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Report of Flux Leakage Inspection

PACIFIC: P425A10

Serial: 207653 #1

Location: WIN-BIG
CASINO, TX 75201

Inspected: August 29, 2007

Inspected By: ANALYST
LEVEL III

Reviewed By: 
TECHNICAL MANAGER, LEVEL III

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Vessel Information

Manufacturer	Model	Style	Serial Number	Type
PACIFIC	P425A10	Fire Tube	207653 #1	Boiler

Boiler	
TestEnd	Compressor End
Tube Count	186
Tube Type	Prime Surface
Tube Material	Carbon Steel
OD	3.00
*NWT	.120
#/Type Support	Non-Detectable
Tube Numbering	Left to Right
Row Numbering	Top to Bottom
Tube Length +- 2	226 Inches

Analyst: ANALYST, LEVEL III

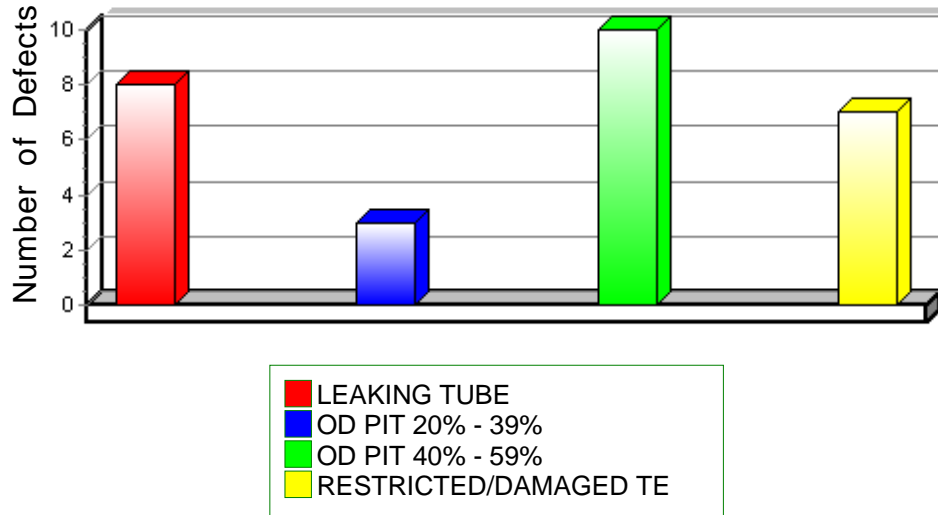
* Nominal Wall Thickness

Defect Summary/Comparison

Test Date

8/29/2007

Boiler Defects



Location	Model	Serial Number
WIN-BIG	P425A10	207653 #1

Note: The Graph will indicate a Comparison Analysis when the unit has been previously tested by TAI Services.

Summary of Inspection

Boiler: 186 Tubes		
Significant/Measurable Indications	Number of Tubes	Percent of Bundle
RESTRICTED/DAMAGED TE	7	3.76
LEAKING TUBE	8	4.30
OD PIT 20% - 39%	3	1.61
OD PIT 40% - 59%	10	5.38
Totals	28	15.05

To insure against any possible tube leaks not detectable by the Flux Leakage test method, we recommend a pressure check be performed on this bundle. If any tube leaks are found, we recommend those tubes be isolated from the system prior to machine start-up.

Recommendations

A Magnetic Flux Leakage inspection was performed on the tubes in this vessel. This type inspection involves locally magnetizing the tube under inspection. Tube discontinuities produce fluctuations in the surface magnetic field, and in the magnetic flux flowing through the tube wall. Responses caused by these discontinuities are compared to notches and grooves milled into a Calibration Reference Standard of the same nominal material, dimension and product form. It should be noted however, that responses caused by natural discontinuities can differ from those caused by artificial discontinuities of the same depth and damage located at or near the tube ends may not be detectable. If a leak is suspected, we recommend a pressure test be performed on this unit prior to placing this unit back in service. Also, if foreign material is present in the tubes, it can obscure or be interpreted as tube damage

The following repair actions are suggested after removing sample tubes to confirm the inspection results.

