ALTEC INC.

AL'S TUBULAR EDDY CURRENT INC.

FINAL REPORT TO:

SAMPLE REPORT

LOCATION OF INSPECTION:

ALTEC JOB #
ANALYSIS BY:

Date of inspection:

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A.L.T.E.C. Inc.
Al's Tubular Eddy Current Inc.

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LEGAL NOTICE

Eddy Current testing is a comparative method of inspection only. It compares known depths of machined pits and grooves, to defects found in tubes. This comparison relates to the angle of the machined pit or groove to the angle (and sometimes amplitude) of a defect found in a tube.

Eddy Current analysis also depends greatly on previous history of the unit. This information gives a better understanding of problems that may be occurring with the tubes.

Machine operation information, gives a more effective inspection method to recognize and properly analyze defects found.

Most all defects in chiller tubes are obvious and easily analyzed, however there is a small percentage with added complications such as ID depositing, OD depositing, tube wall thickness variations, defects that are very small in amplitude, and where the defect sits along the tube length.

A combination of defects and any one of the above stated variations will make accurate analyzing, for most times, impossible.

Circumferential cracking is also a very difficult defect to detect, for two reasons.

1) Eddy currents run in a circulatory path around the tube, the same direction as the circumferential crack, giving very little or no resistive value.

2) Circumferential cracks occur mostly in the transition zones of the tubes. This is where tube geometry changes from finned tube, to a wider diameter smooth tube. This geometry change greatly effects the Eddy currents; a specific method of inspection must be adapted for this type of defect to be detected.

Another factor that must be taken into account is that after an Eddy Current inspection has been completed, the chiller will sit dormant for a period of time. There may be some circumstances that will effect tube integrity before start up and or machine operation after start up.

SUMMARY

Eddy current is not a 100% method of inspection because of the many variables that exist in chiller & heat exchanger tubes. For all stated reasons, Al's Tubular Eddy Current Inc. cannot give a 100% guarantee that eddy currents will detect all problems within any heat exchanger or chiller tubes tested.

ALTEC'S PROMISE

Al's Tubular Eddy Current Inc. will reimburse the total invoice amount of any unit tested if a chiller or heat exchanger tube leaks within a 24-hour period after machine start-up. This is provided that no further tube cleaning or outer tube bundle shell work has been undertaken after Eddy Current testing.

This promise covers the limitations of Eddy Current testing. Al's Tubular Eddy Current Inc. cannot be held responsible for, or be charged for maintenance or repairs of any chiller or heat exchanger tube tested.

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METHOD OF INSPECTION

1.0 SCOPE

This section is to give an overview to parameters used for an EDDY CURRENT INSPECTION. These parameters are basic equipment capabilities, scanning frequencies, and defect detection. EDDY CURRENT is a comparative method of inspection only. It compares defects from a machined tube (Calibration Tube) to defects found in chillers tested.

1.1 BASIC EQUIPMENT CAPABILITIES

This unit UTILIZES 4 DIFFERENT INSPECTION FREQUENCIES and has the capabilities of displaying all channels in a strip chart display. With this 4 frequency capability, along with a probe that has been designed with 2 different coils within, will cover a wide range of different types of defects or non-defects in a single scan.

2.0 SCANNING

The probe is fully inserted into each tube, and then extracted approximately 2 to 3 feet per second. Each tube will have a full length STRIP CHART display on the L C screen for defect detection, before continuing to the next tube. This will be repeated for each tube.

3.0 FREQUENCIES

There are a total of 4 different frequencies that can be used at one time. For Chiller Inspections, the utilization of 2 frequencies for the bobbin coil, and 2 frequencies for the cross axis coil will be used.

Although frequencies can vary, the nominal frequencies are as follows:

BOBBIN COIL 16 kHz & 8 kHz

CROSS AXIS COIL 5 kHz & 2 kHz

For most units, a 2 differential, and a 2 Cross Axis coil inspections will be used simultaneously.

4.0 DEFECT DETECTION

Defect detection and accurate analysis relies on the instrument capabilities, probe design, and experience. The viewing capability along with the frequencies utilized will lower the effect of Eddy Current testing limitations. For these reasons, ALTEC's equipment utilizes 2 different coils in the same probe, along with a 4 frequency viewing capability that enables a larger range of inspection variation and defect detection, to be done in a single scan.

