE
31	42	36						CTE-HTE
31	38	36						CTE-HTE
31	24	36						CTE-HTE
31	13	36						CTE-HTE
31	3	36			RTI			6H-HTE
31	2	36			RTI			5H-HTE

 EVALUATOR SA Circosta LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH02_	2	_C_	HOT __	CH02		CH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	10	37						CTE-HTE
31	21	37						CTE-HTE
31	26	37						CTE-HTE
31	28	37						CTE-HTE
31	34	37	1.16	182	DNT	1	4H + 41.8	CTE-HTE
31	43	37						CTE-HTE
31	21	38						CTE-HTE
31	15	38						CTE-HTE
31	8	38						CTE-HTE
31	4	39			RTI			6C-HTE
31	12	39						CTE-HTE
31	43	39						CTE-HTE
31	39	40						CTE-HTE
31	37	40						CTE-HTE
31	30	40	1.81	178	<20	1	CTS + 13.4	CTE-HTE
31	15	40						CTE-HTE
31	14	40						CTE-HTE
31	17	41						CTE-HTE
							END REEL CH02	

PAGE 2 OF 2 | EVALUATOR S. Circosta by Darrell D. Weber | LEVEL IIA/III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH03P	2	_C_	HOT __	CH03		CH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL CH03	
							TIERNEY MG LIIA	05/08/87
							OPER: HANCOCK R LII	05/08/87
							STD: Z-3924	
31	33	41						CTE-HTE
31	39	41						CTE-HTE
31	44	42						CTE-HTE
31	43	42						CTE-HTE
31	41	42						CTE-HTE
31	29	42						CTE-HTE
31	26	42						CTE-HTE
31	22	42						CTE-HTE
31	20	42	3.30	69	APT	6	5H + 39.9	CTE-HTE
31	11	42	3.81	179	DNT	1	CTS + 10.5	CTE-HTE
31	14	43	1.83	191	DNT	1	3C + 11.9	CTE-HTE
31	16	43						CTE-HTE
31	26	43						CTE-HTE
31	29	43						CTE-HTE
31	33	43						CTE-HTE
31	44	43						CTE-HTE
31	37	44						CTE-HTE
31	13	44						CTE-HTE
31	22	45						CTE-HTE
31	29	45						CTE-HTE
31	41	45						CTE-HTE
31	45	45	8.51	189	DNT	1	4A + 0.1	CTE-HTE
			5.01	185	DNT	1	4A + 1.2	CTE-HTE
			4.64	184	DNT	1	4A + 2.8	CTE-HTE
			6.23	189	DNT	1	1H + 3.7	CTE-HTE
			11.16	188	DNT	1	1H + 4.6	CTE-HTE
31	12	46						CTE-HTE
31	15	47						CTE-HTE
31	16	47						CTE-HTE
31	29	47						CTE-HTE
31	39	47						CTE-HTE
31	43	48						CTE-HTE
31	37	48						CTE-HTE
							OPER: TEAGUE MB LII	05/08/87
31	26	48						CTE-HTE
31	22	48			RBD			
31	13	48			RBD			
31	10	48			RNT			
31	15	49						CTE-HTE
31	20	49						CTE-HTE
31	21	49						CTE-HTE
31	34	49						CTE-HTE
31	29	50			RBD			

PAGE 1 OF 2	EVALUATOR Mark G. Tierney	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH03P	2	_C_	HOT __	CH03		CH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	9	50			RBD			
31	7	51			RBD			
31	13	51			RBD			
31	31	51						CTE-HTE
31	40	51						CTE-HTE
31	26	52			RBD			
31	17	52			RBD			
31	12	52						CTE-HTE
31	5	53			RBD			
31	16	53						CTE-HTE
31	31	53						CTE-HTE
31	42	53						CTE-HTE
31	44	53						CTE-HTE
31	36	54			RBD			
31	34	54						CTE-HTE
31	23	54						CTE-HTE
31	11	54			RBD			
31	2	54			RNT			
31	7	55			RBD			
31	10	55			RBD			
							OPER: BIPES T LII	05/08/87
31	16	55			RBD			
31	20	55			RBD			
31	40	55						CTE-HTE
31	42	56						CTE-HTE
31	36	56						CTE-HTE
31	27	56						CTE-HTE
31	5	57			RNT			
31	16	57	2.46	189	DNT	1	4C + 15.2	CTE-HTE
31	29	57						CTE-HTE
31	30	57			RBD			
							END REEL CH03	

PAGE 2 OF 2 | EVALUATOR *Mark A Kerney* | LEVEL *IIA*

REEL CH-04 WAS NOT USED

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH05_	2	_C_	HOT __	CH05		CH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION			EXTENT
					PRO		A720SFRM REEL CH05 CIRCOSTA SA OPER: TEAGUE MB CAL STD: Z-3924			LIIA 05/09/87 LII 05/09/87
31	38	57								CTE-HTE
31	43	57								CTE-HTE
31	33	58								CTE-HTE
31	21	58								CTE-HTE
31	16	58								CTE-HTE
31	13	58								CTE-HTE
31	2	58			RND					
31	1	59			RND					
31	4	59			RND					
31	14	59								CTE-HTE
31	18	59								CTE-HTE
31	23	59								CTE-HTE
31	28	60								CTE-HTE
31	25	60								CTE-HTE
31	13	60								CTE-HTE
31	7	60	9.92	189	DNT	1	6C	+	3.9	CTE-HTE
31	6	61	3.36	191	DNT	1	1C	+	32.5	CTE-HTE
			8.75	183	DNT	1	6C	+	4.2	CTE-HTE
31	1	60			RND					
31	11	61								CTE-HTE
31	16	61								CTE-HTE
31	31	61	1.61	191	DNT	1	3C	+	0.0	CTE-HTE
31	38	61								CTE-HTE
31	29	62								CTE-HTE
31	15	63	1.42	188	DNT	1	2C	+	47.4	CTE-HTE
31	17	63								CTE-HTE
31	22	63								CTE-HTE
31	33	63								CTE-HTE
31	41	63								CTE-HTE
31	39	64								CTE-HTE
31	33	64								CTE-HTE
31	27	64								CTE-HTE
31	20	64								CTE-HTE
31	9	64	5.89	181	DNT	1	6C	+	5.9	CTE-HTE
31	2	64			RND					
31	1	65			RND					
31	6	65								CTE-HTE
31	25	65								CTE-HTE
31	37	66								CTE-HTE
31	17	66								CTE-HTE
31	13	66								CTE-HTE
31	2	66			RND					
31	5	67								CTE-HTE

 EVALUATOR SA Circosta LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH05_	2	_C_	HOT __	CH05		CH05	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	28	67	4.78	191	DNT	1	6H + 7.2	CTE-HTE
31	31	67						CTE-HTE
31	21	68						CTE-HTE
31	17	68						CTE-HTE
31	12	68						CTE-HTE
31	7	69	8.47	188	DNT	1	6C + 4.8	CTE-HTE
31	11	69						CTE-HTE
31	20	69						CTE-HTE
31	33	69						CTE-HTE
31	39	69						CTE-HTE
31	24	70	1.44	189	DNT	1	1C + 44.5	CTE-HTE
31	10	70						CTE-HTE
31	30	71						CTE-HTE
31	36	71	1.53	191	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
31	28	72						CTE-HTE
31	25	72						CTE-HTE
31	19	72						CTE-HTE
31	17	72	1.04	190	DNT	1	1H + 13.0	CTE-HTE
31	13	72						CTE-HTE
31	5	72	12.47	183	DNT	1	6C + 5.6	CTE-HTE
31	20	73						CTE-HTE
31	36	74	23.67	186	DNT	1	1A + 0.0	CTE-HTE
31	32	74						CTE-HTE
31	24	74						CTE-HTE
31	12	74						CTE-HTE
31	2	74			RND			
31	1	75			RND			
31	6	75	11.85	185	DNT	1	6C + 4.7	CTE-HTE
31	15	75						CTE-HTE
31	26	75						CTE-HTE
31	32	75						CTE-HTE
31	33	76						CTE-HTE
31	29	76						CTE-HTE

END REEL CH05

PAGE 2 OF 2 | EVALUATOR S.I. Circosta | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH06_	2	_C_	HOT __	CH06		CH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH06 CIRCOSTA SA OPER: HANCOCK RW CAL STD: Z-3924	 LIIA 05/09/87 LII 05/09/87
31	10	77						CTE-HTE
31	22	78						CTE-HTE
31	15	78						CTE-HTE
31	1	78			RND			
31	1	79			RND			
31	7	79						CTE-HTE
31	13	79						CTE-HTE
31	28	79						CTE-HTE
31	6	80						CTE-HTE
31	2	80			RND			
31	5	81						CTE-HTE
31	24	81						CTE-HTE
31	28	81						CTE-HTE
31	19	82						CTE-HTE
31	16	82						CTE-HTE
31	10	82						CTE-HTE
31	8	82						CTE-HTE
31	13	83						CTE-HTE
31	23	83						CTE-HTE
31	24	84						CTE-HTE
31	13	84						CTE-HTE
31	10	84						CTE-HTE
31	2	84			RND			
31	5	85						CTE-HTE
31	8	85						CTE-HTE
31	13	85						CTE-HTE
31	1	86			RND			
31	16	87						CTE-HTE
31	18	88						CTE-HTE
31	10	88						CTE-HTE
31	6	88						CTE-HTE
31	11	89						CTE-HTE
31	5	90						CTE-HTE
31	4	90			RND			
31	4	6			RND			
31	4	78			RND			
31	8	73			RTI			CTS-HTE
31	38	71	2.94	175	<20	1	FBC + 9.9	CTE-HTE
			5.74	189	DNT	1	1A + 0.0	CTE-HTE
31	38	68	1.22	190	DNT	1	6C + 3.4	CTE-HTE
31	41	59						CTE-HTE
31	34	59	3.50	191	DNT	1	1C + 24.8	CTE-HTE
			5.68	198	DNT	1	1C + 21.6	CTE-HTE

PAGE 1 OF 2 | EVALUATOR SA Circosta | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH06_	2	_C_	HOT __	CH06		CH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	34	59			ADR	6	3C + 21.4TO+ 36.9	CTE-HTE
			2.63	187	DNT	1	3H + 25.6	CTE-HTE
			6.66	190	DNT	1	1H + 17.3	CTE-HTE
			3.12	193	DNT	1	FBH + 8.0	CTE-HTE
31	37	52						CTE-HTE
31	45	48	14.74	189	DNT	1	1A + 0.0	CTE-HTE
31	28	43	5.35	190	DNT	1	2H + 36.9	CTE-HTE
			1.02	194	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
			1.02	194	DNT	1	HTS + 0.0TO+ 303.0	CTE-HTE
31	3	43			RND			
31	8	30			RND			
31	11	24	3.22	186	DNT	1	6C + 0.0	CTE-HTE
			2.80	190	DNT	1	4H + 22.5	CTE-HTE
31	12	19	3.81	194	DNT	1	HTS + 14.8	CTE-HTE
31	4	6			RND			
							END REEL CH06	

PAGE 2 OF 2 | EVALUATOR S.A. Cericola | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH07_	2	_C_	HOT __	CH07		CH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJFRMWF REEL CH07 CIRCOSTA SA LIIA 05/10/87 OPER: KLATT MJ LII 05/09/87 CAL STD: Z-3924	
31	1	79	1.90	187	DNT	1	HTS + 20.1	6C-HTE
31	1	78						6C-HTE
31	1	75						6C-HTE
31	2	74						6C-HTE
31	2	66						6C-HTE
31	1	65						6C-HTE
31	2	64						6C-HTE
31	1	60						6C-HTE
31	4	59						6C-HTE
31	1	59						6C-HTE
31	2	58						6C-HTE
31	2	54						6C-HTE
31	4	39			RND			
31	4	78						6C-HTE
31	1	5						6C-HTE
31	2	6						6C-HTE
31	3	43			RND			
31	4	6						6C-HTE
31	3	7						6C-HTE
31	1	10						6C-HTE
31	4	11						6C-HTE
31	2	14						6C-HTE
31	5	90			RBD		WRONG ENCODE	
31	1	86						6C-HTE
31	2	84	2.23	190	DNT	1	HTS + 8.3	6C-HTE
31	2	80						6C-HTE
							REEL CH07 WILL CONT. ON DD-7A.	

PAGE 1 OF 1	EVALUATOR S. Circosta by David D. Vale	LEVEL IIA / III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH07A	2	_C_	HOT __	CH07		CH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH07 CIRCOSTA SA LIIA 05/10/87 OPER: TEAQUE MB LII 05/09/87 CAL STD: Z-3924	
31	26	52						CTE-HTE
31	5	53						CTE-HTE
31	11	54						CTE-HTE
31	36	54						CTE-HTE
31	7	55						CTE-HTE
31	10	55	1.86	188	DNT	1	1C + 39.1	CTE-HTE
31	15	55			RBD		WRONG ENCODE	
31	20	55	1.32	186	DNT	1	1C + 43.1	CTE-HTE
			1.32	186	DNT	1	1C + 43.1	CTE-HTE
31	5	57						CTE-HTE
31	30	57						CTE-HTE
31	5	73						CTE-HTE
31	24	75						CTE-HTE
31	8	73	4.33	187	DNT	1	3C + 25.2	CTE-HTE
							END REEL CH07	

PAGE 1 OF 1	EVALUATOR SA Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH08_	2	_C_	HOT __	CH08		CH08	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJFRMWF REEL CH08 CIRCOSTA SA OPER: TEAQUE MB CAL STD: Z-3924	 LIIA 05/10/87 LII 05/10/87
31	1	15						6C-HTE
31	1	18						6C-HTE
31	1	21						6C-HTE
31	2	21						6C-HTE
31	4	21						6C-HTE
31	3	25						6C-HTE
31	1	27						6C-HTE
31	3	28						6C-HTE
31	2	33						6C-HTE
31	2	36						6C-HTE
31	3	36						6C-HTE
31	3	43						6C-HTE
31	4	39						6C-HTE
31	4	6						6C-HTE
31	4	90						6C-HTE
							END DD-8 WILL CONT. ON DD-8A.	

PAGE 1 OF 1	EVALUATOR SA Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH08A	2	_C_	HOT __	CH08		CH08	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL CH08	
							CIRCOSTA SA LIIA	05/10/87
							OPER: TEAQUE MB LII	05/10/87
							CAL STD: Z-3924	
31	16	55						CTE-HTE
31	17	52						CTE-HTE
31	13	51						CTE-HTE
31	7	51						CTE-HTE
31	29	50						CTE-HTE
31	9	50			CU	1	HTS + 1.3	CTE-HTE
							OPER: BIPES TU LII	05/10/87
31	26	13						CTE-HTE
31	8	30			APT	6	1C + 38.5	CTE-HTE
					ADR	6	2H + 0.0TO+ 32.5	CTE-HTE
31	24	41						CTE-HTE
31	10	48			CU	1	HTS + 0.8	CTE-HTE
31	13	48						CTE-HTE
31	22	48						CTE-HTE
							END REEL CH08	

PAGE 1 OF 1 EVALUATOR SA Circosta LEVEL IIA

SECONDARY DATA ANALYSIS

DDA-4 SHEETS

GENERATOR C

NOTE: These secondary data analysis sheets are provided for information and have no effect on the results listings except where differences were resolved as required by the analysis procedure. Resolutions are identified on the primary DDA-4 sheets.

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH01S	2	_C_	HOT __	CH01		CH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH01 CIRCOSTA SA LIIA 05/08/87 OPER:TEAGUE MB LII 05/07/87 CAL STD:Z-3924	
31	9	2						CTE-HTE
31	6	3	79.03	328	OVR	6	HTS + 0.3	CTE-HTE
31	13	3	1.04	171	<20	1	CTS + 12.0	CTE-HTE
			0.85	163	<20	1	CTS + 11.0	CTE-HTE
31	16	4						CTE-HTE
31	14	5						CTE-HTE
31	17	5						CTE-HTE
31	21	6						CTE-HTE
31	11	6						CTE-HTE
31	8	6						CTE-HTE
31	9	8						CTE-HTE
31	6	9						CTE-HTE
31	11	9						CTE-HTE
31	15	9						CTE-HTE
31	17	9						CTE-HTE
31	24	10						CTE-HTE
31	14	10						CTE-HTE
31	4	11			RTI			6C-HTE
31	21	11	1.25	194	DNT	1	HTS + 20.3	CTE-HTE
31	22	11						CTE-HTE
31	23	12						CTE-HTE
31	19	12						CTE-HTE
31	14	12						CTE-HTE
31	7	12						CTE-HTE
31	14	13						CTE-HTE
31	26	13			RBD			
31	31	13						CTE-HTE
31	28	14						CTE-HTE
31	26	14						CTE-HTE
31	21	14						CTE-HTE
31	9	14						CTE-HTE
31	11	15						CTE-HTE
31	16	15						CTE-HTE
31	18	15						CTE-HTE
31	27	15	1.32	193	DNT	1	4H + 40.9	CTE-HTE
							OPER: MCKEE B LI	05/08/87
31	30	16						CTE-HTE
31	25	16						CTE-HTE
31	21	16						CTE-HTE
31	10	16						CTE-HTE
							OPER: TEAQUE MB LII	05/08/87
31	7	17						CTE-HTE
31	17	17						CTE-HTE

PAGE 1 OF 2 EVALUATOR SA Circosta LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH01S	2	_C_	HOT __	CH01		CH01	05/07/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	21	17						CTE-HTE
31	34	18						CTE-HTE
31	16	18						CTE-HTE
31	8	18						CTE-HTE
31	13	19						CTE-HTE
31	14	19						CTE-HTE
31	32	19						CTE-HTE
31	32	20						CTE-HTE
31	31	20						CTE-HTE
31	19	20						CTE-HTE
31	13	20						CTE-HTE
31	4	21			RTI			6H-HTE
31	28	21						CTE-HTE
31	35	21						CTE-HTE
31	24	22						CTE-HTE
31	21	22						CTE-HTE
31	7	22						CTE-HTE
31	11	23	2.43	189	DNT	1	1C + 27.3	CTE-HTE
31	14	23						CTE-HTE
31	37	23						CTE-HTE
31	26	24						CTE-HTE
31	22	24						CTE-HTE
31	17	24						CTE-HTE
31	15	24						CTE-HTE
31	3	25			RTI			6H-HTE
31	24	25						CTE-HTE
31	30	25						CTE-HTE
31	32	25	5.20	190	DNT	1	6C + 0.0	CTE-HTE
31	40	25						CTE-HTE
31	38	26						CTE-HTE
31	35	26						CTE-HTE
							END REEL CH01	

PAGE 2 OF 2	EVALUATOR St Cercosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH02S	2	_C_	HOT __	CH02		CH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION			EXTENT
					PRO		A720SFRM REEL CH02 WEBER DD OPER: HANCOCK RW CAL STD: Z-3924			 LIII 05/08/87 LII 05/08/87
31	19	26								CTE-HTE
31	18	26								CTE-HTE
31	8	27								CTE-HTE
31	22	27								CTE-HTE
31	27	28								CTE-HTE
31	3	28			RTI					6C-HTE
31	13	29								CTE-HTE
31	19	29								CTE-HTE
31	23	29								CTE-HTE
31	26	29								CTE-HTE
31	31	29								CTE-HTE
31	22	30								CTE-HTE
31	6	30	2.29	192	DNT	1	3C	+	26.0	CTE-HTE
			1.80	192	DNT	1	4H	+	39.3	CTE-HTE
			1.38	192	DNT	1	2H	+	6.4	CTE-HTE
31	14	31								CTE-HTE
31	19	31								CTE-HTE
31	38	31								CTE-HTE
31	33	32								CTE-HTE
31	26	32								CTE-HTE
31	16	32								CTE-HTE
31	10	32								CTE-HTE
31	5	32								CTE-HTE
31	2	33			RTI					6H-HTE
31	8	33								CTE-HTE
31	12	33								CTE-HTE
31	22	33								CTE-HTE
31	25	33								CTE-HTE
31	35	34								CTE-HTE
31	31	34								CTE-HTE
31	21	34								CTE-HTE
31	17	34	9.65	190	DNT	1	CTS	+	4.9	CTE-HTE
			1.75	191	DNT	1	5C	+	16.9	CTE-HTE
31	12	34								CTE-HTE
31	6	35	1.70	187	DNT	1	HTS	+	16.0	CTE-HTE
31	10	35								CTE-HTE
31	39	35								CTE-HTE
31	44	36								CTE-HTE
31	42	36								CTE-HTE
31	38	36								CTE-HTE
31	24	36								CTE-HTE
31	13	36								CTE-HTE
31	3	36			RTI					6H-HTE

PAGE 1 OF 2	EVALUATOR Darrell D. Weber	LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH02S	2	_C_	HOT __	CH02		CH02	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	2	36			RTI			5H-HTE
31	10	37						CTE-HTE
31	21	37						CTE-HTE
31	26	37						CTE-HTE
31	28	37	1.24	190	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
			1.24	190	DNT	1	HTS + 0.0TO+ 303.0	CTE-HTE
31	34	37	1.23	178	DNT	1	4H + 41.7	CTE-HTE
31	43	37						CTE-HTE
31	21	38						CTE-HTE
31	15	38						CTE-HTE
31	8	38	9.33	37	CU	1	HTS + 1.4	CTE-HTE
31	4	39			RTI			6C-HTE
31	12	39						CTE-HTE
31	43	39						CTE-HTE
31	39	40						CTE-HTE
31	37	40						CTE-HTE
31	30	40	1.81	178	DNT	1	CTS + 13.5	CTE-HTE
31	15	40						CTE-HTE
31	14	40						CTE-HTE
31	17	41						CTE-HTE
							END REEL CH02	

PAGE 2 OF 2 | EVALUATOR Darrell D. Weber | LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH03S	2	_C_	HOT __	CH03		CH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM	
							REEL CH03	
							CIRCOSTA SA LIIA	05/10/87
							OPER: HANCOCK R LII	05/08/87
							STD: Z-3924	
31	33	41						CTE-HTE
31	39	41						CTE-HTE
31	44	42						CTE-HTE
31	43	42						CTE-HTE
31	41	42						CTE-HTE
31	29	42						CTE-HTE
31	26	42						CTE-HTE
31	22	42						CTE-HTE
31	20	42						CTE-HTE
31	11	42	1.53	177	DNT	1	CTS + 9.3	CTE-HTE
			3.81	179	DNT	1	CTS + 10.5	CTE-HTE
31	14	43	1.83	190	DNT	1	3C + 12.0	CTE-HTE
31	16	43						CTE-HTE
31	26	43						CTE-HTE
31	29	43						CTE-HTE
31	33	43						CTE-HTE
31	44	43						CTE-HTE
31	37	44						CTE-HTE
31	13	44						CTE-HTE
31	22	45						CTE-HTE
31	29	45						CTE-HTE
31	41	45						CTE-HTE
31	45	45	8.88	186	DNT	1	4A + 0.4	CTE-HTE
			5.01	184	DNT	1	4A + 1.2	CTE-HTE
			4.64	183	DNT	1	4A + 2.7	CTE-HTE
			1.83	183	DNT	1	4A + 3.2	CTE-HTE
			1.69	186	DNT	1	4A + 3.8	CTE-HTE
			6.23	189	DNT	1	1H + 3.8	CTE-HTE
			11.16	188	DNT	1	1H + 4.6	CTE-HTE
			2.11	190	DNT	1	1H + 19.2	CTE-HTE
31	12	46						CTE-HTE
31	15	47						CTE-HTE
31	16	47						CTE-HTE
31	29	47						CTE-HTE
31	39	47						CTE-HTE
31	43	48						CTE-HTE
31	37	48						CTE-HTE
							OPER: TEAQUE MB LII	05/08/87
31	26	48						CTE-HTE
31	22	48			RBD			
							SIGNAL SWITCH	
31	13	48						CTE-HTE

PAGE 1 OF 2	EVALUATOR SA Circosta	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH03S	2	_C_	HOT __	CH03		CH03	05/08/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	10	48			RND			
31	15	49						CTE-HTE
31	20	49						CTE-HTE
31	21	49						CTE-HTE
31	34	49						CTE-HTE
31	29	50						CTE-HTE
31	9	50			RBD			
31	7	51			RBD			
31	13	51			RBD			
31	31	51						CTE-HTE
31	40	51						CTE-HTE
31	26	52			RBD			
31	17	52			RBD			
31	12	52						CTE-HTE
31	5	53			RBD			
31	16	53						CTE-HTE
31	31	53						CTE-HTE
31	42	53						CTE-HTE
31	44	53						CTE-HTE
31	36	54			RBD			
31	34	54						CTE-HTE
31	23	54						CTE-HTE
31	11	54			RBD			
31	7	55			RBD			
31	10	55			RBD			
							OPER: BIPES TU LII	05/08/87
31	16	55			RBD			
31	20	55			RBD			
31	40	55						CTE-HTE
31	42	56						CTE-HTE
31	36	56						CTE-HTE
31	27	56						CTE-HTE
31	16	57	2.46	188	DNT	1	4C + 15.2	CTE-HTE
31	29	57						CTE-HTE
31	30	57			RBD			
							END REEL CH03	

PAGE 2 OF 2	EVALUATOR St Arcosta	LEVEL IIA

REEL #CH-04 WAS NOT USED

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH05S	2	_C_	HOT __	CH05		CH05	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRD		A720SFRM	
							REEL CH05	
							LYNCH DE	LIIA 05/10/87
							OPER: TEAGUE MB	LII 05/09/87
							CAL STD: Z-3924	
31	38	57						CTE-HTE
31	43	57						CTE-HTE
31	33	58						CTE-HTE
31	21	58						CTE-HTE
31	16	58						CTE-HTE
31	13	58						CTE-HTE
31	14	59						CTE-HTE
31	18	59						CTE-HTE
31	23	59	1.03	187	DNT	1	5H + 38.3	CTE-HTE
31	28	60						CTE-HTE
31	25	60						CTE-HTE
31	13	60						CTE-HTE
31	7	60						CTE-HTE
31	6	61	3.36	189	DNT	1	1C + 32.7	CTE-HTE
31	11	61						CTE-HTE
31	16	61						CTE-HTE
31	31	61	1.59	191	DNT	1	3C + 0.0	CTE-HTE
31	38	61						CTE-HTE
31	29	62						CTE-HTE
31	15	63	1.40	187	DNT	1	2C + 47.3	CTE-HTE
31	17	63						CTE-HTE
31	22	63						CTE-HTE
31	33	63						CTE-HTE
31	41	63						CTE-HTE
31	39	64						CTE-HTE
31	33	64						CTE-HTE
31	27	64						CTE-HTE
31	20	64						CTE-HTE
31	9	64						CTE-HTE
31	6	65						CTE-HTE
31	25	65						CTE-HTE
31	37	66	1.02	178	DNT	M 1	1C + 0.0	CTE-HTE
31	17	66						CTE-HTE
31	13	66						CTE-HTE
31	5	67						CTE-HTE
31	28	67						CTE-HTE
31	31	67						CTE-HTE
31	21	68	5.82	248	APT	6	2H + 33.0	CTE-HTE
31	17	68						CTE-HTE
31	12	68						CTE-HTE
31	7	69						CTE-HTE
31	11	69						CTE-HTE
31	20	69						CTE-HTE

PAGE 1 OF 2	EVALUATOR	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH05S	2	_C_	HOT __	CH05		CH05	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	33	69						CTE-HTE
31	39	69						CTE-HTE
31	24	70	1.44	185	DNT	1	1C + 44.4	CTE-HTE
31	10	70						CTE-HTE
31	30	71						CTE-HTE
31	36	71	1.43	192	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE
			1.60	192	DNT	1	HTS + 0.0TO+ 303.0	CTE-HTE
31	28	72						CTE-HTE
31	25	72						CTE-HTE
31	19	72						CTE-HTE
31	17	72	1.04	192	DNT	1	1H + 13.2	CTE-HTE
31	13	72						CTE-HTE
31	5	72						CTE-HTE
31	20	73						CTE-HTE
31	36	74	23.67	183	DNT	1	1A + 0.0	CTE-HTE
31	32	74						CTE-HTE
31	24	74						CTE-HTE
31	12	74						CTE-HTE
31	6	75						CTE-HTE
31	15	75						CTE-HTE
31	24	75						CTE-HTE
31	26	75						CTE-HTE
31	32	75						CTE-HTE
31	33	76						CTE-HTE
31	29	76						CTE-HTE
							END REEL CH05	

PAGE 2 OF 2	EVALUATOR RlEL	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH06S	2	_C_	HOT __	CH06		CH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH06 WEBER DD LIII 05/10/87 OPER: HANCOCK RW LII 05/09/87 CAL STD: Z-3924	
31	10	77						CTE-HTE
31	22	78						CTE-HTE
31	15	78						CTE-HTE
31	7	79						CTE-HTE
31	13	79						CTE-HTE
31	28	79						CTE-HTE
31	6	80						CTE-HTE
31	5	81						CTE-HTE
31	24	81						CTE-HTE
31	28	81						CTE-HTE
31	19	82						CTE-HTE
31	16	82						CTE-HTE
31	10	82						CTE-HTE
31	8	82						CTE-HTE
31	13	83						CTE-HTE
31	23	83						CTE-HTE
31	24	84						CTE-HTE
31	13	84						CTE-HTE
31	10	84						CTE-HTE
31	5	85						CTE-HTE
31	8	85						CTE-HTE
31	13	85						CTE-HTE
31	16	87						CTE-HTE
31	18	88						CTE-HTE
31	10	88						CTE-HTE
31	6	88						CTE-HTE
31	11	89						CTE-HTE
31	5	90						CTE-HTE
31	8	73	4.48	191	DNT	1	3C + 24.6	CTE-HTE
31	38	71	2.94	176	<20	1	FBC + 12.1	CTE-HTE
			5.74	189	DNT	1	1A + 0.0	CTE-HTE
31	38	68	1.23	192	DNT	1	6C + 4.1	CTE-HTE
31	41	59						CTE-HTE
31	34	59	5.78	197	DNT	1	1C + 21.8	CTE-HTE
			3.50	191	DNT	1	1C + 24.5	CTE-HTE
			1.68	40	ADR	6	3C + 23.4TO+ 36.1	CTE-HTE
			2.58	187	DNT	1	3H + 25.8	CTE-HTE
			6.66	190	DNT	1	1H + 17.1	CTE-HTE
			3.12	193	DNT	1	FBH + 8.0	CTE-HTE
31	37	52						CTE-HTE
31	45	48	14.53	190	DNT	1	1A + 0.0	CTE-HTE
31	28	43	5.35	190	DNT	1	2H + 36.9	CTE-HTE
			1.02	194	DNT	1	CTS + 0.0TO+ 303.0	CTE-HTE

PAGE 1 OF 2	EVALUATOR Darrell D. Weber	LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH06S	2	_C_	HOT __	CH06		CH06	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
31	28	43	1.02	194	DNT	1	HTS + 0.0TO+ 303.0	CTE-HTE
31	11	24	2.80	190	DNT	1	4H + 23.6	CTE-HTE
			3.27	186	DNT	1	6C + 0.0	CTE-HTE
31	12	19	3.81	193	DNT	1	HTS + 15.7	CTE-HTE
							END REEL CH06	

PAGE 2 OF 2	EVALUATOR Darrell D. Weber	LEVEL III

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH07S	2	_C_	HOT __	CH07		CH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJFRMWF REEL CH07 LYNCH DE OPER: KLATT MJ STD: Z-3924	LIIA 05/10/87 LII 05/09/87
31	1	79	1.76	187	DNT	1	FBH + 0.2	6C-HTE
			1.85	187	DNT	1	FBH - 0.2	6C-HTE
31	1	78						6C-HTE
31	1	75						6C-HTE
31	2	74						6C-HTE
31	2	66						6C-HTE
31	1	65						6C-HTE
31	2	64						6C-HTE
31	1	60						6C-HTE
31	4	59						6C-HTE
31	1	59						6C-HTE
31	2	58						6C-HTE
31	2	54						6C-HTE
31	4	78						6C-HTE
31	1	5						6C-HTE
31	2	6						6C-HTE
31	4	6						6C-HTE
31	3	7						6C-HTE
31	1	10						6C-HTE
31	4	11						6C-HTE
31	2	14						6C-HTE
31	5	90			RND			
31	1	86						6C-HTE
31	2	84	2.24	190	DNT	1	HTS + 8.8	6C-HTE
31	2	80						6C-HTE
							END DD07S CONT ON DD7AS PROBE CHANGE TO A720SFRM	

PAGE 1 OF 1 | EVALUATOR [signature] | LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH7AS	2	_C_	HOT __	CH07		CH07	05/09/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A720SFRM REEL CH07 DD07AS LYNCH DE OPER: KLATT MJ STD: Z-3924	 LIIA 05/10/87 LII 05/10/87
31	26	52						CTE-HTE
31	5	53						CTE-HTE
31	11	54						CTE-HTE
31	36	54						CTE-HTE
31	7	55						CTE-HTE
31	10	55	1.89	189	DNT	1	1C + 39.1	CTE-HTE
31	15	55						CTE-HTE
31	20	55	1.23	185	DNT	1	1C + 43.1	CTE-HTE
31	5	57						CTE-HTE
31	30	57						CTE-HTE
31	5	73						CTE-HTE
31	24	75						CTE-HTE
31	8	73	4.33	186	DNT	1	3C + 25.3	CTE-HTE
							END REEL CH07 DD07AS	

PAGE 1 OF 1	EVALUATOR	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH08S	2	_C_	HOT __	CH08		CH08	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A680BJFSFRM	
							REEL CH08 DD08S	
							LYNCH DE	LIIA 05/10/87
							OPER: TEAGUE MB	LII 05/09/87
							STD: Z-3924	
31	1	15						6C-HTE
31	1	18						6C-HTE
31	1	21						6C-HTE
31	2	21						6C-HTE
31	4	21						6C-HTE
31	3	25						6C-HTE
31	1	27						6C-HTE
31	3	28						6C-HTE
31	2	33						6C-HTE
31	2	36						6C-HTE
31	3	36						6C-HTE
31	3	43						6C-HTE
31	4	39						6C-HTE
31	4	6						6C-HTE
31	4	90						6C-HTE
							END DD08S CONT ON DD08AS	

PAGE 1 OF 1	EVALUATOR DLE	LEVEL IIA

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
CP&L/HBR DDCH8AS	2	_C_	HOT __	CH08		CH08	05/10/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		A 720SFRM	
							REEL CH08 DD08AS	
							LYNCH DE	LIIA 05/10/87
							OPER: TEAGUE MB	LII 05/09/87
							STD: Z-3924	
31	16	55						CTE-HTE
31	17	52						CTE-HTE
31	13	51						CTE-HTE
31	7	51						CTE-HTE
31	29	50						CTE-HTE
31	9	50	3.75	189	DNT	1	HTS + 9.6	CTE-HTE
			2.44	24	CU	1	HTS + 1.4	CTE-HTE
							OPER: BIPES TU	LII 05/09/87
31	26	13						CTE-HTE
31	8	30	6.86	45	APT	6	1C + 38.2	CTE-HTE
31	24	41						CTE-HTE
31	10	48	3.01	15	CU	1	HTS + 0.5	CTE-HTE
31	13	48						CTE-HTE
31	22	48						CTE-HTE
							END REEL CH08 DD08AS	

PAGE 1 OF 1 | EVALUATOR | LEVEL IIA

EDDY CURRENT DATA SHEET

ACQUISITION LOG

GENERATOR C

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
205	9	2	CH-RD PV	MBT	DL		
191	6	3	CH-RD	MBT	DL		
1	13	3	CH-RD	MBT	DL		
2	16	4	CH-RD	MBT	DL		
334	1	5	CH-RD	MBT			No Test
228	14	5	CH-RD	MBT	DL		
3	17	5	CH-RD	MBT	DL		
253	21	6	CH-RD	MBT	DL		
215	11	6	CH-RD	MBT	DL		
4	8	6	CH-RD	MBT	DL		
173	2	6	CH-RD	MBT			NO TEST
5	3	7	CH-RD	MBT			NO TEST
206	9	8	CH-RD	MBT	DL		
192	6	9	CH-RD	MBT	DL		
6	11	9	CH-RD	MBT	DL		
7	15	9	CH-RD	MBT	DL		
239	17	9	CH-RD	MBT	DL		
9	24	10	CH-RD	MBT	DL		
8	14	10	CH-RD PV	MBT	DL		
335	1	10	CH-RD	MBT			No Test

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
10	4	11	CH-RD	MBT	DW		Incomplete
254	21	11	CH-RD	MBT	DW		
11	22	11	CH-RD	MBT	DW		
14	23	12	CH-RD	MBT	DW		
13	19	12	CH-RD	MBT	DW		
12	14	12	CH-RD	MBT	DW		
195	7	12	CH-RD	MBT	DW		
229	14	13	CH-RD	MBT	DW		
15	26	13	CH-RD	MBT	DW RBD		
290	31	13	CH-RD	MBT	DW		
18	28	14	CH-RD	MBT	DW		
330	26	14	CH-RD	MBT	DW		
17	21	14	CH-RD	MBT	DW		
16	9	14	CH-RD	MBT	DW		
175	2	14	CH-RD	MBT			NO TEST
336	1	15	CH-RD	MBT			NO TEST
216	11	15	CH-RD	MBT	DW		
19	16	15	CH-RD	MBT	DW		
20	18	15	CH-RD	MBT.	DW		
328	27	15	CH-RD PV	MBT	DW		

Shift Supervisor: TRB Data Controller: TRB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET		TESTED	ANALYZED	INDEX	COMMENTS
288	30	16	CH-RD		Bm	DJ		
269	25	16	CH-RD		Bm	DJ		
22	21	16	CH-RD		Bm	DJ		
21	10	16	CH-RD		Bm	DJ		
196	7	17	CH-RD		MBT	DJ		
23	17	17	CH-RD		MBT	DJ		
255	21	17	CH-RD		MBT	DJ		
25	34	18	CH-RD		MBT	DJ		
236	16	18	CH-RD		MBT	DJ		
24	8	18	CH-RD		MBT	DJ		
170	1	18	CH-RD		MBT			NO TEST
26	13	19	CH-RD		MBT	DW		
230	14	19	CH-RD		MBT	DJ		
27	32	19	CH-RD		MBT	DJ		
295	32	20	CH-RD		MBT	DJ		
29	31	20	CH-RD		MBT	DJ		
248	19	20	CH-RD		MBT	DJ		
28	13	20	CH-RD	PV	MBT	DJ		
337	1	21	CH-RD		MBT			NO TEST
176	2	21	CH-RD		MBT			NO TEST

Shift Supervisor: JAB Data Controller: JAB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 4

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH01
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
30	4	21	CH-RD	MBT	DW		Incomplete
31	28	21	CH-RD	MBT	DW		
32	35	21	CH-RD	MBT	DW		
33	24	22	CH-RD	MBT	DW		
331	21	22	CH-RD	MBT	DW		
197	7	22	CH-RD	MBT	DW		
217	11	23	CH-RD	MBT	DW		
34	14	23	CH-RD	MBT	DW		
35	37	23	CH-RD	MBT	DW		
272	26	24	CH-RD	MBT	DW		
37	22	24	CH-RD	MBT	DW		
240	17	24	CH-RD	MBT	DW		
36	15	24	CH-RD	MBT	DW		
38	3	25	CH-RD	MBT	DW		Incomplete
266	24	25	CH-RD	MBT	DW		
289	30	25	CH-RD	MBT	DW		
39	32	25	CH-RD	MBT	DW		
315	40	25	CH-RD	MBT	DW		
41	38	26	CH-RD	MBT	DW		
304	35	26	CH-RD PV	MBT	DW		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 5

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
249	19	26	CH-RD	PV	MBT RWA	SC	
40	18	26	CH-RD		MBT RWA	SC	
171	1	27	CH-RD		~~MBT RWA~~	~~SC~~	No Test
201	8	27	CH-RD		MBT RWA	SC	
259	22	27	CH-RD		MBT RWA	SC	
43	27	28	CH-RD		MBT RWA	SC	
42	3	28	CH-RD		MBT RWA	SC	~~No Test~~ INC RWA
221	13	29	CH-RD		MBT RWA	SC	
250	19	29	CH-RD		MBT RWA	SC	
44	23	29	CH-RD		MBT RWA	SC	
273	26	29	CH-RD		RWA ✓	SC	
291	31	29	CH-RD		RWA ✓	SC	
46	22	30	CH-RD		RWA ✓	SC	
45	6	30	CH-RD		RWA ✓	SC	
231	14	31	CH-RD		RWA ✓	SC	
47	19	31	CH-RD		RWA ✓	SC	
310	38	31	CH-RD		RWA ✓	SC	
52	33	32	CH-RD		RWA ✓	SC	
51	26	32	CH-RD		RWA ✓	SC	
50	16	32	CH-RD	FV	RWA ✓	SC	

Shift Supervisor: JL Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 6

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH-02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
49	10	32	CH-RD	RWA	SC		
48	5	32	CH-RD	RWA	SC		~~INC~~ RWA
178	2	33	CH-RD	RWA	SC		INC
202	8	33	CH-RD	RWA	SC		
53	12	33	CH-RD	RWA	SC		
260	22	33	CH-RD	RWA	SC		
270	25	33	CH-RD	RWA	SC		
305	35	34	CH-RD	RWA	SC		
292	31	34	CH-RD	RWA	SC		
55	21	34	CH-RD	RWA	SC		
241	17	34	CH-RD	RWA	SC		
54	12	34	CH-RD	RWA	SC		
56	6	35	CH-RD	RWA	SC		
208	10	35	CH-RD	RWA	SC		
57	39	35	CH-RD	RWA	SC		
321	44	36	CH-RD	RWA	SC		
326	42	36	CH-RD	RWA	SC		
311	38	36	CH-RD	RWA	SC		
268	24	36	CH-RD	RWA	SC		
59	13	36	CH-RD FV	RWA	SC		

Shift Supervisor: JR Data Controller: TWB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 RO LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH-02
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET		TESTED	ANALYZED	INDEX	COMMENTS
58	3	36	CH-RD		RWA	SC		INC
179	2	36	CH-RD		RWA	SC		INC
60	10	37	CH-RD		RWA	SC		
61	21	37	CH-RD		RWA	SC		
62	26	37	CH-RD		RWA	SC		
329	28	37	CH-RD		RWA	SC		
301	34	37	CH-RD		RWA	SC		
63	43	37	CH-RD		RWA	SC		
64	21	38	CH-RD		RWA	SC		
332	15	38	CH-RD		RWA	SC		
203	8	38	CH-RD		RWA	SC		
65	4	39	CH-RD		RWA	SC		INC
220	12	39	CH-RD		RWA	SC		
66	43	39	CH-RD		RWA	SC		
69	39	40	CH-RD		RWA	SC		
307	37	40	CH-RD		RWA	SC		
68	30	40	CH-RD		RWA	SC		
333	15	40	CH-RD		RWA	SC		
67	14	40	CH-RD		RWA	SC		
242	17	41	CH-RD	PV	RWA	SC		

Shift Supervisor: JL Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 8

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3

PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH03

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
70	24	41	CH-RD	RWA	SC		REEL # CH 02
297	33	41	CH-RD	RWA	[illegible]		START REEL # CH 03
71	39	41	CH-RD	RWA	[illegible]		
323	44	42	CH-RD	RWA	[illegible]		
74	43	42	CH-RD	RWA	[illegible]		
317	41	42	CH-RD	RWA	[illegible]		
73	29	42	CH-RD	RWA	[illegible]		
274	26	42	CH-RD	RWA	[illegible]		
261	22	42	CH-RD	RWA	[illegible]		
251	20	42	CH-RD	RWA	[illegible]		
72	11	42	CH-RD	RWH	[illegible]		
232	14	43	CH-RD	RWH	[illegible]		
75	16	43	CH-RD	RWH	[illegible]		
76	26	43	CH-RD	RWH	[illegible]		
77	29	43	CH-RD	RWH	[illegible]		
298	33	43	CH-RD	RWA	[illegible]		
324	44	43	CH-RD	RWA	[illegible]		
79	37	44	CH-RD	RWH	[illegible]		
78	13	44	CH-RD	RWH	[illegible]		
80	22	45	CH-RD PV	RWA	[illegible]		

Shift Supervisor: JR Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

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OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #3

PROBE: A-720-SFRM   CAL. STD.: ASME Z-3924   EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 RO   LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz   REEL NO.: CH03

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
283	29	45	CH-RD	RWH	[illegible]		
81	41	45	CH-RD	RWA	[illegible]		
325	45	45	CH-RD	RWA	[illegible]		
82	12	46	CH-RD	RWA	[illegible]		
233	15	47	CH-RD	RWA	[illegible]		
83	16	47	CH-RD	RWA	[illegible]		
84	29	47	CH-RD	RWA	[illegible]		
85	39	47	CH-RD	RWA	[illegible]		
319	43	48	CH-RD	RWA	[illegible]		
308	37	48	CH-RD	RWA	[illegible]		
275	26	48	CH-RD	MBT	[illegible]		
87	22	48	CH-RD	MBT	[illegible]		
86	13	48	CH-RD	MBT	[illegible]		
209	10	48	CH-RD		[illegible]		No Test
88	15	49	CH-RD	MBT	[illegible]		
89	20	49	CH-RD	MBT	[illegible]		
256	21	49	CH-RD	MBT	[illegible]		
302	34	49	CH-RD	MBT	[illegible]		
284	29	50	CH-RD	MBT	[illegible]		
90	9	50	CH-RD PV	MBT	[illegible]		

Shift Supervisor: [illegible]   Data Controller: [illegible]   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH03
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
91	7	51	CH-RD	MBT	MA		
222	13	51	CH-RD	MBT	MA		
92	31	51	CH-RD	MBT	MA		
316	40	51	CH-RD	MBT	MA		
276	26	52	CH-RD	MBT	MA		
94	17	52	CH-RD	MBT	MA		
93	12	52	CH-RD	MBT	MA		
188	5	53	CH-RD	MBT	MA		Incomplete
237	16	53	CH-RD	MBT	MA		
293	31	53	CH-RD	MBT	MA		
95	42	53	CH-RD	MBT	MA		
322	44	53	CH-RD	MBT	MA		
98	36	54	CH-RD	MBT	MA		
303	34	54	CH-RD	MBT	MA		
264	23	54	CH-RD	MBT	MA		
97	11	54	CH-RD	MBT	MA		
96	2	54	CH-RD		MA		No Test
99	7	55	CH-RD	MBT	MA		
210	10	55	CH-RD	MBT	MA		
100	16	55	CH-RD	PV TWB	MA		

Shift Supervisor: TB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 11

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3

PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 R0 LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH03

ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
252	20	55	CH-RD	TRB	[illegible]		
101	40	55	CH-RD	TRB	[illegible]		
327	42	56	CH-RD	TRB	[illegible]		
102	36	56	CH-RD	TRB	[illegible]		
278	27	56	CH-RD	TRB	[illegible]		
103	5	57	CH-RD		[illegible]		NO TEST
104	16	57	CH-RD	TRB	[illegible]		
285	29	57	CH-RD	TRB	[illegible]		
105	30	57	CH-RD	TRB	[illegible]		END TAPE CH03
312	38	57	CH-RD N	TRB MBT	SC		BEGIN TAPE CH04 BEGIN TAPE CH05
320	43	57	CH-RD	TRB MBT	SC		
108	33	58	CH-RD	TRB MBT	SC		
257	21	58	CH-RD	TRB MBT	SC		
107	16	58	CH-RD	TRB MBT	SC		
223	13	58	CH-RD	TRB MBT	SC		
106	2	58	CH-RD				NO TEST
338	1	59	CH-RD				NO TEST
109	4	59	CH-RD	TRB			NO TEST
110	14	59	CH-RD	TRB MBT	SC		
246	18	59	CH-RD PV	TRB MBT	SC		

Shift Supervisor: JR Data Controller: TRB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH04 CH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-8-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
111	23	59	CH-RD	MBT	MBT	SC	
279	28	60	CH-RD	MBT	MBT	SC	
271	25	60	CH-RD	MBT	MBT	SC	
113	13	60	CH-RD	MBT	MBT	SC	
198	7	60	CH-RD	MBT	MBT	SC	
112	1	60	CH-RD				NO TEST
114	6	61	CH-RD	MBT	MBT	SC	
218	11	61	CH-RD	MBT	MBT	SC	
115	16	61	CH-RD	MBT	MBT	SC	
294	31	61	CH-RD	MBT	MBT	SC	
313	38	61	CH-RD	MBT	MBT	SC	
286	29	62	CH-RD	MBT	MBT	SC	
234	15	63	CH-RD	MBT	MBT	SC	
243	17	63	CH-RD	MBT	MBT	SC	
262	22	63	CH-RD	MBT	MBT	SC	
116	33	63	CH-RD	MBT	MBT	SC	
318	41	63	CH-RD	MBT	MBT	SC	
314	39	64	CH-RD	MBT	MBT	SC	
299	33	64	CH-RD	MBT	MBT	SC	
118	27	64	CH-RD PV	MBT	MBT	SC	

Shift Supervisor: JB Data Controller: TB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH04 CH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
117	20	64	CH-RD	MBT	MBT	SK	
207	9	64	CH-RD	MBT	MBT	SK	4HR CAL
181	2	64	CH-RD				No Test
339	1	65	CH-RD				No Test
119	6	65	CH-RD	MBT	MBT	SK	
120	25	65	CH-RD	MBT	MBT	SK	
309	37	66	CH-RD	MBT	MBT	SK	
122	17	66	CH-RD	MBT	MBT	SK	
224	13	66	CH-RD	MBT	MBT	SK	
121	2	66	CH-RD				No Test
189	5	67	CH-RD	MBT	MBT	SK	
280	28	67	CH-RD	MBT			
123	31	67	CH-RD	MBT			
258	21	68	CH-RD	MBT			
244	17	68	CH-RD	MBT			
124	12	68	CH-RD	MBT			
199	7	69	CH-RD	MBT			
125	11	69	CH-RD	MBT			
126	20	69	CH-RD	MBT			
300	33	69	CH-RD PV	MBT			

Shift Supervisor: JR Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3
PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
127	39	69	CH-RD		MBT	SR	
267	24	70	CH-RD		MBT	SR	
211	10	70	CH-RD		MBT	SR	
128	30	71	CH-RD		MBT	SR	
306	36	71	CH-RD		MBT	SR	
281	28	72	CH-RD		MBT	SR	
130	25	72	CH-RD		MBT	SR	
129	19	72	CH-RD		MBT	SR	
245	17	72	CH-RD		MBT	SR	
225	13	72	CH-RD		MBT	SR	
131	5	73	CH-RD		MBT	SR	
132	20	73	CH-RD		MBT	SR	
136	36	74	CH-RD		MBT	SR	
135	32	74	CH-RD		MBT	SR	
134	24	74	CH-RD		MBT	SR	
133	12	74	CH-RD		MBT	SR	
183	2	74	CH-RD				NO TEST
340	1	75	CH-RD				NO TEST
193	6	75	CH-RD		MBT	SR	
235	15	75	CH-RD	PV	MBT	SR	

Shift Supervisor: JR Data Controller: JWB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #3
PROBE: A-720-SFRM   CAL. STD.: ASME Z-3924   EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0   LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz   REEL NO.: CH05
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
137	24	75	CH-RD	MBT	SD		
277	26	75	CH-RD	MBT	SD		
296	32	75	CH-RD	MBT	SD		
138	33	76	CH-RD	MBT	SD		
287	29	76	CH-RD	MBT	SD		END REEL CH05
212	10	77	CH-RD	RWA	SD		START REEL CH06
263	22	78	CH-RD	RWA	SD		
140	15	78	CH-RD	RWA	SD		
139	1	78	CH-RD				NO TEST
141	1	79	CH-RD				NO TEST
200	7	79	CH-RD	RWA	SD		
226	13	79	CH-RD	RWA	SD		
282	28	79	CH-RD	RWA	SD		
142	6	80	CH-RD	RWA	SD		
185	2	80	CH-RD				NO TEST
143	5	81	CH-RD	RWA	SD		
144	24	81	CH-RD	RWA	SD		
145	28	81	CH-RD	RWA	SD		
146	19	82	CH-RD	RWA	SD		
238	16	82	CH-RD PV	RWA	SD		

Shift Supervisor: JR   Data Controller: DB   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 16

OWNER: C P & L   PLANT/UNIT: H. B. ROBINSON   SG #3
PROBE: A-720-SFRM   CAL. STD.: ASME Z-3924   EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 R0   LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz   REEL NO.: CH06
ECT DESCRIPTION: 10% RANDOM SAMPLE

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
213	10	82	CH-RD	RWA	SC		
204	8	82	CH-RD	RWA	SC		
147	13	83	CH-RD	RWA	SC		
265	23	83	CH-RD	RWA	SC		
149	24	84	CH-RD	RWA	SC		
148	13	84	CH-RD	RWA	SC		
214	10	84	CH-RD	RWA	SC		
186	2	84	CH-RD				NO TEST
150	5	85	CH-RD	RWA	SC		
151	8	85	CH-RD	RWA	SC		
227	13	85	CH-RD	RWA	SC		
152	1	86	CH-RD				NO TEST
153	16	87	CH-RD	RWA	SC		
247	18	88	CH-RD	RWA	SC		
154	10	88	CH-RD	RWA	SC		
194	6	88	CH-RD	RWA	SC		
219	11	89	CH-RD	RWA	SC		
190	5	90	CH-RD PY	RWA	SC		
155	4	90	CH-RD				NO TEST

Shift Supervisor: JL   Data Controller: TB 5-13-87   Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