BOILER:

Tubes marked as Restricted/Damaged, were inaccessible due to the tube end at the test end being damaged. This damage prevented the inspection probe from being inserted into the tube. These tubes were not inspected and their condition remains unknown.

We recommend tubes marked for leaks be isolated from the system at this time. These tubes were indicted as leaking prior to the inspection.

We recommend tubes indicating OD Pits of 40% or more be isolated from the system at this time. Tubes indicating OD Pits of less than 40% require no corrective action but should be monitored for defect growth. We further recommend this tube bundle be pressure tested for leaks that may have been undetectable.

SUMMARY:

We recommend that a follow-up inspection be performed after 1 year of operation. A copy of this report should be retained in your files to be used for comparison at that time.

If you should have any questions concerning this report, or if we may be of further assistance, please feel free to call upon us.

Data Sheet

Location	Model	Serial Number	Date
WIN-BIG	P425A10	207653 #1	August 29, 2007
CASINO, TX 75201			

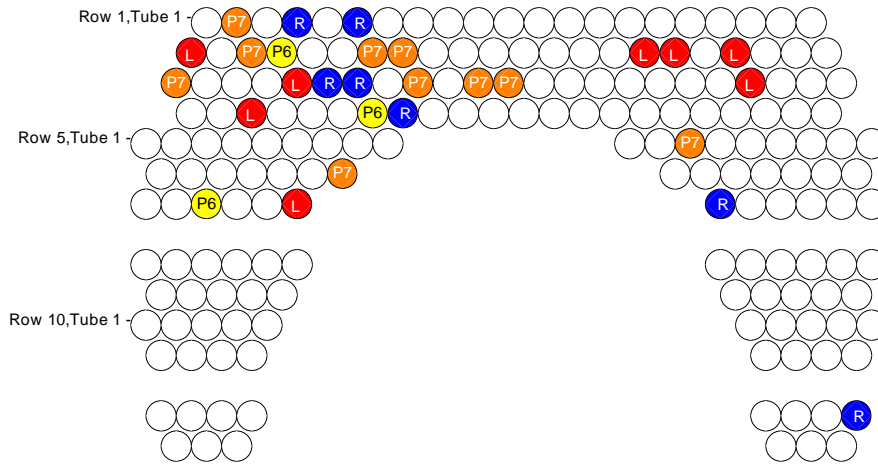
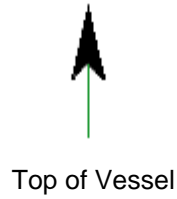
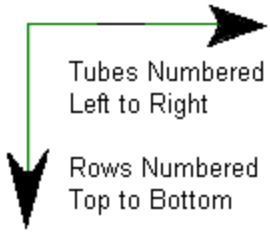
Row	Tube	Description	Area
SET UP CALIBRATE & STARTED			
BOILER 12:30 pm			
1	2	OD PIT 40% - 59%	B01
1	4	RESTRICTED/DAMAGED TE	B01
1	6	RESTRICTED/DAMAGED TE	B01
2	1	LEAKING TUBE	B01
2	3	OD PIT 40% - 59%	B01
2	4	OD PIT 20% - 39%	B01
2	7	OD PIT 40% - 59%	B01
2	8	OD PIT 40% - 59%	B01
2	16	LEAKING TUBE	B01
2	17	LEAKING TUBE	B01
2	19	LEAKING TUBE	B01
3	1	OD PIT 40% - 59%	B01
3	5	LEAKING TUBE	B01
3	6	RESTRICTED/DAMAGED TE	B01
3	7	RESTRICTED/DAMAGED TE	B01
3	9	OD PIT 40% - 59%	B01
3	11	OD PIT 40% - 59%	B01
3	12	OD PIT 40% - 59%	B01
3	20	LEAKING TUBE	B01