4.1 HIGH FREQUENCY INSPECTION — (DIFFERENTIAL)

This frequency will be used mainly for the verification of depth for OD defects, and focusing on ID defects for detection only. This frequency will also help in the rectifying of ID or OD deposits, as not to be misinterpreted as defects.

METHOD OF INSPECTION CONT

4.2 OPTIMUM FREQUENCY ---- F90 (DIFFERENTIAL)

This frequency will be used for defect detection, and final analysis, with comparison to the other inspection frequencies. This frequency will sense most all defects but alone will not accurately define depths of defects or differentiate deposits, from defects.

4.3 LOW FREQUENCY --- (CROSS AXIS)

This frequency is used mainly for the detection of Fretting or (SADDLE DAMAGE), at tube support plates, detecting OD Corrosion, confirming geometric changes and verifying that OD deposits will not be mistaken for defects.

4.4 COMPARISON CROSS AXIS ---

This coil is used in comparison with the F90 Differential coil to confirm defects found. This coil gives an absolute display being sensitive to long gradual defects such as OD Corrosion, Erosion, zipper or longitudinal cracking and is sensitive to some Circumferential Cracking.

4.5

Once a defect has been detected, the strip charts are changed to the 4 channel, X, Y lissajous for comparison analyzing. This method makes analyzing much easier, due to the viewing of 4 frequencies at the same time.

4.6 EQUIPMENT USED

ECT MAD 4D-XS MULTI-FREQUENCY INSTRUMENT
- MODEL # DP386SX-20C
- SERIAL # DCS2003902

PROBE OD -. 525", .560", .575"
- COIL #1 - DIFFERENTIAL
- COIL #2 - CROSS AXIS (ABSOLUTE)

4.7 CALIBRATION TUBE

The Calibration tubes have the following known depths of defects;

- 1-ID 25% THROUGH WALL CONCENTRIC GROOVE 1/16" WIDE.
- 1-100% THROUGH WALL 1/16"
- 1-OD 25% THROUGH WALL CONCENTRIC GROOVE 1/16" WIDE.

METHOD OF TUBE IDENTIFICATION

To eliminate any confusion, ALTEC Inc. always refers to the Chiller control box for proper tube verification.

Rows are always counted from the top of the tube sheet to the bottom. The row closest to the top of the tube sheet being Row #1 Tube #1, with each tube being counted from left to right. Any deviation from this method will be noted on the tube sheet diagram, since some tube sheets are designed such that this method of tube identification cannot be implemented.

FOR PROPER TUBE IDENTIFICATION REFER TO THE TUBE SHEET DIAGRAM.

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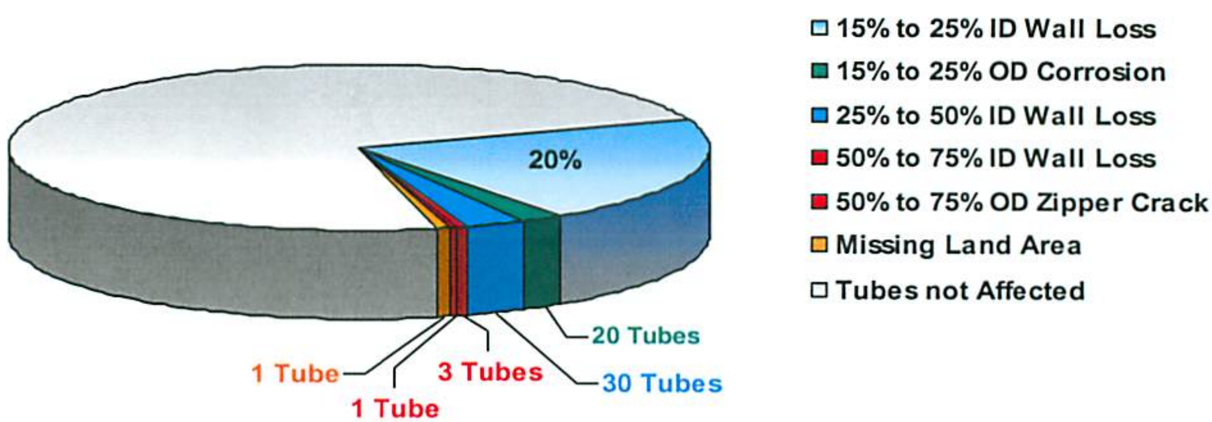
Analysis Results

On *Date* an eddy current inspection was completed *Address, City, Province*.
Of the 1866 tubes tested, the results are as follows;

CONDENSER

Of the 1048 tubes tested in the condenser, there were indications indicative of the following;

20 Category #1 OD Corrosion (15% to 25%)
30 Category #2 ID Wall Loss (25% to 50%)
3 Category #3 ID Wall Loss (50% to 75%) ***Recommend to Plug***
1 Category #3 OD Zipper Crack (50% to 75%) ***Recommend to Plug***
1 Missing Land Area
2 Mechanical Plug



Note: There was approx. 20% of the tubes that exhibited signals indicative of Category #1 ID wall loss. This is concidered minor, and is noted for comparison in future inspections only.