PAGE: 1

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG #3

PROBE: A-720-SFRM CAL. STD.: ASME Z-3924 EXTENT TESTED: CTE-HTE

PROCEDURE: ROB-410-004 RO LEG: HOT

FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH06

ECT DESCRIPTION: PREVIOUS INDICATIONS

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
166	4	6	CH-PI				NO TEST
158	12	19	CH-PI	~~AV~~	RWA	SX	
157	11	24	CH-PI		RWA	SX	
168	8	30	CH-PI		RWA	RTI	
165	3	43	CH-PI				NO TEST
159	28	43	CH-PI		RWA	SX	
162	45	48	CH-PI		RWA	SX	
169	37	52	CH-PI		RWA	SX	
160	34	59	CH-PI		RWA	SX	HARD TO PUSH OVER E.
164	41	59	CH-PI		RWA	SX	
163	38	68	CH-PI		RWA	SX	
161	38	71	CH-PI		RWA	SX	
156	8	73	CH-PI	~~AV~~	RWA	SX RTI	HARD TO PUSH OVER
167	4	78	CH-PI				NO TEST

Shift Supervisor: JR Data Controller: TB Date: 5-12-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON II SG #: C
PROBE: A6B0/BTE/RM/WF CAL. STD.: ASME-Z392Y EXTENT TESTED: 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: CH07
ECT DESCRIPTION: RE-RUN

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	4	39	CH-RD	ND			CH07
✓	2	54	CH-RD	MK	SK		
✓	2	58	CH-RD	MK	SK		
✓	1	59	CH-RD	MK	SK		
✓	4	59	CH-RD	MK	SK		
✓	1	60	CH-RD	MK	SK		
✓	2	64	CH-RD	MK	SK		
✓	1	65	CH-RD	MK	SK		
✓	2	66	CH-RD	MK	SK		
✓	2	74	CH-RD	MK	SK		
✓	1	75	CH-RD	MK	SK		
✓	1	78	CH-RD	MK	SK		
✓	1	79	CH-RD	MK	SK		START REEL CH07
✓	2	80	CH-RD	MK	SK		END REEL CH07
✓	2	84	CH-RD	MK	SK		
✓	1	86	CH-RD	AVB MK	SK		
	4	90	CH-RD	MK	RBD w/ENCODE		CH07

Shift Supervisor: RB Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON II SG # C
PROBE: A680 BIE/RM/WF CAL. STD.: ASME Z3924 EXTENT TESTED: 6C-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: CH07/CH08
ECT DESCRIPTION: RE-RUN

TEST DATE: __________

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	4	6	CH-PI	MK	SC		CH07
	3	43	CH-PI	NP			
✓	4	78	CH-PI	MK	SC		
✓	1	5	CH-RD	MK	SC		P.V.
✓	2	6	CH-RD	MK	SC		
✓	3	7	CH-RD	MK	SC		
✓	1	10	CH-RD	MK	SC		
✓	4	11	CH-RD	MK	SC		
✓	2	14	CH-RD	MK	SC		~~END TAPE~~ CH07 START TAPE CH08
✓	1	15	CH-RD	MBT	SC		
✓	1	18	CH-RD	MBT	SC		
✓	1	21	CH-RD	MBT	SC		
✓	2	21	CH-RD	MBT	SC		
✓	4	21	CH-RD	MBT	SC		
✓	3	25	CH-RD	MBT	SC		
✓	1	27	CH-RD	MBT	SC		
✓	3	28	CH-RD	MBT	SC		
✓	2	33	CH-RD	MBT	SC		
✓	2	36	CH-RD	MBT	SC		
✓	3	36	CH-RD	N MBT	SC		

Shift Supervisor: TB Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON II SG # C
PROBE: A720-SFRM CAL. STD.: ASME-23924 EXTENT TESTED: CTE-HTE
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400/200/100/20 REEL NO.: CH07
ECT DESCRIPTION: RE-RUNS

TEST DATE: 5-9-87

ISIS-ID		ROW	COL	DATA SET	TESTED	ANALYZED	INDEX		COMMENTS
		8	30	CH-PI	PV	MBT			
✓	✓	8	73	CH-PI		MBT	SC		CH07
		26	13	CH-RD		MBT			
		24	41	CH-RD		MBT			
		10	48	CH-RD		MBT			
		13	48	CH-RD		MBT			
		22	48	CH-RD		MBT			
		9	50	CH-RD		MBT			
		29	50	CH-RD		MBT			
		7	51	CH-RD		MBT			
		13	51	CH-RD		MBT			
		17	52	CH-RD		MBT			
✓	—	26	52	CH-RD		MBT	SC		REEL CH07
✓		5	53	CH-RD		MBT	SC		
✓		11	54	CH-RD		MBT	SC		
✓		36	54	CH-RD		MBT	SC		
✓		7	55	CH-RD		MBT	SC		
✓		10	55	CH-RD		MBT	SC		
~~✓~~		16	55	CH-RD		MBT	RBI	w/ENCODE	
✓		20	55	CH-RD	PV	MBT	SC		CH07

Shift Supervisor: TRB Data Controller: TRB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: CP&L PLANT/UNIT: H.B. ROBINSON II SG # C
PROBE: A720-SFRM CAL. STD.: ASME-Z3924 EXTENT TESTED:
PROCEDURE: ROB-410-004 LEG:
FREQUENCY: 400/200/100/20 REEL NO.: CH07
ECT DESCRIPTION: RE-RUNS

TEST DATE: 5-9-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
✓	5	57	CH-RD	MBT	SD	CH07	
✓	30	57	CH-RD	MBT	SD		
✓	5	73	CH-RD	MBT	SD		
✓	24	75	CH-RD	MBT	SD	CH07	

Shift Supervisor: [initials] Data Controller: [initials] Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L ~~BJF~~ (RB) PLANT/UNIT: H. B. ROBINSON SG # C
PROBE: A-680 ~~-SPECT~~ CAL. STD.: ASME-I-3924 EXTENT TESTED: ________
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH08
ECT DESCRIPTION: RE-RUN

TEST DATE: __________

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	3 *	43 *	CH-PI *	PV MBT *	SC	*	
	4 *	39 *	CH-RD *	MBT *	SC	*	
	4 *	6 *	CH-PI *	MBT PV	SC	*	
	*	*	*	*		*	
	~~1 *~~	~~79 *~~	~~CH-RD *~~	RB *		*	
	4 *	90 *	CH-RD *	MBT *	ST	*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

Shift Supervisor: RB Data Controller: RB Date: 5-13-87

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: C P & L PLANT/UNIT: H. B. ROBINSON SG # C
PROBE: A-720-SFRM CAL. STD.: ASME-Z 3924 EXTENT TESTED: ________
PROCEDURE: ROB-410-004 LEG: HOT
FREQUENCY: 400 / 200 / 100 / 20 KHz REEL NO.: CH08
ECT DESCRIPTION: RE-RUN

TEST DATE: 5-10-87

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	26	13	CH-RD	TRB	SC		
	8	30	CH-PI	TRB	SC		
	24	41	CH-RD	TRB	SC		
	10	48		TRB	SC		
	13	48		TRB	SC		
	22	48		TRB	SC		
	9	50		MBT	SC		
	29	50		MBT	SC		
	7	51		MBT	SC		
	13	51		MBT	SC		
	17	52		MBT	SC		
	16	55		PV MBT	SC		

Shift Supervisor: TRB Data Controller: TRB Date: 5-13-87

VOLUME II

VOLUME II

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IR-ISI-102
REV. 0

CALIBRATION DOCUMENTS

CALIBRATION RECORDS

FOR

STEAM GENERATOR "A"

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH-01

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.720SFRM	ROB-410-004 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
0400	6/2	AH-RD	T.U. BIPES/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
0740	34/27	end of tape cal.	R. WITT/II

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POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH -02

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-004 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400

NAME: ROB

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
0805	41/28	AH-RD	R. WITT/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
11:55	26/40	4 HOUR CALL PULL	R. WITT/II
1320	26/44	END OF TAPE CAL.	R. WITT/II

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POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH - 03

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-001 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400

NAME: ROB

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
13:45	18/44	AH-RD	R. WITT/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
18:20	22/45	4 HOUR CAL.	R. WITT/II
21:19	27/56	END TAPE CAL. STD.	B. ATKINSON/II

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Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH - 04

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-001 RO	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
21:30	15/56	AH-RD	M. KLATT/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
00:30	27/77	END TAPE CAL. STD.	B. ATKINSON/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH - 05

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720 SFRM	ROB-410-004 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 KHz	X				X			
2	200 KHz	X				X			
3	100 KHz	X				X			
4	20 KHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
00:47	30/77	AH-RD	B. ATKINSON/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
02:49	11/11	END TAPE CAL. STD.	B. ATKINSON/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH- 06

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/9/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .680SLDE	ROB-410-004 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
08:45	2/4	AH-RD	R. WITT/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
12:18	4/87	END OF TAPE CAL.	R. WITT/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH- 07

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/9/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.680BJF	ROB-410-001 R0	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400

NAME: ROB

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	Row/COL	DATA SET	OPERATOR/LEVEL
16:30	13/88	AH-RD	R. WITT/II

TIME	Row/COL	COMMENTS	OPERATOR/LEVEL
18:25	1/5	END OF TAPE CAL.	R. WITT/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC.	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. AH - 08

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G A	Hot	5/ 9/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .680BJF	ROB-410-001 RO	Z-3922	N/A

MIZ-18 TESTER	INSTRUCTION NO.
061	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400

NAME: ROB

FREQUENCY SEQUENCE #	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	Row/Col	DATA SET	OPERATOR/LEVEL
21:51	2/77	AH-RD	B. ATKINSON/II

TIME	Row/Col	COMMENTS	OPERATOR/LEVEL
21:55	2/77	END TAPE CAL.	B. ATKINSON/II

IR-ISI-102
REV. 0

CALIBRATION RECORDS

FOR

STEAM GENERATOR "B"

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 01

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/7/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.720 -SFRM	ROB-410-004 RO	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME—: ROB

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
17:55	11/2	BH-RD	M. BROWN/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
21:50	20/24	4 HOUR CAL.	B. MCKEE/I
22:10	13/24	END OF PROBE CAL.	B. MCKEE/I
22:37	2/25	NEW PROBE CAL.	B. MCKEE/I
00:43	30/25	END PROBE CAL.	B. ATKINSON/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

C-E POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 02

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/8 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720 -SFRM	ROB-410-004 RO	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
01:20	34/25	BHRD PGS. 4 - 7	B. ATKINSON/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
05:05	13/45	END TAPE CAL. STD.	B. ATKINSON/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 03

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/8 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720 -SFRM	ROB-410-004 R0	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 KHz	X				X			
2	200 KHz	X				-X			
3	100 KHz	X				X			
4	20 KHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
05:30	18/45	BH-RD	B. MCKEE/I

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
08:45	33/49	4 HOUR CAL.	M. BROWN/II
12:45	9/63	4 HOUR CAL.	M. BROWN/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 04

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/8 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720 -SFRM	ROB-410-004 R0	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
13:05	21/63	BH-RD	M. BROWN/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
17:07	18/81	4 HOUR CAL.	M. BROWN/II
17:20	21/82	END OF TAPE	M. BROWN/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 05

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720 -SFRM	ROB-410-004 RO	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE #	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
17:35	26/83	BH-RD	M. BROWN/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
21:30	7/41	4 HOUR CAL.	B. MCKEE/I
23:01	5/26	END OF PROBE CAL.	B. MCKEE/I
23:29	6/51	NEW PROBE CAL.	B. MCKEE/I
01:15	29/45	END OF TAPE CAL.	T.U. BIPES/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 06

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/9 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .680BJF	ROB-410-004 R0	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
02:13	1/70	BH-PI	T.U. BIPES/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
03:57	4/48	PROBE CHANGE CAL.	B. MCKEE/I
04:14	1/67	NEW PROBE CAL.	B. MCKEE/I
07:15	2/19	END OF TAPE	M. BROWN/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 07

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/9 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.680 SLDF	ROB-410-004 RO	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	Row/Col	DATA SET	OPERATOR/LEVEL
09:00	2/4	BH-RD	M. BROWN/II

TIME	Row/Col	COMMENTS	OPERATOR/LEVEL
10:30	2/74	WAS GOING TO END TAPE BUT WAS TOLD TO WAIT ON TUBES	M. BROWN/II
11:45	1/91	END TAPE	M. BROWN/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. BH - 08

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G B	Hot	5/9 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .680SLDF	ROB-410-004 RO	Z-3923	N/A

MIZ-18 TESTER	INSTRUCTION NO.
041	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB

SAMPLES per SEC: 400

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
16:23	1/21	BH-RD/BH-PI	M. BROWN/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
17:06	3/19	END OF TAPE	M. BROWN/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC.	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18			REEL No. BH - 09
SITE H.B. Robinson	UNIT 2	COMPONENT S/G B	SIDE Hot	DATE 5/10/87
PROBE TYPE/SIZE A- .720SFRM	PROCEDURE ROB-410-004 R0	DEFECT STANDARD Z-3923		DENT STANDARD N/A
MIZ-18 TESTER 041		INSTRUCTION NO. Appendix A		
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5		MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2		

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

#	FREQUENCY SEQUENCE	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
03:04	39/50	BH-RD	B. MCKEE/I

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
03:40	30/59	END OF TAPE CAL.	B. MCKEE/I

CALIBRATION RECORDS

FOR

STEAM GENERATOR "C"

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 01

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/7/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER	INSTRUCTION NO.
056	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
00:33	9/2	BH-RD	M. TEAGUE/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
04:30	35/21	4 HOUR CAL.	M. TEAGUE/II
05:53	19/26	END TAPE CAL.	M. TEAGUE/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 02

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/8 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER	INSTRUCTION NO.
056	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
10:00	19/26	CH-RD	R. HANCOCK/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
13:35	3/36	4 HOUR CAL.	R. HANCOCK/II
14:55	24/41	END TAPE CAL.	R. HANCOCK/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 03

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/ 8/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER 056	INSTRUCTION NO. Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
15:19	33/41	CH-RD	R. HANCOCK/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
19:40	21/49	4 HOUR CAL.	M. TEAGUE/II
22:35	30/57	END OF TAPE CAL.	T.U. BIPES/II

REEL #CH-04 WAS NOT USED

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

CE POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 05

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/9/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A-.720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER	INSTRUCTION NO.
056	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1 SAMPLES per SEC: 400
NAME: ROB

FREQUENCY SEQUENCE #	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
01:50	38/57	CH-RD	M. TEAGUE/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
04:50	9/64	4 HOUR CAL.	M. TEAGUE/II
07:30	29/76	END TAPE CAL.	R. HANCOCK/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

C-E POWER SYSTEMS COMBUSTION ENGINEERING, INC.	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 06

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/9/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER 056	INSTRUCTION NO. Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE #	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
07:50	10/77	CH-RD	R. HANCOCK/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
11:10	28/43	4 HOUR CAL.	R. HANCOCK/II
12:12	12/19	END TAPE CAL.	R. HANCOCK/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

C-E POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 07

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/9 /87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .720SFRM	ROB-410-004 R0	Z-3924	N/A

MIZ-18 TESTER 056	INSTRUCTION NO. Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
19:30	8/30	CH-RD	M. TEAGUE/II

TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
22:45	29/75	END DATA SET CAL.	M. TEAGUE/II
23:05	4/90	NEW PROBE CAL.	M. TEAGUE/II
01:44	2/80	END OF TAPE CAL.	M. KLATT/II

THIS IS A TYPED VERSION OF CALIBRATION SHEETS. THE ORIGINALS WERE ATTACHED TO THE DATA CARTRIDGE CONTAINERS AND RETAINED BY THE CUSTOMER.

Duplicate

POWER SYSTEMS COMBUSTION ENGINEERING, INC	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	REEL No. CH - 08

SITE	UNIT	COMPONENT	SIDE	DATE
H.B. Robinson	2	S/G C	Hot	5/10/87

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD
A- .680BJF	ROB-410-004 RO	Z-3924	N/A

MIZ-18 TESTER	INSTRUCTION NO.
056	Appendix A
MIZ-18 SOFTWARE REV. NO. (collection) Ed 18.1 Rev. 5	MIZ-18 SOFTWARE REV. NO. (analysis) Ed 18.1 Rev. 4.2

MIZ-18 CONFIGURATION

NUMBER: 1
NAME: ROB
SAMPLES per SEC: 400

#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	400 kHz	X				X			
2	200 kHz	X				X			
3	100 kHz	X				X			
4	20 kHz	X				X			

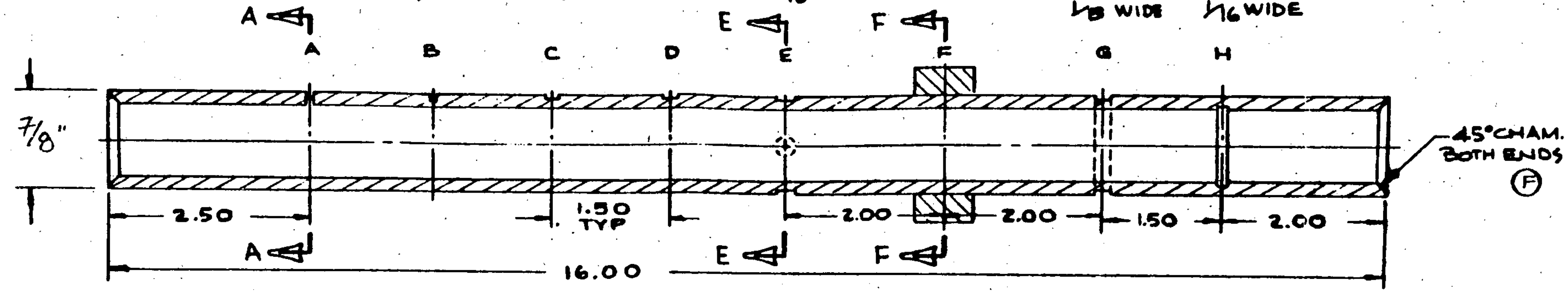
TIME	ROW/COL	DATA SET	OPERATOR/LEVEL
01:55	1/15	CH-RD	M. TEAGUE/II

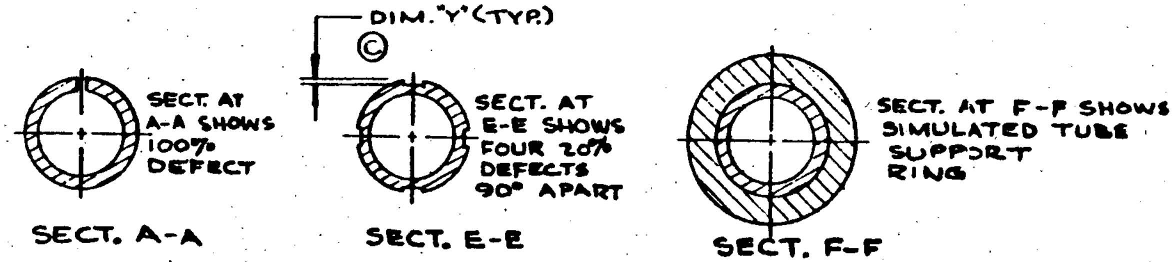
TIME	ROW/COL	COMMENTS	OPERATOR/LEVEL
03:40	4/90	END DATA CAL.	M. TEAGUE/II
04:10	16/55	PROBE CHANGE	M. TEAGUE/II
05:58	22/48	END DATA CAL.	T.U. BIPES/II

CALIBRATION STANDARDS

LOCATION	A	B	C	D	E	F	G	H
PHYSICALLY MEAS. DEPTH IN INCHES (DIM."Y")	THRU	.0415"	.0295"	.0210"	.0110"		.0045"	.0080"
DEPTH (DIM."Y") AS % OF WALL (C)	100%	78%	56%	40%	21%		9%	15%
E.T. PHASE ANGLE MEASUREMENT	40°	84°	118°	144°	159°		161°	10°
DIA. OF DEFECT	(E) △1	5/64	7/64	3/16	3/16		O.D. GROOVE 1/8 WIDE	I.D. GROOVE 1/16 WIDE

DATE	SYM	REVISION RECORD	APVD	DR	CK
[illegible]	A	16.00 DIM. WAS 18.00 2.90 DIM. WAS 2.00	[illegible]	RM	[illegible]
[illegible]	(B)	ADDED DEPTH IN % OF WALL	[illegible]	KZ	[illegible]
[illegible]	(C)	ADD DIM. Y TO A-E & NOTES.	[illegible]	RM	[illegible]
[illegible]	(D)	ADDED NOTE	[illegible]	KZ	[illegible]
12/6	(E)	ADD △1	[illegible]	RD	[illegible]
1/5/7	F	ADD CHAM.	[illegible]	KZ	[illegible]





NOTE:

(E) △1 Ø.052 IN STD ≤ .75 DIA.
△1 Ø.067 IN STD. > .75 DIA.

MATERIAL INCONEL 600

(D) AVERAGE MEASURED WALL THK. .053"

NOMINAL WALL THK. .049"

HEAT LOT NO. 2155-3-3347

TEST FREQ. USED 400 KHZ

SERIAL NO. Z-3922

P.O. NO. 47-35760

REL. NO. N/A

QUALITY REL. NO. N/A

DATE MFG. 2-28-87

E.T. TECHNICIAN M. DeMartino

CUSTOMER COMBUSTION ENGINEERING

RECORDED ON REEL NO. 26

PROBE USED A-750-LC SER# 57742

NOTE:

APVD. BY: [signature]

TOLERANCES	
DIMENSIONS IN INCHES	
X.XXX ±.003	
X.XX ±.010	
X.X .030	
SCALE: NONE	DATE: 12-9-82

ZETEC, INC

ASME CALIBRATION STD. WITH SUPPORT RING

DR. MEYER

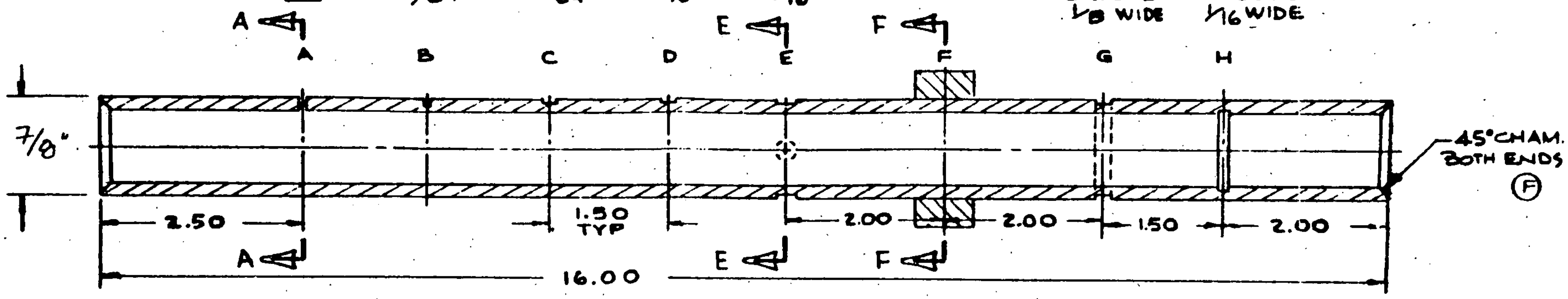
CHK [illegible]

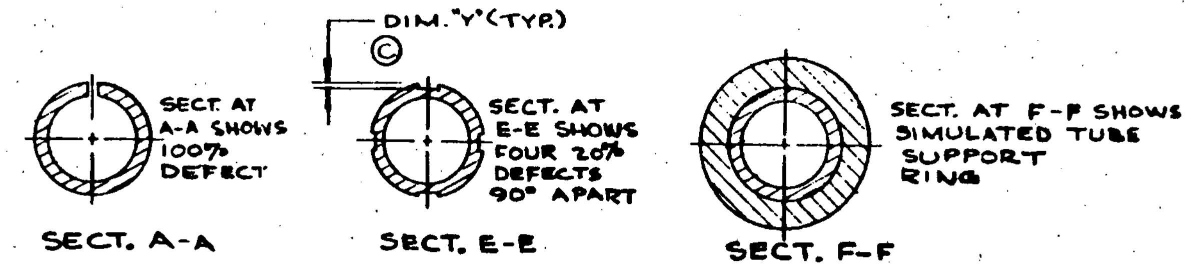
APPROVED BY:

DRAWING NUMBER SHT 2 OF 2 2-4013

LOCATION	A	B	C	D	E	F	G	H
PHYSICALLY MEAS. DEPTH IN INCHES (DIM. "Y")	THRU	.0425"	.0300"	.0215"	.0115"		.0055"	.0035"
DEPTH (DIM. "Y") AS % OF WALL (C)	100%	80%	57%	41%	22%		10%	18%
E.T. PHASE ANGLE MEASUREMENT	41°	85°	119°	114°	159°		162°	11°
DIA. OF DEFECT	(E) △1	5/64	7/64	3/16	3/16		O.D. GROOVE 1/8 WIDE	I.D. GROOVE 1/16 WIDE

DATE	SYM	REVISION RECORD	APVD	DR	CK
[illegible]	A	16.00 DIM WAS [illegible] 2.50 DIM. WAS 2.00	[signature]	RM	[illegible]
[illegible]	(B)	ADDED DEPTH IN % OF WALL	[signature]	KE	[illegible]
[illegible]	(C)	ADD DIM. Y TO E-E & NOTES.	[signature]	RM	[illegible]
3/84	(D)	ADDED NOTE	[signature]	KZ	[illegible]
[illegible]	(E)	ADD △1	[signature]	[illegible]	[illegible]
1/5/[illegible]	F	ADD CHAM.	[signature]	KZ	[illegible]





NOTE:

(E) △1 Ø.052 IN STD ≤ .75 DIA.
△1 Ø.067 IN STD > .75 DIA.

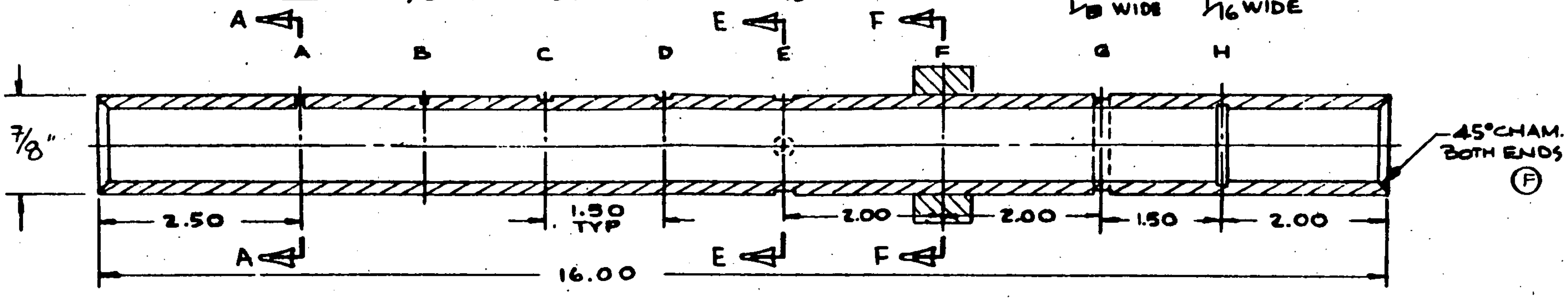
MATERIAL INCONEL 600
(D) AVERAGE MEASURED WALL THK. .053"
NOMINAL WALL THK. .049"
HEAT LOT NO. 2155-3-3347
TEST FREQ. USED 400 KHZ
SERIAL NO. Z-3923
P.O. NO. 47-35760
REL. NO. N/A
QUALITY REL. NO. N/A
DATE MFG. 2-28-87
E.T. TECHNICIAN M. DiMartino
CUSTOMER COMBUSTION ENGINEERING
RECORDED ON REEL NO. 26
PROBE USED A-750-LC SER #57742 APVD. BY: [signature]

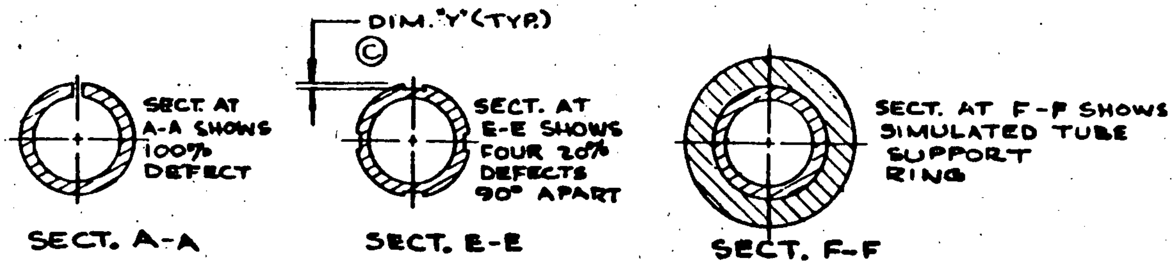
NOTE:

TOLERANCES	ZETEC, INC.	DFR. MEYER
DIMENSIONS IN INCHES X.XXX ±.003 X.XX ±.010 X.X .030	ASME CALIBRATION STD. WITH SUPPORT RING	CHK [illegible] APPROVED BY:
SCALE: NONE DATE: 12-9-82	DRAWING NUMBER SHT 2 OF 2	2-4013

LOCATION	A	B	C	D	E	F	G	H
PHYSICALLY MEAS. DEPTH IN INCHES (DIM. "Y")	THRU	.0420"	.0315"	.0215"	.0110"		.0055"	.0070"
DEPTH (DIM. "Y") AS % OF WALL (C)	100%	80%	59%	41%	21%		10%	14%
E.T. PHASE ANGLE MEASUREMENT	40°	83°	116°	137°	160°		161°	11°
DIA. OF DEFECT	(E) 1	5/64	7/64	3/16	3/16		O.D. GROOVE 1/8 WIDE	I.D. GROOVE 1/16 WIDE

DATE	LTR	REVISION RECORD	APVD	DR	CK
[illegible]	A	.400 DIM WAS [illegible] 2.90 DIM. WAS 2.00	[illegible]	RM	[illegible]
[illegible]	B	ADDED DEPTH IN % OF WALL	[illegible]	KZ	[illegible]
[illegible]	C	ADD DIM. Y TO E-E & NOTES.	[illegible]	RM	[illegible]
[illegible]	D	ADDED NOTE	[illegible]	KZ	[illegible]
[illegible]	E	ADD 1	[illegible]	[illegible]	[illegible]
1/5/7	F	ADD CHAM.	[illegible]	KZ	[illegible]





NOTE:
(E) 1 Ø.052 IN STD ≤ .75 DIA.
1 Ø.067 IN STD > .75 DIA.

MATERIAL INCONEL 600
(D) AVERAGE MEASURED WALL THK. .053"
NOMINAL WALL THK. .049"
HEAT LOT NO. 2155-3-3347
TEST FREQ. USED 400 KHZ
SERIAL NO. Z-3924
P.O. NO. 47-35760
REL. NO. N/A
QUALITY REL. NO. N/A
DATE MFG. 2-28-87
E.T. TECHNICIAN M. DeMartino
CUSTOMER COMBUSTION ENGINEERING
RECORDED ON REEL NO. 26
PROBE USED A-750-LC SER # 57742

NOTE:

APVD. BY: [signature]

TOLERANCES
DIMENSIONS IN INCHES
X.XXX ±.003
X.XX ±.010
X.X .030
SCALE: NONE
DATE: 12-9-82

ZETEC, INC

ASME CALIBRATION STD. WITH SUPPORT RING

DR. MEYER
CHK
APPROVED BY:

DRAWING NUMBER SHT 2 OF 2 2-4013

CABOT WROUGHT PRODUCTS DIVISION C Corporation

HIGHWAY 80 WEST, P. O. BOX 265, ARCADIA, LOUISIANA • Telephone 318 263-2002

REPORT OF PHYSICAL, CHEMICAL & MECHANICAL PROPERTIES

Customer ZETEC INC. Purchase Order No. PS36-IG Reference

Manufacturing Order No. 33346 Produced On 33346-2 Date Certified 8-12-85

Heat Number	Pieces	Footage	Weight	OD	Wall	Ordered Length	Alloy	Specification
2155-3-3347	54	549.1'	280#	.875	.049	120" To 180" R/L	CABOT ALLOY No.600	ASME SB-163-81 N06600 Smls.

CHEMICAL ANALYSIS

Ingot	Al	B	C	Ca	Cd	Cl	Co	Cr	Cu	Fe	H	Hf	Mg	Mn	Mo	N	Na	Nb
	.26		.06				.13	15.86	.04	7.77				.21				

Ni	O	P	Pb	S	Si	Sn	Ta	Ti	U	V	W	Y	Zr	Cb+Ta	Ni+Co	Fe+Cr+Ni	CB+TA
				Less .002	.16			.20							75.44		.17

TENSILE AT ROOM TEMPERATURE

No.	Ultimate PSI	0.2% Yld PSI	% Elong. 2 in	No.	Ultimate PSI	0.2% Yld PSI	% Elong. __ in	No.	Ultimate PSI	0.2% Yld PSI	% Elong. __ in
	109,100	57,600	38								

Corrosion _____ Grain Size _____ Hardness _____

[X] Visual [X] Dimensional 100 % ☐ Pneumatic ___ % at ___ PSI [X] Hydrostatic 100 % at 1000 PSI [X] Eddy Current 100* % ☐ Ultrasonic ___ %

☐ Radiography ___ % ☐ Penetrant ___ % ☐ Cleanliness [X] Straightness [X] Alloy Check ☐ Drift ☐ Boroscope ___ % ☐ Flattening ☐ Reverse Flattening

[X] Flare ☐ Bend ☐ Flange [X] Microstructure

*Material has been 100% Eddy Current tested per Zetec procedure SSP-TMP Rev. 0. the insturement was an EM-3300 S/N B117042, Probe A-750-LS, S/N 52692.

ACCEPTED
QA Mgr
8/28/85

Certified By Stephen A Bullock

STEPHEN A. BULLOCK, Quality Control Eng.
Cabot Wrought Products Division, Cabot Corporation

The above material has been manufactured, inspected and tested in accordance with the purchase order and specifications referenced above and found to meet the stated requirements.

Specialty Steel & Forge

A SERVICE CENTER & FORGE FACILITY

Lee Road
L... N.J. 07605

(201) 461-3200
Telex: 559443

CUSTOMER	Combustion Engineering	DATE	March 5, 1987
ADDRESS	911 W. Main Street	YOUR ORDER NO.	4738211
CITY, STATE	Chatanogga, TN 37402	INVOICE NO.	C22037/26602

CERTIFICATE OF CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES

ITEM NO.	DESCRIPTION/SPECIFICATION		MATERIAL	HEAT NO.
	Stainless Steel Plate 405 (SA 240)			
1	1 pc.- 1" x 11" x 26"	83 lbs.		9096
2	1 pc.- 1" x 10" x 19"	56 lbs.		9096

CHEMICAL ANALYSIS

ITEM NO.	C	MN	SI	P	S	CR	V	NI	MO	CU	CO	W
1 & 2	.024	.47	.65	.019	.010	13.45		.33				

ITEM NO.	N	FE	AL	O	H	ZR	SN	B	PB	TI	CB + TA
1 & 2			.29								

PHYSICAL PROPERTIES

ITEM NO.	YIELD POINT P.S.I.	TENSILE STRENGTH P.S.I.	ELONGATION %	REDUCTION AREA %	MACRO	GRAIN SIZE	HARDNESS	H.T. COND.	IMPACTS CHARPY/IZOD
1 & 2	50,000	70,300	26.0	52.0			BHN 163		

REMARKS:

MATERIAL FOR SUPPORT RING

RnBrown
6-12-87

AUTHORIZED SIGNATURE

THIS IS TO CERTIFY, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THAT THE VALUES SHOWN ARE CORRECT AND TRUE AND THAT THE

	TAPE ENTRY	SG	ROW	COL	TAPE BLOCK	TUBE LENGTH
	1	*** MESSAGE ***			33	6
Z-3922	2	99	999	999	39	124
Z-3922	3	99	999	999	163	114
Z-3922	4	99	999	999	277	121
	5	*** MESSAGE ***			398	6
Z-3923	6	99	999	999	404	109
Z-3923	7	99	999	999	513	108
Z-3923	8	99	999	999	621	129
	9	*** MESSAGE ***			750	6
Z-3924	10	99	999	999	756	92
Z-3924	11	99	999	999	848	98
Z-3924	12	99	999	999	946	103
	13	*** MESSAGE ***			1049	6
	14	* END-OF DATA *			1055	*****

TAPE NO. N/A_

<--- TO READ THIS TUBE PRESS
THE FIND_TUBE KEY

ROTATE KNOB TO SCROLL THE LIST

THE TOTAL NUMBER OF ENTRIES IS

14

H.B.

ROBINSON

ASME

STD.

M12-18

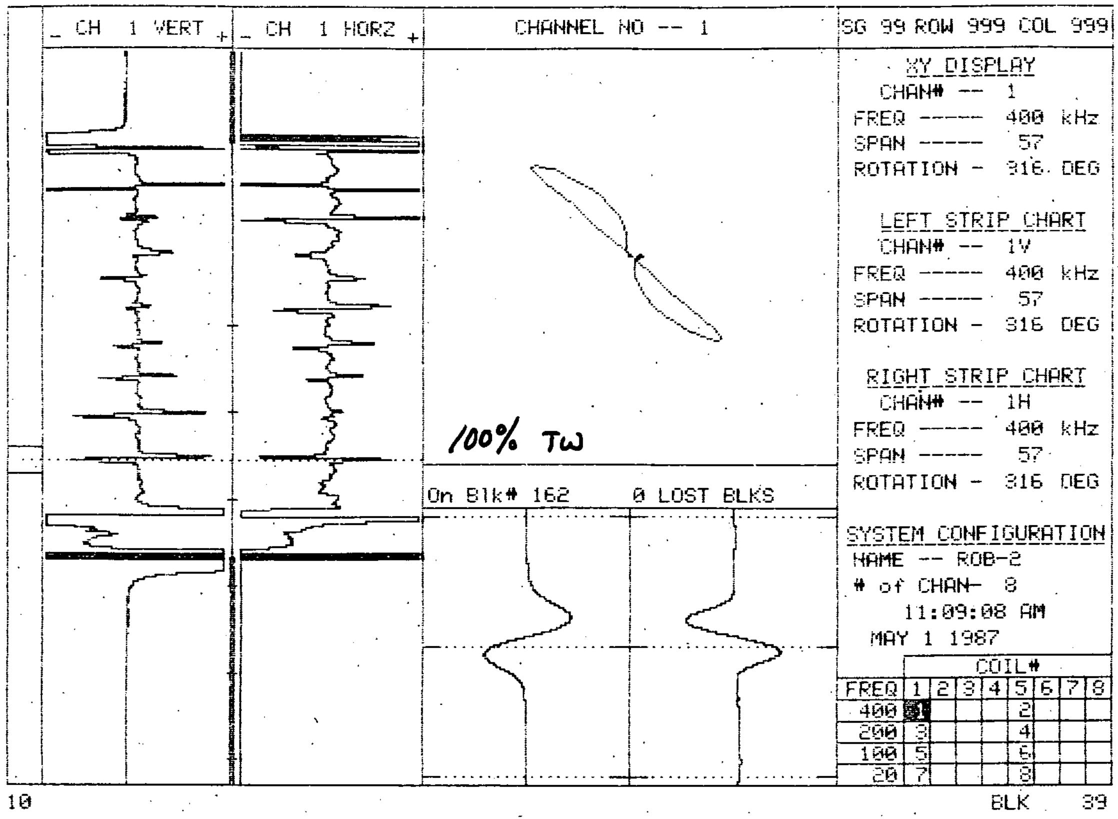
PRINTOUTS

5-1-82

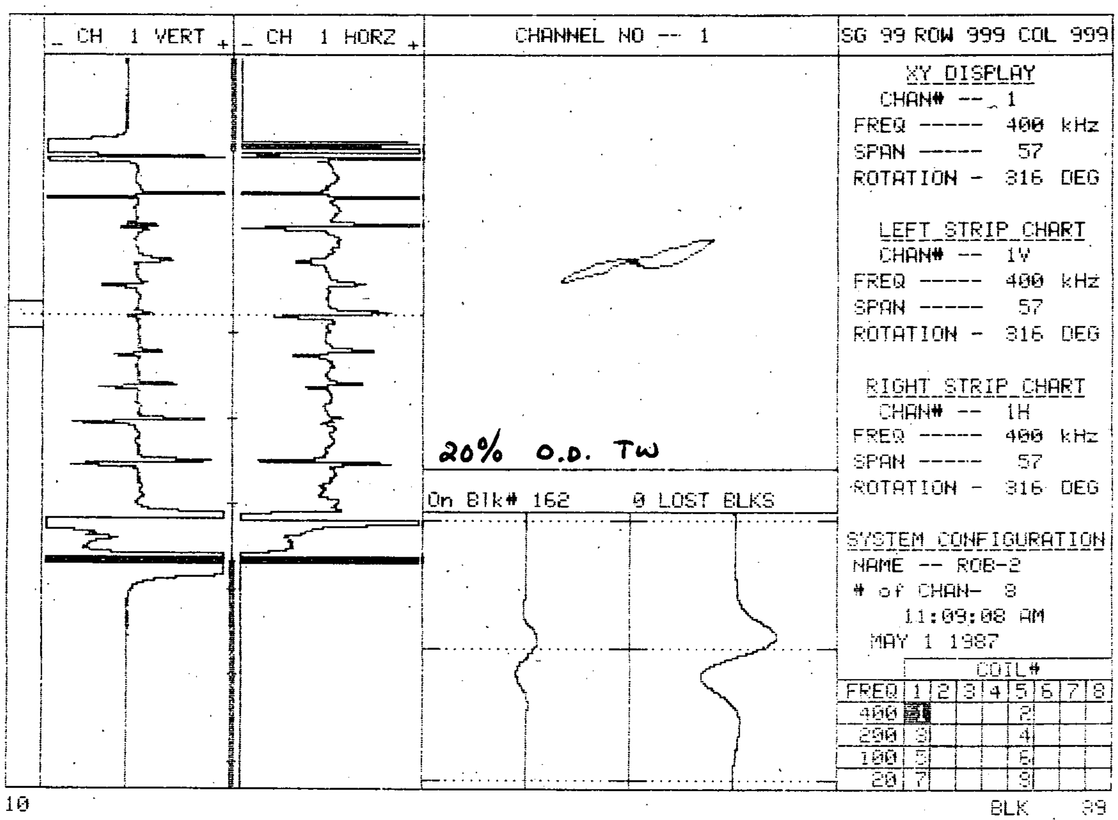
*** THE FOLLOWING ARE CAL PULLS ON THE 3 HB ROBINSON CAL STDS. ***

THE FIRST CAL STANDARD WILL BE # Z-3922
REF STANDARD WILL BE # Z-3924

THE PROBE TO PROBE TO BE USED IS AN A-720-SFRM SER # 79467
REF SER # 79236


_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
100% TW
On Blk# 162 0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:09:08 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 39

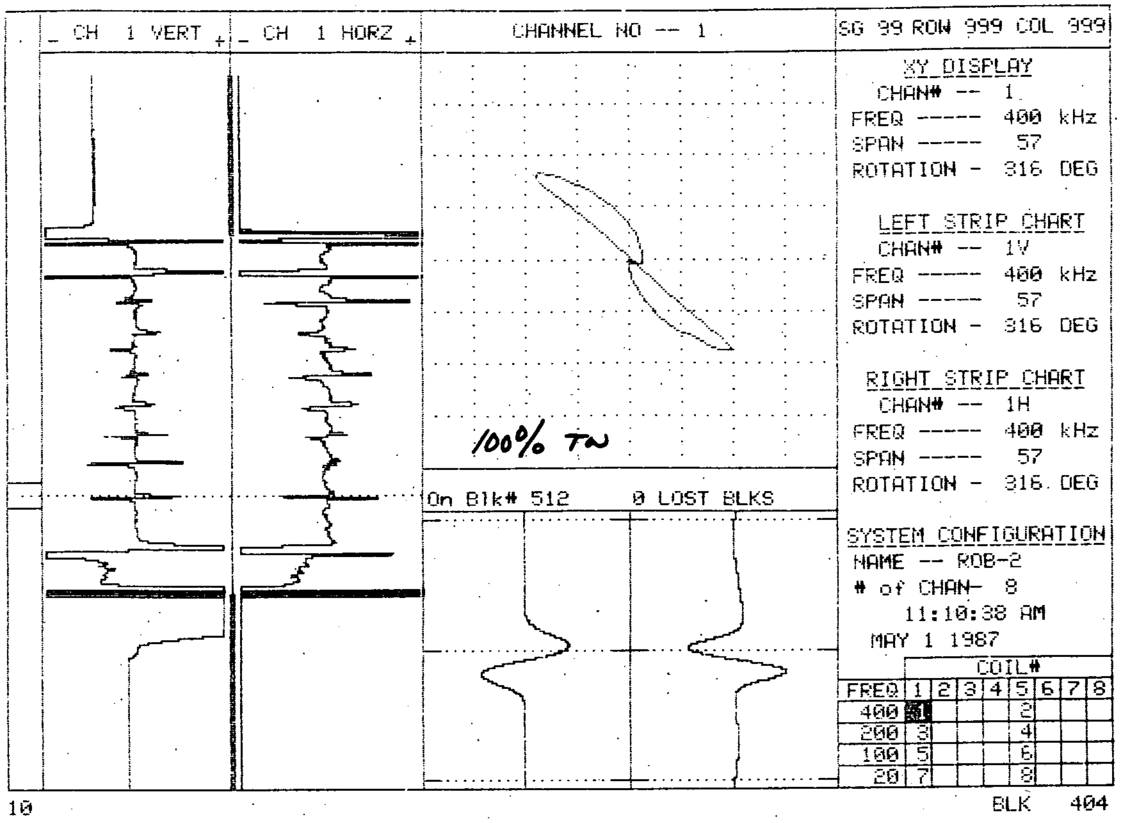
Z - 3922


_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
20% O.D. TW
On Blk# 162 0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:09:08 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 39

*** THE FOLLOWING ARE CAL PULLS ON THE 3 HB ROBINSON CAL STDS. ***

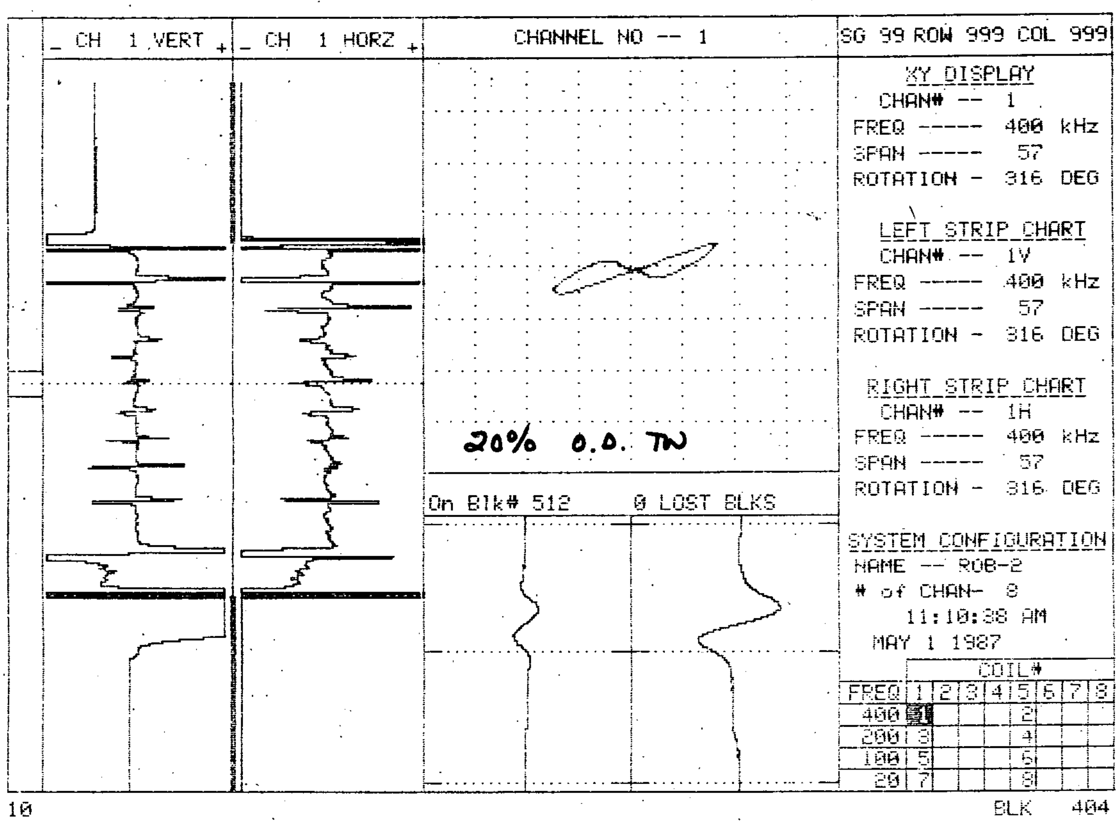
THE FIRST CAL STANDARD WILL BE # Z-3923
REF STANDARD WILL BE # Z-3924

THE PROBE TO PROBE TO BE USED IS AN A-720-SFRM SER # 79467
REF SER # 79236



_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
100% TW
On Blk# 512
0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:10:38 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 404

Z-3923

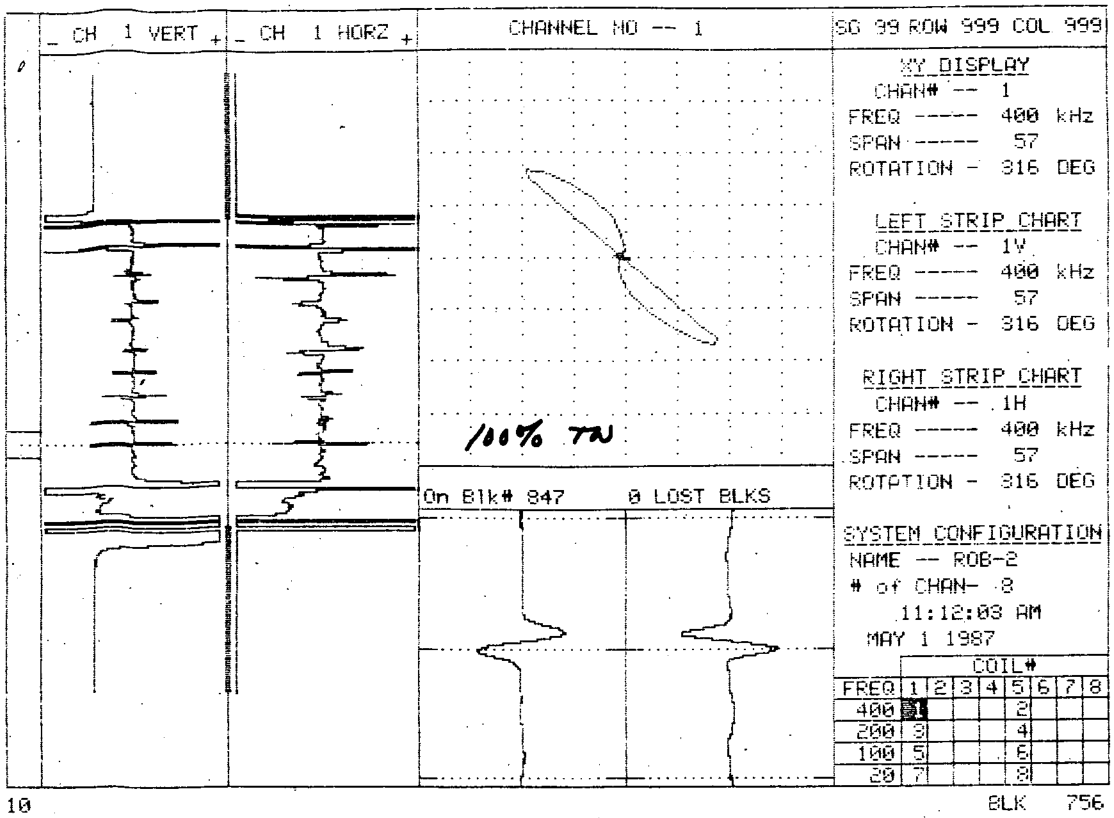


_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
20% O.D. TW
On Blk# 512
0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:10:38 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 404

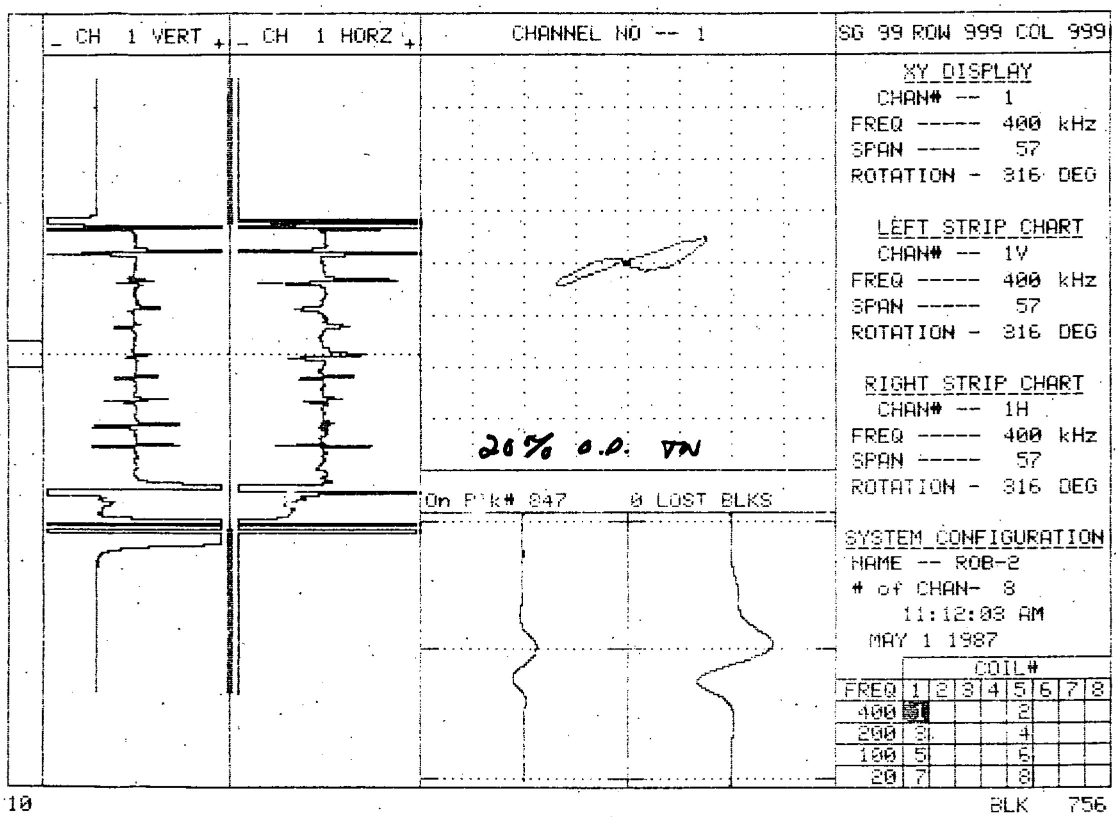
*** THE FOLLOWING ARE CAL PULLS ON THE 3 HB ROBINSON CAL STDS. ***

THE FIRST CAL STANDARD WILL BE # Z-3924
REF STANDARD WILL BE # Z-3922

THE PROBE TO PROBE TO BE USED IS AN A-720-SFRM SER # 79467
REF SER # 79236


_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
100% TW
On Blk# 847 0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:12:03 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 756

Z -3924


_ CH 1 VERT +
_ CH 1 HORZ +
CHANNEL NO -- 1
SG 99 ROW 999 COL 999
XY DISPLAY
CHAN# -- 1
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
LEFT STRIP CHART
CHAN# -- 1V
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
RIGHT STRIP CHART
CHAN# -- 1H
FREQ ----- 400 kHz
SPAN ----- 57
ROTATION - 316 DEG
20% O.D. TW
On Blk# 847 0 LOST BLKS
SYSTEM CONFIGURATION
NAME -- ROB-2
# of CHAN- 8
11:12:03 AM
MAY 1 1987
COIL#
FREQ 1 2 3 4 5 6 7 8
400 1 2
200 3 4
100 5 6
20 7 8
10
BLK 756

TECHNICAL PROCEDURES

PROCEDURE INDEX

1.	ROB-410-001 Rev. 0	Remote Installation, Calibration and Removal of SM-10 Manipulator in Westinghouse Steam Generator.
2.	ROB-410-004 Rev. 0	Procedure for Multi Frequency Eddy Current Examination of Non Ferromagnetic Steam Generator Tubing using MIZ-18 Equipment.
3.	ROB-410-005 Rev. 0	Eddy Current Data Analysis Procedure Evaluation of Westinghouse Steam Generator
	Attachment A Dated 5/7/87	Customer Specific Data Analysis Requirements
	Attachment A Dated 5/8/87	Customer Specific Data Analysis Requirements
4.	ROB-410-006 Rev. 0	Procedure for Control of Eddy Current Examination Data for using the Personal Computer (PC) Based Data System.
5.	ROB-410-008 Rev. 0	Procedure for the Installation and Removal of Temporary Nozzle Covers.