Row	Tube	Description	Area
4	3	LEAKING TUBE	B01
4	7	OD PIT 20% - 39%	B01
4	8	RESTRICTED/DAMAGED TE	B01
5	12	OD PIT 40% - 59%	B01
6	7	OD PIT 40% - 59%	B01
7	3	OD PIT 20% - 39%	B01
7	6	LEAKING TUBE	B01
7	7	RESTRICTED/DAMAGED TE	B01
12	8	RESTRICTED/DAMAGED TE	B01
CALIBRATION CHECK & COMPLETED			
BOILER 04:30 pm			

Boiler Section

S/N 207653 #1

Compressor End

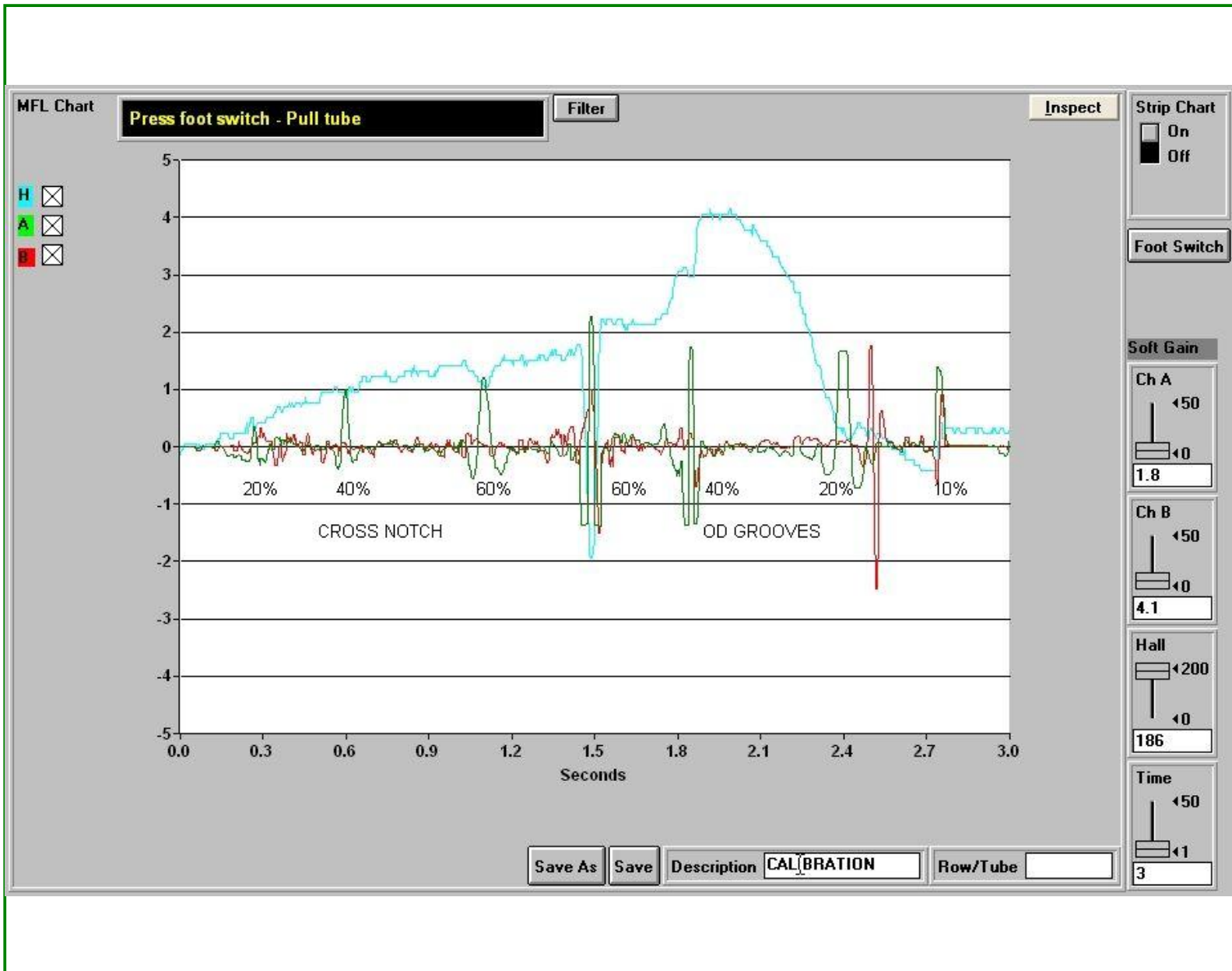


- R = RESTRICTED/DAMAGED TE
- L = LEAKING TUBE
- P6 = OD PIT 20% - 39%
- P7 = OD PIT 40% - 59%

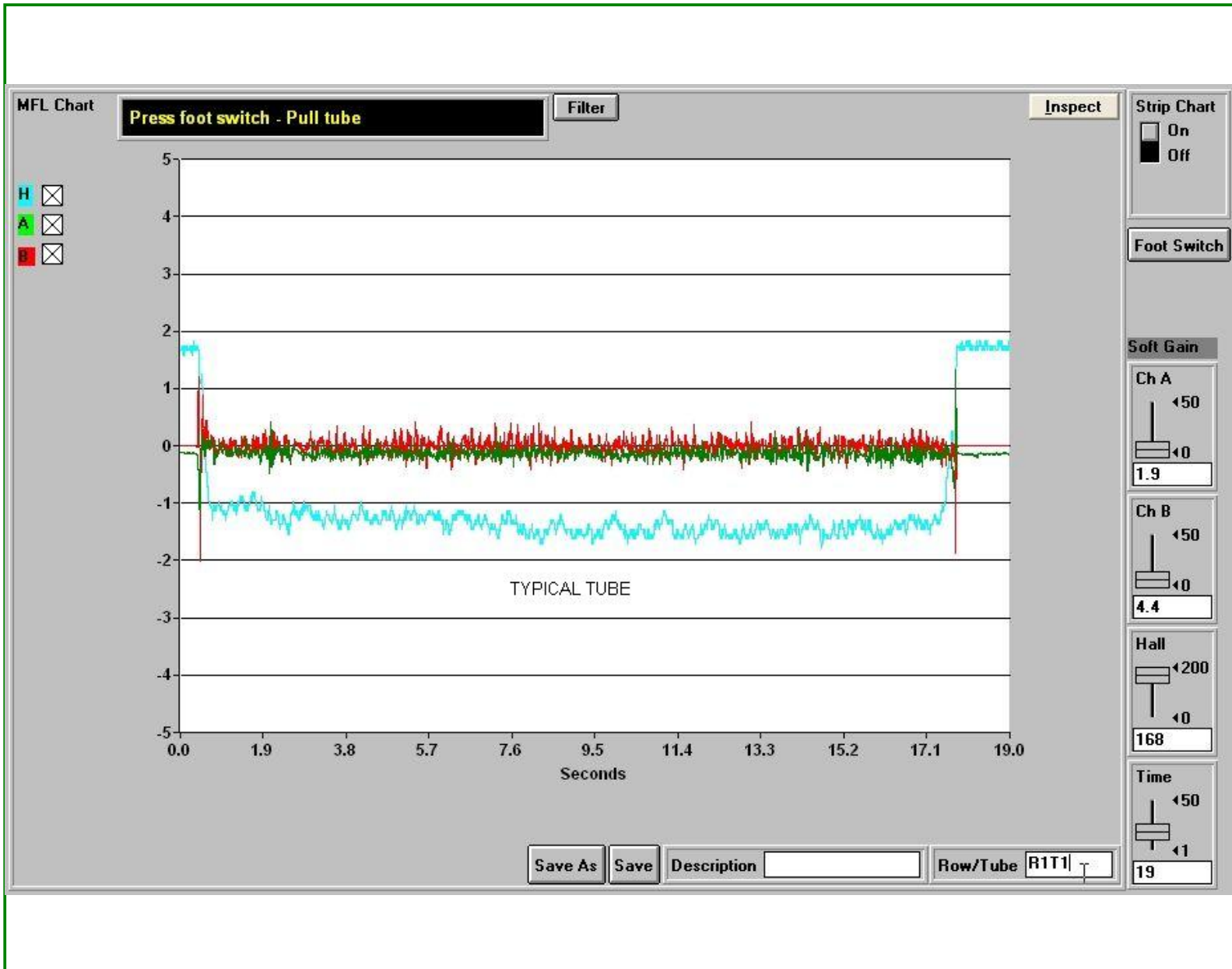
Calibration Page

Tube Type	Material	Nom Wall Thick
Prime Surface	Carbon Steel	.120

Boiler

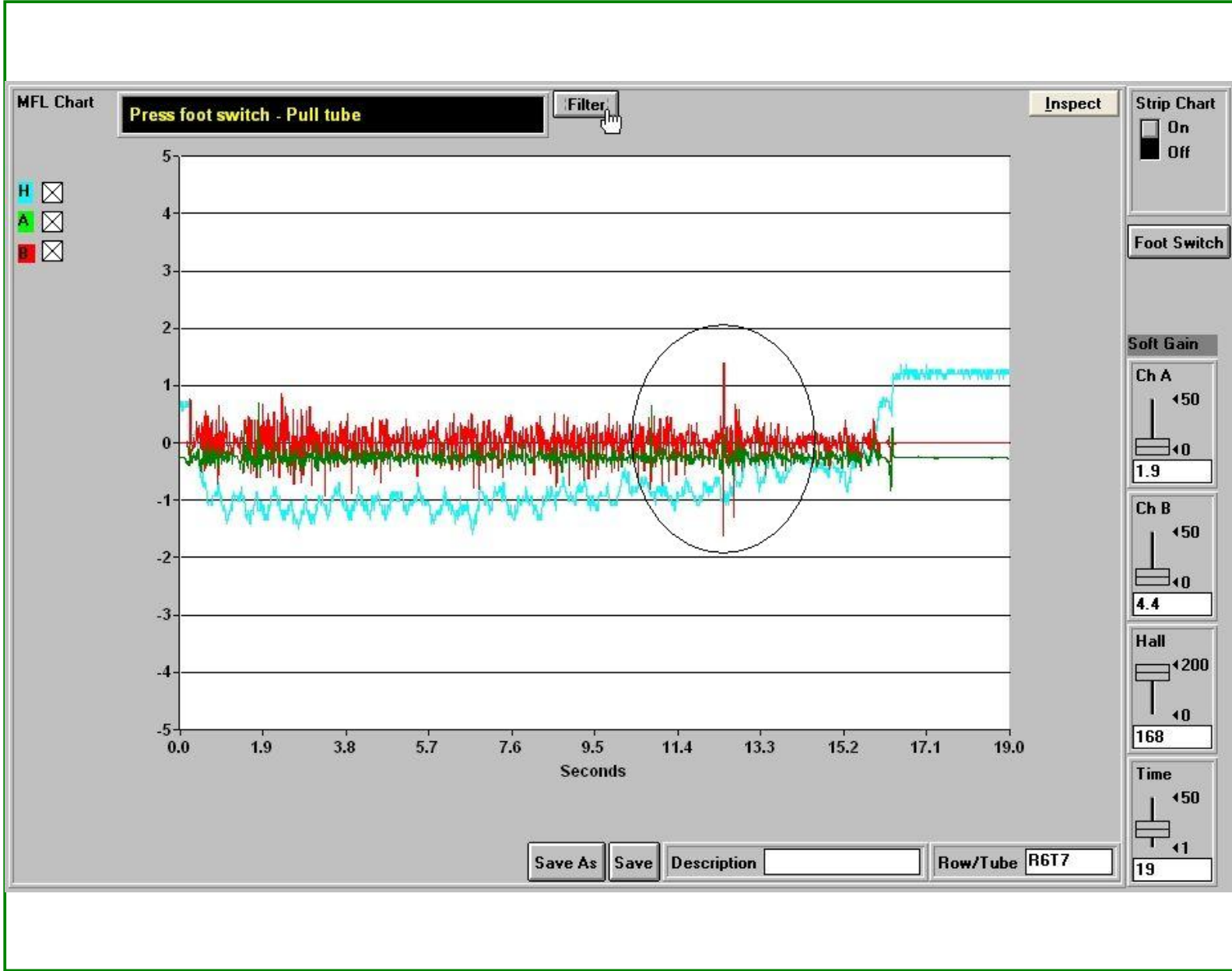


Boiler Section



NO SIGNIFICANT DEFECTS

Boiler Section



OD PIT 40% - 59%

Magnetic Flux Leakage

Calibration Procedure

A calibration procedure is performed prior to each inspection. Calibration Procedures are repeated every 2 hours, or whenever improper operation of the test