** It is recommended to re-test this unit in 3 years to monitor any change in tube integrity.

PLEASE REFER TO THE DEFECTIVE TUBE LIST AND TUBE SHEET DIAGRAM FOR PROPER TUBE IDENTIFICATION.

PLEASE REFER TO THE DEFECT DEFINITION SECTION FOR A BRIEF EXPLANATION OF DEFECTS FOUND.

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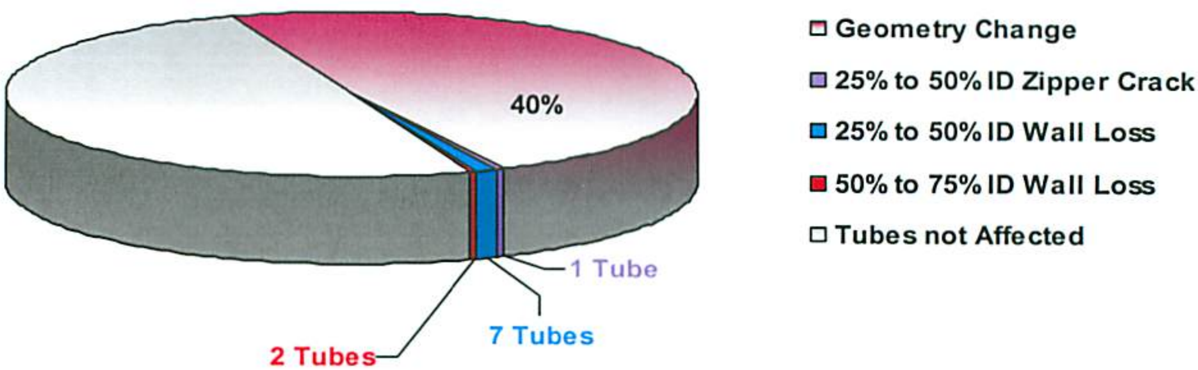
Analysis Results

EVAPORATOR

Of the 818 tubes tested in the evaporator, there were indications indicative of the following;

- 1 Category #2 ID Zipper Crack (25% to 50%)
- 7 Category #2 ID Wall Loss (25% to 50%)
- 2 Category #3 ID Wall Loss (50% to 75%) ***Recommend to Plug***



Note: Approx. 40% of the tubes exhibited signals indicative of manufacturing geometry changes.

** It is recommended to re-test this unit in 3 years to monitor any change in tube integrity.

PLEASE REFER TO THE DEFECTIVE TUBE LIST AND TUBE SHEET DIAGRAM FOR PROPER TUBE IDENTIFICATION.

PLEASE REFER TO THE DEFECT DEFINITION SECTION FOR A BRIEF EXPLANATION OF DEFECTS FOUND.

DEFECTIVE TUBE LIST

CONDENSER

ROW	TUBE	ID	OD	OTHER	CATEGORY	TYPE	COMMENT
10	1	X			2	P	
12	1	X			2	P	
12	3	X			2	P	
12	21	X			2	P	
13	5	X			**3**	P	REC'M PLUG
14	8	X			**3**	P	REC'M PLUG
15	1	X			2	P	
15	4	X			2	P	
16	23			X	5	MLA	
16	24	X			2	P	
17	3	X			2	P	
17	23	X			2	P	
22	1		X		1	C	
22	2		X		1	C	
22	3		X		1	C	
22	4		X		1	C	
22	19	X			2	P	
23	1		X		1	C	
23	2		X		1	C	
23	3		X		1	C	
23	4		X		1	C	
24	2		X		1	C	
24	3		X		1	C	
24	4		X		1	C	
24	9	X			2	P	
25	4	X			2	P	
26	4		X		1	C	
27	4		X		1	C	
28	6	X			2	P	
28	12	X			2	P	
29	8	X			2	P	