RPC 3990

APR 1 7 1987

CONTROLLED DOCUMENTS

H. B. ROBINSON PLANT

1987 UNIT 2 REFUELING OUTAGE

NSSS - WORK AUTHORIZATION ZS60010001

COMBUSTION ENGINEERING PROCEDURE

TITLE: REMOTE INSTALLATION, CALIBRATION AND REMOVAL OF SM-10 MANIPULATOR IN WESTINGHOUSE STEAM GENERATOR No: ROB-410-001

REVISION NO: 0

EFFECTIVE DATE: 4-16-87

APPROVED BY:

S.W. FARMER: [signature] Date: 4/16/87
Plant Group: Tech. Support

[signature] Date: 4-16-87
Onsite QA/QC

[signature] Date: 4-16-87
Outage Management

INFORMATION

:65

REMOTE INSTALLATION, CALIBRATION AND REMOVAL

OF SM-10 MANIPULATOR IN

WESTINGHOUSE STEAM GENERATOR

H.B. ROBINSON

UNIT TWO

PROCEDURE NO.

ROB-410-001

EXAMINATION SERVICES AND PRODUCTS
OUTAGE SERVICES DEPARTMENT
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT
CHATTANOOGA, TENNESSEE, SAN JOSE, CALIFORNIA

PREPARED BY: John E Reich DATE: 4/6/87

APPROVED BY: Darrell D. Weber DATE: 4/6/87
E.T. LEVEL III

APPROVED BY: James D. Ford DATE: 4/6/87
Q.A. ENGINEER

APPROVED BY: Roy n Brown DATE: 4-6-87
SUPERVISOR, EXAMINATION SERVICES & PRODUCTS

ORIGINAL ISSUE DATE: April 3, 1987 REV. NO.: 0

DATE: N/A

TABLE OF CONTENTS

1.0 OBJECTIVE

1.1 This procedure provides the general instruction for Installation, Calibration and Removal of the SM-10 Manipulator at H.B. Robinson Nuclear Plant.

2.0 REFERENCE

2.1 ZETEC SM-10 Installation and Operating Guide

2.2 ZETEC SM-10 Inspection Planning System

2.3 Combustion Engineering, Inc. Power Systems Group Nuclear, Field QA Manual.

2.4 Combustion Engineering, Inc. Nuclear Quality Assurance Instruction Manual.

2.5 Combustion Engineering, Inc. Power Systems Group, Operating Procedures Manual.

3.0 PREREQUISITE

3.1 Steam generator primary manway cover(s) and stud bolts have been removed (as required).

3.2 The steam generator shall be at an acceptable level of dryness.

3.3 Prior to installation, the steam generator channel heads, should be cooled down to a proper temperature to prevent heat damage to equipment (approximately 90 degrees F).

3.4 Provisions must be made for personnel and equipment entry into and exit from the steam generator (i.e., ladders, scaffolds, or staging platform, lighting inside and outside the steam generator, breathing air supply, 120 VAC electricity, etc.).

3.5 An area near the S/G suitable for the setup and installation of the equipment will be made available and cleared.

3.6 Nozzle covers have been installed over the hot and cold leg nozzles of opened channel heads (as required).

3.7 It is expected that very high levels of radiation will be encountered inside and adjacent to the primary head of the steam generators. Utmost care shall be taken in the set-up and performance of the examination to minimize personnel exposure to ionizing radiation and radioactive contamination.

Personnel engaged in the eddy current examination program shall be indoctrinated in the radiation protection rules, guidelines, protective clothing and equipment requirements in effect at the plant site.

4.0 PROCEDURE: Installation and Set-Up

4.1 General Outline

4.1.1 The installation and set-up for the SM-10 will involve hooking up fixture cables to the appropriate locations on the SM-10 control box; booting up MIZ-18 ACQUISITION and FIXTURE CONTROL software and loading up an INSPECTION PLAN; mounting trunk assembly to the manway; setting an encoder offset; installing the arm assembly, installing the guide tube with conduit attached; and leveling the arm assembly inside the steam generator.

4.2 Computer Interface

4.2.1 It is good practice to remove power from all instruments, with the exception of the controlling computer, when connecting or disconnecting cables.

4.2.2 The SM-10 can operate with or without the MIZ-18 eddy current instrument. When operating alone, connect the interface cable, P/N 5-8103, directly to the SM-10 computer connector. Several interface cables, up to 1000 feet total length, can connect in series to the HPIB Interface Unit, which is located within 10 feet of the computer. The Interface Unit then uses a standard IEEE 488 cable to connect to the computer.

4.2.3 When operating in conjunction with the MIZ-18, the two instruments are "daisy-chained" in series. Either unit can be closer to the computer. The 1st unit in series uses the computer connector to connect the computer, and the auxiliary connector of the 2nd unit in series will not be used. Any length cable can separate the two instruments, as long as the 2nd unit in series is not more than 1000 feet from the computer.

4.3 Fixture Interface

4.3.1 The SM-10 Controller can be located up to 100 feet from the fixture. It is connected with extension cables, which can be "daisy-chained" as required.

4.3.2 Connect the three connectors of the extension cable assembly, P/N 4-008005, to the encoder, motor, and trunk connectors on the SM-10. Connect the opposite end of the cable to the encoder and motor connectors on the fixture harness, and to the trunk connector, located on the manway mount.

4.4 Video

4.4.1 Connect the video monitor with coaxial cable to the monitor connector on the controller. The fixture camera is connected via the motor connector.

4.4.2 Should it be required to use a camera separate from the one located on the fixture, an auxiliary camera input is available on the controller. When using this input, the fixture camera will need to be disconnected.

4.5 Powering Up

4.5.1 Assure that the 115/230 V selector plug is in the proper orientation.

4.5.2 Plug unit in. There is no power switch.

4.5.3 Turn on HPIB Interface Unit. SM-10 is now ready for computer control.

4.6 Loading Computer

4.6.1 Boot up the system. To do this insert the MIZ-18 DATA ACQUISITION disk into the right drive and the SM-10 CONTROL disk into the left drive. Turning the power OFF, and then ON will cause the system to load.

4.6.2 Load an inspection plan. To do this insert the INSPECTION PLAN disk in the left drive and press the LOAD.PLAN soft-key in the SHIFTED mode. The LOAD.PLAN key will be found in the _FIXTURE_ mode (coming from the __TEST__ mode). A message will be printed when the plan has been loaded.

4.6.3 Turn OFF the HPIB Interface Unit and leave OFF for 10 Seconds. Turn ON the HPIB Interface Unit. The red LED on the camera will light and the video will be present on the monitor.

4.6.4 NOTE: Turning power off on the HPIB Interface Unit, or disconnecting the IEEE 488 Interface Cable, will control the SM-10 as follows:

A. All motor power supplies will turn off.
B. All internal registers within the Controller will be reset to the motor off condition.

4.7 Sequency of Installation of SM 10 Into Steam Generator

4.7.1 The sequence of installation steps is shown in Figure 1 through 5.

4.7.2 Slide the trunk assembly through the manway (flat side down) until the manway mount reaches the manway. (Shown in Figure 1).

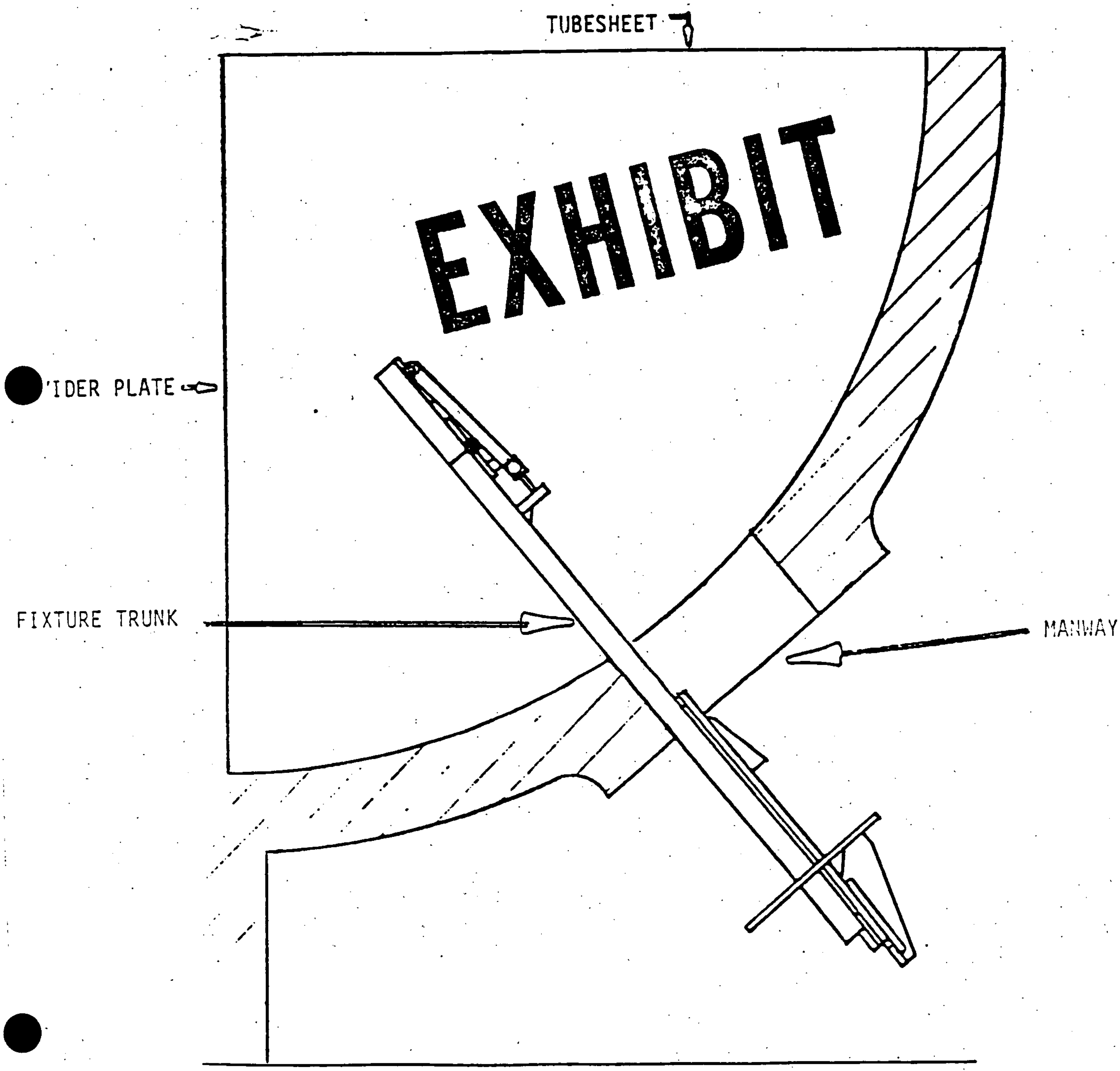


FIGURE 1

4.7.3 Invert the trunk assembly (flat side up). (Shown in Figure 2).

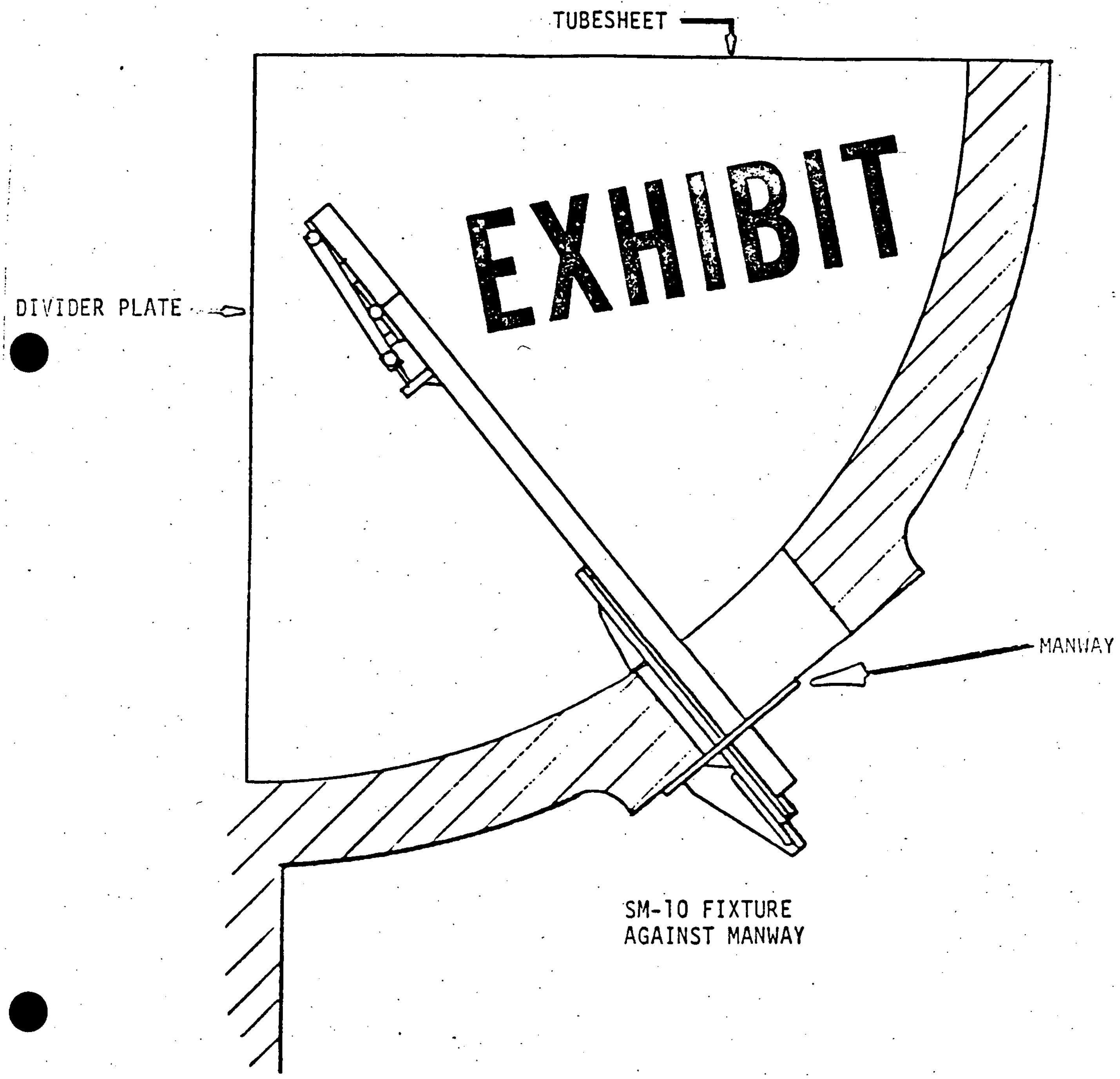


FIGURE 2

4.7.4 Loosely install the four manway bolts utilizing shims as required. (Shown in Figure 3).

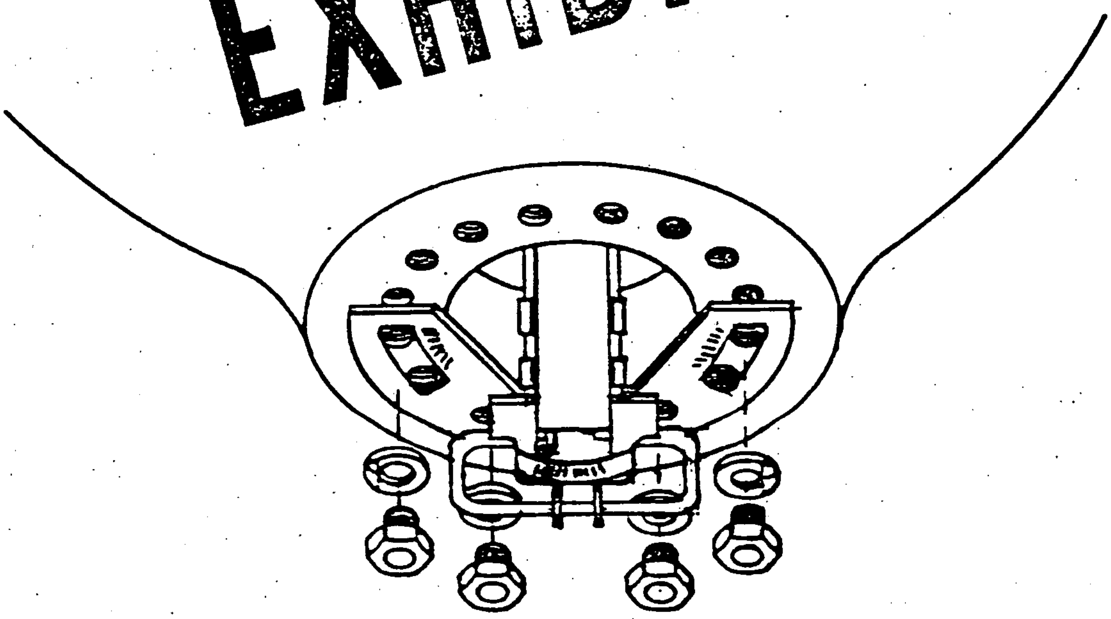


FIGURE 3

4.7.5 Connect the trunk fixture cable, encoder cable, and motor cable. Then rotate the manway mount until the green light on the lower set of three indicating lights come on. Screw manway bolts utilizing shims as required snug enough to hold fixture temporarily against manway.

4.7.6 Loosen the three set screws located on the trunk increment scale above the indicating lights. (Shown in Figure 4).

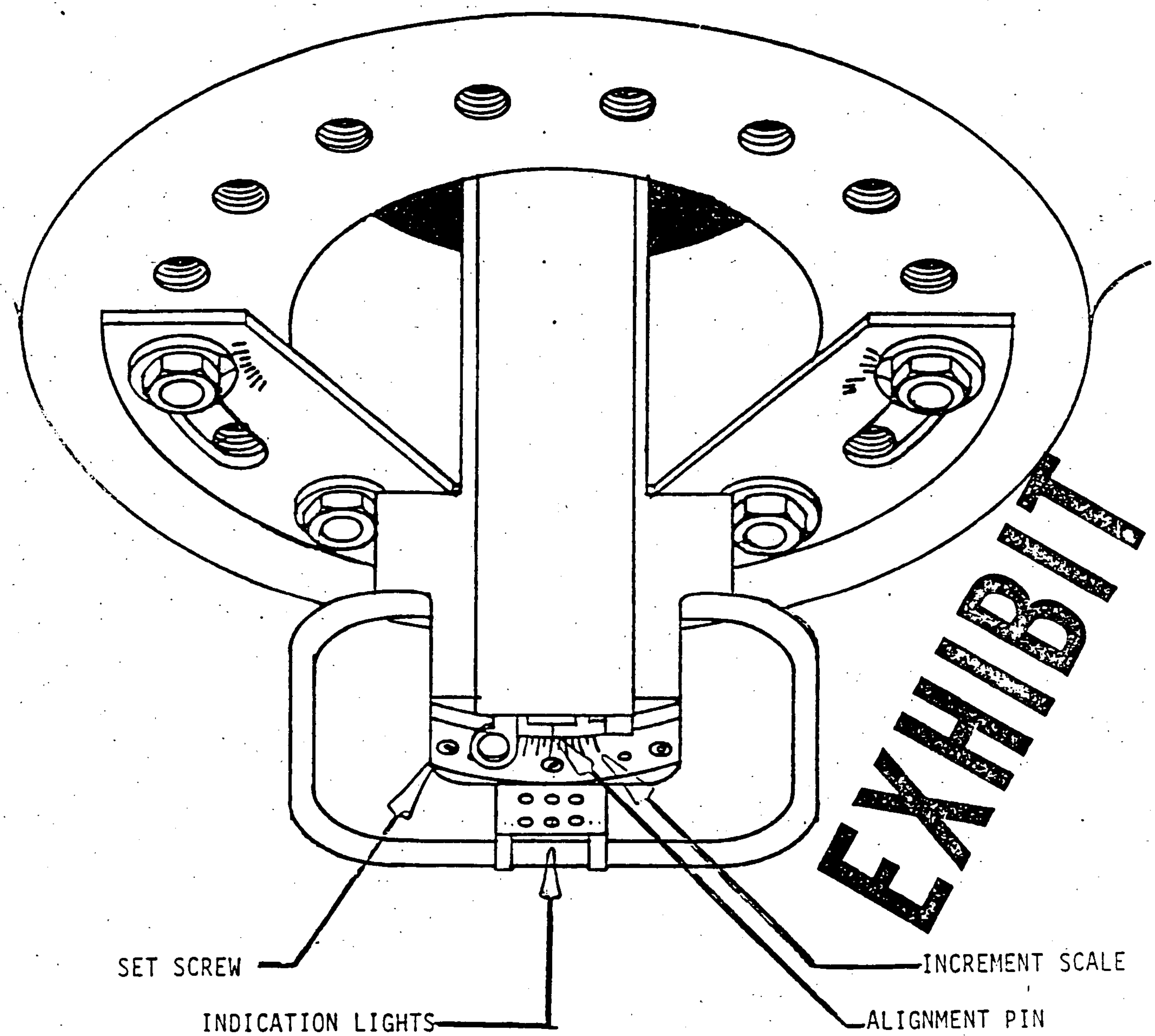


FIGURE 4

4.7.7 The trunk should be placed so that it rests against the divider plate, and then backed off enough distance so the upper trunk can reach a level state. To gain additional leverage use the ZETEC extension bar. This distance is approximately seven (7) increments but this can be adjusted as required. Tighten the three set screws after trunk position is established. Make sure the green indicator light is still on. If not, then rotate manway mount until it comes on. After verifying the trunk is still level, install manway clamp.

4.7.8 Now tighten down manway bolts for permanent use. Verify that green indicator light is still on, then remove manway clamp.

4.7.9 Prior to installing the arm assembly you must enter the CAL_INSP mode in the software. Make sure that the arm has been folded up over the top of the pole and is resting against the mechanical stop. The arm assembly should be folded such that when you go to reopen the arm from the pole, the arm moves towards the divider plate. After you have checked these two conditions, then press the SET_OFST_ soft-key in the SHIFTED mode. This will set an offset for the arm encoder and make a guess to an offset for the pole encoder so that the picture on your display closely approximates the respective positions of the arm and pole inside the bowl. The offset for the pole encoder will be recalculated at the end of the calibration.

4.7.10 Install the arm assembly on the trunk rails and insert it through the manway. Slide the arm assembly until it locks in place.

4.7.11 Now re-install manway clamp for permanent use. The installation is now complete. (Shown in Figure 5).

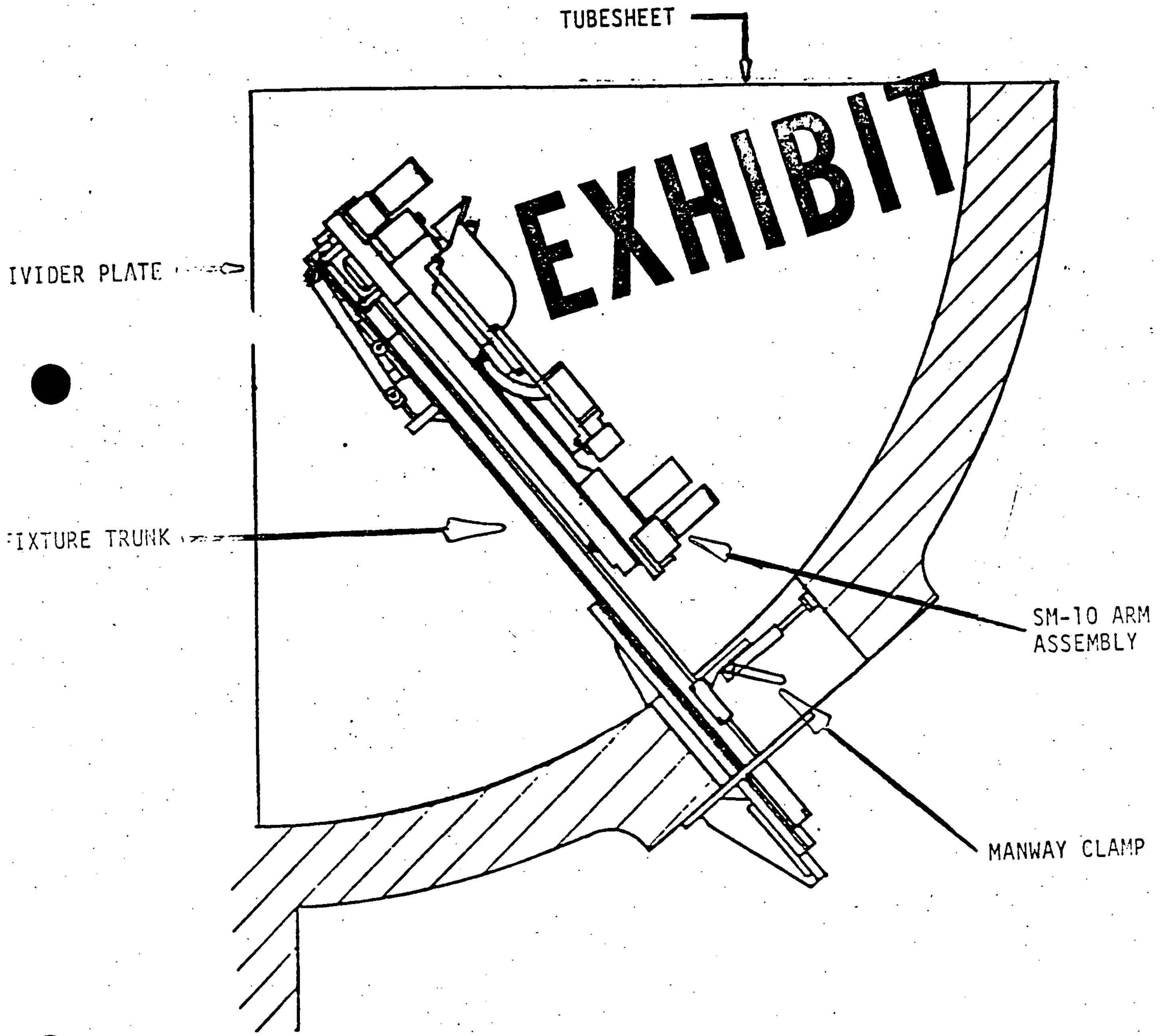

TUBESHEET
EXHIBIT
IVIDER PLATE
IXTURE TRUNK
SM-10 ARM
ASSEMBLY
MANWAY CLAMP

FIGURE 5

5. CALIBRATION OF FIXTURE

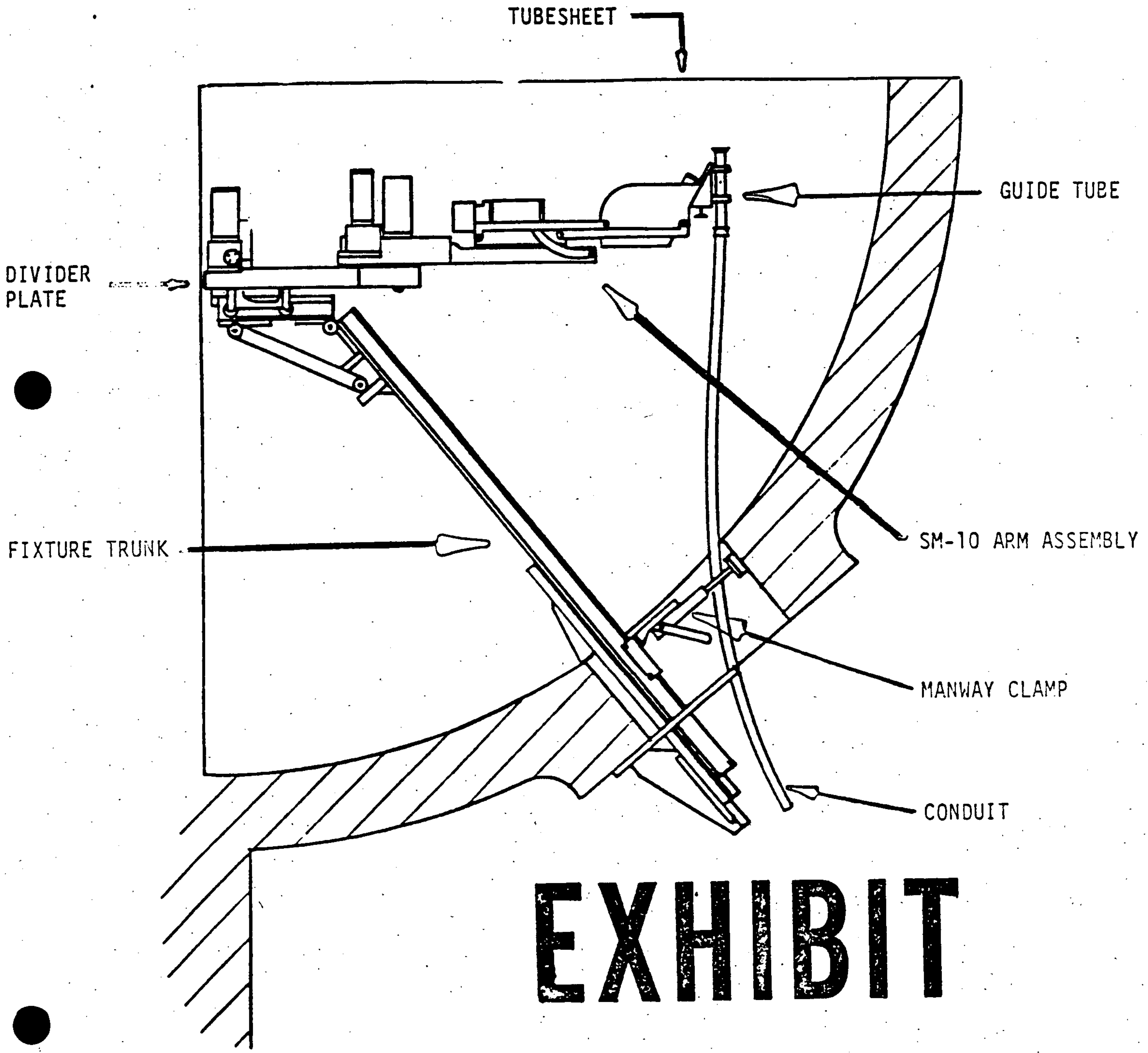
5.1 The SM-10 operating system is designed to be used in conjunction with an Inspection Planning System. The SM-10 Operating System provides the user with the necessary capabilities to perform data acquisition, calibrate the SM-10 fixture and move the SM-10 to desired tube locations. The SM-10 fixture can be calibrated through the following steps.

5.1.1 Using the computer, press the GUIDE.TUB soft-key in the SHIFTED mode. This will position the guide tube mount near the manway.

5.1.2 Install the guide tube with conduit attached.

5.1.3 Insert enough cable and conduit into the steam generator to allow full movement of the fixture.

5.1.4 Using the computer, press the RSME _CAL_ soft-key in the SHIFTED mode. This will now tilt the upper track to its level position. The green light on the upper set of three indicating lights will come on when the upper track has reached a level state. (Shown in Figure 6). These lights may be flickering between red and green when it hits a level state, this is acceptable.



EXHIBIT

FIGURE 6

5.1.5 The guide tube and camera can now be moved closer to the tubesheet, by using the LIFT-UP soft-key. (Shown in Figure 7).

5.1.6 Now press CAL_INSP_ key. This mode of operation provides the user with the capability to calibrate the SM-10 fixture with respect to the steam generator to be inspected. It is essential that one goes through the CAL_INSP_ mode after installation to ensure proper operation of the SM-10 fixture.

5.1.7 The calibration procedure itself involves setting the encoder offset using the SET_OFST_ key and the locating the fixture over three predetermined tubes and pressing the corresponding soft-key at each tube. Instructions for what tubes to line up under will be displayed after pressing the CALIBRATE key.

Follow Diagram 1, a step through sequence for calibrating the SM-10 fixture with respect to the tubesheet.

5.1.8 You now have the option of creating the testing pattern in the INSP_PLAN mode or in the MANUAL mode.

5.1.9 For further detail refer to the manufacturers Operational and Inspection Planning Guide referenced in 2.1 and 2.2.

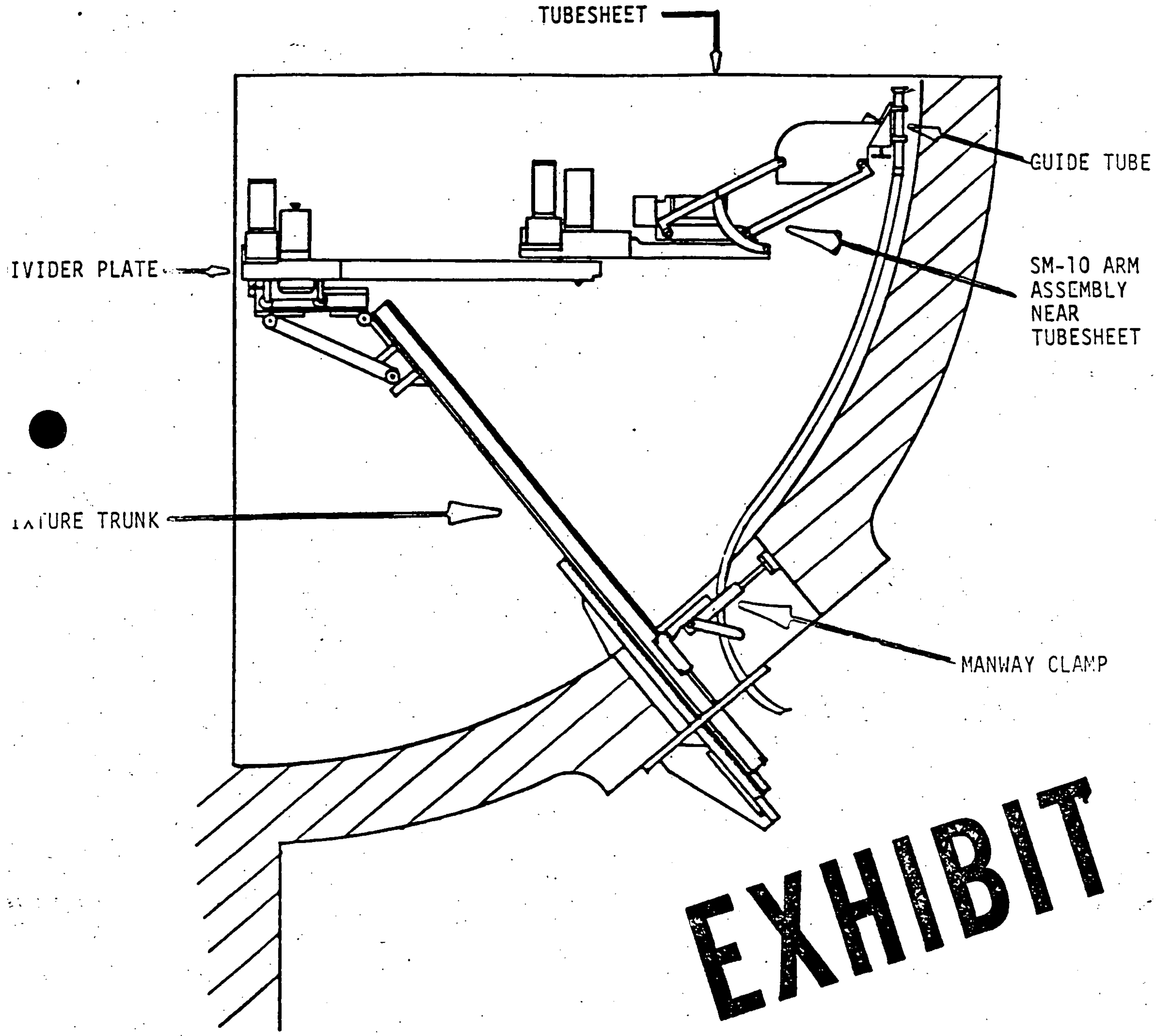
6.0 <u>REMOVAL OF FIXTURE</u>

Removal of the SM-10 from the steam generator will involve using the computer to fold up the arm assembly and position it over the trunk; removing the arm assembly; removing the trunk and disconnecting all the cables. The sequence is as follows:

6.1 Using LIFT_DOWN, lower camera.

6.2 Using the computer, enter the _MANUAL_ mode and press the _FOLD_UP_ soft-key in the SHIFTED mode. This will start the fold up sequence which will position the fixture in front of the manway for guide tube removal and then fold up the arm assembly and position it over the top of the trunk.

6.3 Remove arm assembly from the steam generator. To unlock the arm assembly for removal pull on the lock release ring located above the trunk increment scale.
<u>CAUTION</u>: The arm assembly will be free to slide down the



EXHIBIT

FIGURE 7

SOFT-KEY FLOW SEQUENCE FOR FIXTURE CALIBRATION
FIXTURE

```
--->  _FIXTURE_

              ---> CAL_INSP_

                        __>CALIBRATE ---> GUIDE.TUB ---> SET_OFST_

                                   ---> CAL-RM, C2

                                      ---> _CAL-6,1_ ---> _FIXTURE

              <---> INSP_PLAN

                        ---> _FIXTURE_

              <---> __LEVEL__

                        ---> _FIXTURE_

              <---> --MANUAL__

                      ---> _FREE_RUN ---> AUTO.MOVE ---> _FIXTURE

                    ---> STOP.FXTR     ---> STOP.FXTR --- _MANUAL_
```

DIAGRAM 1

trunk assembly and must be held back before pulling the lock release ring. Do not grasp the fixture by placing your hand on top of the motor. This will prevent the possibility of your hand being pinched in between the motor and the manway during removal. Keeping these precautions in mind the fixture may now be lowered slowly by hand.

6.4 Remove bolts from the manway mount.
CAUTION: As the bolts are loosened the trunk will want to move around in the manway, but the catch on the back side of the trunk should help to hold it in position.

6.5 Once bolts are removed, then invert the trunk such that the flat side is face down.

6.6 Now slide the trunk out of the steam generator.

6.7 Disconnect the three fixture cables (encoder cable, motor cable and trunk cable.

7.0 EMERGENCY REMOVAL OF SM-10

The SM-10 fixture has been designed to be removed in the event that a motor or gearbox failure occurs with the fixture installed.

If the tilt motor or gearbox fails, an emergency tilt release is located outside the manway on the end of the trunk. After aligning the arm assembly over the trunk, remove the tilt release cover and rotate the 1/4 hex head drive screw clockwise until the arm assembly drops onto the trunk. Padding the trunk is recommended to avoid any serious damage to the encoders and other parts of the SM-10.

If the lift motor or gearbox fails in the up position, the arm mounting screw located at the front of the arm must be loosened and the arm removed.

The primary and secondary rotation assemblies may be rotated manually in the event of a failure.

APR 1 7 1987

RPC 3990

CONTROLLED DOCUMENTS

H. B. ROBINSON PLANT

1987 UNIT 2 REFUELING OUTAGE

NSSS - WORK AUTHORIZATION ZS60010001

COMBUSTION ENGINEERING PROCEDURE

TITLE: PROCEDURE FOR MULTI-FREQUENCY EDDY CURRENT EXAMINATION OF NONFERROMAGNETIC STEAM GENERATOR TUBING USING MIZ-18 EQUIPMENT. No: ROB-410-004

REVISION NO: 0

EFFECTIVE DATE: 4-16-87

APPROVED BY:

SW FARMER: [signature] Date: 4/16/87
Plant Group: Tech. Support

[signature] Date: 4-16-87
Onsite QA/QC

[signature] Date: 4-16-87
Outage Management

INFORMATION

PROCEDURE FOR MULTI-FREQUENCY
EDDY CURRENT EXAMINATION OF NONFERROMAGNETIC
STEAM GENERATOR TUBING USING MIZ-18 EQUIPMENT

H.B. ROBINSON

UNIT TWO

PROCEDURE NO.

ROB-410-004

EXAMINATION SERVICES AND PRODUCTS
OUTAGE SERVICES DEPARTMENT
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT
CHATTANOOGA, TENNESSEE - SAN JOSE, CALIFORNIA

PREPARED BY: Thomas A. Biger DATE: 4/6/87

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Q.A. Engineer

APPROVED BY: Ray N. Brown DATE: 4-6-87
Supervisor, Examination Services & Products

ORIGINAL ISSUE DATE: April 3, 1987 REVISION: 0

DATE: N/A

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

1.0 OBJECTIVE:

Eddy current examinations of steam generator tubing is performed to assess the reactor coolant pressure boundary integrity. The results of this examination are permanently recorded and used for comparison with the results of past and/or subsequent steam generator tubing inspection. The eddy current equipment operator is responsible for proper equipment interconnection, set up and collection of eddy current data. The shift supervisor will provide additional technical support during all these activities.

2.0 SCOPE:

This procedure, when used in accordance with the eddy current system set up and calibration parameters established in the specific appendices, meets the intent of the requirements of the USNRC Regulatory Guide 1.83 "Inservice Inspection of PWR Steam Generator Tubes", Revision 1, dated July, 1975 and the ASME Boiler and Pressure Vessel Code, Section XI "Rules for Inservice Inspection of Nuclear Power Plant Components", 1977 Edition, with Summer 1978 Addenda.

3.0 REFERENCES:

3.1 Combustion Engineering, Inc. Power System Group (PSG) Nuclear Field QA Manual.

3.2 Combustion Engineering, Inc. Nuclear Quality Assurance Instruction (NQAI) Manual.

3.3 Combustion Engineering, Inc. Power Systems Group, Operating Procedures Manual

3.4 Zetec DDA-4 System Operating Guideline.

3.5 MIZ-18 Data Acquisition System Operating Guide.

3.6 ROB-410-006; Procedure for Control of Eddy Current Examination Data for the Personal Computer (PC) based Data System.

3.7 ASME Code Case N-401; Use of Digital Equipment.

3.8 ROB-410-005; Eddy Current Data Analysis Procedure for the Evaluation of Westinghouse Steam Generator Tubing.

3.9 ASME Code interpretation X1-83-18: 1980 SNT-TC-1A vs. 1975 SNT-TC-1A Certification.

4.0 PERSONNEL REQUIREMENTS:

Each person performing examinations governed by this procedure shall be certified in accordance with SNT-TC-1A 1980 Edition or equivalent. Combustion Engineering personnel shall be certified in accordance with Combustion Engineering written Procedure NQAI 2.4. contained in Reference 3.2.

If examiners are supplied by the purchaser, the purchaser will be responsible for their certification. In the instance when C-E utilizes a subcontractor, C-E will be responsible for certification either by examination to the requirements of NQAI 2.4 or by auditing and accepting the subcontractor(s) written practice.

4.1 A level I may perform specific calibrations and specific tests according to written instructions (procedure) and to record the results. He shall receive the necessary guidance or supervision from a certified ET Level II or III individual.

4.2 The initial equipment setup at the start of the test program shall be verified by a certified ET Level II or III individual.

4.3 The evaluation of the results of the eddy current examination must be conducted by a Data Analyst qualified to at least ET Level II with specific training for the evaluation of data from nonferrogmagnetic steam generator tubing.

5.0 PRECAUTIONS AND PREREQUISITES:

5.1 It is expected that very high levels of radiation may be encountered inside and adjacent to the primary head of the steam generators. Utmost care shall be taken in the setup and performance of the examination to minimize personnel exposure to ionizing radiation and radioactive contamination.

5.2 Personnel engaged in the eddy current examination program shall be indoctrinated in the radiation protection rules, guidelines, protective clothing and equipment requirements in effect at the plant site as required.

5.3 The eddy current test equipment will be set up in an area designated by the operator and approved by the site personnel in accordance with the appropriate figures and test setup instructions.

NOTE: If the Remote Data Acquisition and Analysis Trailer (RDAAT) is utilized, all data acquisition equipment, video equipment and communication equipment will be located in this trailer.

5.4 The steam generator shall be open on the primary side dried and ventilated in such a manner as to provide proper temperature and humidity for personnel safety and comfort and to prevent heat and moisture damage to equipment.

5.5 The secondary side of the steam generator shall be cooled down to the extent that the temperature of the tubes and tube sheet are 120 deg. F or less.

5.6 Provisions must be made for personnel and equipment entry into and exit from the steam generator (i.e., ladders, scaffolds or staging, platforms, lighting inside and outside the steam generator, breathing air supply, 120 VAC electrcity, etc.).

5.7 Health Physics coverage shall be maintained at the steam generator during any personnel entry into the steam generator as required.

5.8 The Eddy Current Data Sheets will list all the tubes that are to be inspected (Figure 1). The ET Operator will initial each tube after it is inspected and date each sheet upon completion. Data control is maintained in accordance with Reference 3.6 or as applicable.

NOTE: ALL EXAMINATION/INSPECTION FORMS, RECORDS, AND DATA SHEETS SHALL BE DATED AND SIGNED WHERE REQUIRED. "NA" SHALL BE WRITTEN OR TYPED IN ALL BLANKS THAT ARE NOT APPLICABLE TO THE DOCUMENT. BLACK INK IS REQUIRED AND THE USE OF "WHITE OUT" OR CORRECTION FLUID IS FORBIDDEN. CHANGES WILL BE SINGLE LINED THROUGH,INITIALED, AND DATED.

5.9 A communication system may be setup and operating between the eddy current test instrument Operator and the steam generator platform.

5.10 The primary piping nozzle openings at open channel heads shall have been covered prior to entry into the steam generator for eddy current testing equipment installation to eliminate the possibility of hardware inadvertently falling into the nozzle.

6.0 CALIBRATION STANDARDS:

6.1 The calibration standard will be fabricated from a length of tubing, of the same alloy, nominal outside diameter, and nominal wall thickness as that in the steam generator. It may also contain secondary side features such as carbon steel support rings, copper rings, and other features as needed to provide signals for subsequent multi-parameter frequency mixing by the data analyst.

6.2 Documentation shall include an as-built drawing of the calibration standard, a mill test report, serial number and manufacture's heat treat number for tube material used in these calibration standard.

6.3 The ASME calibration standard will typically contain the following artificial discontinuities as a minimum but other designs may be used as required for specific applications. See Figure 2 for typical standard. Use as-built drawing of actual standard for specific details.

6.3.1 A single hole drilled 100% through wall 0.067 in. dia.

6.3.2 Flat-bottomed drill hole 5/64 in. dia. x 80% through from the outer tube wall surface.

6.3.3 Flat-bottomed drill hole 7/64 in. dia. x 60% through from the outer tube wall surface.

6.3.4 Flat-bottomed drill hole 3/16 in. dia. x 40% through from the outer tube wall surface.

6.3.5 Four flat-bottomed drill hole 3/16 in. dia., spaced 90 deg. apart in a single plane around the tube circumference, 20% through from the outer tube wall surface.

6.3.6 1/16 in. wide 360 deg. circumferential groove. 20% through from the inner tube wall surface.

6.3.7 1/8 in. wide 360 degrees circumferential groove 10% through from the outer tube wall surface.

6.3.8 Stainless steel ring, simulated support plate.

6.4 The profile calibration standard will contain sufficient tube expansions and/or reductions in diameter to provide a set of known values for profile evaluations. See Figure 3 for typical standard. Use as-built drawing of the actual standard for specific details.

6.5 The multi-purpose calibration standard will contain a variety of notches, holes and grooves for calibration of special setups such as 8 x 1, segmented bobbin and rotating probes. See Figure 4 for typical calibration standard. Use as-built drawing of the actual standard for specific details.

7.0 EQUIPMENT:

All eddy current test equipment provided by Combustion Engineering shall be certified to be equivalent or exceed the applicable requirements of the ASME Code, Section XI, Appendix IV, Paragraph IV-3100, with Code Case N-401 addressing the use of digital examination equipment. Combustion Engineering may utilize equipment provided by subcontractors that is certified to the above requirements. Documentation of calibration will be provided prior to the start of the inspection. A typical equipment list is provided below.

7.1 HP 9836A Computer with MIZ-18 Data Acquisition Software and a supply of 5-1/4" floppy disks or equivalent.

7.2 Data Cartridge Recorder HCD-75Z (or equivalent) and a supply of preformatted magnetic recording tape cassettes.

7.3 MIZ-18 Remote Data Acquisition Unit.

7.4 Eddy Current test probes. See appropriate appendix for probe size and type.

7.5 Remote controlled manipulator (optional), eg. SM-4, SM-10, Genesis.

7.6 Steam Generator Templates (optional).

7.7 Mechanical probe pusher and flexible conduit (optional).

7.8 A calibration and reference standard (hand held or in-line).

7.9 Eddy Current Data Sheets.

7.10 Close circuit television system (optional).

7.11 Communication system (optional).

8.0 EQUIPMENT SETUP:

8.1 Satisfy applicable requirements specified in Section 5. (Precautions and Prerequisites).

8.2 Set up communications between steam generator platform and data station as required.

8.3 Install templates into the steam generator primary head if required.

8.4 Install the remote manipulator into the steam generator primary head as required.

8.5 Attach guide tube with flexible conduit material between remote manipulator and the probe driver.

8.6 Interconnect the MIZ-18 equipment as shown in Figure 5, 6 and 7 (if applicable) described as follows:

8.6.1 Connect the GPIO interface card on the HP 9836 (Address 12) to the HCD-85Z Data Cartridge Recorder with a 50-pin GPIO cable. (When duplicating tapes, connect a second GPIO Interface Card at Address 11 for the duplicate)

8.6.2 Connect the HPIB Interface on the HP 9836 to the HPIB/MIZ-18 interface with a GPIB cable.

8.6.3 Connect the HPIB/MIZ-18 Interface to the MIZ-18 Remote Unit with the desired lengths (500' to 1000' typical) of MIZ-18 Remote Cables. The IEEE-488 connector at the lower right corner of the MIZ-18 Remote Unit should be used.

8.6.4 An appropriate MIZ-18 Probe Splitter connected to the PROBE connector on the MIZ-18 Remote Unit is used to adapt the test probe to the MIZ-18.