instrument is suspected. The calibration procedure is performed using a Calibration Reference Standard of the same nominal diameter, composition, wall-thickness and tube type being inspected.

The sensitivity of Channel A is adjusted to produce a one division response for the 40% OD Flat Bottom hole or notch milled into the Calibration Reference Standard. This establishes the response to the ID Groove on channel A. The sensitivity of Channel B is adjusted to match the ID Groove response on Channel A. The sensitivity of the Hall Channel is set to produce a 4 division Response for the 40% OD Groove. The degree of response may be modified as necessary to accommodate special needs.

Calibration Reference Standard

A Calibration Reference Standard used to establish system response. Artificial discontinuities are milled into the Calibration Reference Standard to simulate the types of damage typically found. The type and number of artificial and/or natural discontinuities may vary depending upon inspection criteria.

Inspection Procedure

One hundred percent (100%) of the tubes in a vessel are inspected unless otherwise specified in the purchase order. The full length of each tube is inspected by retracting the inspection probe at a constant rate to produce a strip chart. The strip chart is then evaluated for discontinuities. If discontinuities are detected, the tube will be identified in the final report. Tubes that do not show discontinuities are not identified. Sample strip charts of the damage detected, along with strip charts of good tubes are included in the final report. Not all tubes are recorded.

Channel A is displayed in Green and is used to detect sharp discontinuities such as cracks and pitting on the inside, the outside, and throughout the tube wall. Channel B, displayed in Red, is used to detect sharp discontinuities such as cracks and pitting. This channel is primarily sensitive to damage on the inside of the tube and is used to determine defect origin. The Hall Channel, displayed in Blue, is sensitive to large volume and gradual defects such as erosion both on the inside and outside diameter of the tube. This channel is also sensitive to dimensional changes such as freeze bulges.

Explanation of Abbreviations

Abbreviation	Explanation
ABN IND	Abnormal Indication
B	Bay
FB	Freeze Bulge
FBH	Flat Bottom Hole
FM	Foreign Material
ID	Internal Diameter
ID CORROSION	Internal Diameter, Corrosion
ID DEPOSIT	Internal Diameter, Deposit
ID PIT	Internal Diameter, Pit
IDML	Internal Diameter, Metal Loss
IE	Internally Enhanced
OD	Outside Diameter
ODML	Outside Diameter, Metal Loss
ODML@S	Outside Diameter Metal Loss at Support
OD DEPOSIT	Outside Diameter, Deposit
PLF	Possible Longitudinal Flaw
PRF	Possible Radial Flaw
PSC	Possible Stress Corrosion
S	Support
WAS	Wear at Support
>	Greater Than
<	Less Than
OTE	Opposite Test End
TE	Test End