DEFECT TUBE LEGEND

15% - 25% wall loss - Category #1
25% - 50% wall loss - Category #2
50% - 75% wall loss - Category #3
75% - 100% wall loss - Category #4
Other ------------------------Category #5

DEFECT TYPE LEGEND

P - PIT
C - CORROSION
MLA - MISSING LAND AREA

Model #
Serial #

DEFECTIVE TUBE LIST

CONDENSER CONT

ROW	TUBE	ID	OD	OTHER	CATEGORY	TYPE	COMMENT
29	9	X			2	P	
30	4	X			2	P	
30	6			X	5	MP	
30	7		X		1	C	
30	8		X		1	C	
30	9		X		1	C	
30	10	X			2	P	
31	4		X		**3**	Z	REC'M PLUG
31	5			X	5	MP	
31	7		X		1	C	
31	8		X		1	C	
31	9	X			2	P	
32	1	X			2	P	
32	3	X			2	P	
32	5	X			**3**	P	REC'M PLUG
32	6		X		1	C	
32	7		X		1	C	
32	14	X			2	P	
35	4	X			2	P	
35	18	X			2	P	
35	25	X			2	P	
35	28	X			2	P	
35	30	X			2	P	
36	3	X			2	P	
34	25	X			2	P	
37	11	X			2	P	

DEFECT TUBE LEGEND

15% - 25% wall loss - Category #1
25% - 50% wall loss - Category #2
50% - 75% wall loss - Category #3
75% - 100% wall loss - Category #4
Other ------------------------Category #5

DEFECT TYPE LEGEND

P - PIT
C - CORROSION
Z - ZIPPER CRACK
MP - MECHANICAL PLUG

Model #
Serial #

DEFECTIVE TUBE LIST

EVAPORATOR

ROW	TUBE	ID	OD	OTHER	CATEGORY	TYPE	COMMENT
1	23	X			2	P	
2	3	X			2	P	
4	51	X			2	P	
6	38	X			2	P	
7	50	X			**3**	P	REC'M PLUG
8	26	X			**3**	P	REC'M PLUG
8	28	X			2	P	
8	41	X			2	Z	
10	51	X			2	P	
16	16	X			2	P	

DEFECT TUBE LEGEND

15% - 25% wall loss - Category #1
25% - 50% wall loss - Category #2
50% - 75% wall loss - Category #3
75% - 100% wall loss - Category #4
Other ------------------------Category #5