8.7 Should absolute data be desired with this type coil arrangement, the Probe Splitter must have at least two probes; one probe attached to the connector labeled "probe" and one probe attached to the connector labeled "Ref". The reference probe shall be placed in a reference standard. Ten foot extension cables or longer may be used as required. Typically the following splitter will be utilized with the following probe types:

8.7.1 4 pin splitters - bobbin probes.

8.7.2 10 pin splitters - 8 x 1 probes, rotating probes, segmented bobbin probes, profilometry probes, etc.

9.0 EQUIPMENT OPERATION AND CALIBRATION:

The following will describe the typical equipment calibration sequence with the specific calibration technique requirements described in Appendix A thru G. The appropriate Appendix will be selected based on the particular type of inspection. The operator will be provided written instruction by the shift supervisor with the issue of a completed "Set Up Instruction" Form. See Figure 8.

9.1 Load MIZ-18 System Software into right disk drive and a blank diskette into left disk drive.

9.2 Turn power on. Turn display intensity to maximum.

9.3 The system will automatically boot into set clock and date mode. Also load data cartridge into data cartridge recorder.

9.4 Set clock and date.

9.5 Initialize the blank diskette. (If not previously initialized).

9.6 Enable the disk backup.

9.7 Change setup to appropriate identification for examinations.

9.8 Configure HP 9836 to appropriate frequencies and operating modes (absolute/differential) as required by the appendicies for examination to be performed as directed by the shift supervisor.

9.9 Adjust spans and rotations for all channels as described in the same appendix utilized in para. 9.8.

9.10 Complete the summary in accordance with Section XI, Appendix IV, Sub-Article IV-5200 with the following plant specific information supplied by the shift supervisor and by documenting the equipment being utilized.

Owner	Calibration Standard S/N (S)
Plant and Unit Number	Procedure Number
Date	ET Operator Name
Component Number	ET Operator Level
Component Side	Company Affiliation
Type of Test	Length of cable between Probe and MIZ-18 Splitter
Data Cartridge Number	2671G Printer S/N: if utilized
Tubing Size	MIZ-18 S/N
HP9836 S/N	Probe Type, Size and Length
Cartridge Recorder	
HPIB Interface S/N	

NOTE: When completing the line item "plant", identify by initials only. The Owner/plant DDWXYY (DD is for Data Disk with the W representing the S/G number, or letter, X representing the Hot (H) or Cold (C) side and the YY representing the tape number.
EXAMPLE: CPL/ROB DDAH22.

When completing the line "ET Operator Name" use the operator's last name followed by the operator's first two initials.
EXAMPLE: Jones, J.R.

9.11 Record data from the calibration standard onto the data cartridge at the speed required for the examination as defined in the applicable appendix.

9.12 Complete the setup log sheet recording the appropriate information and the calibration time (See Figure 9).

10.0 PROBE SPEED AND VERIFICATION:

10.1 Insert the probe into the tube to known position.

10.2 Retract the probe with MIZ-18 on.

10.3 Use the applicable steam generator drawing dimension for the distance between tube support structures.

10.4 Determine the travel time for the probe between two desired tube support structures using the chart on the MIZ-18 (marked at 1 second intervals).

10.5 If the probe speed exceeds 14 in./sec., adjust the probe pusher to reduce the probe speed to approximately 12 in./sec. or as required by the same appendix utilized in paragraph 9.8.

11.0 CALIBRATION VERIFICATION: (Span and Rotation Settings)

A calibration check must be recorded at the following intervals:

11.1 Within 4 hours of the previous calibration check.

11.2 At the beginning and end of each data cartridge recording tape.

11.3 Whenever test components are changed, loss of power, malfunction is suspected or the operator deems it necessary.

NOTE: If the equipment is out of calibration as defined above, it shall be recalibrated. The recalibration shall be noted on the data cartridge tape. The data analyst shall determine which tubes, if any shall be reinspected.

12.0 EXAMINATION:

12.1 Position the manipulator at the location of the first tube.

12.2 Press MIZ-18 "ON" soft key.

12.3 Properly identify tube location on MIZ-18.

12.4 Insert the probe into the tube to the desired elevation as defined by the Program Data Sheets.

12.5 Press "Run" and withdraw the probe while recording the entire length of tube to be inspected on tape during withdrawal. Take special care not to start the probe retraction or stop the data recorder too quickly which may result in an incomplete examination. Press "Pause" to stop data cartridge recorder.

12.6 Initial the completed tube on the Eddy Current Examination Program Data Sheet. If a tube or portion of is not inspectable, note any apparent cause on the ET Examination Program Data Sheet and on MIZ-18 message.

12.7 Position the probe at the next tube to be examined.

12.8 Repeat paragraph 12.3 through 12.7 for each tube to be examined.

13.0 OPERATING PRACTICES:

13.1 NOTE: ALL EXAMINATION/INSPECTION FORMS, RECORDS, AND DATA SHEETS SHALL BE DATED AND SIGNED WHERE REQUIRED. "NA" SHALL BE WRITTEN OR TYPED IN ALL BLANKS THAT ARE NOT APPLICABLE TO THE DOCUMENT. BLACK INK IS REQUIRED AND THE USE OF "WHITE OUT" OR CORRECTION FLUID IS FORBIDDEN. CHANGES WILL BE SINGLE LINED THROUGH, INITIALED, AND DATED.

13.2 The MIZ-18 has a message capability that is provided for written information about the testing. Notations such as operator changes, probe changes and other description of testing should be included.

13.3 Extreme care must be exercised when utilizing the review mode. Improper use of the review mode could cause a loss of tube entries on tape.

13.4 During the examinations cycling through the channels during data collection is recommended to ensure proper operation of all coils.

13.5 Care should be taken to ensure similar probes are used as reference probes to avoid an impedance mismatch.

13.6 The data tapes shall be labeled appropriately utilizing the data cartridge label (Figure 10) and the multi-frequency eddy current inspection setup data log sheet. These shall be attached to the data cartridge container respectively.

13.7 The S/G identification system will be an alphabetical letter.

13.8 The Row and Column numbers shall be set to "Row 999 Col 999" for all calibration checks.

13.9 Typically whenever a calibration is required, three calibration pulls are recorded.

14.0 TUBE POSITION VERIFICATION:

14.1 Verification of probe positioner location shall be recorded on the data sheet. This will be done by indicating PV (Position Verification) at the required verification points described in 14.2.

14.2 The remote positioner location shall be verified as follows:

a) The first tube of each data set
b) The last tube of each data set
c) The last tube on each data sheet

14.3 In the instance where the location has been wrongfully identified and a position verification cannot be made from the last tube tested, all tubes tested from the last valid position verification must be re-examined.

15.0 RECORDING CRITERIA:

15.1 All data from the examination shall be recorded on the data cartridge tapes. These tapes will contain at a minimum the information defined in paragraph 9.10.

16.0 EVALUATION:

The data analysis shall be conducted in accordance with Reference 3.8 Procedure ROB-410-005, titled "Eddy Current Data Analysis Procedure for the Evaluation of Westinghouse Steam Generator Tubing".

17.0 REPORTING CRITERIA:

The report of the inspection results supplied to the customer will contain the following at a minimum.

17.1 Tube wall degradations of 20% through wall or greater.

17.2 All detectable tube dents known to obstruct probe passage.

17.3 Any additional conditions that the data analyst deams necessary.

APPENDIX A
TEST PARAMETERS FOR STANDARD BOBBIN PROBE EXAMINATIONS FOR DEFECTS, DENTS, SLUDGE, ETC.

I. Tubing
A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard
See Figure 2 for Typical ASME Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standards for specific details.

III. Test Frequencies
Frequency 1 - 400 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 2 - 200 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 3 - 100 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 4 - 20 KHz Diff. and Abs. Toggle Coils 1 and 5
Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase
All differential channels shall be phased so the response from the 100% through-wall flaw is at 40 degrees goes down first, and is approximately 50% of full screen height as practical.

All absolute channels shall be phased so the response from the 20% I.D. groove lies horizontal to the left and is approximately 3 screen divisions as practical.

V. Frequency Mixes
Mix 1 - 400/200 Differential if required by the data analyst. Additional mixes as required.

VI. Probes - Manufactured by Combustion Engineering, Zetec, or equivalent. Diameters are listed below. Probes may have varying prefixes and suffixes describing body shape and centering features.

A. Straight Tubing -.720" and .700", or as required
B. U-Bend tubing - .720" and .700", or as required
C. Low Row U-Bend - .720", .700"and .680 or as required
D. Specialty Testing - As required by the data analyst.
*The above listed probes may also be used with a Ring Magnet.

VII. Probe Speed
The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for bobbin coil testing, 12 in./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

APPENDIX B
TEST PARAMETERS FOR SPECIAL ROW 1 SEGMENTED BOBBIN PROBES FOR DEFECTS

I. Tubing
A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard
See Figure 4 for Typical Special Multi-purpose Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standard for specific detail.

III. Test Frequencies
Frequency 1 - 100 KHz Diff. and Abs. Toggle Coils 1, 3, 5, & 7
Frequency 2 - 200 KHz Diff. and Abs. Toggle Coils 1, 3, 5, & 7
Frequency 3 - 300 KHz Diff. and Abs. Toggle Coils 1, 3, 5, & 7
Frequency 4 - 400 KHz Diff. and Abs. Toggle Coils 1, 3, 5, & 7

NOTE: Special MIZ-18 Y splitter required.
Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase
All differential channels shall be phased so the response from the 100% through-wall flaw is at 40 deg., goes down first, and is approximately 50% of full screen height as practical.

All absolute channels shall be phased so the response from the 20% I.D. groove lies horizontal to the left and is approximately 3 screen divisions as practical.

V. Frequency Mixes
Mixes as required.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv. Row 1 probes large enough in diameter to maintain consistant contact.

VII. Probe Speed
The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for segmented bobbin coil testing, <3 in./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor. Care should be taken when entering the U-Bend region to allow the probe to become properly orientated.

NOTE: Recommended insertion speed should be <6"/sec.

APPENDIX C

TEST PARAMTERS FOR BEADED JOINT FLEX (BJF) PROBE FOR DEFECTS, DENTS, SLUDGE, HEAT TREATMENT, ETC.

I. Tubing

A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard

See Figure 2 for Typical ASME Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standard for specific detail.

III. Test Frequencies

Frequency 1 - 400 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 2 - 200 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 3 - 100 KHz Diff. and Abs. Toggle Coils 1 and 5
Frequency 4 - 20 KHz Diff. and Abs. Toggle Coils 1 and 5
Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase

All differential channels shall be phased so the response from the 100% through-wall flaw is at 40 deg., goes down first, and is approximately 50% of full screen height as practical.

All absolute channels shall be phased so the response from the 20% I.D. groove lies horizontal to the left and is approximately 3 screen divisions as practical.

V. Frequency Mixes

Mix 1 - 400/100 Differential if required by the data analyst. Additional mixes as required.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv. Diameters are listed below. Probes may have varying prefixes and suffixes describing body shape and centering features. BJF Probes - .720", .700" and .680" or as required.

VII. Probe Speed

The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for beaded joint flex coil testing, 12 in./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

APPENDIX D
TEST PARAMETERS FOR SEGMENTED BOBBIN PROBE FOR DEFECTS, SLUDGE, ETC.

I. Tubing

A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard

See Figure 4 for Typical Special Multi-purpose Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standard for specific detail.

III. Test Frequencies

Frequency 1 - 100 KHz Diff. Toggle Coils 1, 3, 5, 7
Frequency 2 - 200 KHz Diff. Toggle Coils 1, 3, 5, 7
Frequency 3 - 300 KHz Diff. Toggle Coils 1, 3, 5, 7
Frequency 4 - 400 KHz Diff. Toggle Coils 1, 3, 5, 7

Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase

All differential channels shall be phased so the response from the 100% through-wall flaw is at 40 deg., goes down first, and is approximately 50% of full screen height as practical.

V. Frequency Mixes

Mixes as required.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv.

Segmented bobbin probes large enough to maintain constant contact.

VII. Probe Speed

The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for segmented bobbin coil testing, 3 in./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

NOTE: Recommended insertion speed should be <6"/sec.

APPENDIX E
TEST PARAMETERS FOR
8 X 1 PROBE FOR DEFECTS AND/OR INDICATION CLARIFICATION

I. Tubing

A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard

See Figure 4 for Typical Special Multi-purpose Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standard for specific detail.

III. Test Frequencies

Frequency 1 - 300 KHz Abs. Toggle Coils 1, 3, 5, 7
Frequency 2 - 300 KHz Abs. Toggle Coils 2, 4, 6, 8
Frequency 3 - 100 KHz Abs. Toggle Coils 1, 3, 5, 7
Frequency 4 - 100 KHz Abs. Toggle Coils 2, 4, 6, 8

Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase

All absolute channels shall be phased so the response from the probe wobble is horizontal, the flaw signals go up first, and the response from the 20% O.D. groove is approximately 3 screen divisions as practical.

V. Frequency Mixes

Mix 1 - 8 - 300/100 Absolute if required by the data analyst. Additional mixes as required.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv.

8 x 1 probes large enough in diameter to maintain constant contact.

VII. Probe Speed

The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for 8 x 1 testing, 6 inc./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

APPENDIX F
TEST PARAMETERS FOR ROTATING PROBE COIL TEST

This examination employs a surface riding pancake coil which is rotated as it traverses the tube axis producing a helical scan. Axial location is tracked by means of a positional encoder with positive feedback to the MIZ-18 system. Flaw depths can be evaluated using a phase delay or amplitude curve and the indication topography presented in C-Scan Graphics (See Figure 7 for set-up information).

I. Tubing

A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard

See Figure 4 for Typical Special Multi-purpose Calibration Standard to be utilized for calibration of phase and span settings. Use as-built drawings of actual standards for specific details.

III. Test Frequencies

Frequency 1 - 300 KHz Abs. Toggle Coil 1
Frequency 2 - 100 KHz Abs. Toggle Coil 2
Frequency 3 - 1000 KHz, Toggle Coil 4
Frequency 4 - 10 KHZ, Toggle Coil 3

NOTE: Frequencies 3 and 4 are used for probe rotational speed and axial indexing. Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase

Frequencies 1 and 2 absolute shall be phased so the response from the probe wobble or noise is horizontal and the 20% hole responses are vertical and approximately 2 screen divisions as practical.

Frequency 3 is utilized to monitor the probe rotation speed. A voltage spike is received per revolution. Phase should be adjusted to position this signal vertically as practical with span varying recording to operator preference. Monitor Frequency 3 vertical strip chart to determine revolutions/sec.

APPENDIX F (con't)

Frequency 4 is utilized to monitor the probe axial traverse speed. A voltage spike is received for every 1/2 inch of axial probe travel. Phase should be adjusted to position this signal vertically as practical with the span varying according to operator preference. Monitor frequency 4 to determine axial traverse speed/second.

V. Frequency Mixes

Mixes as required.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv. Rotating probe pancake coil of the appropriate diameter to maintain constant contact.

*The above listed probe may also be used with a Magnet.

VII. Probe Speed

The mechanical probe pusher test scan speed shall not exceed 2 in./sec.. For rotating probe coil testing 1/2 in./sec. axial traverse speed is desired. Rotation probe speed shall not exceed 10 revolution/sec. with 3 revolutions/sec. being desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

NOTE: Recommended insertion speed should not exceed 6"/sec.

APPENDIX G
TEST PARAMETERS FOR PROFILOMETRY PROBE TEST

I. Tubing

A. O.D. - 0.875"
B. Wall - 0.050" Nominal
C. Material - Inconel 600

II. Calibration Standard

See Figure 3 for Typical Profilometry Standard. Use As-Built drawings of actual standard for specific details.

III. Test Frequencies

Frequency 1 - 400 KHz Abs. Toggle Coils 1, 3, 5, 7
Frequency 2 - 400 KHz Abs. Toggle Coils 2, 4, 6, 8
Frequency 3 - 10 KHz Abs. Toggle Coil 1

Adjust samples per second to 120.

Other test frequencies may be used to optimize the examination as required by the data analyst.

IV. Signal Phase

Absolute frequencies 1, 2 and 3 shall be phased so the response from the step goes vertically up and approximately 3 divisions. During calibration, the probe should be nulled in the nominal section of the tube, held for 3 - 5 seconds, retracted to the reduced section, held for 3 - 5 seconds and retracted again. This process should be repeated at least six times.

VI. Probes- Manufactured by Combustion Engineering, Zetec or equiv. A special designed 8 coil pancake probe or equiv.

VII. Probe Speed

The mechanical probe pusher test scan speed shall not exceed 14 in./sec. for profilometry coil testing, 6 inc./sec. is desired. Specialty tests may be retracted at the rate specified by the Shift Supervisor.

TYPICAL EDDY CURRENT DATA SHEET

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: __________________ PLANT/UNIT: _________________ SG #____
PROBE: ____________ CAL. STD.: _____________ EXTENT TESTED: ________
PROCEDURE: _______________ LEG: ______
FREQUENCY: ________________________________ REEL NO.: __________
ECT DESCRIPTION: ____

TEST DATE: __________

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
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	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

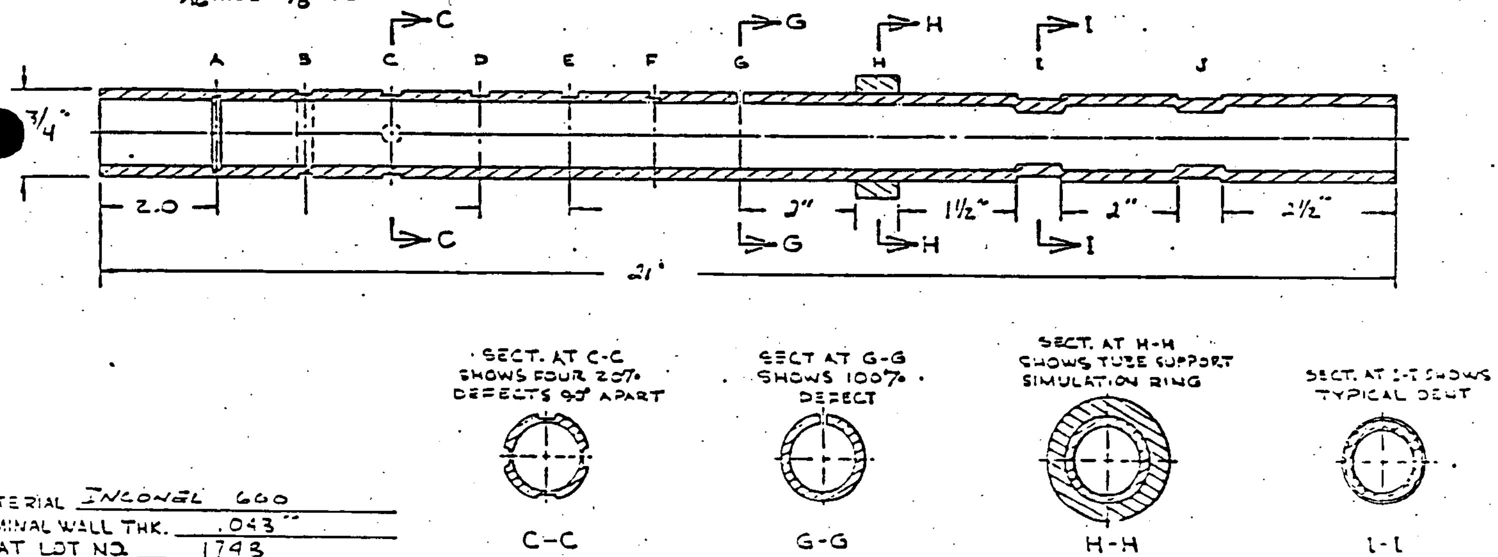
EXHIBIT

Shift Supervisor:__________ Data Controller:___________ Date:________

FIGURE 1

TYPICAL ASME CALIBRATION STANDARD

LOCATION	A	B	C	D	E	F	G	H	I	J
PHYSICALLY MEAS. DEPTH IN % OF WALL	20½%	10½%	20½%	40½%	60½%	81%	100%		.010" INCHES	.004" INCHES
E.T. PHASE ANGLE MEASUREMENT	5°	152°	152°	136°	106°	74°	38°			
DIA. OF DEFECT	I.D. GROOVE 1/16 WIDE	O.D. GROOVE 1/8 WIDE	3/16	3/16	7/64	5/64	.052"			



MATERIAL INCONEL 600
NOMINAL WALL THK. .043"
HEAT LOT NO. 1743
TEST FREQ. USED 550 KHZ
SERIAL NO. Z-1590
P.O. NO. 83PB3 - 93940302
REL. NO. N/A
QUALITY REL. NO. N/A
DATE MFG. 9-16-83
E.T. TECHNICIAN H. [illegible]
CUSTOMER TVA
RECORDED ON REEL NO. 22 / I

EXHIBIT

TOLERANCES
DIMENSIONS IN INCHES
.XXX ± .005
.XX ± .010
.X ± .030

COMBINATION ASME/I DENT
STD. ASSY WITH TUBE SUPT

12-16-82

2-432

FIGURE 2

TYPICAL PROFILOMETRY CALIBRATION STANDARD

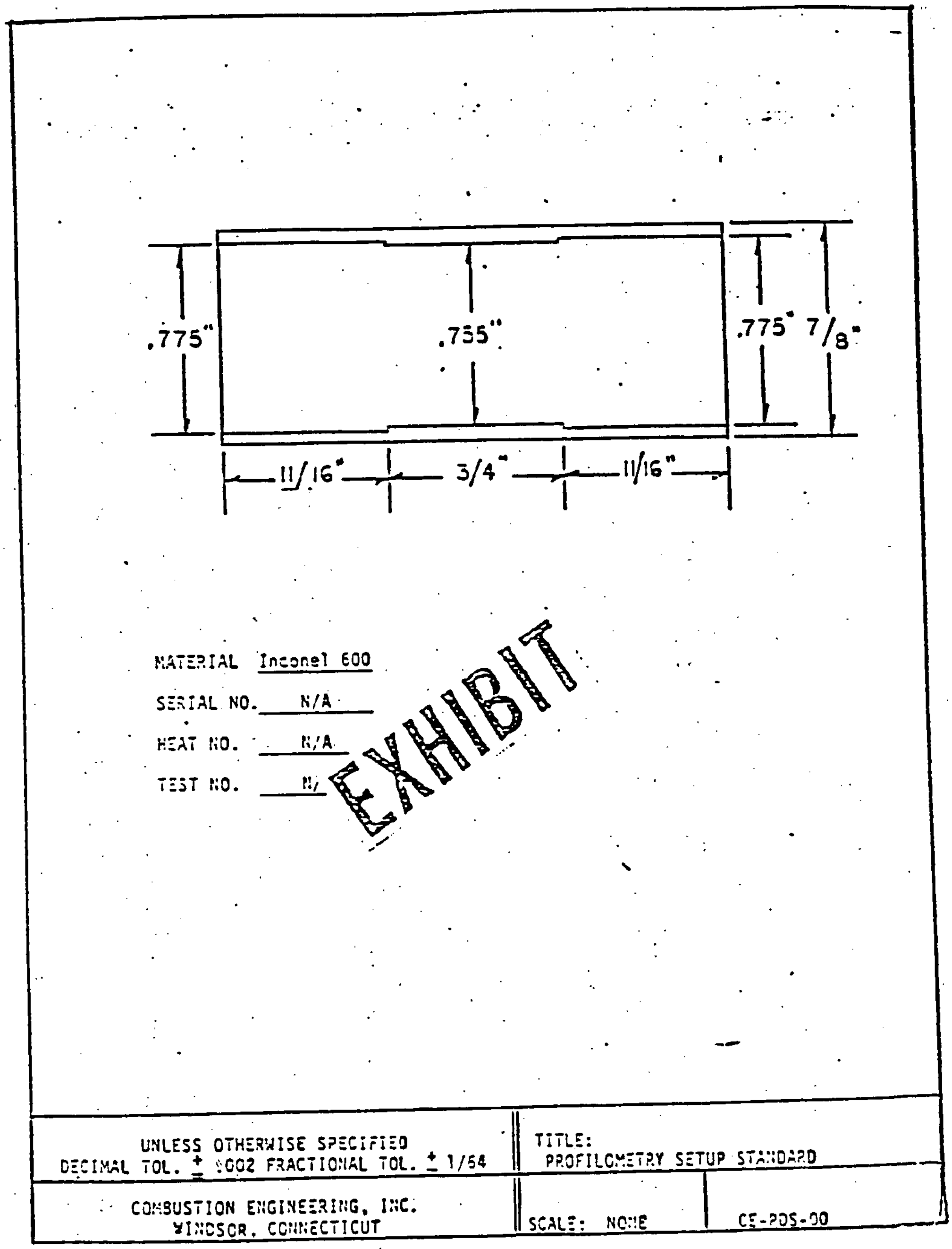
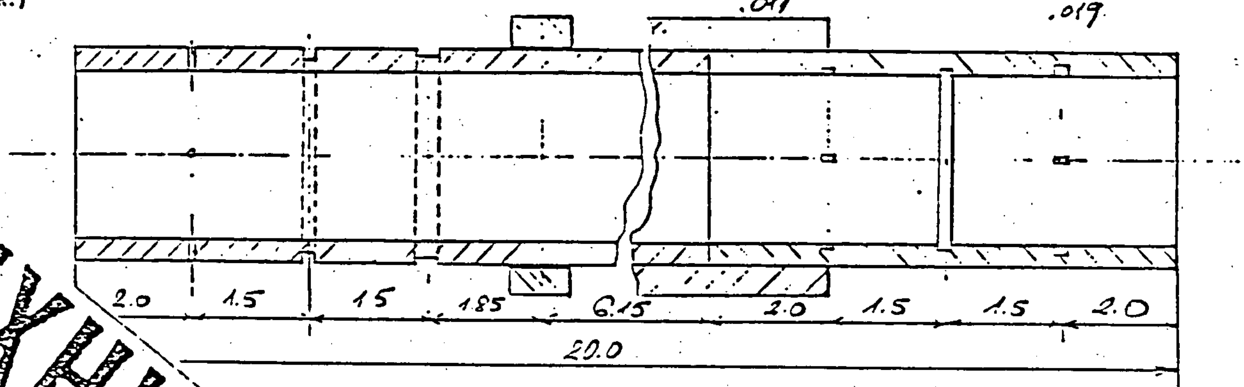


FIGURE 3

TYPICAL MULTI-PURPOSE CALIBRATION STANDARD

FLAW	THROUGHWALL HOLE	OD GROOVE	OD GROOVE	CS RING	4 x EDM ID NOTCHES	ID GROOVE	4 x EDM ID NOTCHES
LENGTH (IN.)	.052	1/16	1/8		.050	.050	.050
DEPTH (% T.W.)	100%	40%	20%		20%	20%	40%
MEASURED DEPTH (IN.)	✓	.021	.009		.011 .011 .010 .011	.010	.021 .020 .020 .019



EXHIBIT

TUBE MATERIAL: Inconel 600
NOMINAL OD: 7/8 inch
NOMINAL THROUGHWALL: .050 inch
NUMBER: NX 2742
STANDARD SER. NUMBER: MAP-004

CS RING OD: 1.250 inches
CS RING ID: .890 inch
CS RING LENGTH: .750 inch

CALIBRATION STANDARD FOR MULTI-ARRAY EDDY CURRENT PROBES

FIGURE 4

TYPICAL MIZ-18 INTERCONNECTION SCHEMATIC

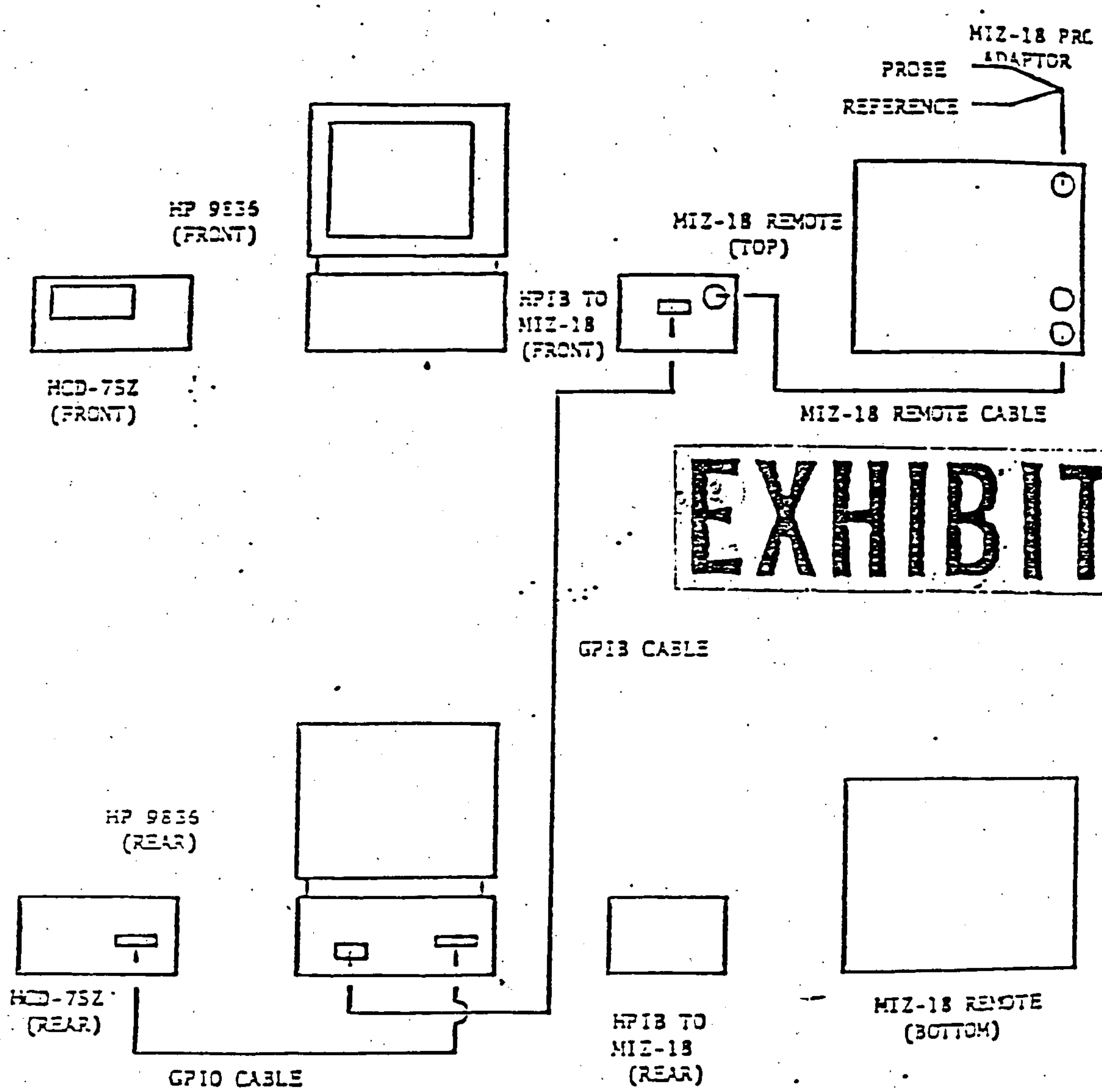


FIGURE 5

TYPICAL EDDY CURRENT TEST EQUIPMENT SET-UP PROGRAM

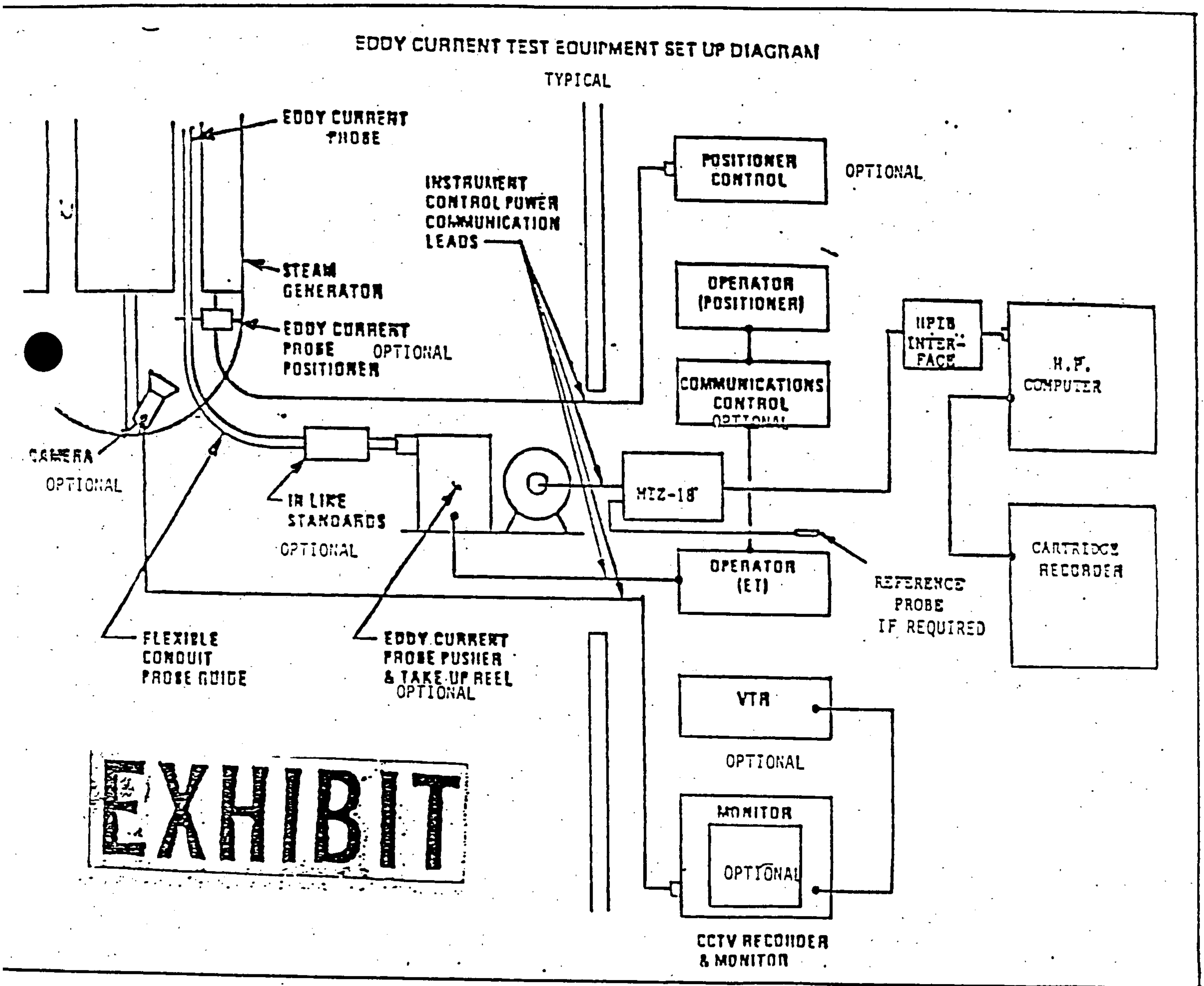


FIGURE 6

TYPICAL INTERCONNECT SCHEMATIC - RPC TEST

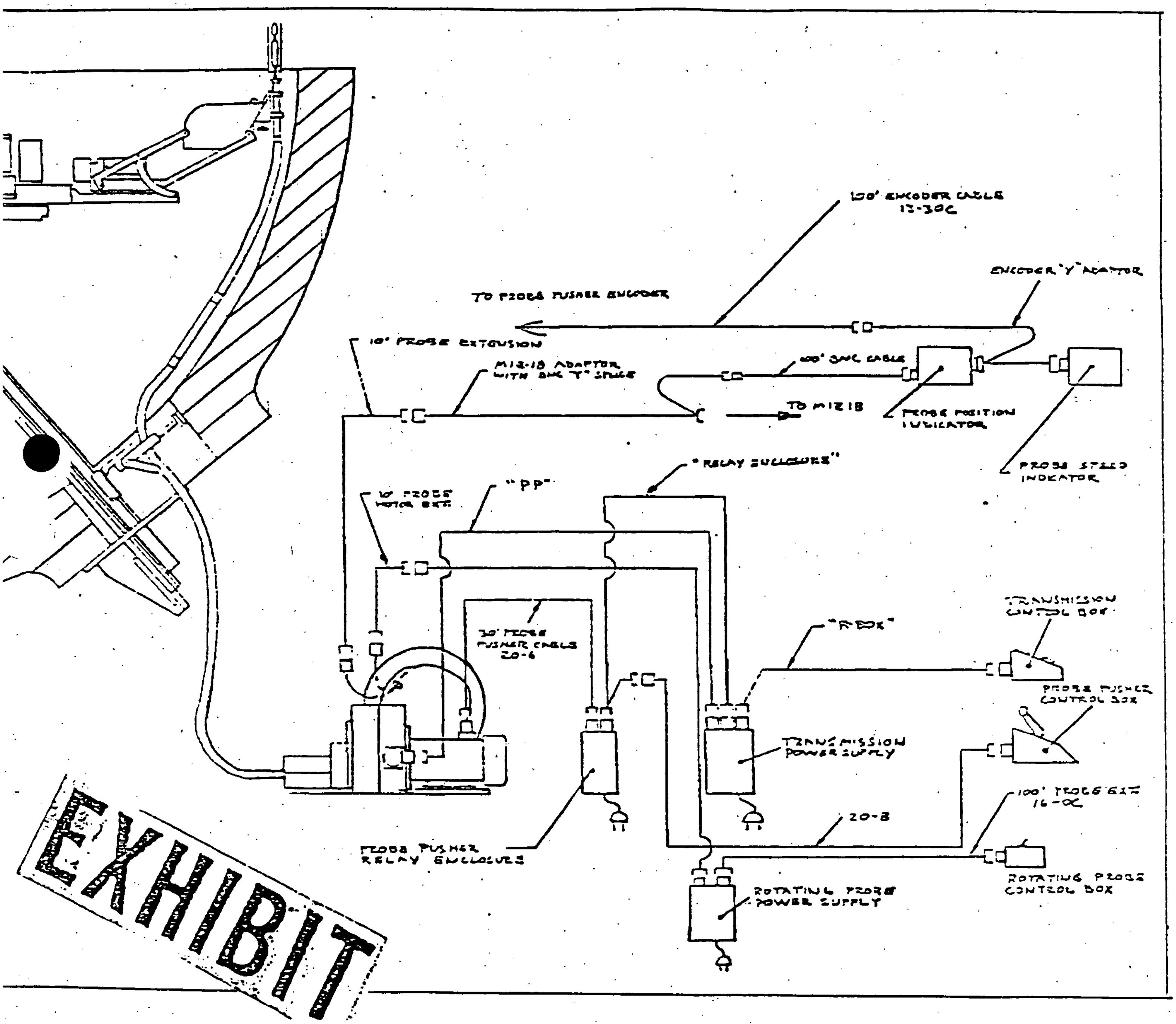


FIGURE 7

TYPICAL SET-UP INSTRUCTION FOR MULTI-FREQUENCY EDDY CURRENT TEST

C-E POWER SYSTEMS COMBUSTION ENGINEERING, INC.	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP INSTRUCTIONS MIZ 18	REEL NO.

SITE	UNIT	COMPONENT	SIDE	DATE

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD

MIZ-18 TESTER	INSTRUCTION NO.

TEST PURPOSE

MIZ-18 CONFIGURATION

NUMBERS RATE →	SAMPLES per SEC							
FREQUENCY SEQUENCE	PROBE CHANNEL SELECT							
# FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1 kHz								
2 kHz								
3 kHz								
4 kHz								

SPECIAL NOTES TO OPERATOR /ANALYST (USE BACK FOR ADDITIONAL SPACE)

SEE APPENDIX _____ FOR SETUP INSTRUCTIONS.

PREPARD		APPROVED	
LEVEL	EDDY CURRENT EXAMINER	LEVEL	EDDY CURRENT EXAMINER
DATE		DATE	CUSTOMER

TEST SETUP INSTRUCTION

EXHIBIT

FIGURE 8

TYPICAL MULTI-FREQUENCY EDDY CURRENT INSPECTION SET-UP DATA LOG

POWER SYSTEMS COMBUSTION ENGINEERING, INC.	MULTI-FREQUENCY EDDY CURRENT INSPECTION SET UP DATA LOG MIZ 18	

SITE	UNIT	COMPONENT	SIDE	DATE

PROBE TYPE/SIZE	PROCEDURE	DEFECT STANDARD	DENT STANDARD

MIZ-18 TESTER	INSTRUCTION NO.
MIZ-18 SOFTWARE REV. NO. (collection)	MIZ-18 SOFTWARE REV. NO. (analysis)

MIZ-18 CONFIGURATION

[illegible]		SAMPLES per SEC:							
FREQUENCY SEQUENCE		PROBE CHANNEL SELECT							
#	FREQUENCY	COIL 1	COIL 2	COIL 3	COIL 4	COIL 5	COIL 6	COIL 7	COIL 8
1	kHz								
2	kHz								
3	kHz								
4	kHz								

TIME	DATA SHEET	DATA SET	OPERATOR/LEVEL

TIME	LINE/ROW	COMMENTS	OPERATOR/LEVEL

EXHIBIT

FIGURE 9

TYPICAL DATA CARTRIDGE MARKING TAG

Site/Unit	Data Set	Reel #
Component	Date	
Side		

EXHIBIT

FIGURE 10

RPC 3990

APR 1 7 1987

CONTROLLED DOCUMENTS

H. B. ROBINSON PLANT

1987 UNIT 2 REFUELING OUTAGE

NSSS - WORK AUTHORIZATION ZS60010001

COMBUSTION ENGINEERING PROCEDURE

TITLE: EDDY CURRENT DATA ANALYSIS PROCEDURE EVALUATION OF WESTINGHOUSE STEAM GENERATOR TUBING: NO: ROB-410-005

REVISION NO: 0

EFFECTIVE DATE: 4-16-87

APPROVED BY:

S.W. FARMER: [signature] Date: 4/16/87
Plant Group: Tech. Support

[signature] Date: 4/16/87
Onsite QA/QC

[signature] Date: 4-16-87
Outage Management

INFORMATION

5 ⓓⓓ 5/7/87
Date: ~~4~~/7/87

Data analysis will be conducted by viewing either the 400 Khz differential or the 400/100 Khz differential mix on the X-Y display. The opposite will be monitored on one of the strip charts along with the 100 Khz verticle response from the absolute data on the other strip chart.

The set volts function in the DDA-4 analysis will not be utilized.

Darrell D. Weber 5 ⓓⓓ 5/7/87 ~~4~~/7/87 — 5/7/87

CE ET LEVEL III DATE | CUSTOMER REPRESENTATIVE CONCURRENCE/DATE

ATTACHMENT A
DATA SHEET DOCUMENTING
CUSTOMER SPECIFIC DATA ANALYSIS REQUIREMENTS

Date: 5/8/87

Change the Example in paragraph 10.4 to read as follows:

Example: A tube being tested from the cold leg 6th support to the hot leg tube end shall be entered using the nomenclature indicated on the S/G cross sectional view (6C-HTE).

Modify Figure 9, Steam Generator cross sectional view as shown on the attached page.

Modify Figure 4, List of DDA-4 Notations as follows;

	Notation	Description
Add	OVR	Tube Rolled above top of tube sheet
Change	ND to RND	Retest - No Data
Change	NT to RNT	Retest - No Test

Darrell D. Weber 5/8/87
CE ET LEVEL III DATE

5/13/87
CUSTOMER REPRESENTATIVE CONCURRENCE/ DATE

ATTACHMENT A
DATA SHEET DOCUMENTING
CUSTOMER SPECIFIC DATA ANALYSIS REQUIREMENTS

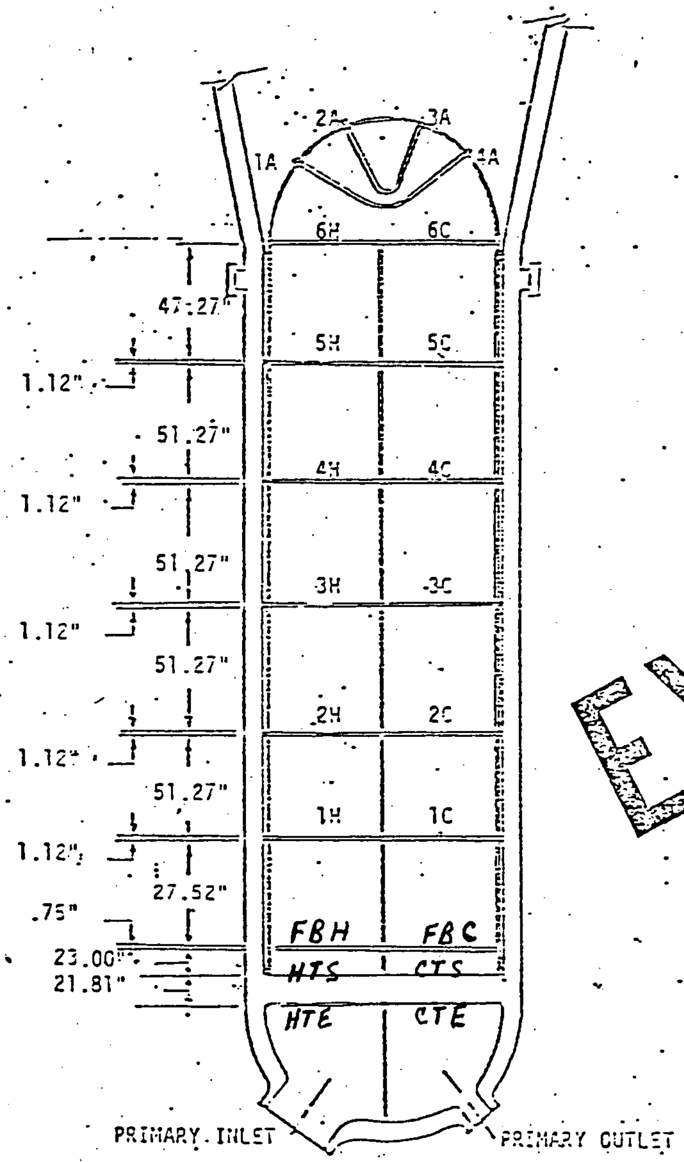


FIGURE 9
TYPICAL W SERIES 44 S/G CROSS SECTIONAL VIEW

EDDY CURRENT DATA ANALYSIS PROCEDURE

EVALUATION OF WESTINGHOUSE STEAM GENERATOR TUBING

H.B. ROBINSON

UNIT TWO

PROCEDURE NO.

ROB-410-005

EXAMINATION SERVICES AND PRODUCTS
FIELD SERVICES AND PRODUCTS
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT
CHATTANOOGA, TENNESSEE, AND SAN JOSE, CALIFORNIA

PREPARED BY: Thomas A. Biper DATE: 4/6/87

APPROVED BY: Darrell D. Wiler DATE: 4/6/87
LEVEL III

APPROVED BY: James D. Tad DATE: 4/6/87
Q.A. ENGINEER

APPROVED BY: Roy M. Brown DATE: 4/6/87
SUPERVISOR, EXAMINATION SERVICES & PRODUCTS

ORIGINAL ISSUE DATE: Apri. 3, 1987 REVISION: 0

DATE: N/A

TABLE OF CONTENTS

1.0 OBJECTIVE

This procedure will establish a set of guidelines to be utilized by the eddy current Data Analyst with the intent of providing a consistant method for reporting the eddy current results. This procedure is not intended to be utilized by an individual who has not had proper training in the evaluation of eddy current data.

2.0 REFERENCES

2.1 Combustion Engineering, Inc. Power Systems Group Nuclear, Field QA Manual.

2.2 Combustion Engineering, Inc. Nuclear Quality Assurance Instruction Manual.

2.3 Combustion Engineering, Inc. Power Systems Group, Operating Procedures Manual.

2.4 Zetec DDA-4 System Operating Guideline.

2.5 ROB-410-006; Procedure for the control of Eddy Current examination data for the personal computer (PC) Data Base System.

2.6 ASME code interpretation X1-83-18: 1980 SNT-TC-1A vs. 1975 SNT-TC-1A Certification.

3.0 PERSONNEL REQUIREMENTS

3.1 The evaluation of the results of the eddy current examination must be conducted by a Data Analyst qualified to at least ET Level II with specific training for the evaluation of data from nonferromagnetic steam generator tubing.

3.2 Each person performing Data Analysis governed by this procedure shall be certified in accordance with SNT-TC-1A 1980 Edition or equivalent. Combustion Engineering personnel shall be certified in accordance with Combustion Engineering written Procedure NQAI 2.4. contained in Reference 2.2.

If data analysts are supplied for primary or secondary data review by the purchaser, the purchaser will be responsible for their certification. In the instance when C-E utilizes a subcontractor for primary or secondary data review, C-E will be responsible for certification either by examination to the requirements of NQAI 2.4 or by auditing and accepting the subcontractor(s) written practice.

3.3 The Analyst shall be responsible for evaluating the data and reporting the results of the examination.

3.4 The independant data analyst (if used) shall be responsible for evaluating the data provided by the data controller.

4.0 EQUIPMENT:

The equipment required to analyze the eddy current examination data includes but is not limited to the following: (Interconnect as appropriate per Fig. 1

4.1 HP 9836 Computer or equivalent

4.2 Zetec DDA Data Analysis software or equivalent.

4.3 Ample supply of 5 1/4" floppy disk.

4.4 Data Cartridge Recorder HCD-75Z, ADIC or equivelent.

4.5 HP 2671G Printer or equivalent (Optional)

4.6 Eventide Expressway intelligent Buffer mode WPB-109 or equivalent (Optional)

4.7 Appropriate interconnect cables and power cords.

5.0 AREA OF INTEREST:

The evaluation of data shall include all information recorded on magnetic tape per the requirements of the Data Acquisition operating procedure in use or as specified by the customer.

6.0 EVALUATION OF DATA:

6.1 The Data evaluation shall be conducted by viewing the lissojiou pattern and the appropiate strip chart presentations on the computer screen for the entire recorded length of each tube. Any abnormal signals will be investigated for determination of location and percent through wall dimension (% TWD) as practical. When the analysis has completed his review of a tube, he will initial the eddy current data sheet in the analysis column, see Figure 13.

6.2 The screening frequencies utilized for the data analysis shall be the optimum defect detection frequencies for the size and wall thickness of the tubing being inspected. These will be determined by the lead data analyst and documented on Attachment A, Customer Specific Data Analysis Requirements. No Field Change Notice (FCN) is required for additions or deletions to Attachment A. The C-E ET Level III will complete and sign along with the customer's representative signature indicating concurrance.
NOTE: As the work progresses Attachment A's shall be completed as required.

6.3 If the Analyst determines that a condition exists that precludes accurate data analysis, the analyst will submit a list of tubes that have been affected by this condition and those tubes must be retested.

6.4 Interpretation of test results shall be conducted by certified Eddy Current Data Analysts. Test results are interpreted using curves generated from information obtained by passing a test probe thru a calibration standard containing known, machined, discontinuities ranging from 100% thru wall to 20% thru wall from the O.D. or as required. Typical calibration standards are shown in Figures 2 and 3. The interpretation curves may be computer generated or produced by hand drawing relating the phase angle degrees vs. depth of penetration or relating amplitude to depth of penetration as required.

6.5 The data shall be analyzed using any or all the recorded information necessary to determine the nature and severity of all detectable indications, as required.

6.6 All indications analyzed will be catagorized using the recommended DDA-4 Notation. These codes are inclusive, but shall not be limited to the listing located in Figure 4.

6.7 When the signal of interest is interfered with by a support structure, sludge, dent, noise, or other unwanted responses from the primary or secondary side of the S/G. These indications will be evaluated using the appropriate sizing frequency and mixes as needed.

6.8 When the signal of interest is interfered with by a support structure, noise, or other indications, one of the following techniques may be utilized to improve the accuracy of classification and sizing.

- 6.8.1 Other frequencies
- 6.8.2 Mixes
- 6.8.3 Special probes
  - 6.8.3.1 Rotating Eddy Current Probes
  - 6.8.3.2 Magnetic Bias Probes
  - 6.8.3.3 8 x 1 Probes
  - 6.8.3.4 UT Probes
  - 6.8.3.5 D Coils or Segment Bobbin Coil Probes
  - 6.8.3.6 Other

7.0 SIGNAL FORMATION

The direction of the initial signal formation supplies important information about the indication type to the data analyst. Signal formation may be determined by strip chart recordings or by CRT display. Signal phase must be set to a known standard prior to initiation of the data analysis.

7.1 The indication shall normally represent tube wall degradation if the evaluated signal begins down (negative) first assuming the signal phase of a known flaw in the calibration standard has been adjusted to form in a downward (negative) direction first.

7.2 The indication shall normally represent no degradation of tube wall if the evaluated signal begins up (positive) first assuming the signal phase of a known flaw in the calibration standard has been adjusted to form downward (negative) direction first.

7.3 The data analyst shall be cognizant of the fact that a real flaw will have appropriate phase rotation at various frequencies.

8.0 PHASE ANGLE MEASUREMENTS

8.1 All phase angle measurements will be compared to the relevant calibration curve to determine percent through wall, utilizing a 3 point fit curve. This curve shall be constructed utilizing the As-Built dimension of the calibration standard and actual phase angle or amplitude data obtain from passing the test probe through the calibration standard. (See Figure 5 for a Typical Curve). The 4.1 curve supplied with the DDA-4 Data Analysis Software will only be utilized if specified in the Customer Specific Data Analysis Requirements.

8.2 Phase angle of an indication must be determined by the proper selection of angle points.

8.3 Indications that return to calibration point (null point) and have a definite straight line transition between peaks shall be called from straight line peaks. Figure 6.