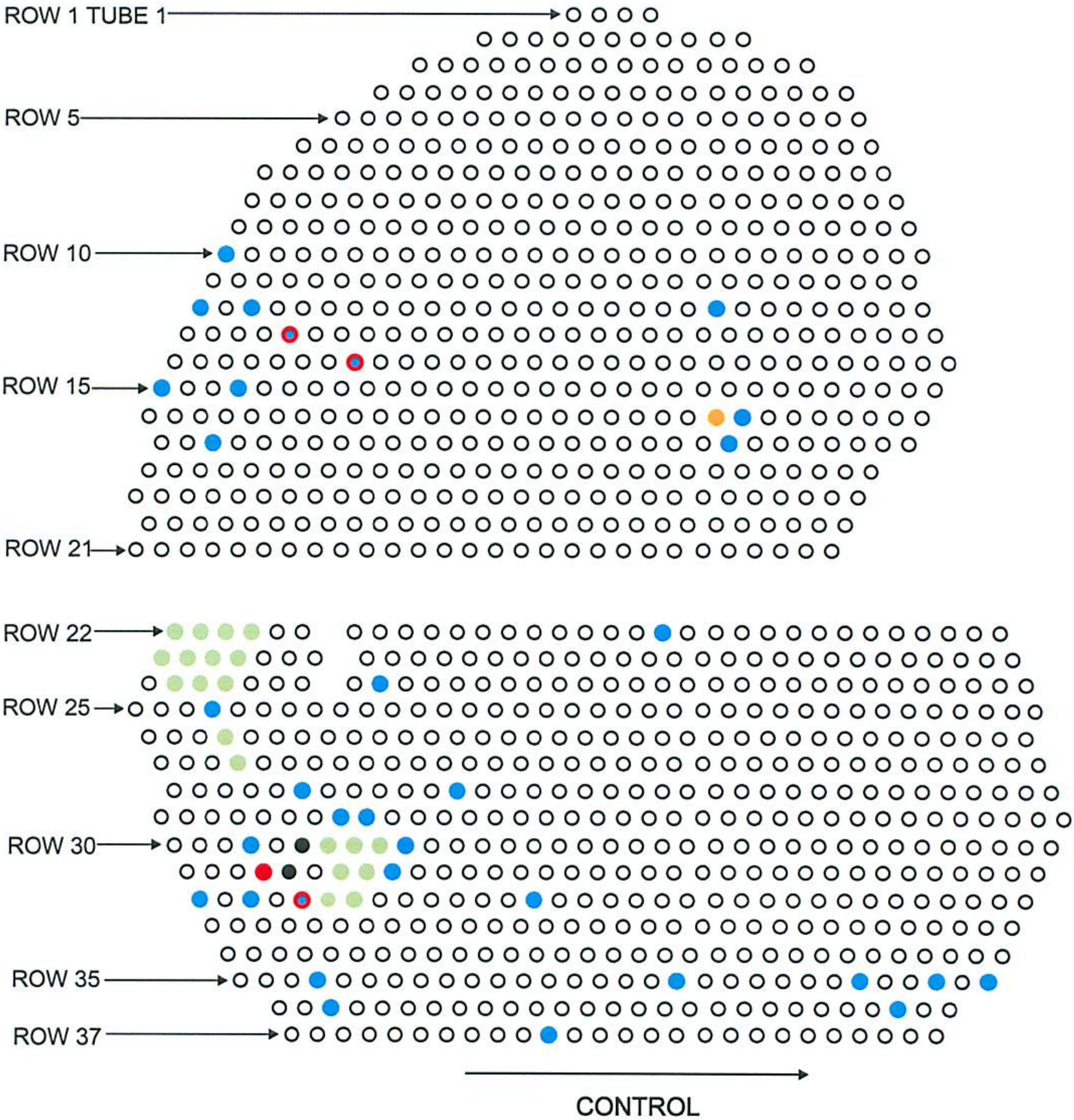
DEFECT TYPE LEGEND

P - PIT
Z - ZIPPER CRACK

Model #
Serial #

TUBE SHEET DIAGRAM

CONDENSER

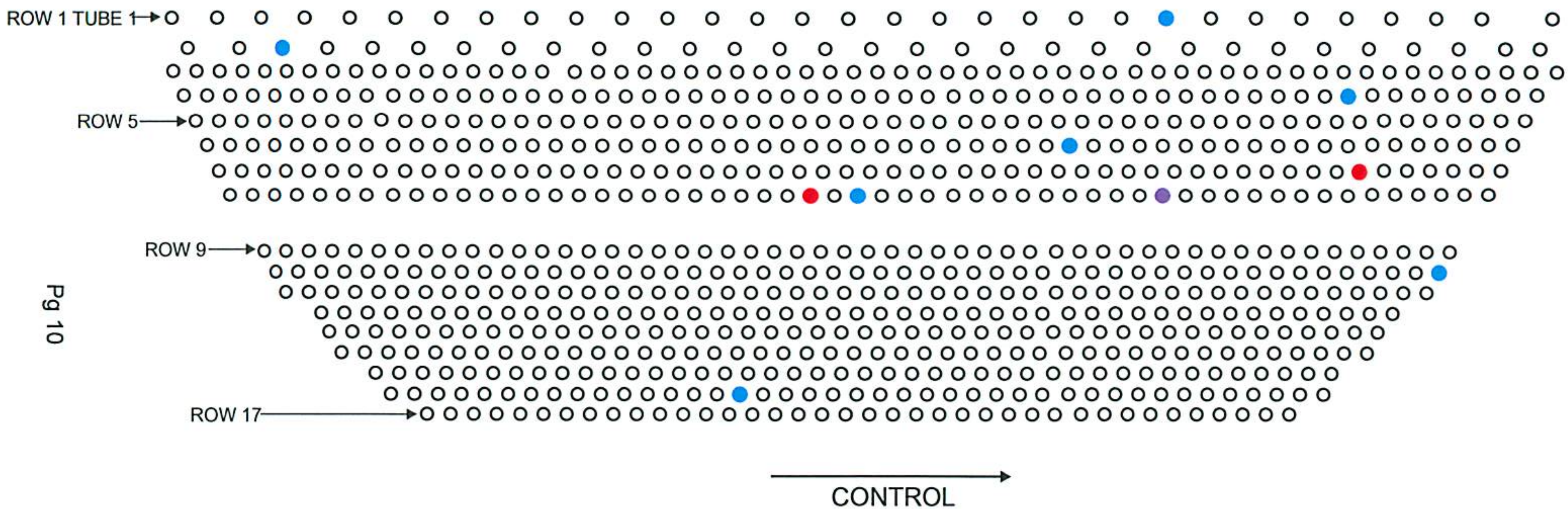


DEFECT SEVERITY LEGEND

MODEL #
SERIAL #

TUBE SHEET DIAGRAM

EVAPORATOR



DEFECT SEVERITY LEGEND