8.4 Any indication that deviates from the calibration point (null point) shall be called from amplitude peak to peak points. Figure 6.

8.5 The lower the frequency the more the signal penetration, but the smaller the phase separation. Therefore, the lower frequencies are mainly used for detection not sizing. Figure 7 shows phase separation from 100 KHZ to 400 KHZ. Low frequencies may be used for sludge detection.

9.0 AXIAL POSITION LOCATION:

All indication representing tube wall degradation shall be recorded with reference to a known structure, i.e., tube support plates, tubesheets, anti-vibration bars, vertical straps.

9.1 Determine from as-built drawing, (preferred) design drawings or customer supplied information the actual distance between support members.

9.2 Calibrate the DDA-4 axial position indicator as described in the System Operating Guideline.

9.3 TSP (Tube Support Plate) Reference locations shall be conducted using the center of the support as the zero (0) reference point.

9.4 Figures 8 through 10 are examples of typical plant layout, S/G sectional views and tube sheet maps. The customer will supply the As-Built drawings required for the Data Analysis.

10.0 DDA-4 FORMAT INFORMATION

All information pertaining to DDA-4 final report format will be typically described below.

10.1 The data disc identification will be typically entered as shown in Figure 11.

10.2 The DDA-4 final report headings shall be typically entered as shown in Figure 12.

10.3 All notation information of tubes shall be entered in the % column of the final report. Any tube requiring retesting shall contain the letter "R" as the first letter of the three letter code entered in the % TWD column on the DDA-4 Report as shown in Figure 4.

10.4 Data analyst shall enter in the extent tested column of DDA-4 final report format, the area of the tube actually tested to the nearest support member actually recorded on the tape. The order of the extent tested column is determined by the direction and extent of the data recording during the data acquisition. The first S/G member noted by the data analyst will be identified first on the extent tested column. The last S/G member noted by the data analyst will be identified second in the extent tested column (Typically HTE or CTE, Hot or Cold Tube End).

EXAMPLE: A tube being tested from the hot leg to the cold leg 7th support to the hot leg tube end shall be entered as C07-HTE.

10.5 When the DDA-4 Final Report is completed the data analyst will sign the DDA-4 report (See Figure 12) and initial the Eddy Current Data Sheet (See Figure 13).

11.0 <u>RE-EXAMINATIONS:</u>

All tubes that require re-examination as a direct result of the evaluation of the data shall be identified by the data analyst. The data analyst if responsible for supplying the Row/Column number and an explanation for why the re-examination is requested.

12.0 <u>CONFIRMATION OF PLUGGABLE INDICATION:</u>

Confirmation of tubes identified for removal from service are usually conducted after completion of the entire eddy current examination. The intent of this confirmation examination is to verify the indication exist and the data is repeatable <u>in</u> the tube identified to be removed from service.

12.1 A normal rule of thumb for accomplishing the confirmation is to supply the data acquisition personnel with oscillographs of the pluggable indications for visual verification. The data generated is normally recorded on magnetic tape but is only required at the direct request of customer. If the data is recorded and the indication is verified as being correct the data analyst shall enter the DDA-4 code of"PID" into the data base.

12.2 In the event that the "Positive Identification" examination does not confirm the tube location, resolution is required. Upon completion of the resolution process the correct tube number shall be noted and all previous data shall be corrected accordingly.

13.0 DATA CONTROL:

The lead Data Analyst shall be responsible for Data Control of the magnetic tape, DDA-4 oscillographs, DDA-4 printouts, floppy disk in proper inventory of such items once they are in his possession. These items shall be turned over to the customer upon completion of the examinations. Data control shall be in compliance with Procedure ROB-410-006, titled "PROCEDURE FOR THE CONTROL OF EDDY CURRENT EXAMINATION DATA FOR THE PERSONAL COMPUTER(PC) DATA BASE SYSTEM".

14.0 RECORDING CRITERIA:

All indications evaluated to be one of the items identified in Figure 4, recommended DDA-4 notations shall be recorded by the appropriate method. Customer specific recording requirements shall supercede this procedure.

15.0 REPORTING CRITERIA:

All reportable indications shall be reported to the customer on a regular basis. The final report of the inspection results supplied to the customer will contain the following at a minimum. Customer reporting requirements shall supercede this procedure.

15.1 Tube wall degradations of 20% through wall or greater shall be reported.

15.2 All detectable tube dents known to obstruct probe passage shall be reported.

15.3 Any additional condition(s) or abnormalies that the Data Analyst deems necessary to report shall be reported.

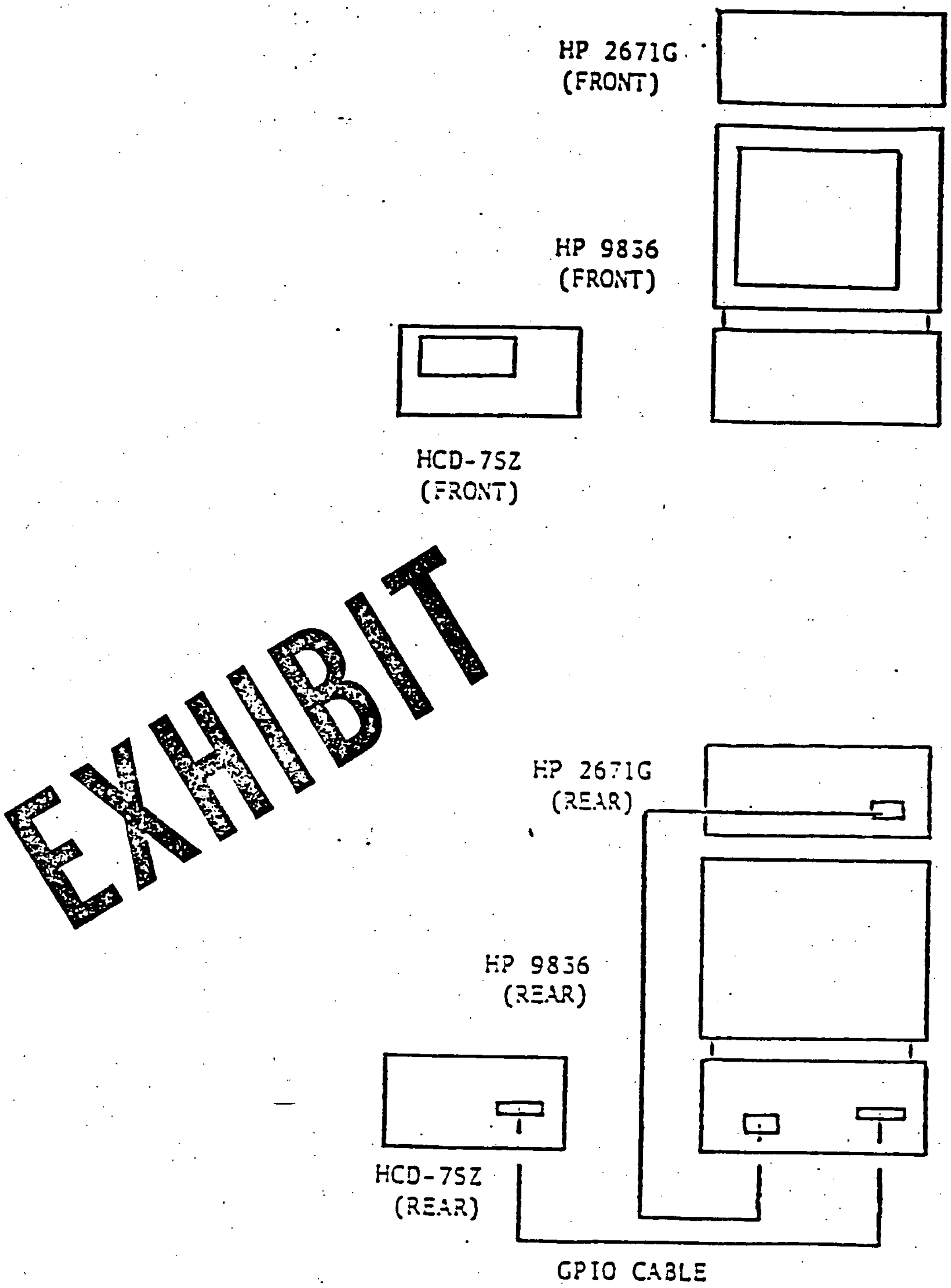


FIGURE 1
TYPICAL EQUIPMENT INTERCONNECT SCHEMATIC

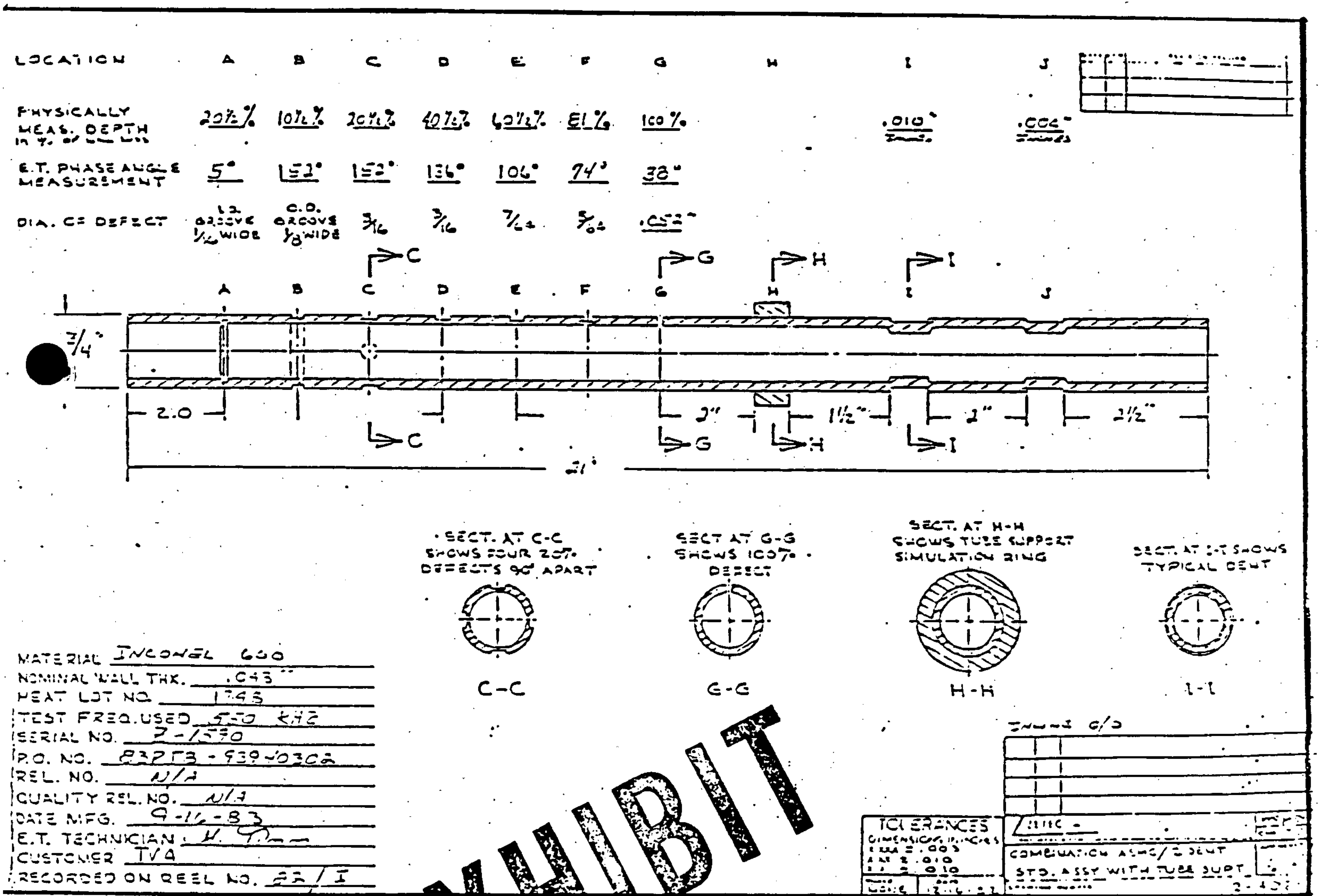
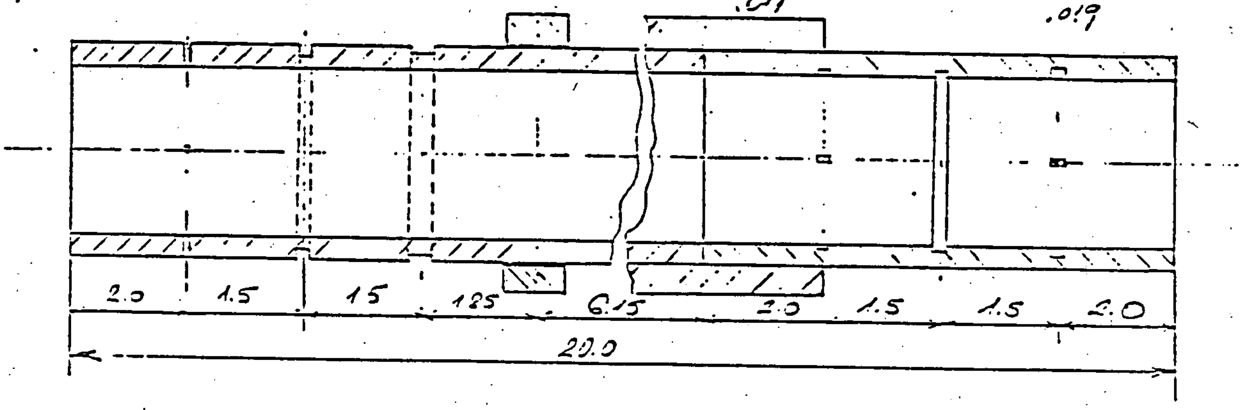


FIGURE 2
TYPICAL ASME CALIBRATION STANDARD

FLAW	THROUGHWALL HOLE	OD GROOVE	OD GROOVE	CS RING	4 x EDM ID NOTCHES	ID GROOVE	4 x EDM ID NOTCHES
LENGTH (IN.)	.052	1/16	1/8		.050	.050	.050
DEPTH (% T.W.)	100%	40%	20%		20%	20%	40%
MEASURED DEPTH (IN.)	✓	.021	.009		.011 .011 .010 .011	.010	.021 .020 .020 .019



TUBE MATERIAL: Inconel 600
NOMINAL OD: 7/8 inch
NOMINAL THROUGHWALL: .050 inch
HEAT NUMBER: NX 2742
CAL. STANDARD SER. NUMBER: MAP-004

CS RING OD: 1.250 inches
CS RING ID: .890 inch
CS RING LENGTH: .750 inch

CALIBRATION STANDARD FOR MULTI-ARRAY EDDY CURRENT PROBES

EXHIBIT

FIGURE 3
TYPICAL MULTI-PURPOSE CALIBRATION STANDARD

NOTATION	DESCRIPTION
BLANK	NO INDICATION
DS	DISTORTED SIGNAL
DNT	DENT
PV	PERMEABILITY VARIATION
IDV	ID VARIATION
ND	NO DATA
ADR	ABSOLUTE DRIFT
SPN	INDICATES SPAN OF LOCATION RANGES
M## (Insert %TWD)	INDICATES MULTIPLE INDICATIONS
I## (Insert %TWD)	INDICATES ID FLAW
OBS	OBSTRUCTED
DTS	DISTORTED TUBE SHEET SIGNAL
NT	NO TEST
APT	ABSOLUTE POSITIVE TRACE
UDS	UNIDENTIFIED DISTORTED SIGNAL
BLG	BULGE
FDS	FREESPAN DISTORTED SIGNAL
DSS	DISTORTED STRAP SIGNAL/SUPPORT
PLG	PLUG
INF	INDICATION NOT FOUND
PID	POSITIVE IDENTIFICATION
CU	COPPER
SLG	SLUDGE
HT	HEAT TREATED
NHT	NO HEAT TREATMENT
HTM	MARGINAL HEAT TREATMENT
SHT	STRAIGHT LEG HEAT TREATMENT
POP	POP-UP HEAT TREATMENT
1PT	ROW 1 POSITIVE TRACE
2PT	ROW 2 POSITIVE TRACE
1ST	ROW 1 SUSPECTED TRACE
2ST	ROW 2 SUSPECTED TRACE
RDS	RETEST - DISTORTED SIGNAL
RTI	RETEST - INCOMPLETE
RPV	RETEST - PERMEABILITY VARIATION
RDS	RETEST - DISTORTED SIGNAL
RBD	RETEST - BAD DATA
RTP	RETEST - TEMPLATE PLUG
RFX	RETEST - FIXTURE
RPS	RETEST - POSITIVE TRACE
RPI	RETEST - POSITIVE INDICATION
RTO	RETEST - OBSTRUCTION
RCU	RETEST - COPPER

FIGURE 4
LIST OF APPROVED DDA-4 NOTATIONS

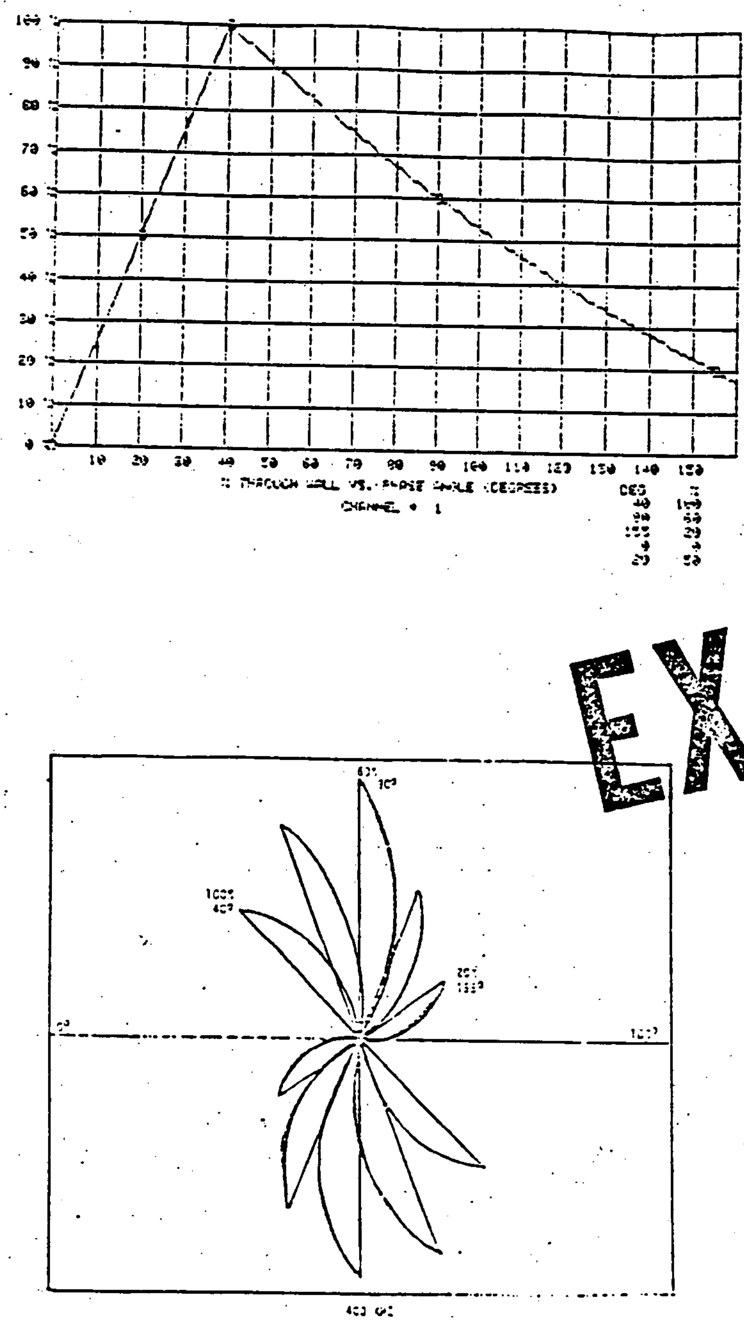
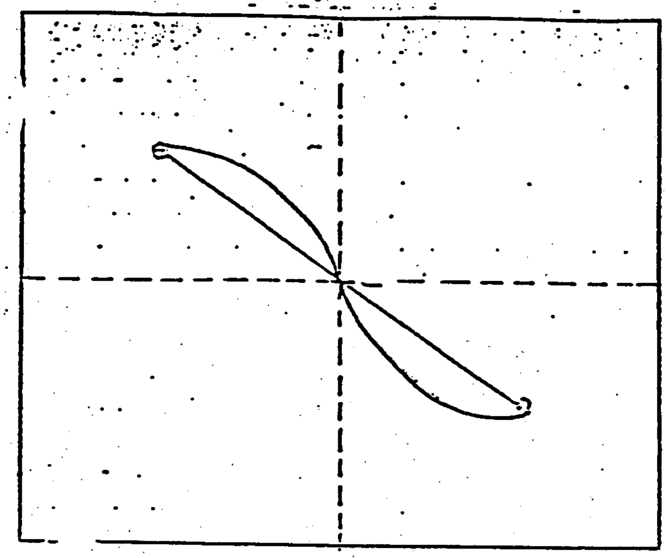


FIGURE 5
TYPICAL 3 POINT FIT CURVE AND MACHINED FLAW RESPONSES



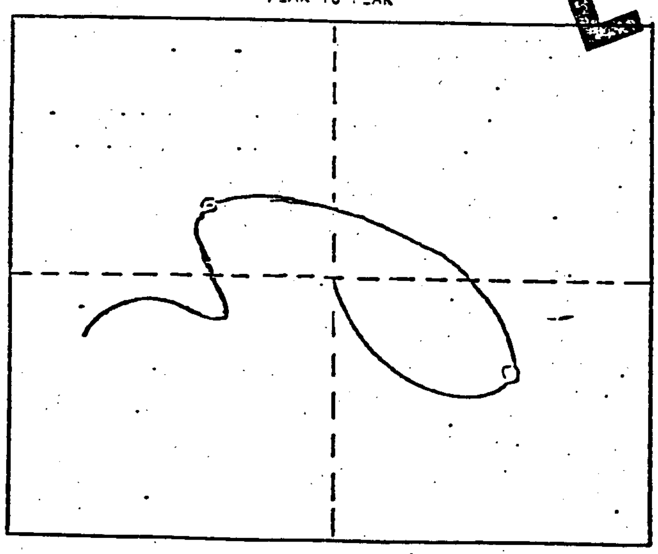
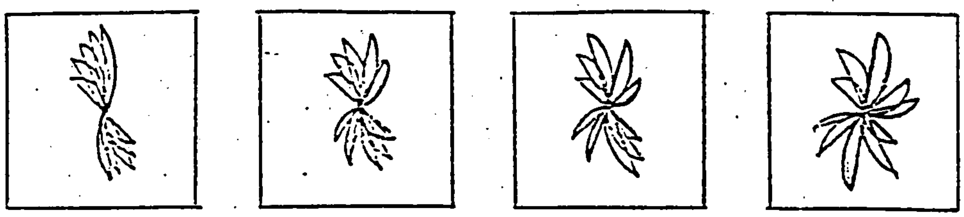


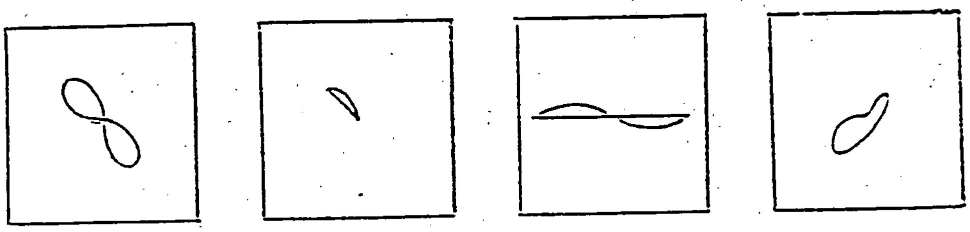
FIGURE 6
PHASE ANGLE MEASUREMENTS

EXHIBIT

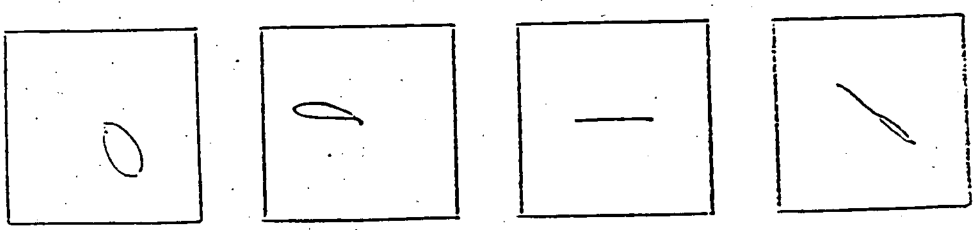


100 KHZ | 200 KHZ | 300 KHZ | 400 KHZ

THE HIGHER THE FREQUENCY, THE WIDER THE PHASE SEPARATION
TYPICAL ASME CALIBRATION STANDARD RESPONSES



TUBE SUPPORT | ABS. SIGNAL | DENT | NON-SYMMETRICAL FLAW



UNEXPANDED TS | EXPANDED TS | PROBE MOTION (NOISE) | PERMEABILITY (PV)

FREQUENTLY OBSERVED SIGNAL RESPONSES FROM STEAM GENERATOR MEMBERS AND DAMAGE MECHANISMS SIGNALS ARE TYPICAL AND NOT INTENDED TO BE ALL INCLUSIVE.

FIGURE 7
PHASE SEPARATION AND SIGNAL RESPONSE

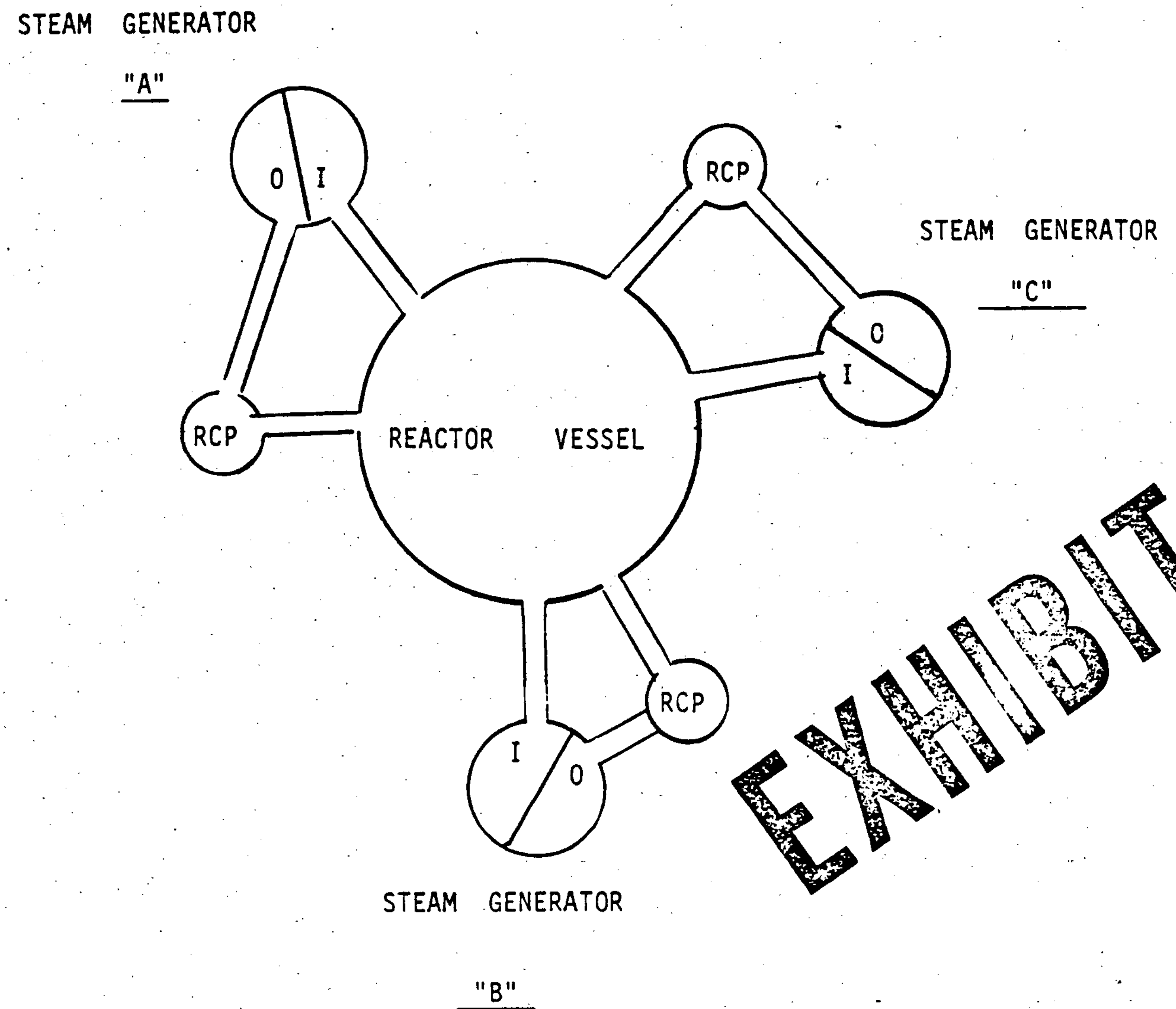
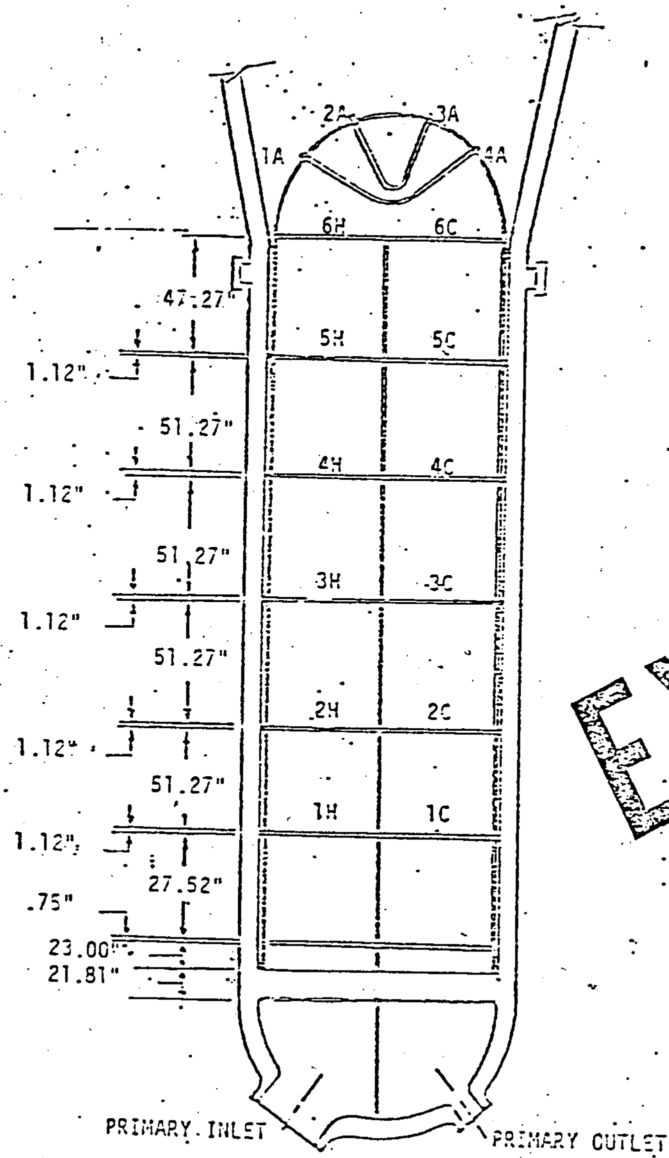


FIGURE 8
TYPICAL 3 LOOP PLANT LAYOUT



EXHIBIT

FIGURE 9
TYPICAL W SERIES 44 S/G CROSS SECTIONAL VIEW

EXHIBIT

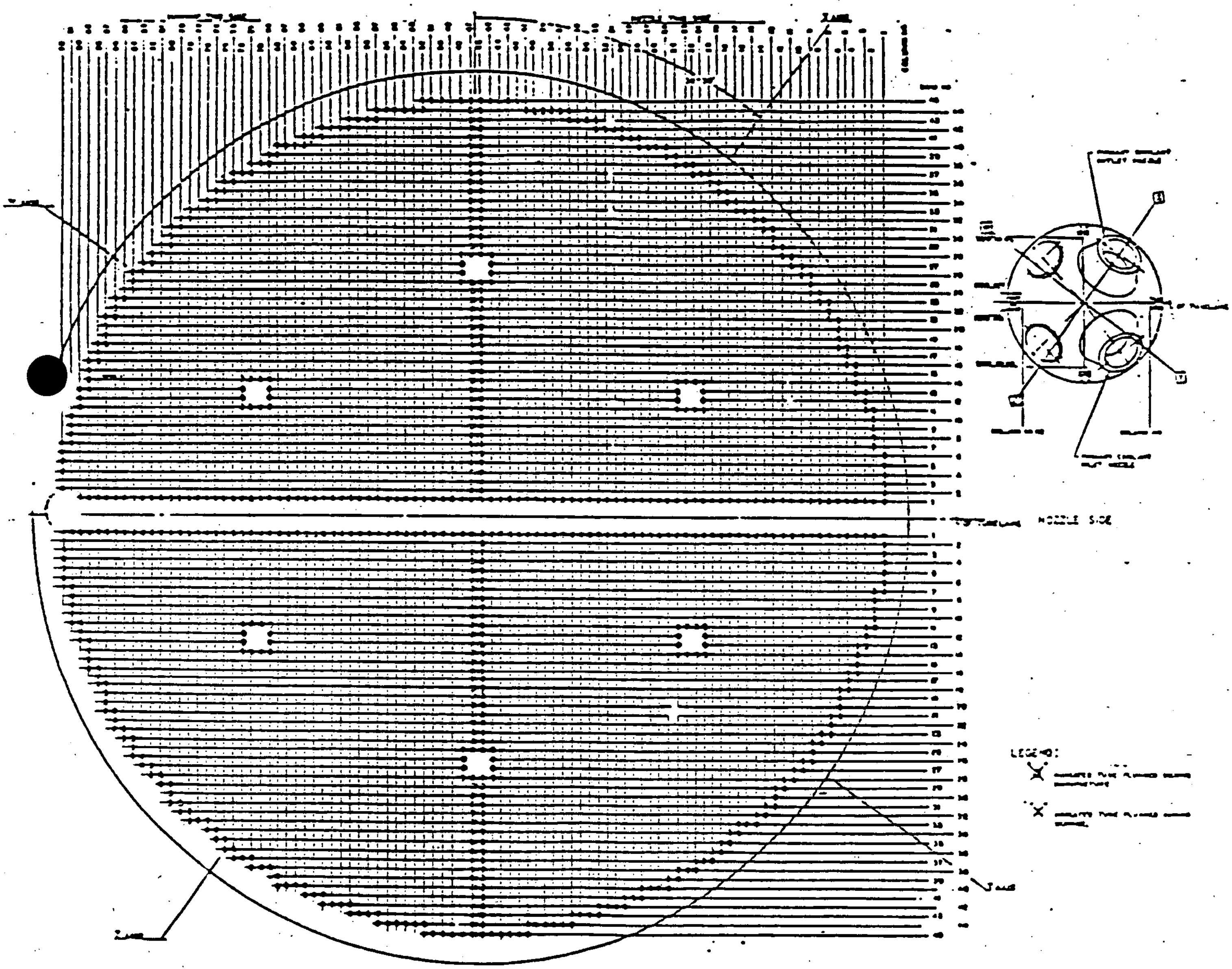


FIGURE 10
TYPICAL W MODEL 44 S/G TUBESHEET MAP

EXHIBIT

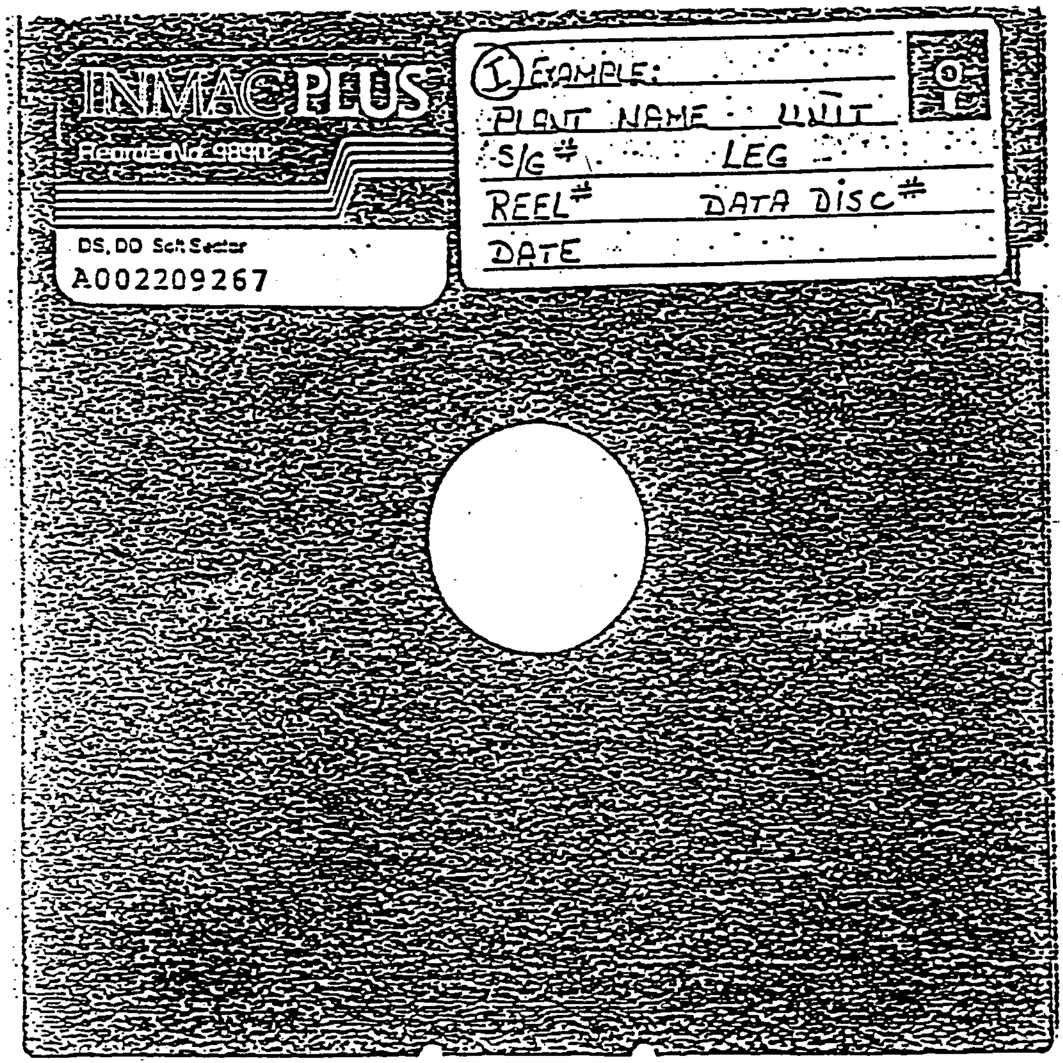


FIGURE 11
TYPICAL FORMAT FOR DATA DISC IDENTIFICATION

PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
TVA/SQNP DD3H08	1_	_3__	HOT___	3H08		3H08	02/17/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		Z03F6578	
							REEL #3H08	
							LYNCH DE	LIIA 02/17/87
							OPER: KEMP LA	LI 02/17/87
							STD: MAP-001	
31	2	83						C07-H06
31	2	84						C07-H06
31	1	84	30.34	7	1ST	1	C07 + 4.3	C07-H06
			82.57	5	1ST	5	C07 + 4.3	C07-H06
			149.2	359	1ST	9	C07 + 4.3	C07-H06
			205.5	357	1ST	13	C07 + 4.3	C07-H06
31	1	85						C07-H06
31	2	85						C07-H06
31	2	86						C07-H06
31	1	86			NT		NO HEAT TREATMENT	C07-H06
31	1	87						C07-H06
31	2	87					OPER: GRIGSBY JC	LII 02/17/87
31	2	88						C07-H06
31	1	88						C07-H06
31	1	89						C07-H06
31	2	89						C07-H06
31	2	90						C07-H06
31	1	90						C07-H06
31	1	91						C07-H06
31	2	91						C07-H06
31	2	92						C07-H06
31	1	92						C07-H06
31	1	93						C07-H06
31	2	93						C07-H06
31	2	94						C07-H06
31	1	94						C07-H06
							END REEL #3H08 DD-08	

EXHIBIT

PAGE 1 OF 1	EVALUATOR	LEVEL IIA

FIGURE 12
TYPICAL DDA-4 FINAL REPORT FORMAT

TYPICAL EDDY CURRENT DATA SHEET

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: ____________________ PLANT/UNIT: ____________________ SG #____
PROBE: ______________ CAL. STD.: ______________ EXTENT TESTED: ________
PROCEDURE: ________________ LEG: ______
FREQUENCY: __________________________________ REEL NO.: __________
ECT DESCRIPTION: ____

TEST DATE: __________

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

EXHIBIT

Shift Supervisor: __________ Data Controller: ________ Date: ________

FIGURE 13

C-E ET LEVEL III DATE

CUSTOMER REPRESENTATIVE CONCURRENCE/ DATE

ATTACHMENT A
DATA SHEET DOCUMENTING
CUSTOMER SPECIFIC DATA ANALYSIS REQUIREMENTS

RPC 3990

APR 1 7 1987

CONTROLLED DOCUMENTS

H. B. ROBINSON PLANT

1987 UNIT 2 REFUELING OUTAGE

NSSS - WORK AUTHORIZATION ZS60010001

COMBUSTION ENGINEERING PROCEDURE

TITLE: PROCEDURE FOR CONTROL OF EDDY CURRENT EXAMINATION DATA FOR USING THE PERSONAL COMPUTER (PC) BASED DATA SYSTEM. No: ROB-410-006.

REVISION NO: 0

EFFECTIVE DATE: 4-16-87

APPROVED BY:

S.W. FARMER: [signature] Date: 4/15/87
Plant Group: Tech. Support

[signature] Date: 4-16-87
Onsite QA/QC

[signature] Date: 4-16-87
Outage Management

INFORMATION

PROCEDURE FOR CONTROL OF EDDY CURRENT
EXAMINATION DATA FOR USING THE
PERSONAL COMPUTER (PC) BASED DATA SYSTEM

H.B. ROBINSON

UNIT TWO

PROCEDURE NO.

ROB-410-006

EXAMINATION SERVICES AND PRODUCTS
OUTAGE SERVICES DEPARTMENT
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT
CHATTANOOGA, TENNESSEE - SAN JOSE, CALIFORNIA

PREPARED BY: [signature] DATE: 4-6-87

APPROVED BY: Darrell D. Weber DATE: 4/6/87
E.T. LEVEL III

APPROVED BY: [signature] DATE: 4/6/87
Q.A. ENGINEER

APPROVED BY: [signature] DATE: 4-6-87
SUPERVISOR, EXAMINATION SERVICES & PRODUCTS

ORIGINAL ISSUE DATE: April 3, 1987 REVISION: 0

DATE: N/A

TABLE OF CONTENTS

1.0 OBJECTIVE

This procedure will provide instructions for the control of data pertaining to eddy current examinations of steam generator and other heat exchanger tubing. These instructions encompass requirements and other controls to be followed during the:

- planning of tubing examinations.
- examination of tubing.
- analysis of examination results.
- reporting of examination results.

2.0 SCOPE

This procedure shall be used for the control of data pertaining to eddy current tube degradation testing (dent, defect, sludge, etc.) only. Appropriate sections of this procedure may be implemented by the Project Engineer or Shift Supervisor for control of other eddy current data such as from profilometry testing. In all cases, the actual eddy current examination testing shall be in accordance with approved eddy current examination procedures.

3.0 REFERENCES

3.1 Combustion Engineering, Inc. Power Systems Group Nuclear, Field QA Manual.

3.2 Combustion Engineering, Inc. Nuclear Quality Assurance Instruction Manual.

3.3 Combustion Engineering, Inc. Power Systems Group, Operating Procedures Manual.

3.4 Examination procedures that reference the Procedure for Control of Eddy Current Examination Data

4.0 EDDY CURRENT DATA SHEETS

Eddy Current Data Sheets, Figure 1, labeled "Combustion Engineering Eddy Current Data Sheet" will be utilized to detail the examination performed. The Project Leader will be responsible to supply the data controller with the tube list identifying the inspections to be performed as received from the customer.

4.1 Explanation of the Eddy Current Data Sheets contents

The Eddy Current Data Control Sheet shall contain the following information:

4.1.1 Site/Unit: (e.g., Millstone Unit 2)

4.1.2 Component/Side: (e.g., Steam Generator 1)

4.1.3 Examination Type: (e.g., defect, sludge)

4.1.4 Examination Frequency: (e.g., 400 KHz)

4.1.5 Examination Procedure: (appropriate number and revision)

4.1.6 Probe Type/Size: (e.g., 540 SF)

4.1.7 Extent of Test: (e.g., full length)

4.1.8 Data Set: (appropriate identification)

4.1.9 Page Number: (appropriate page number)

4.1.10 Tubes to Be Tested: (e.g., Line 1/Row 1)

4.1.11 Examination Date: (appropriate date)

4.1.12 Tested Space: (for each tube identified, initialed by operator after examination)

4.1.13 Analyzed Space: (for each tube identified, initialized by analyst after evaluating data)

4.1.14 Comments: (e.g., Start Tape 1, Template Plug, etc.) As required.

4.1.15 Data Controller: (to be signed after verification of all data on page.)

4.2 Data Controller Responsibility

The Data Controller is responsible for completing paragraphs 4.1.1 through 4.1.10.

4.3 Shift Supervisor Responsibility

The Shift Supervisor in charge of the ET examination operations will be responsible for supplying the Eddy Current Data Sheets to the ET operations station(s). The Shift Supervisor will also be responsible for assuring that the ET Operator is performing the exam ination according to procedure. The shift supervisor will check each data sheet for completeness, initial and date the appropriate blanks on the bottom of the Eddy Current Data Sheet(s).

4.4 ET Operator Responsibility

The ET Operator will be responsible for initialing each tube after it has been examined in the column marked "TESTED". In addition, the ET Operator will also identify each tube for which a position verification is completed in accordance with the appropriate ET Data Acquisition procedure. At a minimum, the Reel No. will be identified for the first and last tube on each reel and at at the top of each Eddy Current Data Sheet in the appropriate blank. If any tube in the program is not examined, the ET Operator should write "NO TEST" and identify the apparent reason (e.g., tube plugged, etc.) in the column.

4.5 Data Controller Responsibility (Before Analysis)

The Eddy Current Data Sheets along with the correspond- ing magnetic tape and strip chart data (if used) are given to the Data Controller. The Data Controller does NOT initial the Data Control Sheet at this time. The magnetic tapes, strip chart data (if used) and Data Control Sheets are then given to the Data Analyst.

4.6 Data Analyst Responsibility

The Data Analyst reviews all the examination data and records the location and percent of wall or type (e.g., dent) for each indication on a DDA-4 (Digital Data Analysis System) Final Report Form, figure 2.

4.7 Data Controller Responsibility (After Analysis)

After completion of analysis, the magnetic tapes, strip chart data (if used), Eddy Current Data Sheets and DDA-4 Data Analysis Report Sheets, and floppy disc are re- turned to the Data Controller. The Data Controller reviews the Eddy Current Data Sheets and DDA-4 Data Analysis Report Sheet returned from the Data Analyst. The Controller initials each Eddy Current Data Sheet after ascertaining that all information on the sheet is complete.

The Data Controller checks the tested and analyzed columns for proper completeness and initial by both the ET Operator and Data Analyst.

The Eddy Current Data Sheets will be used to document who conducted the examinations and analysis. The DDA-4 Data Analysis Report Sheets will be used to document the results of the examinations and determine if additional examinations will be required.. The Eddy Current Data Sheets, DDA-4 Data Analysis Report Sheets, floppy disk, magnetic tapes and strip chart data (if used) will be provided to the customer representative. A copy of the Eddy Current Data Sheet(s) and DDA-4 Data Analysis Report Sheet(s) will be retained by the Data Controller as a permanent record of the examination.

4.8 Secondary Combustion Engineering Data Analysis (When Required)

If independant data analysis is to be performed, the Data Controller will provide to the second analyst the magnetic tapes, strip chart data (if used) and copies of the Eddy Current Data Sheets, identifying all tubes to be reviewed. The independant analyst will provide analysis results in accordance with Section 4.6.

After completion of independant data analysis, the magnetic tapes, strip chart data (if used), Eddy Current Data Sheets and DDA-4 Data Analysis Report Sheets, and floppy disk are returned to the Data Controller.

The Data Controller compares the two sets of results. The first analysis is considered as final unless: a discrepancy of > 10 percent exists between the primary and secondary data analysis results. In this case, a Level III review shall be required and the result would be considered final. All conflicting calls at the 47 percent recording level (one call above 47% and one call below 47%) shall be evaluated by the Level III. After resolution of any discrepancies by the Level III, the Data Controller will correct the PC Data Base to reflect the final results for the examinations.

5.0 EDDY CURRENT DATA SHEET FLOW CHART

A Flow Chart for the Eddy Current Data Sheet is shown in Figure 3.

6.0 PC DATA BASE

The DDA-4 Report disk shall be turned over to the Data Controller for both the primary and secondary analysis when applicable. The primary data analysis shall be loaded into the PC Data Base System.

NOTE: Care should be exercised to ensure that the final results from the Level III data resolutions as described in Para. 4.8 are entered into the data base.

7.0 RECORDING

All information recorded by the data analyst onto the DDA-4 floppy disk is entered and stored on the PC Data Base System. This information can then be utilized to supply the customer with reports about the examinations as requested.

8.0 REPORTING

The reporting capability of the PC Data Base System are almost unlimited. The actual reports supplied are tailored to meet the specific customers request. Typical reports supplied to the customer on a daily basis include the following:

8.1 Total number of tubes tested/generator

8.2 Total number of tubes analyzed/generator

8.3 Tube number and locations of indications equal to or greater than 20% but less than 47%.

8.4 Tube numbers and locations of indications equal to or greater than 47%. (H.B. Robinson plugging limit is 47%).

COMBUSTION ENGINEERING EDDY CURRENT DATA SHEET

OWNER: ________________ PLANT/UNIT: ________________ SG #____
PROBE: ____________ CAL. STD.: ____________ EXTENT TESTED: ________
PROCEDURE: ______________ LEG: ______
FREQUENCY: ______________________________ REEL NO.: __________
ECT DESCRIPTION: ____

TEST DATE: __________

ISIS-ID	ROW	COL	DATA SET	TESTED	ANALYZED	INDEX	COMMENTS
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	
	*	*	*	*		*	

EXHIBIT

Shift Supervisor: __________ Data Controller: __________ Date: ________

FIGURE 1
TYPICAL EDDY CURRENT DATA SHEET

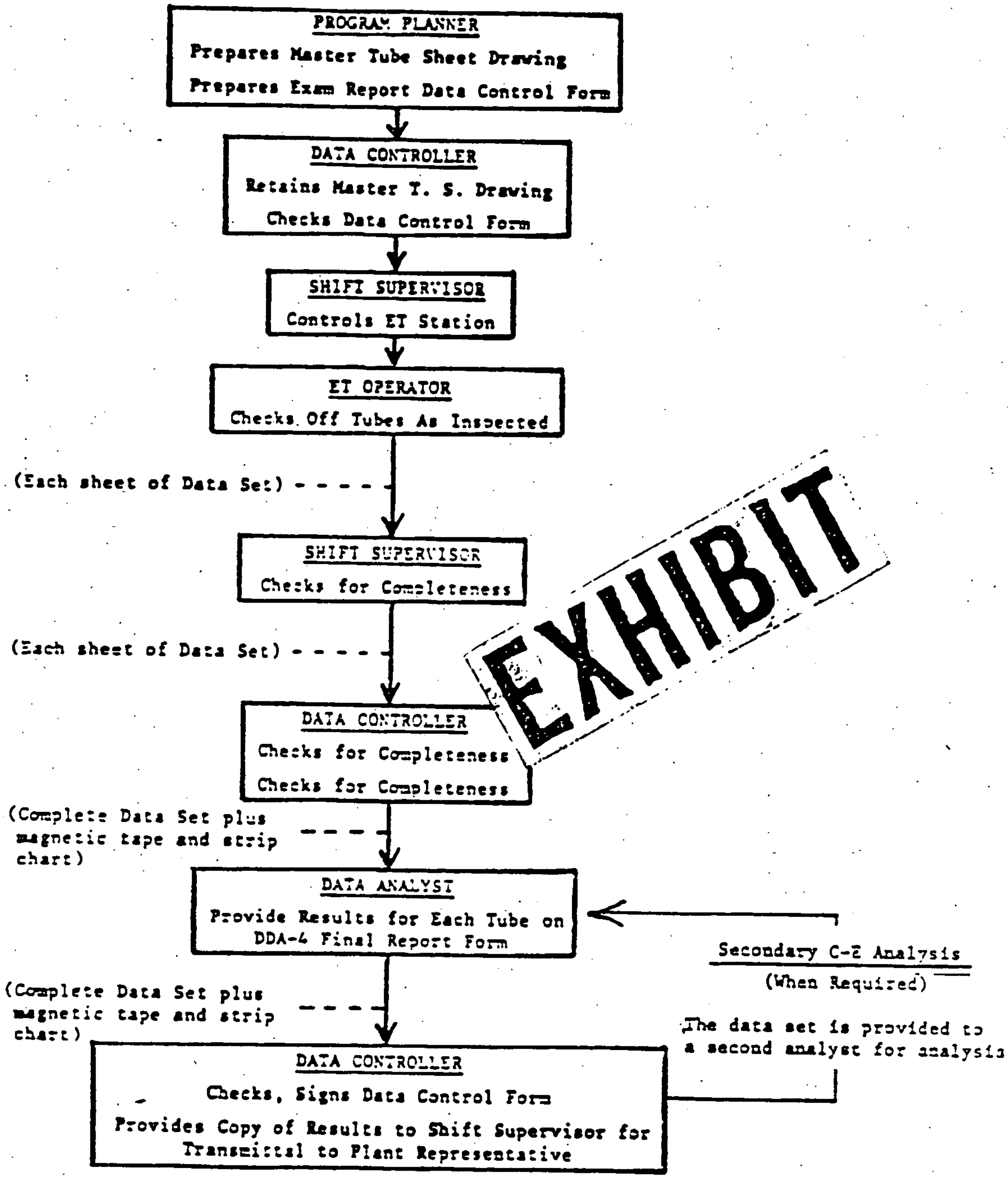
PLANT	UNIT#	S/G	LEG	REEL	TO	REEL	DATE
TVA/SQNP DD3H08	1_	_3__	HOT___	3H08		3H08	02/17/87

SG	ROW	COL	VOLTS	DEG	%	CH#	LOCATION	EXTENT
					PRO		Z03F6578	
							REEL #3H08	
							LYNCH DE LIIA	02/17/87
							OPER: KEMP LA LI	02/17/87
							STD: MAP-001	
31	2	83						C07-H06
31	2	84						C07-H06
31	1	84	30.34	7	1ST	1	C07 + 4.3	C07-H06
			82.57	5	1ST	5	C07 + 4.3	C07-H06
			149.2	359	1ST	9	C07 + 4.3	C07-H06
			205.5	357	1ST	13	C07 + 4.3	C07-H06
31	1	85						C07-H06
31	2	85						C07-H06
31	2	86						C07-H06
31	1	86			NT		NO HEAT TREATMENT	
31	1	87						C07-H06
31	2	87						C07-H06
							OPER: GRIGSBY JC LII	02/17/87
31	2	88						C07-H06
31	1	88						C07-H06
31	1	89						C07-H06
31	2	89						C07-H06
31	2	90						C07-H06
31	1	90						C07-H06
31	1	91						C07-H06
31	2	91						C07-H06
31	2	92						C07-H06
31	1	92						C07-H06
31	1	93						C07-H06
31	2	93						C07-H06
31	2	94						C07-H06
31	1	94						C07-H06
							END REEL #3H08 DD-08	

EXHIBIT

PAGE 1 OF 1	EVALUATOR	LEVEL IIB

FIGURE 2
TYPICAL DDA-4 DATA ANALYSIS REPORT SHEET



EXHIBIT

FIGURE 3
TYPICAL FLOW CHART FOR DATA CONTROL

RPC 3990

CONTROLLED DOCUMENTS

APR 1 7 1987

H. B. ROBINSON PLANT

1987 UNIT 2 REFUELING OUTAGE

NSSS - WORK AUTHORIZATION ZS60010001

COMBUSTION ENGINEERING PROCEDURE

TITLE: PROCEDURE FOR THE INSTALLATION AND REMOVAL OF TEMPORARY NOZZLE COVERS

NO: ROB-410-008

REVISION NO: 0

EFFECTIVE DATE: 4-16-87

APPROVED BY:

S.W. FARMER: S.W. Farmer Date: 4/15/87
Plant Group: Tech. Support

[signature] Date: 4/16/87
Onsite QA/QC

[signature] Date: 4-16-87
Outage Management

INFORMATI'ON

PROCEDURE FOR THE INSTALLATION AND REMOVAL OF TEMPORARY NOZZLE COVERS

H.B. ROBINSON

UNIT TWO

PROCEDURE NO.

ROB-410-008

EXAMINATION SERVICES AND PRODUCTS
OUTAGE SERVICES DEPARTMENT
NUCLEAR POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT
CHATTANOOGA, TENNESSEE - SAN JOSE, CALIFORNIA

PREPARED BY: John E Reich DATE: 4/6/87

APPROVED BY: Darrell D. Weber DATE: 4/6/87
E.T. Level III

APPROVED BY: James D. Ford DATE: 4/6/87
Q.A. Engineer

APPROVED BY: Ray N Brown DATE: 4-6-87
Supervisor, Examination Services & Products

ORIGINAL ISSUE DATE: April 3, 1987 REVISION: 0

DATE: N/A

TABLE OF CONTENTS

1.0 OBJECTIVE

This procedure will establish a set of guidelines to be utilized by the nozzle cover worker with the intent of providing a safe and consistant method for installing and removing nozzle covers in the channel heads of the steam generators.

NOTE: Basic rule of thumb is that the nozzle cover is the first item into the channel head and the last item removed from the channel head.

2.0 REFERENCES

2.1 Combustion Engineering, Inc. Power Systems Group Nuclear, Field QA Manual.

2.2 Combustion Engineering, Inc. Nuclear Quality Assurance Instruction Manual.

2.3 Combustion Engineering, Inc. Power Systems Group, Operating Procedures Manual.

3.0 PERSONNEL REQUIREMENTS

The installation personnel will have received documented training and mock-up practice prior to starting the installation.

4.0 PRECAUTIONS AND PREREQUISITIES

4.1 It is expected that very high levels of radiation may be encountered inside and adjacent to the primary head of the steam generators. Utmost care shall be taken in the setup to minimize personnel exposure to ionizing radiation and radioactive contamination.

4.2 Personnel engaged in the nozzle cover installation shall be indoctrinated in the radiation protection rules, guidelines, protective clothing and equipment requirements in effect at the plant site as required.

4.3 The steam generator shall be open on the primary side dried and ventilated in such a manner as to provide proper temperature and humidity for personnel safety and comfort to prevent head and moisture damage to equipment.

4.4 The secondary side of the steam generator shall be cooled down to the extent that the temperature of the tubes and tube sheet are 120 deg. F or less.

4.5 Provisions must be made for personnel and equipment entry into and exit from the steam generator (i.e., ladders, scaffolds or staging, platforms, lighting inside and outside the steam generator, breathing air supply, 120 VAC electricity, etc.).

4.6 Health Physics coverage shall be maintained at the steam generator during any personnel entry into the steam generator as required.

4.7 A communication system may be setup and operating between the eddy current test instrument operator and the steam generator platform.

5.0 EQUIPMENT

For installation and removal of nozzle covers the following equipment is required.

5.1 Nozzle covers - (1) for each leg to be covered.

5.2 Rope (lanyard) to tie off covers - (1) for each cover.

5.3 Safety light for inside generator.

5.4 Installation Pole

5.5 Pully and tackle (optional)

6.0 INSTALLATION OF NOZZLE COVERS

6.1 Ensure that all equipment is at the work area and is in proper working condition.

6.2 Insert a light into the channel head through the manway opening to ensure proper lighting.

6.3 Secure one end of a strong lanyard to a safe supporting structure outside the generator. Secure the other end of the lanyard to the handle on the manway cover.

NOTE: This must be done to insure the cover does not fall into the nozzle.

6.4 In the folded position insert the cover into the channel head through the manway opening and unfold it before releasing.

6.5 Depending on accessibility around the manway and radiation level, the worker now has one of three installation options for installing the cover. The installation technique must be evaluated and pre-planned prior to starting the installation process.

6.5.1 Utilize a pole to invert the unfolded cover and push it into place over the nozzle.

6.5.2 Utilize a pully and tackle device clamped to the tubesheet from which the cover will be attached to a rope so as to lift the unfolded cover and lower it into place while guiding it with the long handle pole. After nozzle cover is installed, remove pully and tackle and secure rope outside the generator.

6.5.3 Install the cover manually by entering the channel head through the manway opening. This is a generator entry and must be coordinated with Health Physics personnel.

7.0 CLEANLINESS VERIFICATION

The platform worker shall verify that all tools, equipment and debris is removed from the channel head prior to removing the nozzle cover. If any items are in the channel head, they must be removed prior to the nozzle cover removal.

8.0 NOZZLE COVER REMOVAL

8.1 Ensure the lanyard is still securely tied at both ends.

8.2 Using the rope and/or pole, pull the cover to the manway opening.

8.3 Reach through the manway and fold up the cover.

8.4 Pull the folded cover out of the manway.

8.5 Re-verify that nothing has been left in the channel head.

PERSONNEL AND EQUIPMENT CERTIFICATION

EDDY CURRENT

H.B. Robinson Plant

ROY N. BROWN TASK MANAGER

SHIFT LEADERS

J. Reich

T. Bipes

DATA ACQUISITION

R. Witt
M. Brown (Duke)
R. Hancock

GENERATORS

"A"	B. Atkinson
"B"	B. McKee
"C"	M. Teague (Duke)

PLATFORM SUPPORT WORKERS

G. Calhoun
B. Irwin
D. Lynch (Level II A back up)

T. Southerland
D. Key
M. Klatt (Level II backup)

DATA ANALYSIS

D. Weber
S. Circosta

G. Terning
M. Tierney

To : File
Subj.: JOBSITE QC INDOCTRINATION DATE:4-30-87

A Jobsite QC indoctrination session was held (on the dates indicated below) for the 1987 H.B.Robinson refueling outage Steam Generator Eddy-Current Examination and Tube Plugging.

Subjects discussed included :

A) Organization
B) Use of procedures
C) Personnel training/certification requirements
D) Document Control
E) Use of owner supplied M&TE.
F) Use of owner supplied material
G) QC responsibilities

The personnel attending this session are listed below:

	Signature	Initials	Date
R. Brown	Roy n Brown RnB	RnB	5-4-87
J. Reich	John E Reich Jr.	JER	5-2-87
~~R. Strickland~~ Fired 5-4-87			
D. Weber	David D. Weber	DDW	5/1/87
G. Calhoun	George Calhoun	GHC	5-6-87
T. Southerland	T. Southerland	TAS	5-7-87
W. Irwin	William E. Irwin	WEI	5-2-87
~~R. Price~~ Fired 5-4-87			
T. Bipes	Thomas L. Bipes	TLB	5-6-87
S. Circosta	Scotty A. Circosta	SAC	5-6-87
M. Tierney	Mark J. Tierney	MJT	5-6-87
G. Terning	Gary A. Terning	GAT	5-6-87
D. Lynch	D. E. Lynch	DEL	5-7-87

This fifteen min.session was administered by the writer.

J.F. Sikorski

J.F.Sikorski

Ref:CE cont.#4987

NAME	SIGNATURE	INITIAL
ROY N BROWN	Roy N Brown	RNB
John E. Reich Jr.	John E Reich Jr.	JER
GEORGE B. CALHOUN	George B. Calhoun	GBC
Roland M. Witt, Jr	Roland M. Witt Jr.	[illegible]
WILLIAM E. IRWIN	William E. Irwin	W.E.I.
Daniel E Lynch	[illegible]	DEL
Richard W Hancock Jr	Richard W Hancock Jr	RWH
Michael W. Brown	Michael W. Brown	MWB
DARRELL D Weber	Darrell D Weber	DDW
SILVESTRO A. CIRCOSTA	SA Circosta	SAC
MARK G. TIERNEY	Mark G. Tierney	[illegible]
Bryant McKee	Bryant McKee	BM
Michael B. Teague	Michael B Teague	MBT
THOMAS U. BIPES	Thomas U Bipes	TUB
GARY A. Terning	Gary A. Terning	GAT
MARTY J. KLATT	Marty J. Klatt	MJK

SIGNATURE AND INITIAL

LOG

EDDY CURRENT

CERTIFICATIONS

COMBUSTION ENGINEERING, INC.

B. Atkinson	Level II
T. Bipes	Level II
R. Brown	Level II
S. Circosta	Level IIA
R. Hancock	Level II
M. Klatt	Level II
D. Lynch	Level IIA
B. McKee	Level I
J. Reich	Level II
G. Terning	Level IIA
M. Tierney	Level IIA
D. Weber	Level III
R. Witt	Level II

DUKE POWER PERSONNEL

M. Brown	Level II
M. Teague	Level II

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Bruce M. Atkinson

LEVEL: II

SSN/EMP NO: 087-58-2388

CERTIFICATION DATE: 8/25/86

EXPIRATION DATE: 1/16/89

EDUCATION:

Ward Melville High School, Setauket, NY

TRAINING:

Combustion Engineering, Inc. - June 1985 - 40 hours ET Level I

Combustion Engineering, Inc. - January 1986 - 40 hours ET Level II

EXPERIENCE:

Certified and experienced at Combustion Engineering, Inc. as a Level I from July 22, 1985 through August 25, 1986 with experience in field eddy current examinations of steam generator tubing. Experience exceeds ten months.

EXAMINATION RESULTS:

General/Basic	87.5
Specific/Method	74
Practical/Specific	98

Total 259.5 / 3 = 86.5 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles M Ashman

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

1 Prospect Hill Road
Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME BRUCE ATKINSON   SOCIAL SECURITY NO 087-58-2388   DATE MAR 1 1 1987 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R # 1	L # 1	B # 1	R #	L #	B #
FAR VISION - SNELLEN	R 20/10	L 20/13	B 20/10	R 20/	L 20/	B 20/

COLOR VISION

[X] ISHIHARA Normal

[ ] WOOL (Holmgren)

EYE EXAMINATION ADMINISTERED BY: [illegible signature]

Eye Examination Results Reviewed & Accepted By: * [illegible signature]
NDE Department

* Required to be completed for NDE certification only. Not required for qualification to wear respiratory protection devices.

PHYSICAL EXAMINATION

HEIGHT 72   WEIGHT 239   BLOOD PRESSURE 130/76

SKIN N   EARS N   NECK N   EYES N

HEAD N   HEART N   CHEST N   LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓   ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES 0   DENTURES 0   OTHER 0

[illegible signature]
Signature of Medical Examiner

DR. EDWARD F. MURPHY
Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339
Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Thomas U. Bipes LEVEL: II

SSN/EMP NO: 475-70-3052 CERTIFICATION DATE: 10/1/86

EXPIRATION DATE: 9/17/89

EDUCATION:

Hutchinson High School, Hutchinson, MN

Hutchinson Area Vocational Technical Institute, Hutchinson, MN - Degree in NDT, 1976

TRAINING:

Hutchinson Vocational Tech. - Aug. 74-June 76 - Two years of college level courses in eddy current theory and laboratory exceeding 150 hours total training.

EXPERIENCE:

Experienced at Hutchinson Vocational Tech. as an NDT trainer between August 1980 and September 1986 with primary emphasis on teaching eddy current techniques. Responsible for ET and UT course curriculm and equipment with minimum 8,000 hours time in classroom and laboratory instruction. Previous Level II experience in RT, UT, MT, PT and VT at Conam Inspection between 1978 and 1980.

EXAMINATION RESULTS:

General/Basic	95
Specific/Method	90
Practical/Specific	95
Total	280 / 3 = 93.3 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NOAI 2.4 Revision 1.

CERTIFIED BY: Harry Labowski

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Pipes, Thomas U. SOCIAL SECURITY NO 475-70-3052 DATE 9-17-86
(of Examination)

EYE EXAMINATION

				Acceptable (completed by NDE Department)	Unacceptable (completed by NDE Department)
NEAR VISION - Jaeger					
NATURAL:	R # 20/20 (1	L # 20/25 (2	B # 20/20 (1	[x]	[ ]
CORRECTED:	R # N/A	L # N/A	B # N/A	[ ] N/A	[ ]
FAR VISION - Snellen					
NATURAL:	R 20/20	L 20/20	B 20/20	[x]	[ ]
CORRECTED:	R 20/N/A	L 20/N/A	B 20/N/A	[ ] N/A	[ ]
COLOR VISION					
[x] ISHIHARA				[x]	[ ]
[ ] WOOL				[ ]	[ ]

EYE EXAMINATION

ADMINISTERED BY: [illegible]

TITLE: RN COHN

REVIEWED & ACCEPTED BY: Darrell D. Weber
(NDE Department)

TITLE: Level III ET

PHYSICAL EXAMINATION

HEIGHT ______ WEIGHT ______ BLOOD PRESSURE ______

SKIN ______ EARS ______ NECK ______ EYES ______

HEAD ______ HEART ______ CHEST ______ LUNGS ______

PULMONARY FUNCTION TEST: NORMAL ______ ABNORMAL ______

N/A

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES ______ DENTURES ______ OTHER ______

______ Medical Examiner (Print) ______ Signature of Medical Examiner

RESUME OF THOMAS U. BIPES
FIELD SERVICE ENGINEER II

Thomas U. Bipes

SUMMARY OF QUALIFICATIONS

Mr. Thomas U. Bipes is responsible for Eddy Current Procedure and Report writing, R&D, Training and Field Testing of new techniques. He has six (6) years experience in training in Eddy Current and Ultrasonics at Hutchinson Tech., and 4 + years of Level II Technician skills in RT, UT, MT, PT and VT. Mr. Bipes has also performed as an Eddy Current Consultant with Air Conditioning Tubing Testing.

PROFESSIONAL EXPERIENCE

Combustion Engineering, Inc. September 1986 to Present
Examination Services & Products

Mr. Bipes is responsible for Eddy Current Examination Support in the Chattanooga Regional Office. He will also perform NDT Examinations in other disciplines on an as required basis.

Hutchinson Vo-Tech Institute 1980 - 1986

Level III NDT Trainer

Mr. Bipes was responsible for training of Level I and II Technicians with primary experience in Eddy Current, Ultrasonics and Acoustic Emission. Mr. Bipes was also responsible for all equipment and curriculum in these areas.

ConAm Inspection Division 1978 - 1980

Level II Technician

Mr. Bipes was responsible for manual testing in RT, UT, MT, PT and Visual Testing in Nuclear Power Stations, Fossil Fuel Plants, Refineries, Pipelines and Lab Applications.

Metils Inc. 1976 - 1978

Level II Technician

Branch Lab Manager - 1978

Mr. Bipes was responsible for Manual Testing in RT, UT, PT and MT in Fossil Fuel Plants, Refineries, Chemical Plants and other Field Applications. Mr. Bipes was promoted to Senior Technician and managed a Field Lab in 1978.

PERSONAL BACKGROUND

Graduate Hutchinson High School

Graduate 2 yr. Degree Nondestructive Testing Technology - Hutchinson

ASNT Member - Board of Directors Minn. Section - 1985

- Education/Technical Committee - 1983 - 1986

Resume Date: September 1986

EXPERIENCE RECORD

1975 - Visual Inspection of Tube Plug Welds - Palisades NPS-MI

1976 - 1980 - Level II RT, UT, MT, PT for Testing Labs - Field Work

1979 - 1980 - Level II Ultrasonic Inspection of Pipe Welds Quad Cities and Dresden

1980 - 1986 - Designated Level III Trainer at Hutchinson Area Vo-Tech Inst.

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Roy N. Brown

LEVEL: II

SSN/EMP NO: 353-38-9360

CERTIFICATION DATE: January 16, 1986

EXPIRATION DATE: January 14, 1989

EDUCATION:

Harrisburg Township High School, Harrisburg, IL
Cambell County Vocational Technical School, Rustburg, VA - Electronics

TRAINING:

Babcock & Wilcox Co., Lynchburg, VA - August 1979 - 24 hours Level I
Babcock & Wilcox Co., Lynchburg, VA - September 1984 - 12 hours ET
Combustion Engineering, Inc. - January 1986 - 32 hours Level II

EXPERIENCE:

Certified at Babcock & Wilcox Co. as a Level I trainee from August 1979 to August 1982 and as a Level I from September 1984 to August 1985 with experience in ET examinations of steam generator tubing.

EXAMINATION RESULTS:

General/Basic	92.5
Specific/Method	98
Practical/Specific	98
Total	288.5 / 3 = 96.2 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Oshima

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

EYE EXAMINATION RECORD

NAME: Brown, Roy N. DATE: 10-10-86

Reads J1 on Jaeger card with out glasses

[✓] JAEGER #1 [ ] JAEGER #2 [ ] ORTHORATER

[ ] SNELLEN [ ] OTHER ______

Please fill in method if not listed

EXAMINATION RESULTS:

NEAR VISION - Jaeger				Acceptable	Unacceptable
NATURAL:	R # J1 20/20	L # J1 20/20	B # J1 20/20	[✓]	[ ]
CORRECTED:	R # ___	L # ___	B # ___	[ ]	[ ]

FAR VISION - Snellen				Acceptable	Unacceptable
NATURAL:	R 20/67	L 20/100	B 20/100	[ ]	[✓]
CORRECTED:	R 20/20	L 20/20	B 20/20	[✓]	[ ]

COLOR VISION

[✓] ISHIHARA [ ] A.O.I. [✓] [ ]

[ ] OTHER ______

Please fill in color test method if not listed.

CORRECTIVE LENSES OR AIDS ARE REQUIRED WHILE CONDUCTING INSPECTION:

NEAR VISION [ ] YES [✓] NO

FAR VISION [✓] YES [ ] NO

OCT 22 1986

ADMINISTERED BY: Elizabeth B Cheatham

TITLE: RN- COHN

REVIEWED AND ACCEPTED BY: GS Bloomquist

TITLE: VT III

C-E 0013105 (8/84)

C. .BUSTION ENGINEERING

RESUME OF ROY N. BROWN: Roy N Brown
REGIONAL INSPECTION SERVICE MANAGER
Signature

SUMMARY OF QUALIFICATIONS

Mr. Brown is responsible for directing the Southeast Regional office staff of NDE Engineers and Technicians. He has 19 years experience in non-destructive testing on nuclear power plant components both during manufacture and inservice.

PROFESSIONAL EXPERIENCE

Combustion Engineering, Inc. - August 1985 to Present

Power Systems, Nuclear Power Systems

Regional Manager, Inspection Services Southeast Region, for Examination Services and Products Department of Nuclear Field Services

Mr. Brown is responsible for technical and administrative management of a regional service office of NDE engineers and technicians. Mr. Brown's group is responsible for providing a variety of nondestructive examination services to utilities such as eddy current and ultrasonic examinations and analysis.

Babcock & Wilcox Co. - 1966 to 1985

From 1979 to 1985 Mr. Brown was the Inspection Operations Manager for Field Services, responsible for all Field NDE inspections on contracted Inservice Nuclear Power Plants. Duties included managing a staff of about 50 people for reviewing techniques, procedures, operation of automatic reactor vessel examination equipment, remote eddy current and NDE.

From 1975 to 1979 Mr. Brown was a section supervisor in NDE for B & W's Nuclear Manufacturing Shop responsible for three shifts of operation and about 75 personnel. Examinations were conducted on commercial nuclear and navy nuclear components. Certified B&W's Mt. Vernon Works Level III Examiner in UT, MT and PT in February 1979.

From 1969 to 1975 served as a shift supervisor in NDE.

From 1966 to 1969 served as a technician performing UT, RT, MT PT examinations.

PERSONAL BACKGROUND

American Society of Nondestructive Testing
ASNT Level III in Ultrasonic and Radiography. Cert. No.: JM-1015
Harrisburg High School Graduated 1965

TECHNICAL TRAINING

See Attachment A

SITE EXPERIENCE

See Attachment B

ATTACHEMNT A

RESUME OF R. N. BROWN

TRAINING COURSES AND TECHNICAL SCHOOLS

120 hours	Destructive Testing - Metallography	Bethlehem Steel	1965
40 hours	Ultrasonic Inspection	Branson Corporation	1968
40 hours	Radiography	Picker X-Ray Corp.	1969
80 hours	Ultrasonics	Babcock & Wilcox Co.	1969
40 hours	Magnetic Particle and Liquid Penetrant	Babcock & Wilcox Co.	1969
80 hours	Radiography	Eastman-Kodak	1970
40 hours	Krautkramer AVG System	Babcock & Wilcox Co.	1973
80 hours	Geometric Dimensioning & Tolerancing	Babcock & Wilcox Co.	1976
	Basic Principles of Human Relations	Babcock & Wilcox Co.	1970
	Better Methods Training	Babcock & Wilcox Co.	1972
	OSHA Safety Training for Supervisors	Babcock & Wilcox Co.	1976
	Supervisory Skills	Babcock & Wilcox Co.	1978
5.5 hours	Visual Inspection	Babcock & Wilcox Co.	1978
24 hours	Eddy Current	Babcock & Wilcox Co.	1979
4 hours	UT Techniques - IGSCC	Babcock & Wilcox Co.	1980
	EEO Training	Babcock & Wilcox Co.	1981
	Managing for Improved Performance	Babcock & Wilcox Co.	1981
16 hours	Profilometry	Babcock & Wilcox Co.	1981
60 hours	Electronics	Campbell Co.Vo.Tec.	1983
[illegible] hours	Successful Middle Management	Practical Management Associates, Inc.	1983
4 hours	Motivating Today's Employee	Dunn & Bradstreet	1984
4 hours	Appraising for Better Performance	Dunn & Bradstreet	1984
12 hours	Eddy Current	Babcock & Wilcox Co.	1984
24 hours	Level III Basic Refresher Course	ASNT	1985
30 hours	Refresher, Visual Techniques & Procedures	Babcock & Wilcox Co.	1985
40 hours	Eddy Current Classroom and Lab	Combustion Engineering	1986

ATTACHEMNT B

RESUME OF R. N. BROWN

SPECIFIC SITE PARTICIPATION

o	CR-3 UT of CRDM J Weld	1980
o	Oconee I 10 year Reactor Vessel examination	1981
o	Oconee II 10 year Reactor Vessel examination	1981
o	Oconee III 10 year Reactor Vessel examination	1982
o	Conn-Yankee-Eddy Current	1983
o	Beaver Valley Eddy-Current	1983
o	North Anna-Eddy Current	6/84
o	HB Robinson-Eddy Current	9/84
o	Crystal River 3-10 year Reactor Vessel examination	4/85
o	Supervised or performed UT, MT, PT, VIS, and RT examinations during various stages of <u>manufacture</u> on components for over 50 different nuclear units	1966 to 1979

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD Eddy Current

NAME: Silvestro A. Circosta

LEVEL: IIA

SSN/EMP NO: 026-34-3934

CERTIFICATION DATE: 10/7/85

EXPIRATION DATE: 8/3/87

EDUCATION:

West Side High School, West Springfield, MA

TRAINING:

Combustion Engineering, Inc. - September 1981 - 16 hours Level I

Combustion Engineering, Inc. - December 1981 - 24 hours Level I

Combustion Engineering, Inc. - August 1984 - 40 hours Level II

Zetec, Inc. - March 1985 - 40 hours Level IIA (Data Analyst)

EXPERIENCE:

Experienced and certified at C-E as a Level I trainee from December 1981 through March 1982, as a Level I from March 3, 1982 through December 11, 1984 and as a Level II from December 12, 1984 through October 7, 1985 with experience in steam generator and heat exchanger eddy current examinations.

EXAMINATION RESULTS:

General/Basic	92
Specific/Method	77
Practical/Specific	99
Total	268 / 3 = 89.3 COMPOSITE SCORE

Eddy Current Level IIA (Data Analyst) Examination Score: 99%

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Richard S. Maurer

POSITION: ET Level III

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Sil Circosta SOCIAL SECURITY NO 026-34-3934 DATE JAN 1 4 1987 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R # 1	L # 1	B # 1	R #	L #	B #
FAR VISION - SNELLEN	R 20/13	L 20/15-	B 20/13	R 20	L 20	B 20

COLOR VISION

[x] ISHIHARA Normal

[ ] WOOL (Holmgren)

ADMINISTERED BY: [signature] RN

[illegible] Examination Results [illegible] By: [signature]

PHYSICAL EXAMINATION

HEIGHT 67 WEIGHT 178 BLOOD PRESSURE [illegible]

SKIN Psoriasis EARS N NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES 0 DENTURES 0 OTHER 0

[signature]
Signature of Medical Examiner

Edward F. Murphy, M.D.
Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339
Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Richard W. Hancock, Jr. **LEVEL:** II

SSN/EMP NO: 048-60-2273 **CERTIFICATION DATE:** 9/24/86

EXPIRATION DATE: 1/16/89

EDUCATION:

Penney High School, East Hartford, CT

University of Connecticut, Storrs, CT - B.S.M.E. and Materials

TRAINING:

Combustion Engineering, Inc. - June 1985 - 40 Hours Level I

Combustion Engineering, Inc. - January 1986 - 40 Hours Level II

EXPERIENCE:

Certified and experienced as a Level I Trainee from June 1985 through September 1985 and as a Level I from September 1985 through September 1986 with experience in field examinations of steam generators. Total documented experience time exceeds nine months.

EXAMINATION RESULTS:

General/Basic	97.5
Specific/Method	90.0
Practical/Specific	98.0

Total 285.5 / 3 = 95.2 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME RICHARD HANCOCK SOCIAL SECURITY NO 048-60-2273 DATE MAR 2 4 1987 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R # 1	L # 1	B # 1	R #	L #	B #
FAR VISION - SNELLEN	R 20/25	L 20/50	B 20/20	R 20	L 20	B 20

COLOR VISION

[X] ISHIHARA Normal

[ ] WOOL (Holmgren)

EYE EXAMINATION ADMINISTERED BY: Martha Henning RN

Eye Examination Results Reviewed & Accepted By: * CS Bloomquist
NDE Department

* Required to be completed for NDE certification only. Not required for qualification to wear respiratory protection devices.

PHYSICAL EXAMINATION

HEIGHT 70 WEIGHT 147 BLOOD PRESSURE

SKIN tanned EARS N NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES 0 DENTURES 0 OTHER 0

Edw F Murphy
Signature of Medical Examiner

DR. EDWARD F. MURPHY
Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339
Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD Eddy Current

NAME: Marty J. Klatt

LEVEL: II

SSN/EMP NO: 547-06-9933

CERTIFICATION DATE: 2/28/86

EXPIRATION DATE: 2/21/89

EDUCATION:

Waconia High School, Waconia, Minnesota

Hutchinson Area Vocational Technical Institute, Hutchinson, MN - courses

TRAINING:

Hutchinson Vocational Tech. - Fall 1979 - 59 Hours ET

Combustion Engineering, Inc. - February 1986 - 40 Hours ET

EXPERIENCE:

Experienced as an Eddy Current Level II at previous employer, SIFCO Custom Machining from December 1983 through December 1985.

EXAMINATION RESULTS:

General/Basic	100
Specific/Method	100
Practical/Specific	97
Total	297 / 3 = 99 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

00 Prospect Hill Road
st Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Marty Klatt SOCIAL SECURITY NO 547-06-9933 DATE JAN 28 1987 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R # /	L # /	B # /	R #	L #	B #
FAR VISION - SNELLEN	R 20/13	L 20/15	B 20/13	R 20	L 20	B 20

COLOR VISION

[x] ISHIHARA Normal

[ ] WOOL (Holmgren)

EYE EXAMINATION ADMINISTERED BY: Martha Kennington

Eye Examination Results Reviewed & Accepted By: * [signature]
NDE Department

* Required to be completed for NDE certification only. Not required for qualification to wear respiratory protection devices.

PHYSICAL EXAMINATION

HEIGHT 68 WEIGHT 151 BLOOD PRESSURE 110/64

SKIN N EARS Perf TM AS NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES

LIMITATIONS:

CORRECTIVE LENSES 0 DENTURES 0 OTHER 0

[signature]
Signature of Medical Examiner

Edward F. Murphy, M.D.
Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339

Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Daniel E. Lynch

LEVEL: IIA

SSN/EMP NO: 020-44-0996

CERTIFICATION DATE: 8-26-85

EXPIRATION DATE: 8-03-87

EDUCATION:

Classical High School, Springfield, MA
Holyoke Community College, Holyoke, MA - AA
California State College, California, PA - BA
Springfield Technical Community College, Springfield, MA - AS

TRAINING:

Combustion Engineering, Inc. - December 1981 - 24 hours Level I
Combustion Engineering, Inc. - August 1984 - 40 hours Level II
Zetec, Inc. - June 1985 - 40 hours Level IIA (Data Analyst)

EXPERIENCE:

Experienced and certified at C-E as a Level I trainee from December 1981 through March 1982, as a Level I from March 1982 through August 1984 and as a Level II from August 10, 1984 through August 26, 1985 with experience in steam generator and heat exchanger eddy current examinations.

EXAMINATION RESULTS:

General/Basic	80
Specific/Method	78
Practical/Specific	100
Total	258 / 3 = 86 COMPOSITE SCORE

Eddy Current Level IIA (Data Analyst)
Examination Score: 93%

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Richard S. Ma[illegible]

POSITION: ET Level III

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Daniel Lynch SOCIAL SECURITY NO 020-44-0996 DATE SEP 29 1986 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R # 1	L # 1	B # 1	R #	L #	B #
FAR VISION - SNELLEN	R 20/15	L 20/13	B 20/10	R 20/	L 20/	B 20/

COLOR VISION
[✓] ISHIHARA Normal 1-14
[ ] WOOL (Holmgren)

ADMINISTERED BY: E. Carta, RN

C-E Examination Results Reviewed and Accepted By: NSS Level II

PHYSICAL EXAMINATION

HEIGHT 80" WEIGHT 360 BLOOD PRESSURE 138/96

SKIN N EARS N NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES 0 DENTURES 0 OTHER 0

Signature of Medical Examiner

Edward F. Murphy, MD
Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339
Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Bryant McKee

LEVEL: I

SSN/EMP NO: 413-08-2318

CERTIFICATION DATE: 1/13/86

EXPIRATION DATE: 1/10/89

EDUCATION:

Southside Sr. High School, Jackson, TN

Tennessee State University, Nashville, TN - BSME

TRAINING:

Combustion Engineering, Windsor - January 1986 - 40 Hrs. Level I

EXPERIENCE:

Experienced in Eddy Current testing and data collection at C-E from August through November, 1985.

EXAMINATION RESULTS:

General/Basic	80
Specific/Method	85
Practical/Specific	99
Total	264 / 3 = 88 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NOAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Bryant McKee SOCIAL SECURITY NO 413-08-2318 DATE AUG 29 1986 (of Examination)

EYE EXAMINATION

		NATURAL			CORRECTED		
NEAR VISION - JAEGER		R # 1	L # 1	B # 1	R #	L #	B #
FAR VISION - SNELLEN		R 20/13	L 20/25	B 20/13	R 20	L 20	B 20

COLOR VISION

[X] ISHIHARA Normal

[ ] WOOL (Holmgren)

ADMINISTERED BY: Mark Henning Lm

Results Reviewed & Accepted By:
NDE Level III

PHYSICAL EXAMINATION

HEIGHT 71" WEIGHT 173 BLOOD PRESSURE 108/70

SKIN N EARS N NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS ~~NOT~~ QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES 0 DENTURES 0 OTHER 0

Signature of Medical Examiner

Edward F. Murphy, M.D.

Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339

Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: John E. Reich, Jr.

LEVEL: II

SSN/EMP NO: 306-46-9824

CERTIFICATION DATE: January 16, 1986

EXPIRATION DATE: January 14, 1989

EDUCATION:

Mt. Vernon High School, Mt. Vernon, IN

TRAINING:

Babcock & Wilcox co., Lynchburg, VA - January 1984 - 40 hours Level I

Combustion Engineering, Inc. - January 1986 - 32 hours Level II

EXPERIENCE:

Certified at Babcock & Wilcox Co., as a Level I trainee from February 1984 to May 1984 and as a Level I from May 1984 to January 1986 with experience in ET examinations and data analysis of steam generator tubing.

EXAMINATION RESULTS:

General/Basic 82.5

Specific/Method 80

Practical/Specific 98

Total 260.5 / 3 = 86.8 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME [illegible] John E. Jr SOCIAL SECURITY NO 306-46-9924 DATE 12-16-96 (of Examination)

EYE EXAMINATION

NEAR VISION - Jaeger

				Acceptable (completed by NDE Department)	Unacceptable (completed by NDE Department)
NATURAL:	R # 20/20 J1	L # 20/20 J1	B # 20/20 J1	[x]	[ ]
CORRECTED:	R # N/A	L # N/A	B # N/A	[ ] N/A	[ ]

FAR VISION - Snellen

NATURAL:	R 20/17	L 20/17	B 20/17	[x]	[ ]
CORRECTED:	R 20/N/A	L 20/N/A	B 20/N/A	[ ] N/A	[ ]

COLOR VISION

[x]	ISHIHARA	[x]	[ ]
[ ]	WOOL	[ ]	[ ]

EYE EXAMINATION

ADMINISTERED BY: [signature]

TITLE: RN COHN.

REVIEWED & ACCEPTED BY: Darrell D Weller

(NDE Department)

TITLE: Level III ET

PHYSICAL EXAMINATION

HEIGHT ______ WEIGHT ______ BLOOD PRESSURE ______

SKIN ______ EARS ______ NECK ______ EYES ______

HEAD ______ HEART ______ CHEST ______ LUNGS ______

PULMONARY FUNCTION TEST: NORMAL ______ ABNORMAL ______

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and/has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES ______ DENTURES ______ OTHER ______

NA

______ Medical Examiner (Print) ______ Signature of Medical Examiner

COMBUSTION ENGINEERING

RESUME OF JOHN E. REICH
SENIOR FIELD ENGINEER

Signature________________

SUMMARY OF QUALIFICATIONS

Mr. Reich is responsible for maintenance and calibration of NDE equipment for the S.E. Regional Office. Mr. Reich has worked and supervised in MT, PT, UT, RT, VT and ET methods for the past 19 years at different levels in both manufacturing and inservice of nuclear power plant components.

PROFESSIONAL EXPERIENCE

Combustion Engineering, Inc. - January 1986 to present

Senior Field Service Engineer

Mr. Reich is assigned to support inservice inspection work as well as equipment maintenace at the S.E. Regional Office. The following shows his past experience record.

Babock and Wilcox - 1981 - 1986

Worked as the Equipment Maintenance Supervisor for Field Services. Other duties also included support in MT, PT, UT and ET methods.

From 1969 - 1980 Mr. Reich was Shift Supervisor NDE, supervised technicians in the performance of MT, PT, UT, RT and Visual exams on Navy nuclear and commercial nuclear components.

From 1967 - 1969 Mr. Reich was an NDE Technician performing MT, PT, UT on various nuclear components.

General Electric - 1980 - 1981

Mr. Reich worked as Color Lab Technician in Vallox Department.

COMBUSTION ENGINEERING

ATTACHMENT A

RESUME OF J.E. REICH

TRAINING COURSES AND TECHNICAL SCHOOLS

80 hrs.	Lab training in Ultrasonic Training of heavy wall pressure vessels and weldments of nuclear reactor vessels	B&W	1972
80 hrs.	Eastman-Kodak Company Educational Center	Atlanta, Ga.	1970
60 hrs.	Magnetic Particle and Liquid Penetrant courses with the requirements of ASNT-TC1A and NavShips 250-1500-1	B&W	1969
40 hrs.	Radiography	Picker X-Ray	1969
40 hrs.	Krautkramer ultrasonics equipment with the use of the German AVG flaw size system	B&W	1973
60 hrs.	Electronics	Campbell Co. Vo-Tec	1983
40 hrs.	Magnetic Particle	B&W	1985
40 hrs.	Dye Penetrant	B&W	1985
40 hrs.	Eddy Current Classroom and Lab	Combustion Engineering	1986

COMBUSTION ENGINEERING

ATTACHMENT B

RESUME OF J.E. REICH

SPECIFIC SITE PARTICIPATION

Arkansas Nuclear One	1984
North Anna	1984
Oconee	1985
McGuire	1985
Watts Bar	1986
St. Lucie	1986
Sequoyah	1986
Watts Bar	1986
Waterford III	1986
Sequoyah	1987

1967 to 1980
Supervised or performed UT, MT, PT, VIS and RT examinations during various stages of <u>manufacture</u> on components for over 50 different nuclear units.

COMBUSTION ENGINEERING

PERSONAL BACKGROUND

Mt. Vernon High School
Electronic Basis - Campbell County Vo-Tech

TECHNICAL TRAINING

See Attachment A

SITE EXPERIENCE

See Attachment B

Power Systems
Combustion Engineering, Inc.
911 West Main Street
Chattanooga, Tennessee 37402
(615) 265-4631
Telex: 55-8429
Cable: COMBENG

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Gary A. Terning

LEVEL: II A

SSN/EMP NO: 471-66-5028

CERTIFICATION DATE: January 16, 1986

EXPIRATION DATE: January 14, 1989

EDUCATION:

Cokato High School, Cokato, MN

Hutchinson Area Vocational Technical School, Hutchinson, MN - AS in NDE

TRAINING:

Hutchinson Vocational Tech. - 1973 - 180 hours in ET Theory and Laboratory
Babcock & Wilcox Co., Copley, OH - August 1970 - 9 hours ET Data Interpertation
Babcock & Wilcox Co., Lynchburg, VA - March 1982 - 24 hours ET
- 1983 - 40 hours ET Data Analysis
- May 1984 - 24 hours ET Data Analysis
EPRI NDE Center, Charlotte, NC - December 1985 - 80 hours Data Analysis
Combustion Engineering, Inc. - January 1986 - 32 hours Level II

EXPERIENCE:

Certified at Babcock & Wilcox Co. as a Level II from February 1976 to February 1979 and from April 1982 to May 1984; and as a Level II A from June 1984 to November 1985 with experience in ET examinations and data analysis of steam generator tubing.

EXAMINATION RESULTS:

General/Basic 87.5

Specific/Method 95

Practical/Specific 97

ET II A Data Analysis Test Score 90.5%

Total 279.5 / 3 = 93.2 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

C-E C013106 (8/84)

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP
000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Terning, Gary SOCIAL SECURITY NO 471-66-5029 DATE 11-18-86 (of Examination)

EYE EXAMINATION

				Acceptable (completed by NDE Department)	Unacceptable
NEAR VISION - Jaeger					
NATURAL:	R # 20/25 J2	L # 20/25 J2	B # 20/25 J2	[ ]	[X]
CORRECTED:	R # 20/20 J1	L # 20/20 J1	B # 20/20 J1	[X]	[ ]
FAR VISION - Snellen					
NATURAL:	R 20/100	L 20/100	B 20/100	[ ]	[X]
CORRECTED:	R 20/18	L 20/20	B 20/18	[X]	[ ]
COLOR VISION					
[X] ISHIHARA				[X]	[ ]
[ ] WOOL				[ ]	[ ]

EYE EXAMINATION ADMINISTERED BY: Elizabeth B. Cheatham

TITLE: RN COHN.

REVIEWED & ACCEPTED BY: Darrell D. Weber (NDE Department)

TITLE: Level III ET

PHYSICAL EXAMINATION

HEIGHT ______ WEIGHT ______ BLOOD PRESSURE ______

SKIN ______ EARS ______ NECK ______ EYES ______

HEAD ______ HEART ______ CHEST ______ LUNGS ______

PULMONARY FUNCTION TEST: NORMAL ______ ABNORMAL ______

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES ______ DENTURES ______ OTHER ______

Medical Examiner (Print) ______ Signature of Medical Examiner ______

BUSTION ENGINEERING

RESUME OF GARY ALLEN TERNING
PRINCIPLE FIELD SERVICE ENGINEER
EXAMINATION SERVICE & PRODUCTS
CHATTANOOGA REGIONAL OFFICE

Gary Allen Terning
Signature

SUMMARY OF QUALIFICATIONS

Mr. Terning is responsible for performing and supervising nondestructive testing on balance of plant work at nuclear power plants. He has 12 years experience in areas of ultrasonics, liquid penetrant, magnetic particle, visual, and eddy current testing. Mr. Terning also has specialized training as a Level IIA analyst in eddy current testing.

PROFESSIONAL EXPERIENCE

Combustion Engineering, Inc. November 1985 to Present
Examination Services and Products

Principle Field Service Engineer, Examination Services & Products, Nov. 1985 to Present

Mr. Terning is responsible for performing and supervising nondestructive testing at nuclear power plants. The Chattanooga Regional Office is responsible for the Southeast region of the U.S. contracts to supply personnel and equipment to support nondestructive testing.

Babcock & Wilcox Co., Utility Power Generation Division - 1982 to 1985

Customer Service Engineer, Special Product and Integrated Field Services.

Mr. Terning was responsible for preliminary and/or final disposition in the areas of ultrasonics and visual indications to the ASME Code. He also wrote and revised nondestructive procedures to new or improved techniques. Involved in the Automated Reactor Inspection System (ARIS), UT system KB-6000 and analyzed steam generator tubing eddy current data with MIZ 12 and MIZ 18 equipment.

Hutchinson Area Vocational Technical Insitutue - 1980 to 1982

Instructor, Nondestructive Testing Department

Mr. Terning was responsible for instruction to first year students of ultrasonics, liquid penetrant nondestructive techniques. Visual examination was also taught to second year students. Involved in revising curricular, ordering equipment, designing samples and budget reviews.

Stone & Webster Engineering Company - June/July 1980

Technician - Level II Ultrasonics.

Mr. Terning performed ultrasonics on a biological shield wall on a BWR Nuclear System. This involved performing and evaluating the ultrasonic indications.

Babcock & Wilcox Construction Company - 1974-1979

Technical Group - Inservice Inspection Division

Mr. Terning was responsible for training, re-certification, write, review procedures, develop techniques. Certified to Level II in UT, PT, VT, ET and also performed ET analysis on steam generator tubing.

Group Leader - Inservice Inspection Division

Mr. Terning was responsible for completing inservice and baseline nondestructive testing work. Planning and organizing work for technicians, maintaining files and being a liaison for customer to management.

Technician - Inservice Inspection Division

Mr. Terning performed nondestructive testing as a Level II in UT, ET, PT, VT and MT.

PROFESSIONAL AFFILIATIONS

ASNT, American Society for Nondestructive Testing - Member

Technical Publications

"Visual Examination of Recording Criteria", authored, for Visual Examination Training Program - Level I EPRI

"Visual Examination of Bolting", authored, for Visual Examination Training Program - Level I EPRI

"Visual Examination of Bolting", authored, for Visual Examination Training Program - Level II EPRI

PERSONAL BACKGROUND

Associate Degree in Nondestructive Testing, Hutchinson Area Vocational Technical Institute - Hutchinson, Minn. - 1973

Resume Date: January 16, 1986

EXPERIENCE RECORD

1985 - ET Analyst - Oconee Unit II, III
UT Level III Reactor Vessel Examinations - Mid-Term Oconee II,III; McGuire I,II; 10-year Exam Reactor Vessel Crystal River Unit III
UT Level III - evaluate indications to ASME Section XI - Acceptance requirements.
R&D in Ultrasonics - Contact vs. Immersion, underclad cracking, IGSCC program; Write procedures

1984 - ET Analyst
- Prairie Island Unit 2
- North Anna Unit 1
- Arkansas Nuclear I Unit 1

UT Level III evaluate indications to ASME Section XI Acceptance Requirements
UT Bolt Load Development of Test Data
R&D in Ultrasonics; Write Procedures

1983 - ET Analyst
Arkansas Nuclear I Unit 1 100% Examination of 2 steam generators
UT Level III - Evaluate indications to ASME Section XI Acceptance requirements
UT Bolt Load Development of Test Data
R&D in Ultrasonics; Write Procedures

1982 - ET Analyst
Oconee Unit II
Arkansas Nuclear I Unit 1
D. C. Cook

Biblis - West Germany
UT Level III - Evaluate indications to ASME Section XI Acceptance requirements
UT Bolt Load Development of Test Data
R&D in Ultrasonics, Penetrants, Visual; Write Procedures

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Mark G. Tierney

LEVEL: IIA

SSN/EMP NO: 041-62-0854

CERTIFICATION DATE: 8-26-85

EXPIRATION DATE: 8-03-87

EDUCATION:

East Catholic High School, Manchester, CT

TRAINING:

Combustion Engineering, Inc. - January 1984 - 40 hours Level I

Combustion Engineering, Inc. - August 1984 - 40 hours Level II

Zetec, Inc. - July 1985 - 40 hours Level IIA (Data Analyst)

EXPERIENCE:

Experienced and certified as an Eddy Current Level I trainee from January 1984 through April 1984, as a Level I from April 1984 through January 1985 and as a Level II from January 22, 1985 through August 26, 1985 with experience in field examinations of steam generators and heat exchanger tubing.

EXAMINATION RESULTS:

General/Basic	90
Specific/Method	83
Practical/Specific	100
Total	273 / 3 = 91 COMPOSITE SCORE

Eddy Current Level IIA (Data Analyst)
Examination Score: 90 %

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Richard S. Mann

POSITION: ET Level III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Mark Tierney SOCIAL SECURITY NO 041-62-0854 DATE SEP 22 1986 (of Examination)

EYE EXAMINATION

	NATURAL			CORRECTED		
NEAR VISION - JAEGER	R #	L #	B #	R # 1	L # 1	B # 1
FAR VISION - SNELLEN	R 20/	L 20/	B 20/	R 20/20	L 20/15	B 20/15

Eye Examination Results Reviewed and Accepted By

COLOR VISION

[✓] ISHIHARA Normal

[ ] WOOL (Holmgren)

ADMINISTERED BY: Virginia Dessureau, RM

PHYSICAL EXAMINATION

HEIGHT 71" WEIGHT 265 BLOOD PRESSURE 116/64

SKIN N EARS N NECK N EYES N

HEAD N HEART N CHEST N LUNGS N

PULMONARY FUNCTION TEST: NORMAL ✓ ABNORMAL

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES + DENTURES 0 OTHER 0

Edw F Murphy

Signature of Medical Examiner

Edward F. Murphy, M.D.

Medical Examiner (Print)

C-E Medical Department
Dept. 6106-1902
1000 Prospect Hill Road
Windsor, CT 06095-0500
(203) 285-3339

Clinic Location

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Darrell D. Weber

LEVEL: III

SSN/EMP NO: 472-70-9568

CERTIFICATION DATE: 1/12/87

EXPIRATION DATE: 12/19/89

EDUCATION:

Eden Valley - Watkins High School, Eden Valley, MN

Hutchinson Area Vocational Technical Institute, Hutchinson, MN - AS in NDT, 1975

TRAINING:

Hutchinson Vocational Tech. - 1975 - 180 hours ET theory and laboratory

Babcock & Wilcox, CO., Lynchburg, VA - July 1981 - 8 hours ET

Babcock & Wilcox, Co., Lynchburg, VA - 1983 - 40 hours ET Data Analysis

Combustion Engineering, Inc. - January 1986 - 32 hours ET Level II

EXPERIENCE:

Certified and experienced at Southwest Research Institute as an ET Level II from October 1976 to October 1977, at Babcock & Wilcox Co. as a Level II from July 1978 to September 1983 and as a Level III from September 1983 to January 1986 and at Combustion Engineering, Inc. as an ET Level IIA from January 1986 to January 1987. Experienced in eddy current examinations and data analysis of steam generator tubing.

EXAMINATION RESULTS:

General/Basic	85.4
Specific/Method	83.1
Practical/Specific	93.9

Total 262.4 / 3 = 87.5 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles M Ashman

POSITION: Manager, Steam Generator Services

C-E 0013106 (8/84)

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Darrell D. Weber

LEVEL: IIA

SSN/EMP NO: 472-70-9568

CERTIFICATION DATE: 1/16/86

EXPIRATION DATE: 1/14/89

EDUCATION:

Eden Valley - Watkins High School, Eden Valley, MN

Hutchinson Area Vocational Technical Institute, Hutchinson, MN
AS in NDE

TRAINING:

Hutchinson Vocational Tech - 1975 - 180 hours ET theory and laboratory.
Babcock & Wilcox Co., Lynchburg, VA - July 1981 - 8 hours ET
Babcock & Wilcox Co., Lynchburg, VA - 1983 - 40 hours ET Data Analysis
Combustion Engineering, Inc. - January 1986 - 32 hours Level II

EXPERIENCE:

Certified at Southwest Research Institute as an ET Level II from October 1976 to October 1977.

Certified at Babcock & Wilcox Co. as a Level II from July 1978 to September 1983 and as a Level III from September 1983 to January 1985 with experience in ET examinations and data analysis of steam generator tubing.

EXAMINATION RESULTS:

General/Basic 82.5
Specific/Method 95
Practical/Specific 97

ET IIA Data Analysis
Test Score 93.6 %

Total 274.5 / 3 = 91.5 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NOAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Weber, Darrell D. SOCIAL SECURITY NO 472-70-9569 DATE 12-12-86 (of Examination)

EYE EXAMINATION

NEAR VISION - Jaeger

				Acceptable	Unacceptable
				(completed by NDE Department)	
NATURAL:	R # 20/70 J7	L # 20/30 J3	B # 20/70 J7	[ ]	[x]
CORRECTED:	R # 20/20 J1	L # 20/20 J1	B # 20/20 J1	[x]	[ ]

FAR VISION - Snellen

NATURAL:	R 20/100	L 20/100	B 20/100	[ ]	[x]
CORRECTED:	R 20/20	L 20/20	B 20/20	[x]	[ ]

COLOR VISION

[X] ISHIHARA ________	[x]	[ ]
[ ] WOOL ________	[ ]	[ ]

EYE EXAMINATION ADMINISTERED BY: Elizabeth W. Cheatham

TITLE: RN COHN

REVIEWED & ACCEPTED BY: Gary Terainy (NDE Department)

TITLE: Level III - UT

PHYSICAL EXAMINATION

HEIGHT ________ WEIGHT ________ BLOOD PRESSURE ________

SKIN ________ EARS ________ NECK ________ EYES ________

HEAD ________ HEART ________ CHEST ________ LUNGS ________

PULMONARY FUNCTION TEST: NORMAL ________ ABNORMAL ________

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES ________ DENTURES ________ OTHER ________

NA

________ Medical Examiner (Print) ________ Signature of Medical Examiner

COMBUSTION ENGINEERING

RESUME OF DARRELL D. WEBER
PRINCIPAL FIELD SERVICE ENGINEER

Darrell D. Weber
Signature

SUMMARY OF QUALIFICATIONS

Mr. Darrell D. Weber is responsible for supervision of the ET program in the Chattanooga Regional Office. He has eleven years of experience in performance of ET, UT, PT, MT and VT examinations in nuclear power plants. He has performed extensive Eddy Current Data analysis of steam generator tubing.