CATEGORY #2 ID PIT

CATEGORY #3 ID PIT

CATEGORY #2 ID ZIPPER CRACK

MODEL #
SERIAL #

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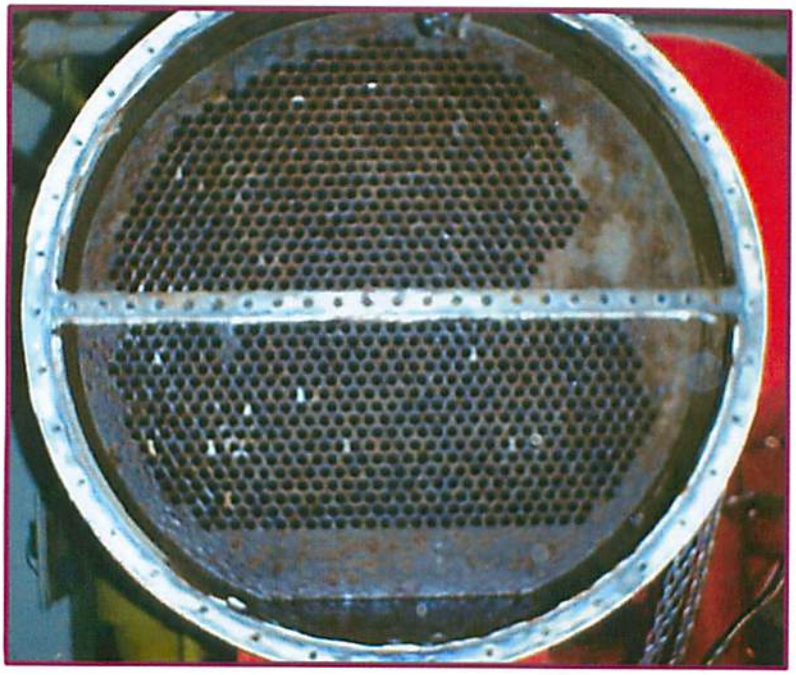
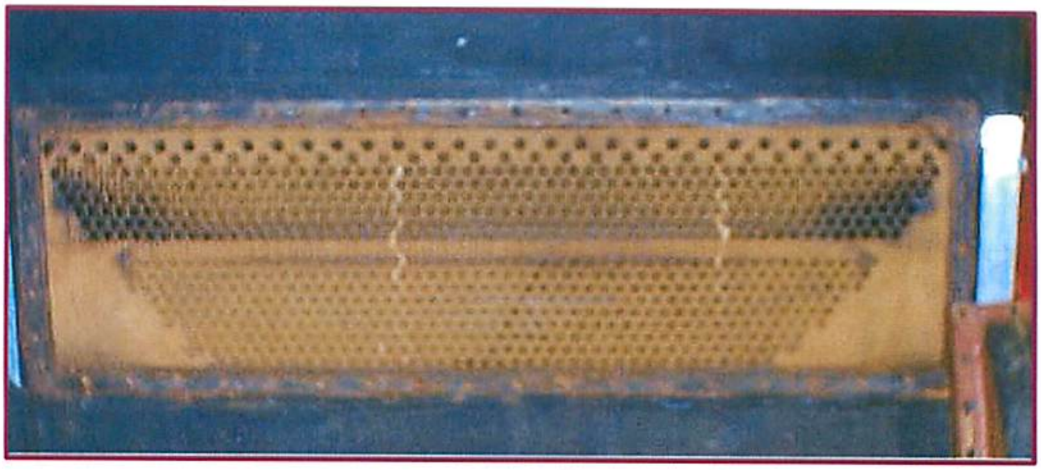
Address:
Type:
Model:
Serial:
Unit #