PROFESSIONAL EXPERIENCE

Combustion Engineering, Inc. January 1986 to Present
Examination Services and Products

Principal Field Service Engineer, January 86 to present

Mr. Weber is responsible for Eddy Current examinations in the Chattanooga Regional office. He will also be performing NDT examinations in other disciplines on an as required basis.

Babcock & Wilcox Co., 1978 to 1986

3/85 - 1/86 - NDE Service Engineer

Mr. Weber was responsible for Eddy Current, profilometry and ultrasonic data analysis, procedure and report writing, R&D, training and field testing of new techniques. Mr. Weber also has been responsible for customer interfacing on technical issues. Certified Level III ET and Level II UT, PT, MT, and VT.

11/83 - 3/85 - Associate Engineer - Same responsibilities as above.

5/81 - 11/83 - Associate Engineer - Same responsibilities as above.

1/79 - 5/81 - Assistant Group Leader

Mr. Weber was responsible for scheduling of supervisor of NDT ISI work activities. Coordination of ISI support services and ET and UT data analysis. He also received numerious NDE training classes.

7/78 - 1/79 - NDT Technician

As an NDT Technician Mr. Weber was responsible for conducting both manual and remote NDT examinations on baselines and ISI's.

2/78 - 7/78 - Unemployed by choice

I&M Electric Company, Donald C. Cook Nuclear Plant 9/77 - 2/78

Quality Control Technician

Mr. Weber was responsible for supervision of the ET program, procedure and report writing, training of ET personnel and ET Data analysis. He was also responsible for the inspections of new fuel assemblies.

Southwest Research Institute, ISI Field Operations 5/75 - 9/77

1/77 to 9/77 Assistant Team Leader

Mr. Weber was responsible for scheduling and supervision of NDT ISI activities. Coordination of ISI support services and UT data analysis. He also received numerous NDE training classes. Certified Level II, UT, PT MT, ET and VT.

5/75 - 1/77 NDT Technician

As an NDT Technician Mr. Weber was responsible for conducting both manual and remote NDT examinations on baselines and ISI's.

PERSONAL BACKGROUND

Eden Valley - Watkin High School - Graduated 1973
Hutchinson Area Vo-Tech School - Graduated 1975

EXPERIENCE RECORD

1979 - 1986 - ET Data Analysis at least once at the following sites:

Oconee I, II, III	Arkansas Nuclear One I
McGuire I, II	Biblis Block A, B
Catawba I	Grohnde Block A
Crystal River 3	Conn-Yankee I
Davis Besse I	North Anna II
Rancho Seco I	Prairie Island II
Midland I, II	South Texas Project I

1975 - Performed examination in at least one NDT method at the following plants.

Oconee I, II, III	Arkansas Nuclear One I
McGuire I, II	Lacrosse
Catawba I, II	Palisades
San Onofre I	Big Rock Point
Davis Besse I	Pilgrim
Rancho Seco I	Commanche Peak I
Midland I, II	Salem I, II
Calvert Cliffs I, II	D. C. Cook I, II
St. Lucie I	Farley I
Brunswick I, II	Hatch I, II
Peach Bottom II, III	H. B. Robinson II

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD EDDY CURRENT

NAME: Roland M. Witt, Jr.

LEVEL: II

SSN/EMP NO: 234-56-6289

CERTIFICATION DATE: January 16, 1986

EXPIRATION DATE: January 14, 1989

EDUCATION:

Woodrow Wilson High School, Beckley, WV
Lynchburg College, Lynchburg, VA - BA Degree

TRAINING:

Babcock & Wilcox co., Lynchburg, VA - January 1984 - 40 hours Level I
Combustion Engineering, Inc. - January 1986 - 32 hours Level II

EXPERIENCE:

Certified at Babcock & Wilcox Co. as a Level I trainee from February 1984 to May 1984 and as a Level I from May 1984 to October 1985 with experience in ET examinations of steam generator tubing.

EXAMINATION RESULTS:

General/Basic	80
Specific/Method	77.5
Practical/Specific	88

Total 245.5 / 3 = 81.8 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above examination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 1.

CERTIFIED BY: Charles Ashman

POSITION: ET Level III

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP
000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

CERTIFICATION FOR FIELD SERVICES ACTIVITIES

NAME Witt Roland M Jr. SOCIAL SECURITY NO 234-56-6289 DATE 10-23-86 (of Examination)

EYE EXAMINATION

				Acceptable (completed by NDE Department)	Unacceptable
NEAR VISION - Jaeger					
NATURAL:	R # 20/25 J2	L # 20/20 J1	B # 20/25 J2	[X]	[ ]
CORRECTED:	R # 20/20 J1	L # 20/20 J1	B # 20/20 J1	[x]	[ ]
FAR VISION - Snellen					
NATURAL:	R 20/29	L 20/40	B 20/25	[X]	[ ]
CORRECTED:	R 20/17	L 20/17	B 20/17	[x]	[ ]
COLOR VISION					
[x] ISHIHARA				[x]	[ ]
[ ] WOOL				[ ]	[ ]

EYE EXAMINATION ADMINISTERED BY: Elizabeth B Cheatham

TITLE: RN COHN.

REVIEWED & ACCEPTED BY: Darrell D. Weber (NDE Department)

TITLE: Level III ET

PHYSICAL EXAMINATION

HEIGHT ______ WEIGHT ______ BLOOD PRESSURE ______

SKIN ______ EARS ______ NECK ______ EYES ______

HEAD ______ HEART ______ CHEST ______ LUNGS ______

PULMONARY FUNCTION TEST: NORMAL ______ ABNORMAL ______

This is to certify that this individual has been examined and no evidence has been found of any physical condition which might be aggravated by, or attributed to, occupational exposure to ionizing radiation. This individual has no history or evidence of previous radiation injury and has no history of exceeding the limits of 10 CFR 20.101 and is found to be physically qualified to perform duties involving occupational exposures to ionizing radiation.

This examination has also revealed no indications of aberrant behavior.

This individual has been examined in accordance with NUREG-0041 Section 7.4 and no evidence has been found of any physical or mental conditions in which the use of respiratory protection devices are considered contraindicated.

NA

THE ABOVE INDIVIDUAL IS / IS NOT QUALIFIED FOR WORK INVOLVING RESPIRATORY PROTECTION DEVICES:

LIMITATIONS:

CORRECTIVE LENSES ______ DENTURES ______ OTHER ______

______ Medical Examiner (Print) ______ Signature of Medical Examiner

Roy Brown
for your file
Ed Fr[illegible]

Interoffice Correspondence

POWER SYSTEMS

QA-87-241

TO: Distribution

APPROVED SUPPLIERS

D.J. Paro
Dept. 9515-GC26

April 10, 1987

The following supplier will be added to our Approved Suppliers List (ASL) during the next revision:

Duke Power

In the interim period, they are considered added to the ASL based on your receiving a copy of the enclosed completed Supplier Evaluation forms. The supplier may be used for the listed product or service until their approval expires.

If you have any questions, please call me at X9817.

D.J. Paro

D.J. Paro

DJP:jm

RECEIVED
APR 16 1987
R. N. BROWN

Rev. 10-30-86

SUPPLIER EVALUATION

Supplier: Duke Power

Address: 422 South Church Street

City: Charlotte State: NC Zip: 28242

Area Code: 704 Telephone No.: 373-4011

Contact: Larry Davison Title: QA Manager

ASME Cert.: ------ No.: ------ Expiration: -----

Date of Survey: 3/12/87 Auditor(s): D.A. Campbell

Topical Report Duke-1-A, Amendment 10

The supplier's QA Program has been evaluated and the following elements rated as Acceptable (A), Unacceptable (U) or Not Applicable (N/A).

1.	Organization	(A)	10.	Inspection	(N/A)
2.	QA Program	(A)	11.	Test Control	(N/A)
3.	Design Control	(N/A)	12.	Control of Measuring and Test Equipment	(A)
.	Procurement Document Control	(A)	13.	Handling, Storage and Shipping	(N/A)
5.	Instructions, Procedures and Drawings	(A)	14.	Inspection and Test Status	(A)
6.	Document Control	(A)	15.	Control of Nonconforming Items	(A)
7.	Control of Purchased Items and Services	(A)	16.	Corrective Action	(A)
8.	Identification and Control of Items	(A)	17.	QA Records	(A)
9.	Control of Processes	(A)	18.	Audits	(A)

The vendor is approved (X) based on ASME Cert. ( ) disapproved ( )

Approval Expires: 3/12/88 Product or Service: Supplier of NDE Personnel, equipment and calibration services

[signature]

Quality Assurance

26251 (R1-85)

FORM NDE-B | REV. 3

DUKE POWER COMPANY

CERTIFICATION OF NONDESTRUCTIVE EXAMINATION PERSONNEL

Name: Michael W. Brown

Method: Eddy Current

Level: II

Limitations (If Any) (If None So State): None

Education and experience Background: Graduated from A. L. Brown High School Kannapolis, N.C. 1977. Promoted to Inspector Learner 7-24-78. Certified Level II MT 3-6-79; Level II PT, 3-5-79; Level II RT-81; Fillet Weld Inspector Level I, 4-17-80; Eddy Current Level I, 8-21-85.

ON THE JOB TRAINING

Date Started 8-21-85 Date Completed 4-21-86

EYE EXAMINATION

JAEGER (J-1) Date 1-15-86

SUCCESSFULLY COMPLETED CLASSROOM TRAINING	Name of Course	Hours	Date Completed
	Eddy Current Level II	40	4-18-86

Required Length of on the Job Training See Attachment

Additional Required Qualifications Eddy Current training was conducted by Babcock & Wilcox (Lynchburg, VA.) while under contract with Duke Power.

Examinations:

General Grade 92.5

Specific Grade 93.7

Practical Grade 100

Composite Grade 96.5

NDE PROCEDURES QUALIFIED TO:

PROJECT QA MANAGER/SENIOR QA ENGINEER J. W. Barbour DATE: 4/23/86

LEVEL III EXAMINER: J. E. Lavender DATE: 4/26/86

☒ CERTIFICATION
☐ RECERTIFICATION

CERTIFIED BY: Valerie S. Spearman

CERTIFICATION PERIOD: 4/25/86 4/25/89

26089 (R4-84)

FORM A-1408	REVISION 1

NAME Michael W. Brown

23713 5371

EYE EXAMINATION

Both eyes = 14/14

Near Vision Jaeger (J-1) or Equivalent		Uncorrected	Corrected	Unsat
	Left Eye	14/18		✓
	Right Eye	14/14		

Examiner Linda B. Barker, RN Date 6-11-86

Position/Title

Far Vision 20/30 or Better		Uncorrected	Corrected	Unsat
	Left Eye	20/20		
	Right Eye	20/20		

Examiner LB Date 6-11-86

Position/Title

Color Vision	Sat	Unsat
	✓	

Examiner LB Date 6-11-86

Position/Title

Comments:

26251 (R1-86)

FORM [illegible]E-B | REV. 3

DUKE POWER COMPANY
CERTIFICATION OF NONDESTRUCTIVE EXAMINATION PERSONNEL

Name: Michael B. Teague

Method: Eddy Current

Level: II

Limitations (If Any) (If None So State): None

Education and experience Background: Graduated from Gaffney High School 1969. Employed at Cherokee January 79 - Civil Group. Certified Mechanical Level II, 4/5/85; Eddy Current Level 1, 8-21-85.

ON THE JOB TRAINING	EYE EXAMINATION
Date Started 8-21-85 Date Completed 4-21-86	JAEGER (J-1) Date 1-15-86

SUCCESSFULLY COMPLETED CLASSROOM TRAINING	Name of Course	Hours	Date Completed
	Eddy Current Level II	40	4-18-86

Required Length of on the Job Training: See Attachment

Additional Required Qualifications: Eddy Current training conducted by Babcock & Wilcox (Lynchburg, VA.) while under contract with Duke Power.

Examinations:

General Grade 90

Specific Grade 90.3

Practical Grade 97.5

Composite Grade 93.8

NDE PROCEDURES QUALIFIED TO:

NDE-700

OCB-8

PROJECT QA MANAGER/SENIOR QA ENGINEER: J Barbour DATE: 4/23/86

LEVEL III EXAMINER: J [illegible] DATE: 4/29/86

☒ CERTIFICATION
☐ RECERTIFICATION

CERTIFIED BY: Valeria D Spearman 4/29/86

CERTIFICATION PERIOD: 4/29/86 to 4/29/89

26089 (R4-84)

FORM QA-140B	REVISION 1

NAME Michael Teague
247-90-7002

EYE EXAMINATION

Near Vision
Jaeger (J-1)
or Equivalent

	Uncorrected	Corrected	Unsat
Left Eye	14/16		
Right Eye	14/16		

Examiner J.M. Alexander, RN Date 12-12-86

Position/Title RN. COHN

Far Vision
20/30 or Better

	Uncorrected	Corrected	Unsat
Left Eye	20/22		
Right Eye	20/25		

Examiner J.M. Alexander Date 12-12-86

Position/Title RN COHN

Color Vision

Sat	Unsat
✓	

Examiner J.M. Alexander, RN Date 12-12-86

Position/Title COHN

Comments:

Interoffice Correspondence

POWER SYSTEMS

TO: Roy N. Brown

DATE: 4/21/87

FROM: Darrell D. Weber

LOCATION: Examination Services & Products
Southeast Regional Office
ES-C-87-059

SUBJECT: Eddy Current Task
H.B. Robinson

This letter is to document the following personnel as training instructors for eddy current platform workers. The training will cover installation of nozzle covers, templates and manipulators (SM-4, SM-10 and GENESIS), also, probe driver operation and maintenance. A basic explanation of eddy current testing will also be included.

D. Weber
T. Bipes
J. Reich
B. McKee

These people have had sufficient mockup training and actual experience in performing this work to provide quality instructions to other personnel for platform work.

Darrell D. Weber

Darrell D. Weber
Eddy Current, Level III
Examination Services & Products

DDW/bsc

cc: C. Ashman
G. Bloomquist

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Bruce M. Atkinson SS/EMP NO.: 087-58-2388

CERTIFICATION DATE: 5/4/87 EXPIRATION DATE: 5/4/88

EDUCATION: Ward Melville H.S.
U.S. Naval Nuclear Power Program

TRAINING: Eddy Current Level I & II Class. Combustion Engineering.

EXPERIENCE:
Multiple Site Experience in Above Skills since 6/85.

EXAMINATION RESULTS:
Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E Reich Jr.
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Michael W. Brown SS/EMP NO.: 237-13-5371

CERTIFICATION DATE: 5-4-87 EXPIRATION DATE: 5-3-88

EDUCATION: High school
9 1/2 Years Q.A. Inspector with Duke Power Co.
Certified MT Level II, PT Level II
RT Level II, ECT Level II
Welding Level I, Mechanical Level I
Eletrical Level I

TRAINING:
Eddy Current Training Level I and II

EXPERIENCE:
Multiple site experience @ Oconee, McGuire and Catawba

EXAMINATION RESULTS:

Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E. [signature]
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK: Eddy current Platform Worker

NAME: Roy N Brown

SS/EMP NO.: 353-38-9360

CERTIFICATION DATE: 5-3-87

EXPIRATION DATE: 5-3-88

EDUCATION: High School Graduate

TRAINING: Training in all phases of NDE
Previous platform training for steam generator work at ABR in 1984
Remote manipulator installation & set-up
Manual plugging platform work

EXPERIENCE: Various nuclear plants performing Eddy current set up as well as Reactor vessel Examination Remote tooling set up

EXAMINATION RESULTS: Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E Reid Jr.
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK: ECT PLATFORM WORKER

NAME: GEORGE B. CALHOUN SS/EMP NO.: 409-76-5654

CERTIFICATION DATE: 1-19-87 EXPIRATION DATE: 1/18/88

EDUCATION: HIGH SCHOOL
3 1/2 YRS. BUSINESS ADMIN. AT UTC.

TRAINING: TUBE (GENESIS & MANUAL) PLUGGING, TUBE PLUG (MANUAL + GENESIS) REMOVAL, SLUDGE LANCING, REACTOR COOLANT PUMP REPAIR, TUB PULL WITH GENESIS

EXPERIENCE: AS LISTED ABOVE AT VARIOUS NUCLEAR PLANTS

EXAMINATION RESULTS:

Proficiency Demonstrated in Mockup

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: Darrell D. Weber
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Richard W. Hancock Jr. SS/EMP NO.: 048-60-2273

CERTIFICATION DATE: 5-4-87 EXPIRATION DATE: 5-4-88

EDUCATION: George J Penney High School
University of Connecticut
B.S. Mechanical Engineering/Materials Engineering
MAY 1984

TRAINING: ECT TRAINING
LEVEL II ECT

EXPERIENCE: ECT PLATFORM WORKER SINCE 1985
OPERATOR EXPERIENCE

EXAMINATION RESULTS:

Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E Reid Jr.
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: William E. Irwin SS/EMP NO.: 415-78-6670

CERTIFICATION DATE: 1-20-87 EXPIRATION DATE: ~~1-20-88~~ 1/20/88
1-19-88

EDUCATION: B.S. in Engr. Management from University of Tennessee at Chattanooga, Aug. 1980.

TRAINING: Eddy Current Level I Oct 1986 Chatt. Outage Services.
Genesis Tube Plugging and Pulling.
Manual Tube Plugging and Pulling
Sludge Lancing

EXPERIENCE:

Multiple Site Experience in above Skills since Sept 1983.

EXAMINATION RESULTS:

Proficiency Demonstrated in Mockup at TVA Sequoyah Plant 1-20-87.

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: Darrell D. Weber
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK EDDY CURRENT PLATFORM WORKER

NAME: JERRY DOUGLAS KEY

SS/EMP NO.: 253-80-4471

CERTIFICATION DATE: 2/10/87

EXPIRATION DATE: 2/9/88

EDUCATION: ROSSVILLE HIGH, ROSSVILLE GA.
BSE UTC (UNIV. OF TENN. AT CHATT.)

TRAINING:
GENISIS TUBE PLUG
MANUAL PLUGGING, SLEEVING

EXPERIENCE:
- ST. LUCIE FP&L 1985 TUBE PLUG
- SEQUOYAH TVA 1985 TUBE PLUG

EXAMINATION RESULTS:

PROFICIENCY DEMONSTRATED IN MOCK-UP

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: Silvestro A. Arcosta
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Bryant McKee SS/EMP NO.: 413-08-2318

CERTIFICATION DATE: 5/4/87 EXPIRATION DATE: 5/4/88

EDUCATION:

B.S Mechanical Engineering
Tennessee, State University 5/85

TRAINING:

ECT Traning

EXPERIENCE:

Multiple site Experience in above skills since 7/85

EXAMINATION RESULTS:

Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E. Reich Jr.
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: T. Southerland SS/EMP NO.: 252-78-5163

CERTIFICATION DATE: 4/29/86 EXPIRATION DATE: 4/29/87

EDUCATION: High School, C.E. Machinist Apprenticeship

TRAINING: E.D.M. Plug Removal, Tube Pulling, Plugging, Torque Trace Analysis

EXPERIENCE: Tube Plugging, Nozzle Dam Installation, Tube Pulling, Pressurizer Heater Repair

EXAMINATION RESULTS:

Proficiency Demonstrated in Mockup

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: Darrell D. [signature]
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Michael B. Teague SS/EMP NO.: 247-90-7072

CERTIFICATION DATE: 5/4/87 EXPIRATION DATE: 5/3/88

EDUCATION: High School Graduate
2 years College

TRAINING: Eddy Current Tng Level I & Level II

EXPERIENCE: Multiple site experience @ Oconee, McGuire & Catawba for Duke Power Co.

EXAMINATION RESULTS:

Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E Reid Jr
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current PLATFORM Worker

NAME: Gary Terning SS/EMP NO.: 471-66-5028/50628

CERTIFICATION DATE: 5/5/87 EXPIRATION DATE: 5/4/88

EDUCATION: HighSchool - GRAD.
Hutchinson AREA Vocational Technical Institute - GRAD.

TRAINING: SM-10 & Nozzle Cover Installation
Probe Driver Set up
ET Level IIA EPRI IGSCC Detection Manual
UT Level III " " Sizing Manual
" " Overlay Manual
" " Detection Auto.

EXPERIENCE:
Oconee I, II, III
ANO-1
SMUD
FPC CR-3

EXAMINATION RESULTS:
Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E Reich
INSTRUCTOR

COMBUSTION ENGINEERING

CERTIFICATION RECORD

TASK Eddy Current Platform Worker

NAME: Roland M Witt, Jr. SS/EMP NO.: 234-56-6289

CERTIFICATION DATE: 5-3-87 EXPIRATION DATE: 5-3-88

EDUCATION: Coyne Radio & Television - Diploma
Lynchburg College - Degree

TRAINING: EDM-100 Zetec
Eddy Current II

EXPERIENCE: 3 1/2 YEARS Eddy Current Equipment Repair, Calibration, Data Aqusition

EXAMINATION RESULTS:

Passed

The above named individual has completed the qualification requirements for certification for the above named task.

CERTIFIED BY: John E [illegible] Jr.
INSTRUCTOR

CERTIFICATION PROGRAM FOR NONDESTRUCTIVE EXAMINATION PERSONNEL

1.0 PURPOSE

To delineate the technical requirements for qualification and certification of Levels I, II and III nondestructive examination (NDE) personnel.

2.0 REFERENCES

2.1 ASME Code, Sections I, III, V, VIII, XI and ANSI B31.1

2.2 SNT-TC-1A, 1980 or other applicable edition

3.0 DEFINITIONS

3.1 Activity or Operation - Any part of a technique including but not limited to, film grading, ultrasonic thickness examination, application of penetrant materials, evaluation of examination results, etc.

3.2 Certification - Written testimony of qualification.

3.3 Certifying Agency - The employer of the personnel being certified.

3.4 Employer - The corporate, private or public entity, which employs personnel for wages, salary, fees, or other considerations.

3.5 Method - The utilization of a physical principle in NDE in its entirety, i.e., radiography, ultrasonics, liquid penetrant, magnetic particle, eddy current, leak testing, acoustic emission, visual, etc.

3.6 Qualification - The demonstrated skill, training, knowledge and experience required for personnel to properly perform the duties of a specific job.

3.7 Surveillance - The act of monitoring or observing to verify an item or activity conforms to specified requirements.

3.8 Technique - A specific way of utilizing a particular NDE method, i.e., gamma radiography, contact ultrasonics, solvent removable liquid penetrant examination, etc.

3.9 Training - The program developed to impart the knowledge and skills necessary for qualification.

4.0 LEVELS OF QUALIFICATION

4.1 Trainee - in the process of being qualified and certified to at least NDE Level I, an individual shall be considered a trainee. A trainee shall work with a certified individual and shall not independently conduct any test, interpret or evaluate any results of a test, or write a report of test results.

4.2 Level I - shall be qualified to properly perform specific calibrations, specific tests and specific evaluations for acceptance or rejection according to written instructions, and to record the results. He shall receive the necessary guidance or supervision from a certified Level II or III in the same method. Those individuals performing work governed by Section XI shall not independently evaluate or accept the results of a nondestructive examination.

4.3 Level I Limited - shall be qualified to perform only a specific activity or operation within a particular technique as shown in Table I.

4.4 Level II - shall be qualified to set up and calibrate equipment, and to interpret and evaluate test results with respect to applicable codes, standards and specifications. He shall be able to prepare written instructions and to organize and report nondestructive testing investigations. He shall be familiar with the scope and limitations of the method and shall exercise assigned responsibility for on-the-job training and guidance of trainees and Level I personnel.

4.5 Level II A - (Eddy Current Data Analyst for nonferromagnetic steam generator heat exchanger tubing) - satisfies all the requirements for an Eddy Current Level II and in addition, is capable of interpreting and evaluating data taken from eddy current examinations of nonferromagnetic steam generator heat exchanger tubing.

4.6 Level II Limited - shall be qualified to perform examinations to a specific technique, activity or operation within a method. (See Table I).

4.7 Level III - shall be capable of and responsible for establishing techniques and procedures, interpreting codes, standards and specifications, and designating the particular test method and technique to be used. The individual shall be capable of evaluating results in terms of existing codes, standards, specifications and shall have sufficient practical background in applicable materials, fabrication or product technology to establish techniques and acceptance criteria where none are otherwise available. The individual shall be responsible for the training and qualification examination of NDE Levels I, II and III candidates. The actual administration and grading of examinations may be delegated in writing, to a duly selected representative of the Level III.

4.8 Certifications to the above levels of qualifications issued to NDE personnel prior to adoption of this written practice and based on an approved Power Systems Group written practice shall be considered valid for the remainder of the individual's certification period. Future certifications and recertifications shall be in accordance with this written practice.

5.0 EDUCATION, TRAINING AND EXPERIENCE

5.1 Level I and II shall satisfy the education, training and experience requirements of Table II, as modified below.

5.1.1 For a limited certification, work time experience and classroom training may be reduced for the technique, activity or operation being performed as shown in Table I.

5.1.2 Work time experience gained while functioning as part of the office NDE departments shall be considered NDE experience.

5.1.3 Limitations for individual's certified in accordance with Paragraph 5.1.1 shall be noted on their certification papers.

5.2 Level III's shall satisfy one of the following education and experience criteria:

5.2.1 Graduate of four (4) year accredited engineering or science college or university with a degree in engineering or science plus one (1) year's experience in an assignment comparable to that of a Level II in the applicable method.

5.2.2 Graduate of two (2) year curriculum in nondestructive testing plus one (1) year's experience in an assignment comparable to that of a Level II in the applicable method.

5.2.3 Completion, with a passing grade, of at least two years of engineering or science study at an accredited university, college, or technical school plus two (2) year's experience comparable to that of a Level II in the applicable method.

5.2.4 Four (4) years experience comparable to that of a Level II in the applicable method.

5.3 Organized training shall be completed for all individuals seeking unlimited certification (see Table II, for Levels I and II). For Level III, the training hours shall consist of at least the combined required hours for Levels I and II in the applicable method except when the candidate has been qualified or has held a position certified to that of a Level II, in which case, the requirement for training may be considered met.

5.4 To assure that an individual has assimilated the training material presented, he shall satisfy the examination requirements of Paragraph 6.0, as applicable.

5.5 Records used to substantiate education, training and experience shall be identified and maintained in accordance with Paragraph 9.0.

6.0 EXAMINATIONS

6.1 The following paragraphs describe the examinations for each qualification level. The written examinations shall be administered without access to reference material (closed book) except that necessary data such as graphs, tables, specifications, procedures and codes may be provided.

6.1.1 Qualification examinations for Levels I and II shall consist of a written General Examination, a written Specific Examination and a documented Practical Examination.

6.1.1.1 The General Examination shall cover the basic test principles relative to the applicable test method or technique. The minimum number of questions shall be as follows:

METHOD	Level I	Level I Limited	Level II	Level II Limited
Radiography	40	20	40	30
Magnetic Particle	30	15	30	20
Ultrasonics	40	20	40	30
Liquid Penetrant	30	15	30	20
Eddy Current	30	20	30	20
Leak Testing	20	10	20	10
Acoustic Emission	40	20	40	20
Visual	20	10	30	20

6.1.1.2 The Specific Examination shall cover the equipment and operating procedures relative to the applicable test method or technique. It shall also cover specifications, codes and acceptance criteria used in the testing procedures. The minimum number of questions shall be as follows:

METHOD	Level I	Level I Limited	Level II	Level II Limited
Radiography	20	10	20	10
Magnetic Particle	20	10	15	10
Ultrasonics	20	10	20	10
Liquid Penetrant	20	10	15	10
Eddy Current	15	10	15	10
Leak Testing	20	10	20	10
1. Bubble Test	15	10	15	10
2. Absolute Pressure Test (Pressure Change)	15	10	15	10
3. Halogen Diode Leak Test	15	10	15	10
4. Mass Spectrometer Leak Test	20	10	40	20
Acoustic Emission	20	10	20	10
Visual	20	10	15	10

6.1.1.3 The Practical Examination shall demonstrate to the satisfaction of the examiner that the candidate is familiar with and can operate (except surveillance, see Paragraph D below) the necessary test equipment and can interpret and record the resultant information from at least one (1) test specimen. Additional requirements are as follows:

A. At least ten different checkpoints requiring an understanding of the test variables and procedural requirements shall be included in the examination.

B. The description of the specimen(s), the test procedure including checkpoints, and the results of the examination shall be documented.

C. Level I individuals being certified in accordance with Section XI are not required to interpret or evaluate results.

D. Surveillance personnel shall have a Practical Examination that shall demonstrate to the satisfaction of the examiner that the candidate is familiar with the necessary equipment (except radiography) and can interpret and record the resultant information from at least one (1) test specimen. The requirements listed in Paragraphs A, B and C above shall also apply.

6.1.2 An Eddy Current Level IIA shall satisfy all of the requirements for an Eddy Current Level II and, in addition, demonstrate proficiency in evaluating data taken from actual eddy current inspections. The evaluation of data shall be done with regard to the applicable acceptance criteria. At least fifty (50) different items of data shall be included in this examination.

6.1.3 Qualification examinations for Level III certification shall consist of written Basic, Method and Specific Examinations.

6.1.3.1 The Basic Examination (written) shall consist of:

A. At least twenty (20) questions relating to understanding the SNT-TC-1A document,

B. At least fifteen (15) questions relating to applicable materials, fabrication and product technology, and

C. At least fifteen (15) questions which are selected from, or are similar to, Level II questions for other appropriate NDE methods.

The Basic Examination is required only once when examinations for more than one method are taken.

6.1.3.2 The Method Examination (written) shall be administered for each method for which certification is sought and shall consist of:

A. At least thirty (30) questions relating to fundamentals and principles which are selected from, or are similar to, the published ASNT Level III questions for each method, and

B. At least fifteen (15) questions relating to application and establishment of techniques and procedures which are selected from, or similar to, the published ASNT Level III questions for each method, and

C. At least twenty (20) questions relating to capability for interpreting codes, standards and specifications relating to the method.

6.1.3.3 The Specific Examination (written) shall be administered for each method and shall consist of:

A. At least twenty (20) questions relating to specifications, equipment, techniques and procedures applicable to products and methods utilized by the Combustion Engineering NDE departments and administration of the NDE written practice.

6.1.4 The employer, the responsible Level III or his designee shall be responsible for conducting and grading the examinations.

6.1.5 A composite passing grade (average of all tests) of 80% or greater is required for examinations administered for qualification. In addition, each individual passing grade (General, Specific, etc.) shall be 70% or greater.

6.1.6 If the examinations are administered and graded by an outside agency which issues a pass/fail grade only, a grade value of 80% shall be assigned for each examination administered.

6.1.7 When an outside agency other than ASNT or EPRI is used for qualification services, those services rendered shall be in accordance with this written practice. Combustion Engineering shall retain responsibility for the adequacy of the program of the outside agency.

6.1.8 Those failing to attain the required grades shall wait at least thirty (30) days or show evidence of having received additional training, as determined by the certifying individual, prior to re-examination.

6.1.9 All levels of NDE personnel shall successfully complete an eye examination to assure natural or corrected near vision acuity in at least one eye capable of reading a minimum of Jaeger Number 1 letters on a standard Jaeger test chart or a near distance test pattern equivalent to a Snellen fraction of 20/20. In addition, when required by Code, contract, specification or standard, personnel shall have natural or corrected far vision acuity equivalent to a Snellen fraction of 20/30.

NDE personnel shall also pass an Ishihara or equivalent color vision examination to show ability to distinguish and differentiate contrasts between colors used in the method for which qualified. When personnel are unable to pass this examination, they shall satisfactorily show ability to distinguish and differentiate contrast between colors as part of their NDE Practical Examination.

6.1.9.1 The eye examination shall be given to all NDE personnel on an annual basis.

6.1.9.2 Eye examinations shall be performed by a Level III, his designate, or medical personnel.

6.1.9.3 The results of the examination shall be recorded on the Eye Examination Record as shown on Attachment I or equivalent.

7.0 CERTIFICATION

7.1 A Level III shall certify Level I and II personnel. Certification of Level III personnel shall be by the responsible department head. All certifications shall be documented on a Certification Record as shown on Attachment II.

7.2 The certification period for Levels I, II and III personnel shall be three (3) years.

7.3 Certification of all levels of NDE personnel shall be based on successful completion of the education, training and experience requirements of Paragraph 5.0 and the required examinations of Paragraph 6.0.

7.3.1 The maximum duration of interrupted service for each NDE method or technique shall be one (1) year. Where evidence of use of the method or technique can not be shown, the individual shall successfully complete the examinations deemed necessary by the responsible Level III or department head prior to reactivating the certification.

7.4 New employees having held valid NDE certifications with their former employer may be certified to their former NDE levels provided that:

7.4.1 The employee provides proof of prior certifications, or

7.4.2 The former employer provides documentation substantiating the training and experience qualification obtained by the employee. The qualifications shall meet the requirements of SNT-TC-1A and this written practice.

NOTE: Every attempt shall be made to procure the documentation that substantiates the certification, however

a. When the former employer will not verify training and experience time, an individual's personal history may be acceptable documentation.

b. The employee's former training and experience may be verified by telephone. A record of telephone conversation shall be acceptable documentation of an individual's prior training and/or experience when documentation is otherwise unavailable.

7.4.3 The employee was working in the test method within six months of termination and is certified within six months after termination.

7.4.3.1 When limits are in excess of those specified above, the employee shall receive additional training, as determined by the certifying individual, prior to certification.

7.4.4 The employee successfully completes the examination requirements, as applicable, of Paragraph 6.0.

7.5 Certification shall be revoked by the responsible Level III or department head by evidence of unsatisfactory performance or termination of employment. Individuals who are separated shall not be considered terminated provided they return to work within one year.

8.0 RECERTIFICATION

8.1 Levels I, II and III personnel shall be recertified at least every three (3) years by either evidence of continued satisfactory performance or re-examination based on the governing Code and contract requirements.

8.1.1 When a Level III is recertified by continued satisfactory performance, the recertification shall be based on documented evidence performing Level III duties such as NDE training, procedure development, certification of Level I's and Level II's, test development, etc.

9.0 RECORDS

9.1 The qualification records of the certified individual shall be maintained and shall include the following:

9.1.1 Name of the certified individual.

9.1.2 Level of certification and test method.

9.1.3 Educational background and experience of the certified individual.

9.1.4 Statement indicating satisfactory completion of training in accordance with this procedure.

9.1.5 Results of the physical examination prescribed in Paragraph 6.1.9.

9.1.6 Current examination copy(s) or evidence of successful completion of the examinations.

9.1.7 Other suitable evidence of satisfactory qualifications when such qualifications are used in lieu of examinations.

9.1.8 Composite grade(s) or suitable evidence of grades.

9.1.9 Date of certification and/or recertification and the date of assignment to NDT.

9.1.10 Signature of employer's designated representative.

9.2 Records shall be maintained by the responsible group or department.

TABLE I

TRAINING AND EXPERIENCE FOR LIMITED CERTIFICATIONS

TECHNIQUE/ACTIVITY	METHOD	TRAINING (HRS) I	TRAINING (HRS) II	EXPERIENCE (HRS) I	EXPERIENCE (HRS) II
Isotope Radiography	RT	N/A	40	N/A	720
Film Evaluation	RT	N/A	20	N/A	520
Data Taking/Equipment Operation	RT	20	N/A	0	N/A
Surveillance	RT	N/A	40	2 surveillance trips	
Coil Technique	MT	2	4	40	260
Yoke Technique	MT	3	4	40	260
Prod Technique	MT	3	4	40	260
Evaluation	MT	N/A	4	N/A	130
Data Taking/Equipment Operation	MT	12	N/A	0	N/A
Surveillance	MT	N/A	10	1 surveillance trip	
Thickness Readings	UT	10	N/A	240	N/A
Contact Testing	UT	N/A	20	N/A	720
Evaluation	UT	N/A	20	N/A	520
Data Taking/Equipment Operation	UT	40	N/A	0	N/A
Surveillance	UT	N/A	40	2 surveillance trips	
Evaluation	PT	N/A	4	N/A	130
Solvent Removable	PT	N/A	4	N/A	130
Data Taking/Equipment Operation	PT	4	N/A	0	N/A
Surveillance	PT	N/A	6	1 surveillance trip	
Weldments	VT	1	2	100	175
VT-1	VT	1	2	100	175
Data Taking/Equipment Operation	VT	2	N/A	0	N/A
Surveillance	VT	N/A	6	2 surveillance trips	
Data Taking/Equipment Operation	ET	12	N/A	0	N/A
Surveillance	ET	N/A	12	1 surveillance trip	

1. Work experience in RT, MT, UT, PT, ET or other NDE related methods such as Dimensional, Mechanical, Optical, etc. shall be applied to not more than 75% of the work time experience required for VT.

2. Training received in the course of qualifying to any NDE Level II, other than VT, will be considered to have met 75% of the training required for VT of weldments and/or VT-1.

3. Personnel holding limited certifications in data taking/NDE data analysis equipment operation shall work with a certified (unlimited) individual and shall not independently conduct any test, interpret or evaluate any results of a test, or write a report of test results.

4. The above hours are based on a high school graduate or equivalent. For other education levels, the hours will be adjusted in a ratio based upon the hours shown in Table II.

5. It is not intended by this written practice that the sum of the hours listed for each method above is required for unlimited certification. See Table II for unlimited certification requirements.

6. For activities for which limited certification training and experience hours are not included in the table above, the responsible Level III shall establish and document the required training and experience hours prior to initiation of qualification and certification activities.

TABLE II

MINIMUM TRAINING AND EXPERIENCE

Examination Method	RT		MT		UT		PT		ET		VT		AE		LT							
Level	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I				II			
Technique															BT	PCMT	HDLT	MSLT	BT	PCMT	HDLT	MSLT
	TRAINING (HOURS)																					
Completion with a passing grade of at least 2 years of engineering or science study in a university, college, or technical school	12	40	8	4	24	40	4	4	8	8	2	4	40	30	2	16	8	28	2	12	6	16
High school graduation or equivalent	20	40	12	8	40	40	4	8	12	8	2	4	60	60	2	24	12	40	4	16	8	24
Grammar school graduation, or demonstration proficiency, or additional training	80	80	24	16	40	80	12	16	48	24	4	6	80	80	2	60	24	60	4	80	20	80
	WORK TIME EXPERIENCE (MONTHS)																					
All educational levels as listed above	3	9	1	3	3	9	1	2	1	9	1	2	6	18	*	1-1/2	1-1/2	4	1/2	4	4	6

NOTE:

1. Training shall be as outlined in Reference 2.2. For Level II certification, the experience shall consist of time at Level I. If a person is being qualified directly to Level II with no time at Level I, the required experience shall consist of the sum of the times required for Level I and Level II and the hours of training required for Level I and Level II in total shall apply. Credit for experience may be gained simultaneously in two or more methods or techniques. The candidate must spend at least 25% of his work time in each method or technique for which experience is being claimed.

2. VT as identified above refers to VT-1 and VT of weldments.

3. Work time experience accumulated in RT, MT, UT, PT, ET or other NDE related methods such as Dimensional, Mechanical, Optical, etc. shall be applied toward not more than 75% of the work time experience required for VT.

4. Training received in the course of qualifying to any NDE Level II, other than VT, will be considered to have met 75% of the training required for VT.

   One (1) month equals 175 hours.

6. Personnel utilizing methods not covered in Table II above shall be trained and qualified in accordance with SNT-TC-1A and this written practice.

7. BT - Bubble Test
   PCMT - Pressure Change/Measurement Test
   HDLT - Halogen Diode Leak Test
   MSLT - Mass Spectrometer Leak Test
   * - 2 Hours

C-E 0013085-2 (7/84)

ATTACHMENT I

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

EYE EXAMINATION RECORD

NAME: RICHARD J. GORANOWSKI DATE: 3/10/87

[✓] JAEGER #1 [ ] JAEGER #2 [ ] ORTHORATER

[✓] SNELLEN [ ] OTHER ______
Please fill in method if not listed

EXAMINATION RESULTS:

NEAR VISION

				Acceptable	Unacceptable
NATURAL:	R 20 #1	L 20 #1	B 20 #1	[✓]	[ ]
CORRECTED:	R 20	L 20	B 20	[ ]	[ ]

FAR VISION

				Acceptable	Unacceptable
NATURAL:	R 20/40	L 20/40	B 20/40	[ ]	[✓]
CORRECTED:	R 20/20	L 20/20	B 20/20	[✓]	[ ]

COLOR VISION

[✓] ISHIHARA [ ] A.O.I. [ ]

[ ] OTHER ______
Please fill in color test method if not listed

EXHIBIT

CORRECTIVE LENSES OR AIDS ARE REQUIRED WHILE CONDUCTING INSPECTION:

NEAR VISION [ ] YES [✓] NO

FAR VISION [✓] YES [ ] NO

ADMINISTERED BY: Marthe Henning

TITLE: R.N.

REVIEWED AND ACCEPTED BY: G.S Bloomquist

TITLE: Level III

C-E 0013106 (8/84)

ATTACHMENT II

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATION RECORD

METHOD Ultrasonics

NAME: Richard J. Goranowski LEVEL: II

SSN/EMP NO: 247-72-0169 CERTIFICATION DATE: 3/15/87

EXPIRATION DATE: 3/15/90

EDUCATION: (EXHIBIT NOTE: List Schools, Locations, Date Graduated and Degrees)

Silver Lake High School - Graduated 1978
Silver Lake, MN

Hutchinson Area Vocational Technical Institute - Graduated 1981
Hutchinson, MN - AAS in NDT

TRAINING: (EXHIBIT NOTE: List Organization, Location, Dates, Hours)

Hutchinson Vocational Institute - Fall 1979 - Spring 1981 - 175 Hours

Combustion Engineering, Inc.
Windsor, CT - July, 1983 - 40 Hours
Windsor, CT - July, 1986 - 40 Hours

EXPERIENCE: (EXHIBIT NOTE: List Organization, Location, Dates, Months or Hours)

Sonic Systems, Inc. - July, 1982 - July 1983 - 12 Months
Houston, TX

Combustion Engineering, Inc. - August, 1983 - March, 1977
Windsor, CT Certified Level II - 42 Months

EXHIBIT

EXAMINATION RESULTS:

General/Basic	95
Specific/Method	89
Practical/Specific	94
Total	278 / 3 = 92.7 COMPOSITE SCORE

The above named individual has completed the qualification requirements for certification in the above exmination method in accordance with Combustion Engineering procedure NQAI 2.4 Revision 4.

CERTIFIED BY: DC Overton

POSITION: LEVEL III

C-E 0013106 (8/84)

COMBUSTION ENGINEERING

CAROLINA POWER & LIGHT COMPANY
H. B. Robinson Nuclear Plant

Nuclear Quality Assurance Plan
Revision 0

1987 Refueling Outage

Reference: CP&L Authorization No. ZS60010001

Quality Assurance the subject work activity performed at the H. B. Robinson nuclear jobsite shall be in accordance with the Power Systems Group Nuclear Field Quality Assurance Manual (Revision 5) and this Quality Assurance Plan. The QA Program Systems as defined in the QA Manual and as modified below are applicable to the subject work activity and shall be implemented by all C-E personnel during the work activity. This QA Plan shall only be revised by the Quality Assurance Administrator.

N-1.0 ORGANIZATION

The subject work activity shall be performed under the cognizance of the onsite C-E Outage Manager. The Outage Manager shall issue and maintain current a jobsite organization chart (refer to System N-5.1).

N-2.0 QUALITY ASSURANCE PROGRAM

All work shall be performed in accordance with ASME Code Section XI, 1977 Edition through Summer 1978 Addenda.

The following is a list of activities which require certified personnel to perform the work:

- Non-Destructive Examination
- Welder or Welding Operator

Personnel qualification records shall be submitted to CP&L for acceptance prior to the start of work. A QA/QC indoctrination session shall be presented to all project supervision and other personnel performing quality related activities prior to the start of work.

Power Systems
Combustion Engineering, Inc.
911 West Main Street
Chattanooga, Tennessee 37402
(615) 265-4631
Telex: 55-8429
Cable: COMBENG

N-2.1 AUTHORIZED INSPECTION AGENCY

The Authorized Inspection Agency Service, if required, shall be provided through Carolina Power & Light Company. Review and approval of the work program and notification of hold/witness points is CP&L's responsibility. A prejob meeting is not required.

N-3.0 DESIGN CONTROL

The Cognizant Engineering Organization (CEO) for all normal refueling activities including Steam Generator Eddy Current Testing is CP&L. The CEO for Steam Generator and Pressurizer Services is Chattanooga Operations Design Engineering Group.

N-4.0 PROCUREMENT DOCUMENT CONTROL

The steam generator tube plugs (if required) shall be supplied in accordance with the Chattanooga Nuclear Operations Quality Assurance Program. All other items shall be supplied by CP&L.

N-5.0 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

All Site Travelers, procedures and supporting documentation for the subject work activity shall be submitted to CP&L for approval prior to the start of work.

N-5.1 MAINTENANCE, REPAIR, AND REPLACEMENT INCLUDING MODIFICATIONS, ALTERATIONS AND ADDITIONS TO NUCLEAR POWER PLANT FACILITIES

This is the primary quality system to be implemented for the subject work activity. The C-E Outage Manager shall be responsible for the overall coordination of the work activity.

The Quality Assurance Plan, Site Travelers, Technical Operating Procedures (TOPs), and subcontractor work procedures shall be submitted to CP&L for approval. CP&L is responsible for obtaining the Authorized Inspection Agency's approval, if required.

N-6.0 DOCUMENT CONTROL

This complete system shall be implemented. CP&L work procedures for which C-E is responsible for completion and subcontractor work procedures shall be controlled per this system as described in section 2.6. Revisions to CP&L procedures shall be accomplished per the CP&L QA Program. Revisions to subcontractor procedures shall be accomplished per the C-E QA Program.

N-7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

This complete system shall be implemented for items and services procured under the PSG Nuclear Field QA Program.

N-8.0 IDENTIFICATION AND CONTROL OF ITEMS

This complete system shall be implemented.

N-9.0 CONTROL OF PROCESSES

This complete system shall be implemented, where applicable.

N-10.0 INSPECTION

This complete system shall be implemented, except that a receiving inspection supplement shall not be generated. All furnished items shall be receipt inspected by CP&L prior to use for installation by C-E.

N-11.0 TEST CONTROL

This complete system shall be implemented, if required.

N-12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

This complete system shall be implemented. C-E supplied M&TE calibration records shall be submitted to CP&L prior to start of work.

N-13.0 HANDLING, STORAGE, AND SHIPPING

This complete system shall be implemented, where applicable. If applicable, requirements/instructions shall be contained within Operating Procedures, TOPs or Site Travelers.

N-14.0 INSPECTION AND TEST STATUS

This complete system shall be implemented. The status of work activities shall be maintained and controlled by Site Travelers, TOPs or CP&L procedures. Quality status tags are not required.

N-15.0 NONCONFORMING ITEMS

The CP&L Designated Representative shall be immediately notified of nonconformances. Field Action Requests (FARs) shall be submitted to CP&L for approval prior to implementation of the disposition. The QC Superintendent may approve FAR dispositions in lieu of the QA Administrator.

N-16.0 CORRECTIVE ACTION

Should corrective action measures be required, the QC Superintendent shall document and implement them as required.

N-17.0 QUALITY ASSURANCE RECORDS

The list of records to be maintained by site personnel shall be developed and transmitted to the QC Superintendent by the Quality Assurance Administrator.

Quality Assurance Records identified on the QA Records List shall be submitted to CP&L at the completion of work, after review and acceptance by Quality Assurance. The records shall include a Certificate of Conformance stating that all contract requirements have been met. Records of steam generator Eddy Current testing activities will be compiled and transmitted to CP&L by the Examination Services and Products Group. The final records package shall be submitted to CP&L within thirty (30) days of completion of work at the jobsite.

N-18.0 AUDITS

A Quality Assurance onsite audit will not be performed.

James D. Ford
J. D. Ford
QA Administrator

JDF:co

COMBUSTION ENGINEERING

CAROLINA POWER & LIGHT COMPANY
H. B. Robinson Nuclear Plant

Nuclear Quality Assurance Plan
Revision 1

1987 Refueling Outage

Reference: CP&L Authorization No. ZS60010001

Quality Assurance for the subject work activity performed at the H. B. Robinson nuclear jobsite shall be in accordance with the Power Systems Group Nuclear Field Quality Assurance Manual (Revision 5) and this Quality Assurance Plan. The QA Program Systems as defined in the QA Manual and as modified below are applicable to the subject work activity and shall be implemented by all C-E personnel during the work activity. This QA Plan shall only be revised by the Quality Assurance Administrator.

N-1.0 ORGANIZATION

The subject work activity shall be performed under the cognizance of the onsite C-E Outage Manager. The Outage Manager shall issue and maintain current a jobsite organization chart (refer to System N-5.1).

N-2.0 QUALITY ASSURANCE PROGRAM

All work shall be performed in accordance with ASME Code Section XI, 1977 Edition through Summer 1978 Addenda.

The following is a list of activities which require certified personnel to perform the work:

- Non-Destructive Examination
- Welder or Welding Operator

Personnel qualification records shall be submitted to CP&L for acceptance prior to the start of work. A QA/QC indoctrination session shall be presented to all project supervision and other personnel performing quality related activities prior to the start of work.

Power Systems
Combustion Engineering, Inc.
911 West Main Street
Chattanooga, Tennessee 37402
(615) 265-4631
Telex: 55-8429
Cable: COMBENG

N-2.1 AUTHORIZED INSPECTION AGENCY

The Authorized Inspection Agency Service, if required, shall be provided through Carolina Power & Light Company. Review and approval of the work program and notification of hold/witness points is CP&L's responsibility. A prejob meeting is not required.

N-3.0 DESIGN CONTROL

The Cognizant Engineering Organization (CEO) for all normal refueling activities including Steam Generator Eddy Current Testing Pressurizer Services is CP&L.

N-4.0 PROCUREMENT DOCUMENT CONTROL

The steam generator tube plugs (if required) shall be supplied in accordance with the Chattanooga Nuclear Operations Quality Assurance Program. All other items shall be supplied by CP&L.

N-5.0 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

All Site Travelers, procedures and supporting documentation for the subject work activity shall be submitted to CP&L for approval prior to the start of work.

N-5.1 REPAIR, MODIFICATIONS AND REPLACEMENT OF NUCLEAR COMPONENTS

This is the primary quality system to be implemented for the subject work activity. The C-E Outage Manager shall be responsible for the overall coordination of the work activity.

The Quality Assurance Plan, Site Travelers, Technical Operating Procedures (TOPs), and subcontractor work procedures shall be submitted to CP&L for approval. CP&L is responsible for obtaining the Authorized Inspection Agency's approval, if required.

N-6.0 DOCUMENT CONTROL

This complete system shall be implemented. CP&L work procedures for which C-E is responsible for completion and subcontractor work procedures shall be controlled per this system as described in section 2.6. Revisions to CP&L procedures shall be accomplished per the CP&L QA Program. Revisions to subcontractor procedures shall be accomplished per the C-E QA Program.

N-7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

This complete system shall be implemented for items and services procured under the PSG Nuclear Field QA Program.

N-8.0 IDENTIFICATION AND CONTROL OF ITEMS

This complete system shall be implemented.

N-9.0 CONTROL OF PROCESSES

This complete system shall be implemented, where applicable.

N-10.0 INSPECTION

This complete system shall be implemented, except that a receiving inspection supplement shall not be generated. All furnished items shall be receipt inspected by CP&L prior to use for installation by C-E.

N-11.0 TEST CONTROL

This complete system shall be implemented, if required.

N-12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

This complete system shall be implemented. C-E supplied M&TE calibration records shall be submitted to CP&L prior to start of work.

N-13.0 HANDLING, STORAGE, AND SHIPPING

This complete system shall be implemented, where applicable.

N-14.0 INSPECTION AND TEST STATUS

This complete system shall be implemented. The status of work activities shall be maintained and controlled by Site Travelers, TOPs or CP&L procedures. Quality status tags are not required.

N-15.0 CONTROL OF NONCONFORMING ITEMS

The CP&L Designated Representative shall be immediately notified of nonconformances. Field Action Requests (FARs) shall be submitted to CP&L for approval prior to implementation of the disposition. The QC Superintendent may approve FAR dispositions in lieu of the QA Administrator.

N-16.0 CORRECTIVE ACTION

Should corrective action measures be required, the QC Superintendent shall document and implement them as required.

N-17.0 QUALITY ASSURANCE RECORDS

The list of records to be maintained by site personnel shall be developed and transmitted to the QC Superintendent by the Quality Assurance Administrator.

Quality Assurance Records identified on the QA Records List shall be submitted to CP&L at the completion of work, after review and acceptance by Quality Assurance. The records shall include a Certificate of Conformance stating that all contract requirements have been met. Records of steam generator Eddy Current testing activities will be compiled and transmitted to CP&L by the Examination Services and Products Group. The final records package shall be submitted to CP&L within thirty (30) days of completion of work at the jobsite.

N-18.0 AUDITS

A Quality Assurance onsite audit will not be performed.

James D. Ford

J. D. Ford
QA Administrator

JDF:co

EQUIPMENT LIST

COMPONENT	EL #	CALIBRATION DATE	DUE DATE
Computer			
HP 9836	1373	3/16/87	9/16/87
HP 9836	1438	3/13/87	9/13/87
HP 9836	1406	12/18/86	6/18/87
HP 9836	1363	1/30/87	7/30/87
HP 9836	1408	3/13/87	9/13/87
HP 9000-236	1147	4/27/87	10/27/87
HP 9836	1371	12/18/86	6/18/87
Printer			
HP 2671G	1392	3/16/87	9/16/87
HP 2671G	1375	4/27/87	10/27/87
HP 2671G	1141	3/25/87	9/25/87
HP 2671G	1418	3/13/87	9/13/87
HP 2671G	1140	1/30/87	7/30/87
HP 2671G	1419	3/4/87	9/4/87
HP 2671G	1374	3/4/87	9/4/87
Data Recorder			
ADIC DCR	1368	4/27/87	10/27/87
ADIC DCR	1413	4/27/87	10/27/87
ADIC DCR	1415	1/17/87	7/17/87
ADIC DCR	1403	3/4/87	9/4/87
ADIC DCR	1367	1/16/87	7/16/87
ADIC DCR	1369	1/30/87	7/30/87
ADIC DCR	1404	3/4/87	9/4/87
ADIC DCR	1455	3/13/87	9/13/8
ADIC DCR	1365	3/4/87	9/4/87
Data Acquisition/Analysis			
MIZ 18	1377	4/24/87	10/24/87
MIZ 18	1378	2/5/87	8/5/87
MIZ 18	1454	2/5/87	8/5/87
MIZ 18	1412	12/19/86	6/19/87
8 Channel Recorder	EL 1030	1/27/87	7/27/87
A-D Converter	EL 1231	1/28/87	7/28/87

Attn: Roy Brown
C-E Task Manager for Steam Generator
Services at H. B. Robinson

May 8, 1987

Dear Roy:

We offer the following response to the Auditor's questions.

1. On the certification of the Remote Data Acquisition Unit (R.D.A.U.) Mfg. Serial No. 041, C-E ID No. EL1377, the person who did the calibration did not list the EL or serial no. of the printer that was used during the calibration.

   Response: In calibrating the R.D.A.U, the printer is used only to print the information that is presented on the computer screen. The printer does not have any effect on any of R.D.A.U. functions or any of the instrument setting. No action required because omission does not effect the calibration of the R.D.A.U.

2. Calibration sheets for the data cartridge recorder and the HP26716 Printers list either CSP-HCD-75Z and CSP-Print 2671G or manufacturer specification. Is there a difference?

   Response: No, there is no difference. When we do the calibrations they are done in accordance with the CSP Procedures which are written by ZETEC, the manufacturer of the Data Acquisition/Analyst System.

   No further action required because manufacturer's specifications and the CSP Procedures are the same.

3. Where procedures are listed, there are differences in the revision cited. What are the differences in the revisions.

<u>Response</u>: C-E, in reviewing the certifications, has found that the persons performing the calibration listed; no revision number, Revision 0 or Revision 1. Revision 0 and no revision number are meant to be the same. Revision 1 is an error, that is caused by the cover sheet of the procedure which has "Form No. Z-QA 1 Rev. 1" on the upper right hand corner, which is where most procedures cite their revision. The only CSP procedure that is Revision 1 is CSP-RDAU-18.

<u>Corrective Action</u>: Correct those calibration sheets that list the wrong revision and forward correct copies to site as soon as possible.

We will be reviewing all Calibration Sheets to determine if further corrective action is required. If there are any additional questions, please call me or Bob Walker.

Yours truly,

George V. Stepanek

G. Stepanek
Equipment Maintenance Engr.

R. G. Walker

R. G. Walker
Manager, Electrical Dept.

D. Paro

Dennis Paro
C-E Q.A.

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: COMPUTER 9836A
Manufacturer: HEWLETT PACKARD
Range: DIGITAL Accuracy: N/A
Mfg. Serial No.:
C-E ID No.: EL 1373

Calibration Date: 3/16/87
Calibration Due Date: 9/16/87
Calibration Document:
[ ] Procedure ______ Rev. ___
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
SYSTEM TEST DISK 1	09800-10534		
SYSTEM TEST DISK 2	09800-10535		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST PER SYSTEM TEST DISK

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: 9403-0201

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: COMPUTER 9836A
Manufacturer: HEWLETT PACKARD
Range: DIGITAL Accuracy: N/A
Mfg. Serial No. 2314A03954
C-E ID No. EL 1438

Calibration Date: 3/13/87
Calibration Due Date: 9/13/87
Calibration Document:
[ ] Procedure ______ Rev. ___
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disk 1	09800-10534	DUPLICATED	
System Test Disk 2	09800-10535	CALIB. SHEET	
Printer HP 2671G	EL1417		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST PER SYSTEM TEST DISK

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: 9403-0201

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type Computer
Manufacturer Hewlett Packard
Range Digital Accuracy N/A
Mfg. Serial No. 2440A09849
C-E ID No. EL1406

Calibration Date 12/18/86
Calibration Due Date 6/18/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disk #1	09800-10534		
System Test Disk #2	09800-10535		
Printer HP2671G	EL1444		

DUPLICATED CALIB. SHEET

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Functional Test per System Test Disk

CALIBRATED BY: Cliff A Thomson

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: EMC

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type COMPUTER
Manufacturer HEWLETT PACKARD
Range DIGITAL Accuracy N/A
Mfg. Serial No. 2440A09684
C-E ID No. EL 1363 /AX0100007C TECH. SERV.

Calibration Date 01/30/87
Calibration Due Date 07/30/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
SYSTEM TEST DISK #1	09800-10534		
SYSTEM TEST DISK #2	09800-10535		
PRINTER HP2671G	EL1140		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

~~CALIBRAITON~~ CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST PER SYSTEM TEST DISK

CALIBRATED BY: Jeff P. Thomson

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: EML

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: Computer 9836A

Manufacturer: Hewlett Packard

Range: Digital

Accuracy: N/A

Mfg. Serial No.: 2314A06963

C-E ID No.: EL 1408

Calibration Date: 3/13/87

Calibration Due Date: 9/13/87

Calibration Document:

[ ] Procedure ______ Rev. ____

[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disc 1	09800-10534		
System Test Disc 2	09800-10535		
Printer HP 2671G	EL 1418		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Functional Test per System Test Disc

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION: 9403-0207

C-E 0020743 (7/86) Front

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type ~~Computer 9836~~ PWB 5757

Manufacturer HEWLETT - PACKARD

Range — Accuracy —

Mfg. Serial No. 2429A08787

C-E ID No. AX0100004C -EL1147

Calibration Date 4-27-87

Calibration Due Date 10-27-87

Calibration Document:

[✓] Procedure CSP-9836 Rev. 0

[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
HP 9836 Computer	2429A08787		
HP DISK REV F	09800-10534		
HP DISK REV. A	09800-10535		

CALIBRATION RESULTS

Standard Value	As Found	As Left
	SAME	SAME

Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: HPIP CABLE & Peripheral used to verify HPIB Link

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Roland M Witty

ORGANIZATION: ESSP - CHATTANOOGA

Page 1 of 1

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

DUPLICATED CALIB. SHEET

CERTIFICATE OF CALIBRATION

Instrument Type: Computer
Manufacturer: Hewlett Packard
Range: Digital Accuracy: N/A
Mfg. Serial No. 2440A09685
C-E ID No. EL1371/AX010000SC

Calibration Date: 12/18/86
Calibration Due Date: 6/18/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disk #1	09800-10534		
System Test Disk #2	09800-10535		
Printer HP2671G	EL1444		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Functional Test per System Test Disk

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Geoff A Thomson
ORGANIZATION: EMC

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type PRINTER HP 2671G

Manufacturer HEWLETT PACKARD

Range DIGITAL Accuracy N/A

Mfg. Serial No. 2351A20290

C-E ID No. EL 1392

Calibration Date 3/16/87

Calibration Due Date 9/16/87

Calibration Document:

[X] Procedure CSP-PRINT 2671G Rev. 0 * AWD 5/11/87

[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL1373		
SYSTEM TEST DISK 1	09800-10534		
SYSTEM TEST DISK 2	09800-10535		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST PER SYSTEM TEST DISK

* REV. # 0 ADDED BY [signature] GEORGE STEPANEK 5/11/87

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION: 9403-0201

C-E 0020743 (7/86) Front

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 2671G PRINTER
Calibration Date 4-27-87
Manufacturer HEWLETT PACKARD
Calibration Due Date 10-27-87
Range —— Accuracy ——
Calibration Document:
Mfg. Serial No. 2406A28055
[✓] Procedure CSP-Print2671G Rev. 0
C-E ID No. UT2300001 - EL1375
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
HP 9836 COMPUTER	2429A08787		
HP floppy DISK	09800-10534		
HP floppy DISK	09800-10535		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left
	SAME	SAME			

DUPLICATED CALIB. SHEET

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Roland M. Witt Jr.
ORGANIZATION: ES&P CHATTANOOGA

C-E 0020743 (7/86) Front

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@ABC DEFGHIJK LMNOPQRS TUVWXYZ[\]^_`abc defghijk lmnopqrs tuvwxyz{ |}~

@ABCDEFGHIJKLMNO 2141 G

Self Test Passed

2671G Self Test - Pass 1

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@ABC DEFGHIJK LMNOPQRS TUVWXYZ[\]^_`abc defghijk lmnopqrs tuvwxyz{ |}~

@ABCDEFGHIJKLMNO 2141 G

DUPLICATED
CALIB. SHEET

Self Test Passed

United States Characters
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

Roman Extended Characters
´`^¨~ £¯ ° çÑñ¡¿¤£ § âêôûáéóúàèòùäëöüÅîØÆåíøæÄìÖÜÉïB

Line drawing Characters

!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

Graphics Test

PRINTER 2671G SN# 2406A28055 UT 2300001 EL 1375
HP 9836 Computer SN# 2429A08787 AX0100004C EL 1197
CAL. DATE 4-27-87 DUE DATE 10-27-87

Roland M. Witty
ES&P CHATTANOOGA

Page 2 of 2

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 2671G PRINTER

Manufacturer HEWLETT PACKARD

Range DIGITAL Accuracy N/A

Mfg. Serial No. 2406A27721

C-E ID No. EL 1141

Calibration Date 3/25/87

Calibration Due Date 9/25/87

Calibration Document:

[ ] Procedure ______ Rev. ____

[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL 1373		
SYSTEM TEST DISK 1	09800-10534		
SYSTEM TEST DISK 2	0980010535		

CALIBRATION RESULTS

Standard Value	As Found	As Left

Standard Value	As Found	As Left

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST PER SYSTEM TEST DISK

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION: 9403-0201

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type PRINTER HP 2671G
Manufacturer HEWLETT PACKARD
Range DIGITAL Accuracy N/A
Mfg. Serial No. 2406A26289
C-E ID No. EL 1418 / AX0200002C

Calibration Date 3/13/87
Calibration Due Date 9/13/87
Calibration Document:
[ ] Procedure ________ Rev. ____
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disk #1	09800-10534		
System Test Disk #2	09800-10535		
Computer HP 9836A	EL 1408		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TEST FOR SYSTEM TEST DISK

CALIBRATED BY: [signature]

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: 9403-0441

C-E 0020743 (7/86) Front

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type PRINTER HP2671G
Manufacturer HEWLETT PACKARD
Range DIGITAL Accuracy N/A
Mfg. Serial No. 2351A19711
C-E ID No. EL 1140 / AX02000256 TECH SERV

Calibration Date 01/30/87
Calibration Due Date 07/30/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
System Test Disk #1	09800-10534		
System Test Disk #2	09800-10535		
Computer HP9836A	EL 1363		

DUPLICATED CALIB. SHEET

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

CALIBRATION ~~CALIBRAITON~~ HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Functional Test per System Test Disk

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: EMC

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type PRINTER HP2671G
Manufacturer HEWLETT PACKARD
Range DIGITAL Accuracy N/A
Mfg. Serial No. 2406A23537
C-E ID No. EL 1419

Calibration Date 3/4/87
Calibration Due Date 9/4/87
Calibration Document:
[✓] Procedure CSP-PRINT2671G Rev. ~~0~~ BN 5/8/87
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL 1371		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[✓] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: 9403 ETOS

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type PRINTER HP2671G
Manufacturer HEWLET PACKARD
Range DIGITAL Accuracy N/A
Mfg. Serial No. 2342A17369
C-E ID No. EL 1374

Calibration Date 8/4/87
Calibration Due Date 9/4/87
Calibration Document:
[✓] Procedure CSP-PRINT2671G Rev. 10
BN 5/8/87
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL 1371		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[✓] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: 9403 ETUS

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 575 DCR
Manufacturer ADIC
Range — Accuracy —
Mfg. Serial No. 30043
C-E ID No. AX0400003C-EL1368

Calibration Date 4-27-87
Calibration Due Date 10-27-87
Calibration Document:
[✓] Procedure CSP-HCD-75Z Rev. 0
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
HP Computer 9836	2429A08787		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left
	SAme	SAME			

DUPLICATED
CALIB. SHEET

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Roland M Witty
ORGANIZATION: ES&P Chattanooga

C-E 0020743 (7/86) Front

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 575 DCR

Manufacturer ADIC

Range — Accuracy —

Mfg. Serial No. 30042

C-E ID No. AX0400007C -EL1413

Calibration Date 4-27-87

Calibration Due Date 10-27-87

Calibration Document:

[✓] Procedure CSP-HCD-75E Rev. 0

[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
HP Computer 9836	2429A08787		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left
	SAME	SAME			

DUPLICATED CALIB. SHEET

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Roland M Witt Jr.

ORGANIZATION: ES&P CHATTANOOGA

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 575 DCR
Manufacturer ADIC
Range — Accuracy —
Mfg. Serial No. 841174
C-E ID No. E80500004 EL1415

Calibration Date 1-17-87
Calibration Due Date 7-17-87
Calibration Document:
[✓] Procedure CSA-HCD-75Z Rev. 0
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
HP Computer 9836	2314A03954		

DUPLICATED CALIB. SHEET

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left
	SAME	SAME			

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: GPIO cable & DC600HCD Data Cartridge used As Per Procedure

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION: ES&P - Chattanooga

C-E 0020743 (7/88) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type DATA CARTRIDGE RECORDER
Manufacturer ADIC/ZETEC
Range DIGITAL Accuracy N/A
Mfg. Serial No. 10931
C-E ID No. EL 1403

Calibration Date 3/4/87
Calibration Due Date 5/4/87
Calibration Document:
[✓] Procedure CSP-HCD-752 Rev. 0 BN 5/8/87
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL1371		
MIZ-19RDAU	EL 1410		

CALIBRATION RESULTS

Standard Value	As Found	As Left

Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: ______

CALIBRATED BY: [signature]

ORGANIZATION: ______

[X] ACCEPTED [ ] REJECTED

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type 575 DCR
Manufacturer ADIC
Range — Accuracy —
Mfg. Serial No. 30044
C-E ID No. AX04000006C -EL1367

Calibration Date 1-16-87
Calibration Due Date 7-16-87
Calibration Document:
[✓] Procedure CSP-HCD-75Z Rev. 0
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.
HP 9836 Computer	2314A03954

Test Equipment	Serial or ID No.

DUPLICATED
CALIB. SHEET

CALIBRATION RESULTS

Standard Value	As Found	As Left
	SAME	SAME

Standard Value	As Found	As Left

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NE STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTE

REMARKS: GPIO Cable & 600 HC Data Cartridge used As Per Procedure

CALIBRATED BY: [signature]

ORGANIZATION: ESEP Chattan

[X] ACCEPTED [ ] REJECTED

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type DATA CARTRIDGE RECORDER
Manufacturer ADIC/ZETEC
Range DIGITAL Accuracy N/A
Mfg. Serial No. 841173
C-E ID No. EL 1369 /EB0500002 TECH SERV

Calibration Date 01/30/87
Calibration Due Date 07/30/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Computer HP9836A	EL 1145		
MIZ-18 RDAU	EL 1410		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

~~CALIBRAITON~~ CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Functional Test per System Integration

CALIBRATED BY: Jeff A Thomson

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: EMC

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: DATACARTRIDGE RECORDER	Calibration Date: 3/4/87
Manufacturer: ADIC/ZETEC	Calibration Due Date: 9/4/87
Range: DIGITAL Accuracy: N/A	Calibration Document:
Mfg. Serial No.: 10932	[✓] Procedure CSP-HCD-752 Rev. ~~1~~ 0 BN 3/8/87
C-E ID No.: EL1404	[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL1371		
M12-18 RDAV	EL1410		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: ____________________

[✓] ACCEPTED [ ] REJECTED

CALIBRATED BY: Brian Norella

ORGANIZATION: ____________________

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: DATA CARTRIDGE RECORDER
Manufacturer: ADIC / ZETEC
Range: DIGITAL Accuracy: N/A
Mfg. Serial No.: 10611
C-E ID No.: EL 1455

Calibration Date: 3/13/87
Calibration Due Date: 9/13/87
Calibration Document:
[ ] Procedure ______ Rev. ____
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL 1408		
MIZ 18 RDAU	EL 1376		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATE CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: FUNCTIONAL TESTS PER SYSTEM INTEGRATION

CALIBRATED BY: [signature]

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: ______

C-E 0020743 (7/86) Front

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type DATA CARTRIDGE RECORDER
Calibration Date 3/4/87
Manufacturer ADUC/ZETEC
Calibration Due Date 9/4/87
Range DIGITAL Accuracy N/A
Calibration Document:
Mfg. Serial No. ~~900-638-0818~~ 841389 BN 3/5/87
[✓] Procedure CSP-HCD-752 Rev. ~~1~~ 0 BN 5/8/87
C-E ID No. EL 1365
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
COMPUTER HP9836A	EL 1371		
M17-180AU	EL 1410		

CALIBRATION RESULTS

Standard Value	As Found	As Left	Standard Value	As Found	As Left

DUPLICATED CALIB. SHEET

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION:

C-E 0020743 (7/86) Front

DUPLICATED CALIB. SHEET

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type REMOTE DATA AQUISITION UNIT
Manufacturer ZETEC
Range MULTY FREQ Accuracy SEE BELOW
Mfg. Serial No. 041
C-E ID No. EL 1377

Calibration Date 4/24/87
Calibration Due Date 10/24/87
Calibration Document:
[✓] Procedure CSP-RDAU-18 Rev. 1
[ ] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
FREQUENCY COUNTER	EL1423	OSCILLOSCOPE	EL1453
DIGITAL MULTIMETER	EL1424	HP9836A COMPUTER	EL 1407
FUNCTION GENERATOR	EL1425	HP2671G PRINTER	

CALIBRATION RESULTS

Standard Value	As Found	As Left
POWER SUPPLIES		
+5.000 ± 0.125VDC	5.002	5.002
RIPPLE < 50mV P-P	22.80mv	22.80mv
+15.000 ± 0.375VDC	14.656	14.656
RIPPLE < 100mV P-P	14.00mv	14.00mv
-15.000 ± 0.375VDC	-14.998	-14.998
RIPPLE < 100mV P-P	9.700mv	9.700mv
-5.000 ± 0.125VDC	-4.996	-4.996
RIPPLE < 100mV P-P	15.60mv	15.60mv
A/D REFERENCE		
-1.000 ± 0.005VDC	-1.000	-1.000

Standard Value	As Found	As Left
FREQ ACCURACY	±5%	±5%
(HZ)	(HZ)	(HZ)
9765	9765	9765
12019	12019	12019
17045	17045	17045
100000	100K	100K
110085	110086	110086
119850	119850	119850
340401	340406	340406
359375	359377	359377
400390	400388	400388
898437	898448	898448
992838	992832	992832
1000000	100000	1000000

CALIBRATION HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS:

[✓] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]

ORGANIZATION: ETDS

C-E 0020743 (7/86) Front

MIZ-18 CALIBRATION SPECIFICATIONS

DUPLICATED CALIB. SHEET

START TIME 9:24:30 AM

DATE 4 /24 /1987

S/N 41

ROT 0

SPAN 3000

FIRST CHANNEL 1

LAST CHANNEL 16

CHN#	FREQ	H-VDEV	SPEC
16	14000	+0.00%	+/- 1%
3	340000	-0.96%	+/- 1%

CHN#	FREQ	QDEV	SPEC
2	56000	0.00 DEG	3.00 DEG
1	74000	1.65 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.8%	- 3.7%	400100	- 1.2%	- 3.3%	-15%
2	401000	- 3.6%	- 4.0%	400100	- 1.2%	- 3.4%	-15%
3	401000	- 3.6%	- 3.9%	400100	- 1.3%	- 3.3%	-15%
4	401000	- 4.2%	- 4.4%	400100	- 1.4%	- 3.0%	-15%
5	401000	- 4.6%	- 4.6%	400100	- 1.6%	- 3.5%	-15%
6	401000	- 4.7%	- 5.2%	400100	- 1.6%	- 3.6%	-15%
7	401000	- 4.6%	- 4.9%	400100	- 1.5%	- 3.4%	-15%
8	401000	- 5.1%	- 5.7%	400100	- 1.6%	- 3.6%	-15%
9	401000	- 4.7%	- 4.6%	400100	- 1.7%	- 3.8%	-15%
10	401000	- 4.6%	- 5.0%	400100	- 1.8%	- 3.8%	-15%
11	401000	- 4.5%	- 5.1%	400100	- 1.8%	- 3.9%	-15%
12	401000	- 5.2%	- 5.6%	400100	- 1.9%	- 3.3%	-15%
13	401000	- 4.6%	- 4.6%	400100	- 1.6%	- 3.3%	-15%
14	401000	- 4.7%	- 5.1%	400100	- 1.7%	- 3.4%	-15%
15	401000	- 4.6%	- 5.0%	400100	- 1.7%	- 3.8%	-15%
16	401000	- 5.1%	- 5.6%	400100	- 1.7%	- 3.9%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
5	1000000		43700		
15	1000000	45039		+3.0%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
16	10000	38593			
15	1000000	45039		+16.7%	30%

TECHNICIAN MJ

STOP TIME 9:17:34 AM

POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type REMOTE DATA AQUISITION UNIT

Manufacturer ZETEC

Range MULTI FREQ Accuracy SEE BELOW

Mfg. Serial No. 061

C-E ID No. EL 137B / EB0100002

Calibration Date 02/05/87

Calibration Due Date 08/05/87

Calibration Document:

[ ] Procedure ______ Rev. ______

[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Frequency Counter	EL 1423	Oscilloscope	EL 1453
Digital Multimeter	EL 1424	HP9836A Computer	EL 1362
Function Generator	EL 1425	HP2671G Printer	EL 1143

CALIBRATION RESULTS

Standard Value	As Found	As Left
POWER SUPPLIES		
+5.000±0.125VDC	+5.001	+5.001
Ripple <50mVp-p	21.8mVp-p	21.8mVp-p
+15.000±0.375VDC	+15.071	+15.071
Ripple <100mVp-p	11.5mVp-p	11.5mVp-p
-15.000±0.375VDC	-15.002	-15.002
Ripple <100mVp-p	11.1mVp-p	11.1mVp-p
-5.000±0.125VDC	-4.995	-4.995
Ripple <100mVp-p	8.9mVp-p	8.9mVp-p
A/D REFERENCE		
-1.000±0.005VDC	-1.005	-1.000

Standard Value	As Found	As Left
FREQ. ACCURACY	±5%	±5%
(Hz)	(Hz)	(Hz)
9765	9765	9765
12019	12019	12019
17045	17045	17045
100000	99999	99999
110085	110085	110085
119850	119851	119851
340401	340403	340403
359375	359373	359373
400390	400394	400394
898437	898440	898440
992838	992846	992846
1000000	999996	999996

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Adjusted A/D Reference, Adjusted Channels 1-4 VERT and HORZ Digital Counts

CALIBRATED BY: [illegible signature]

[X] ACCEPTED [ ] REJECTED

ORGANIZATION: EMC

DUPLICATED CALIB. SHEET

C-E 0020743 (7/86) Front

As Found Data EL1378 Jeff A. Thomson S/N 061 02/04/87

MIZ-18 R.D.A.U		CALIBRATION	2 /4 /1987		S/N 61
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41471	41564	-0.23%	0.37 DEG
2	400000	41597	41540	+0.13%	0.07 DEG
3	400000	41627	41604	+0.05%	0.45 DEG
4	400000	41599	41556	+0.10%	0.21 DEG
5	400000	41527	41633	-0.26%	0.38 DEG
6	400000	41649	41609	+0.09%	0.10 DEG
7	400000	41979	41978	+0.00%	0.46 DEG
8	400000	42111	42104	+0.01%	0.24 DEG
9	400000	41684	41794	-0.27%	0.38 DEG
10	400000	41851	41812	+0.09%	0.09 DEG
11	400000	41897	41899	-0.01%	0.47 DEG
12	400000	41870	41863	+0.01%	0.25 DEG
13	400000	41527	41633	-0.26%	0.38 DEG
14	400000	41653	41604	+0.11%	0.09 DEG
15	400000	41984	41975	+0.02%	0.47 DEG
16	400000	42114	42102	+0.02%	0.24 DEG

DUPLICATED
CALIB. SHEET

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	07:30:00 AM
DATE	2 /5 /1987
S/N	61
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

DUPLICATED CALIB. SHEET

CHN#	FREQ	H-VDEV	SPEC
16	12000	+0.00%	+/- 1%
6	41000	-0.87%	+/- 1%

CHN#	FREQ	QDEV	SPEC
9	10000	0.00 DEG	3.00 DEG
4	74000	1.56 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.8%	- 4.1%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 4.0%	- 3.8%	400100	- 0.2%	- 0.1%	-15%
3	401000	- 3.8%	- 4.0%	400100	- 0.2%	- 0.2%	-15%
4	401000	- 3.8%	- 3.9%	400100	- 0.2%	- 0.2%	-15%
5	401000	- 4.7%	- 5.1%	400100	- 0.3%	- 0.3%	-15%
6	401000	- 5.2%	- 5.0%	400100	- 0.4%	- 0.4%	-15%
7	401000	- 5.0%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
8	401000	- 4.9%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
9	401000	- 4.8%	- 5.1%	400100	- 0.3%	- 0.4%	-15%
10	401000	- 5.1%	- 4.9%	400100	- 0.4%	- 0.4%	-15%
11	401000	- 5.0%	- 5.2%	400100	- 0.4%	- 0.4%	-15%
12	401000	- 5.0%	- 5.1%	400100	- 0.4%	- 0.5%	-15%
13	401000	- 4.8%	- 5.1%	400100	- 0.3%	- 0.3%	-15%
14	401000	- 5.2%	- 5.0%	400100	- 0.4%	- 0.4%	-15%
15	401000	- 4.9%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
16	401000	- 5.0%	- 5.0%	400100	- 0.4%	- 0.4%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
13	1000000	45336			
16	1000000		47402	+4.5%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
9	10000		38834		
16	1000000		47466	+22.2%	30%

TECHNICIAN	JEFF THOMSON
STOP TIME	7:42:44 AM

A's Left Data EL1378 EL1378 Jeff A. Thomson S/N

MIZ-18 R.D.A.U		CALIBRATION		2 /5 /1987	S/N 61
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41063	41040	+0.05%	0.35 DEG
2	400000	41070	41063	+0.01%	0.18 DEG
3	400000	41065	41032	+0.08%	0.60 DEG
4	400000	41063	41050	+0.03%	0.21 DEG
5	400000	41101	41087	+0.03%	0.37 DEG
6	400000	41107	41113	-0.02%	0.14 DEG
7	400000	41410	41393	+0.04%	0.47 DEG
8	400000	41552	41576	-0.06%	0.23 DEG
9	400000	41269	41267	+0.00%	0.36 DEG
10	400000	41310	41324	-0.04%	0.09 DEG
11	400000	41325	41317	+0.01%	0.47 DEG
12	400000	41314	41342	-0.07%	0.23 DEG
13	400000	41099	41096	+0.00%	0.37 DEG
14	400000	41112	41116	-0.01%	0.12 DEG
15	400000	41416	41396	+0.04%	0.47 DEG
16	400000	41557	41578	-0.06%	0.23 DEG

DUPLICATED
CALIB. SHEET

HS-Lost Data CL1310 [illegible] Thomson S/N 001 Pg.0040

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	08:20:00 AM
DATE	2 /5 /1987
S/N	61
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

DUPLICATED CALIB. SHEET

CHN#	FREQ	H-VDEV	SPEC
16	12000	+0.00%	+/- 1%
6	41000	-0.87%	+/- 1%

CHN#	FREQ	QDEV	SPEC
9	10000	0.00 DEG	3.00 DEG
4	74000	1.56 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.8%	- 4.1%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 4.1%	- 4.1%	400100	+ 0.0%	- 0.1%	-15%
3	401000	- 3.8%	- 4.3%	400100	- 0.1%	- 0.2%	-15%
4	401000	- 3.8%	- 4.0%	400100	+ 0.1%	- 0.2%	-15%
5	401000	- 4.7%	- 5.0%	400100	- 0.2%	- 0.3%	-15%
6	401000	- 5.2%	- 5.2%	400100	+ 0.0%	- 0.4%	-15%
7	401000	- 4.9%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
8	401000	- 4.9%	- 5.0%	400100	- 0.4%	- 0.4%	-15%
9	401000	- 4.8%	- 5.1%	400100	- 0.3%	- 0.3%	-15%
10	401000	- 5.1%	- 4.9%	400100	- 0.3%	- 0.4%	-15%
11	401000	- 5.0%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
12	401000	- 5.0%	- 5.1%	400100	- 0.3%	- 0.4%	-15%
13	401000	- 4.7%	- 5.1%	400100	- 0.2%	- 0.3%	-15%
14	401000	- 5.2%	- 5.2%	400100	+ 0.0%	- 0.4%	-15%
15	401000	- 4.9%	- 5.1%	400100	- 0.3%	- 0.4%	-15%
16	401000	- 4.9%	- 5.0%	400100	- 0.4%	- 0.4%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
13	1000000	44928			
16	1000000		46816	+4.2%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
9	10000		38261		
16	1000000		47466	+24.0%	30%

TECHNICIAN JEFF THOMSON
STOP TIME 8:32:37 AM

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type REMOTE DATA AQUISITION UNIT
Manufacturer ZETEC
Range MULTI FREQ Accuracy SEE BELOW
Mfg. Serial No. 023
C-E ID No. EL 1454 / EB01000066 TECH SERV

Calibration Date 02/05/87
Calibration Due Date 08/05/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Frequency Counter	EL1423	Oscilloscope	EL 1453
Digital Multimeter	EL1424	HP9836A Computer	EL 1362
Function Generator	EL1425	HP2671G Printer	EL 1143

CALIBRATION RESULTS

Standard Value	As Found	As Left
POWER SUPPLIES		
+5.000±0.125VDC	+5.015	+5.015
Ripple <50mVp-p	24.0mVp-p	24.0mVp-p
+15.000±0.375VDC	+15.017	+15.017
Ripple <100mVp-p	18.2mVp-p	18.2mVp-p
-15.000±0.375VDC	-15.027	-15.027
Ripple <100mVp-p	10.8mVp-p	10.8mVp-p
-5.000±0.125VDC	-4.976	-4.976
Ripple <100mVp-p	11.5mVp-p	11.5mVp-p
A/D REFERENCE		
-1.000±0.005VDC	-0.998	-0.998

Standard Value	As Found	As Left
FREQ. ACCURACY	±5%	±5%
(Hz)	(Hz)	(Hz)
9765	9765	9765
12019	12019	12019
17045	17045	17045
100000	99992	99992
110085	110083	110083
119850	119849	119849
340401	340397	340397
359375	359346	359346
400390	400387	400387
898437	898426	898426
992838	992831	992831
1000000	999921	999921

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Adjusted Channels 1-4 VERT and HORZ Digital Count

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: [signature]
ORGANIZATION: EMC

DUPLICATED CALIB. SHEET

C-E 0020743 (7/86) Front

CERTIFICATE OF CALIBRATION (CONT.)

'g. Serial No. 023

C-E ID No. EL 1454

Calibration Date 02/05/87

Calibration By Jeff A Thomas

CALIBRATION RESULTS

Standard Value	As Found	As Left
41050 ± 50 Counts	See Data Sheet	See Data Sheet
H-V Deviation ± 1%	See Data Sheet	See Data Sheet
Quad Error < 3°	See Data Sheet	See Data Sheet
Bandwidth < 10% @ 1KHz	See Data Sheet	See Data Sheet
Ch-Ch Variation < 10%	See Data Sheet	See Data Sheet
Freq-Freq Variation < 30%	See Data Sheet	See Data Sheet

Standard Value	As Found	As Left

As Found Data EL 1454 Jeff A. Thomson S/N 023 Pg. 3 of 6

MIZ-18 R.D.A.U		CALIBRATION- - -2 /4 /1987			S/N 23
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41658	41778	-0.29%	0.74 DEG
2	400000	41853	41729	+0.29%	0.34 DEG
3	400000	41701	41763	-0.15%	0.87 DEG
4	400000	41778	41814	-0.09%	0.49 DEG
5	400000	41965	42097	-0.32%	0.74 DEG
6	400000	42112	41993	+0.28%	0.34 DEG
7	400000	42161	42219	-0.14%	0.88 DEG
8	400000	42301	42357	-0.14%	0.50 DEG
9	400000	41895	42020	-0.30%	0.75 DEG
10	400000	42125	41997	+0.30%	0.36 DEG
11	400000	42006	42058	-0.13%	0.89 DEG
12	400000	42087	42139	-0.13%	0.51 DEG
13	400000	41977	42101	-0.30%	0.73 DEG
14	400000	42121	41999	+0.28%	0.34 DEG
15	400000	42157	42222	-0.16%	0.88 DEG
16	400000	42296	42363	-0.16%	0.51 DEG

DUPLICATED
CALIB. SHEET

As Found Data EL 1454

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	08:10:00 PM
DATE	2 /5 /1987
S/N	23
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

CHN#	FREQ	H-VDEV	SPEC
1	12000	+0.00%	+/- 1%
8	56000	+0.94%	+/- 1%

CHN#	FREQ	QDEV	SPEC
13	10000	0.00 DEG	3.00 DEG
6	74000	2.18 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.7%	- 4.0%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 4.4%	- 4.1%	400100	- 0.1%	- 0.1%	-15%
3	401000	- 3.5%	- 3.8%	400100	+ 0.0%	- 0.1%	-15%
4	401000	- 3.7%	- 4.1%	400100	- 0.1%	- 0.2%	-15%
5	401000	- 4.7%	- 4.9%	400100	- 0.4%	- 0.4%	-15%
6	401000	- 5.5%	- 5.2%	400100	- 0.4%	- 0.4%	-15%
7	401000	- 4.6%	- 4.8%	400100	- 0.5%	- 0.4%	-15%
8	401000	- 4.8%	- 5.2%	400100	- 0.5%	- 0.5%	-15%
9	401000	- 4.6%	- 4.9%	400100	- 0.4%	- 0.4%	-15%
10	401000	- 5.4%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
11	401000	- 4.5%	- 4.8%	400100	- 0.4%	- 0.4%	-15%
12	401000	- 4.9%	- 5.2%	400100	- 0.5%	- 0.5%	-15%
13	401000	- 4.6%	- 4.9%	400100	- 0.3%	- 0.4%	-15%
14	401000	- 5.5%	- 5.2%	400100	- 0.4%	- 0.4%	-15%
15	401000	- 4.5%	- 4.9%	400100	- 0.4%	- 0.5%	-15%
16	401000	- 4.8%	- 5.2%	400100	- 0.5%	- 0.5%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
5	1000000	46078			
16	1000000		47507	+3.1%	-10%

CHN#	FREQ	H	V	F/FDEV	SPEC
15	10000		38026		
16	1000000		47507	+24.9%	30%

TECHNICIAN	JEFF THOMSON
STOP TIME	8:22:52 PM

DUPLICATED
CALIB. SHEET

As Left Data EL1454 Jeff A. Thomas S/N 023 Pg. 5 of 6

MIZ-18 R.D.A.U		CALIBRATION -	2 /5 /1987		S/N 23
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41041	41064	-0.06%	0.74 DEG
2	400000	41035	41056	-0.06%	0.31 DEG
3	400000	41043	41038	+0.01%	0.89 DEG
4	400000	41034	41056	-0.06%	0.50 DEG
5	400000	41332	41371	-0.10%	0.76 DEG
6	400000	41242	41273	-0.08%	0.33 DEG
7	400000	41467	41458	+0.02%	0.89 DEG
8	400000	41536	41576	-0.10%	0.50 DEG
9	400000	41264	41298	-0.09%	0.76 DEG
10	400000	41285	41314	-0.08%	0.34 DEG
11	400000	41325	41315	+0.02%	0.89 DEG
12	400000	41317	41362	-0.11%	0.51 DEG
13	400000	41345	41374	-0.08%	0.76 DEG
14	400000	41249	41280	-0.08%	0.33 DEG
15	400000	41470	41458	+0.02%	0.88 DEG
16	400000	41542	41574	-0.08%	0.50 DEG

DUPLICATED
CALIB. SHEET

As Left Data EL1454

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	08:45:00 PM
DATE	2 /5 /1987
S/N	23
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

CHN#	FREQ	H-VDEV	SPEC
1	12000	+0.00%	+/- 1%
8	56000	+0.94%	+/- 1%

CHN#	FREQ	QDEV	SPEC
13	10000	0.00 DEG	3.00 DEG
6	74000	2.18 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.8%	- 4.0%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 4.5%	- 4.1%	400100	- 0.1%	- 0.2%	-15%
3	401000	- 3.6%	- 3.8%	400100	- 0.1%	- 0.2%	-15%
4	401000	- 3.9%	- 4.1%	400100	- 0.2%	- 0.2%	-15%
5	401000	- 4.6%	- 4.9%	400100	- 0.4%	- 0.4%	-15%
6	401000	- 5.5%	- 5.3%	400100	- 0.4%	- 0.4%	-15%
7	401000	- 4.6%	- 4.9%	400100	- 0.5%	- 0.4%	-15%
8	401000	- 4.8%	- 5.2%	400100	- 0.5%	- 0.5%	-15%
9	401000	- 4.7%	- 5.0%	400100	- 0.4%	- 0.4%	-15%
10	401000	- 5.4%	- 5.1%	400100	- 0.4%	- 0.4%	-15%
11	401000	- 4.5%	- 4.8%	400100	- 0.4%	- 0.5%	-15%
12	401000	- 4.9%	- 5.3%	400100	- 0.5%	- 0.5%	-15%
13	401000	- 4.6%	- 4.8%	400100	- 0.3%	- 0.4%	-15%
14	401000	- 5.5%	- 5.2%	400100	- 0.4%	- 0.5%	-15%
15	401000	- 4.6%	- 4.9%	400100	- 0.4%	- 0.5%	-15%
16	401000	- 4.9%	- 5.2%	400100	- 0.5%	- 0.5%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
5	1000000	45024			
16	1000000		46286	+2.8%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
15	10000		38026		
16	1000000		47507	+24.9%	30%

TECHNICIAN	JEFF THOMSON
STOP TIME	8:57:25 PM

DUPLICATED
CALIB. SHEET

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type Remote Data Acquisition Unit	Calibration Date 12/19/86
Manufacturer Zetec	Calibration Due Date 6/19/87
Range Multi Freq Accuracy See Below	Calibration Document:
Mfg. Serial No. 056	[ ] Procedure ______ Rev. ____
C-E ID No. EL1412	[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Function Generator	EL1425	Digital Multimeter	EL1424
Oscilloscope	EL1453	HP2671G Printer	EL1444
Frequency Counter	EL1423	HP9836A Computer	EL1406

CALIBRATION RESULTS

Standard Value	As Found	As Left
+5.000±0.125 VDC	+4.997	+4.997
Ripple < 50mVp-p	21mVp-p	21mVp-p
		—
+15.000±0.375 VDC	+15.001	+15.001
Ripple < 100mVp-p	11mVp-p	11mVp-p
-15.000±0.375 VDC	-14.999	-14.999
Ripple < 100mVp-p	6mVp-p	6mVp-p
-5.000±0.125 VDC	-5.003	-5.003
Ripple < 100mVp-p	11mVp-p	11mVp-p
-1.000±0.005 VDC	-1.001 VDC	-1.001 VDC

Standard Value	As Found	As Left
All Frequencies ±5%		
(Hz)	(Hz)	(Hz)
9765	9765	9765
12019	12019	12019
17045	17045	17045
100000	99990	99990
110085	110086	110086
119850	119849	119849
340401	340406	340406
359375	359371	359371
400390	400386	400386
898437	898449	898449
992838	992827	992827
1000000	999990	999990

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: ______

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Jeff A Thomson

ORGANIZATION: EMC

DUPLICATED CALIB. SHEET

C-E 0020743 (7/86) Front

As Found Data 12/19/86 MIZ-18 RDAU S/N 056 EL1412

Jeff A Thomas

Page 3 of 6

DUPLICATED
CALIB. SHEET

MIZ-18 R.D.A.U		CALIBRATION		12 /19 /1986	S/N 56
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41505	41195	+0.74%	0.15 DEG
2	400000	41448	41562	-0.28%	0.41 DEG
3	400000	41547	41556	-0.03%	0.10 DEG
4	400000	41517	41429	+0.21%	0.34 DEG
5	400000	41567	41256	+0.74%	0.14 DEG
6	400000	41780	41898	-0.29%	0.37 DEG
7	400000	41665	41684	-0.05%	0.11 DEG
8	400000	41728	41646	+0.19%	0.34 DEG
9	400000	41735	41411	+0.77%	0.16 DEG
10	400000	41643	41756	-0.28%	0.40 DEG
11	400000	41819	41830	-0.03%	0.10 DEG
12	400000	41809	41712	+0.23%	0.36 DEG
13	400000	41569	41263	+0.73%	0.14 DEG
14	400000	41778	41908	-0.32%	0.38 DEG
15	400000	41673	41683	-0.03%	0.10 DEG
16	400000	41737	41646	+0.21%	0.33 DEG

PFS TOTAL CHAN PAGE 1 OF 0

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	14:10:00 PM
DATE	12 /19 /1986
S/N	56
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

DUPLICATED CALIB. SHEET

CHN#	FREQ	H-VDEV	SPEC
15	59000	+0.00%	+/- 1%
13	900000	+0.94%	+/- 1%

CHN#	FREQ	QDEV	SPEC
16	14000	0.00 DEG	3.00 DEG
2	74000	1.66 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.8%	- 3.7%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 3.8%	- 3.8%	400100	- 0.1%	+ 0.4%	-15%
3	401000	- 3.9%	- 3.5%	400100	- 0.1%	- 0.1%	-15%
4	401000	- 4.1%	- 4.1%	400100	- 0.2%	+ 0.4%	-15%
5	401000	- 4.7%	- 4.6%	400100	- 0.3%	- 0.3%	-15%
6	401000	- 4.9%	- 5.0%	400100	- 0.4%	- 0.1%	-15%
7	401000	- 5.0%	- 4.6%	400100	- 0.3%	- 0.4%	-15%
8	401000	- 4.7%	- 4.8%	400100	- 0.2%	+ 0.1%	-15%
9	401000	- 4.7%	- 4.6%	400100	- 0.3%	- 0.3%	-15%
10	401000	- 4.5%	- 4.7%	400100	- 0.2%	+ 0.2%	-15%
11	401000	- 5.0%	- 4.6%	400100	- 0.4%	- 0.4%	-15%
12	401000	- 4.7%	- 4.9%	400100	- 0.2%	+ 0.0%	-15%
13	401000	- 4.7%	- 4.6%	400100	- 0.3%	- 0.3%	-15%
14	401000	- 4.9%	- 5.0%	400100	- 0.3%	+ 0.0%	-15%
15	401000	- 4.4%	- 4.3%	400100	- 0.3%	- 0.3%	-15%
16	401000	- 5.0%	- 5.0%	400100	- 0.4%	+ 0.1%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
5	1000000		44697		
15	1000000	46201		+3.3%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
13	10000		38621		
15	1000000	46201		+19.6%	30%

TECHNICIAN	JEFF THOMSON
STOP TIME	2:23:03 AM

:As-Left Data 12/19/86 MIZ-18 RDAU S/N 056 EL1412

Jeff A. Thomson

MIZ-18 R.D.A.U		CALIBRATION		12 /19 /1986	S/N 56
CHAN.NO.	FREQ.	HORZ.MAX	VERT.MAX	H-V DEV	QUAD-ERR
1	400000	41074	41071	+0.00%	0.10 DEG
2	400000	41058	41085	-0.07%	0.39 DEG
3	400000	41079	41058	+0.05%	0.12 DEG
4	400000	41031	41020	+0.02%	0.32 DEG
5	400000	41136	41129	+0.01%	0.11 DEG
6	400000	41387	41406	-0.05%	0.38 DEG
7	400000	41202	41184	+0.04%	0.11 DEG
8	400000	41258	41241	+0.04%	0.34 DEG
9	400000	41299	41284	+0.03%	0.10 DEG
10	400000	41248	41269	-0.06%	0.39 DEG
11	400000	41341	41326	+0.03%	0.12 DEG
12	400000	41317	41295	+0.05%	0.33 DEG
13	400000	41142	41128	+0.03%	0.11 DEG
14	400000	41388	41412	-0.06%	0.38 DEG
15	400000	41201	41179	+0.05%	0.10 DEG
16	400000	41258	41240	+0.04%	0.33 DEG

DUPLICATED
CALIB. SHEET

As Left Data

MIZ-18 CALIBRATION SPECIFICATIONS

START TIME	15:20:00 PM
DATE	12 /19 /1986
S/N	56
ROT	0
SPAN	3000
FIRST CHANNEL	1
LAST CHANNEL	16

DUPLICATED
CALIB. SHEET

CHN#	FREQ	H-VDEV	SPEC
15	59000	+0.00%	+/- 1%
2	870000	-0.98%	+/- 1%

CHN#	FREQ	QDEV	SPEC
16	14000	0.00 DEG	3.00 DEG
2	74000	1.66 DEG	3.00 DEG

CHN#	FREQ	H-HDEV	V-VDEV	FREQ	H-HDEV	V-VDEV	SPEC
1	401000	- 3.6%	- 3.6%	400100	- 0.1%	- 0.1%	-15%
2	401000	- 3.6%	- 3.8%	400100	- 0.1%	- 0.1%	-15%
3	401000	- 3.7%	- 3.4%	400100	- 0.2%	- 0.1%	-15%
4	401000	- 3.9%	- 4.1%	400100	- 0.2%	- 0.1%	-15%
5	401000	- 4.5%	- 4.6%	400100	- 0.3%	- 0.4%	-15%
6	401000	- 4.7%	- 5.0%	400100	- 0.3%	- 0.4%	-15%
7	401000	- 4.8%	- 4.5%	400100	- 0.3%	- 0.4%	-15%
8	401000	- 4.5%	- 4.7%	400100	- 0.3%	- 0.2%	-15%
9	401000	- 4.6%	- 4.5%	400100	- 0.2%	- 0.3%	-15%
10	401000	- 4.4%	- 4.6%	400100	- 0.2%	- 0.3%	-15%
11	401000	- 4.9%	- 4.5%	400100	- 0.3%	- 0.4%	-15%
12	401000	- 4.6%	- 4.8%	400100	- 0.2%	- 0.3%	-15%
13	401000	- 4.6%	- 4.6%	400100	- 0.4%	- 0.3%	-15%
14	401000	- 4.8%	- 5.0%	400100	- 0.4%	- 0.4%	-15%
15	401000	- 4.4%	- 4.2%	400100	- 0.3%	- 0.3%	-15%
16	401000	- 4.9%	- 4.8%	400100	- 0.4%	- 0.3%	-15%

CHN#	FREQ	H	V	C/CDEV	SPEC
13	1000000		44655		
7	1000000	45731		+2.4%	10%

CHN#	FREQ	H	V	F/FDEV	SPEC
7	10000	38269			
15	1000000	46201		+20.7%	30%

TECHNICIAN	JEFF THOMSON
STOP TIME	3:32:26 AM

COMBUSTION ENGINEERING
POWER SYSTEMS GROUP

CERTIFICATE OF CALIBRATION

Instrument Type: 8ch. Tape Recorder
Manufacturer: Hewlett Packard/Zetec
Range: Multi Accuracy: See below
Mfg. Serial No. 2314A01986
C-E ID No. EL-1030/AR0S00007C

Calibration Date: 01/27/87
Calibration Due Date: 07/27/87
Calibration Document:
[ ] Procedure ______ Rev. ______
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Ocilloscope	EL1453	Function Generator	EL1425
Frequency Counter	EL1423		
Digital Multimeter	EL1424		

CALIBRATION RESULTS

Standard Value	As Found		As Left	
Mode - Dupe In	Vert.	Horz	Vert.	Horz
Channel-1 (VDC)	(KHZ)	(KHZ)	(KHZ)	(KHZ)
0.000	3.503	3.438	3.502	3.500
+8.000	5.503	5.398	5.501	5.502
-8.000	1.500	1.483	1.499	1.506
Channel-2				
0.000	3.514	3.501	3.500	3.501
+8.000	5.511	5.500	5.502	5.497
-8.000	1.526	1.494	1.508	1.492
Channel-3				
0.000	3.505	3.468	3.504	3.501
+8.000	5.506	5.437	5.503	5.501
-8.000	1.444	1.506	1.443	1.504

Standard Value	As Found		As Left	
Mode - Dupe In	Vert.	Horz	Vert.	Horz
Channel-4 (VDC)	(KHZ)	(KHZ)	(KHZ)	(KHZ)
0.000	3.510	3.422	3.501	3.501
+8.000	5.516	5.384	5.504	5.500
-8.000	1.510	1.474	1.502	1.514
Mode-Dupe Out	Vert	Horz	Vert.	Horz
Channel-1 (VDC)	(VDC)	(VDC)	(VDC)	(VDC)
0.000	+0.015	-0.217	+0.005	+0.001
+8.000	+8.036	+7.665	+7.996	+8.000
-8.000	-8.012	-8.048	-7.994	-7.955
Channel-2				
0.000	+0.064	+0.053	+0.002	+0.006
+8.000	+8.084	+8.163	+7.997	+8.002
-8.000	-7.996	-8.085	-8.019	-8.028

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Changed value of R30 on Channels 2 VERT and HORZ / Re-calibrate

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Jeff A. Thorsen
ORGANIZATION: EMC

C-E 0020743 (7/86) Front

CERTIFICATE OF CALIBRATION

Instrument Type A/D-R CONVERTER
Manufacturer ZETEL
Range ±10v / 12 bit Accuracy SEE BELOW
Mfg. Serial No. 049
C-E ID No. EL 1231 / AX0300002C

Calibration Date 01/28/87
Calibration Due Date 07/28/87
Calibration Document:
[ ] Procedure ________ Rev. ____
[X] Manufacturer's Specifications

Test Equipment Used To Perform Calibration:

Test Equipment	Serial or ID No.	Test Equipment	Serial or ID No.
Oscilloscope	EL 1453	HP3968A2 Tape Rec.	EL 571
Digital Multimeter	EL 1424		
HP9836A Computer	EL 1362		

CALIBRATION RESULTS

Standard Value	As Found		As Left	
POWER SUPPLY (VDC)	(VDC)		(VDC)	
+15.00 ± 0.05	+15.016		+15.016	
−15.00 ± 0.05	−14.991		−14.991	
+5.000 ± 0.006	+5.003		+5.003	
IEEE CONTROL	Pass	Fail	Pass	Fail
K0 (Fast Reverse)	✓		✓	
K1 (Reverse)	✓		✓	
K2 (Stop)	✓		✓	
K3 (Forward)	✓		✓	
K4 (Fast Forward)	✓		✓	
K5 (Get Data)	✓		✓	
K6 (Clear Transfer)	✓		✓	
K8 (Speed −)	✓		✓	
K9 (Speed +)	✓		✓	

Standard Value	As Found	As Left
TIME DELAY (mS)	(mS)	(mS)
2.50	2.50	2.50
A/D CONVERTER (VDC)	(VDC)	(VDC)
GAIN CH1-CH8 = 5.0	5.0	5.0
OFFSET CH8 = 0.0	0.0	0.0
GAIN CH1 = 5.0	5.0	5.0
DATA BURSTS (mS)	(mS)	(mS)
2.5 ± 0.1	2.5	2.5
PULSE TRAIN (uS)	(uS)	(uS)
Pulse Width 1.5 ± 1.0	1.5	1.5
Pulse Sep. 1.5 ± 1.0	1.5	1.5
Pair Sep. 22.0 ± 5.0	22.0	22.0

DUPLICATED CALIB SHEET

CALIBRAITON HAS BEEN PERFORMED UTILIZING MEASUREMENT DEVICES WHICH HAVE, KNOWN RELATIONSHIPS TO NBS STANDARDS WHERE SUCH STANDARDS EXIST. WHERE SUCH STANDARDS DO NOT EXIST, AN APPROVED PROCEDURE WRITTEN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS HAS BEEN USED AND THE STANDARDS DOCUMENTED.

REMARKS: Adjusted Offset

[X] ACCEPTED [ ] REJECTED

CALIBRATED BY: Jeff A Thomson
ORGANIZATION: EMC

C-E 0020743 (7/86) Front