CONDENSER



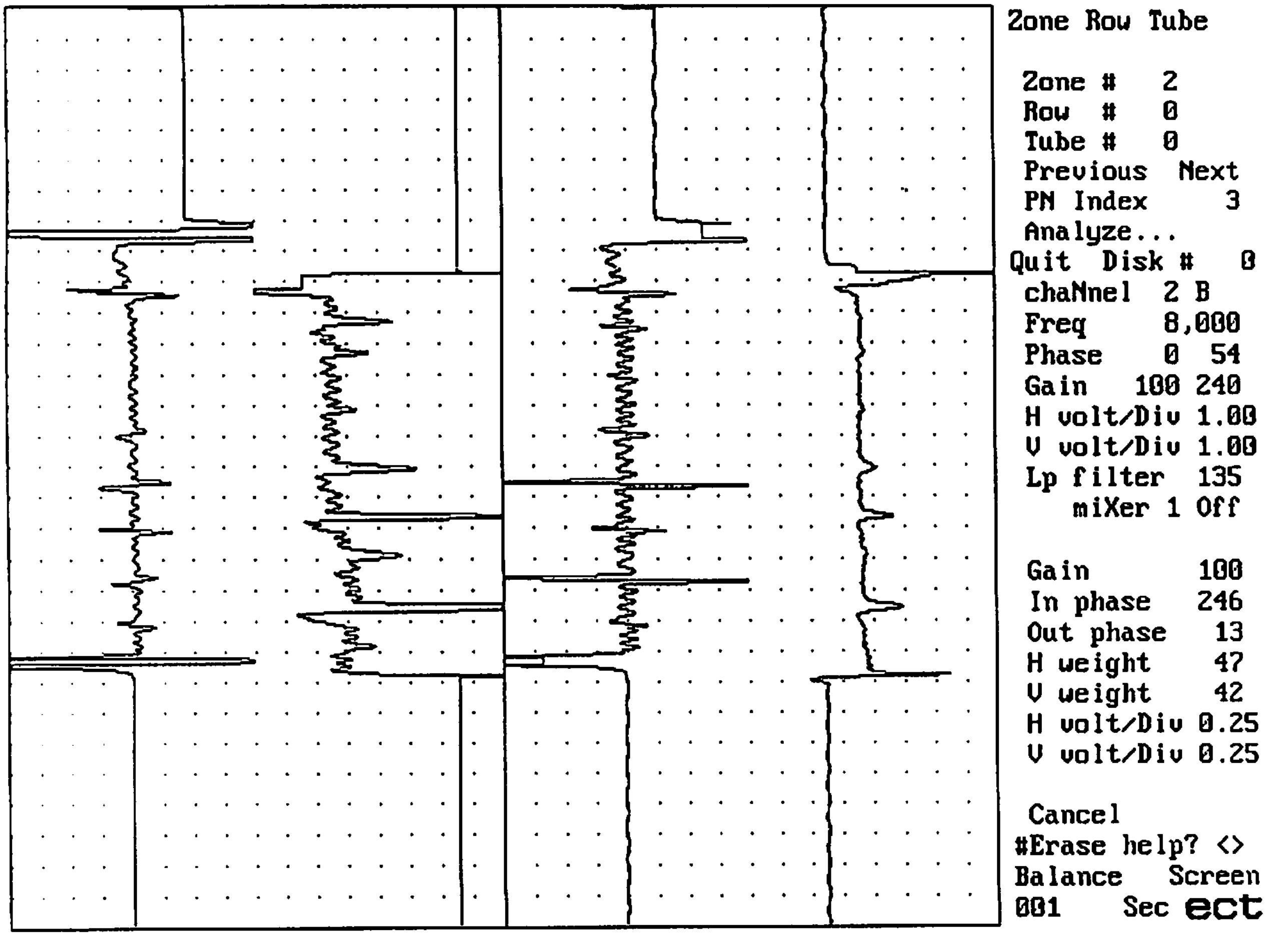
CONTROL

EVAPORATOR



CONTROL

Calibration Tube Condenser



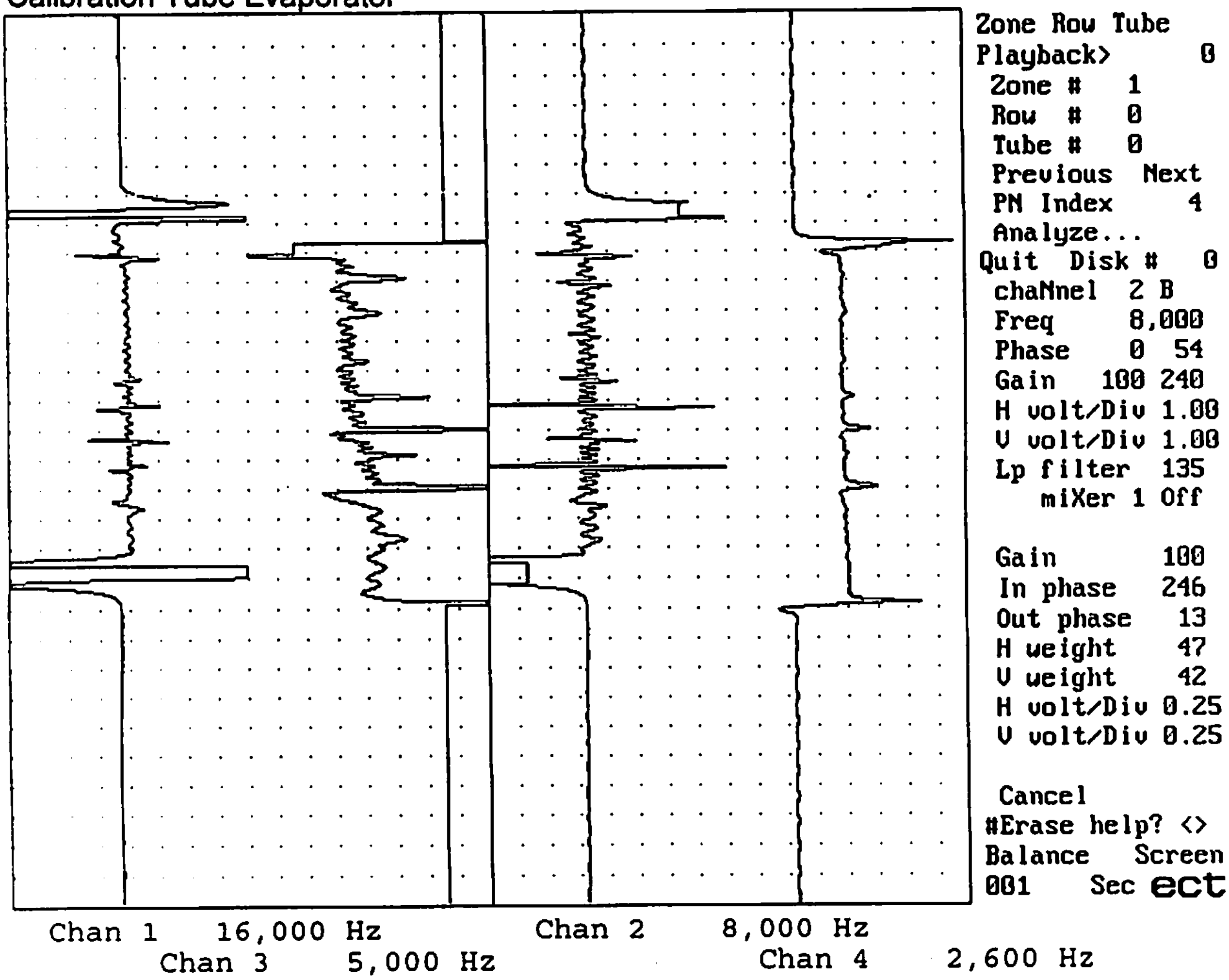
Chan 1 16,000 Hz Chan 2 8,000 Hz
Chan 3 5,000 Hz Chan 4 2,600 Hz

8.108B 98MAR26 File: UWONT525

	Frequency	Phase	Gain	Horiz V/div	Vert V/div	Angle Amp	LP Filter	HP Filter	Bal X	Bal Y	Screen
Channel 1	16,000	22	240	1.00	1.00	Off	135	Off	+32767	+32767	A
Channel 2	8,000	54	240	1.00	1.00	Off	135	Off	+32767	-32768	B
Channel 3	5,000	234	170	1.00	1.00	Off	135	Off	-32768	+32767	C
Channel 4	2,600	222	90	2.00	2.00	Off	135	Off	-32768	-32768	D

	Horiz Weight	Vert Weight	Input Phase	Out Phase	Horiz V/div	Vert V/div	Angle Amp	Screen	HP Filter	Zone	Row	Tube
Mixer 1	47	42	246	13	0.25	0.25	Off	Off	Off	2	0	0
Mixer 2	71	56	250	17	0.13	0.13	Off	Off	Off			

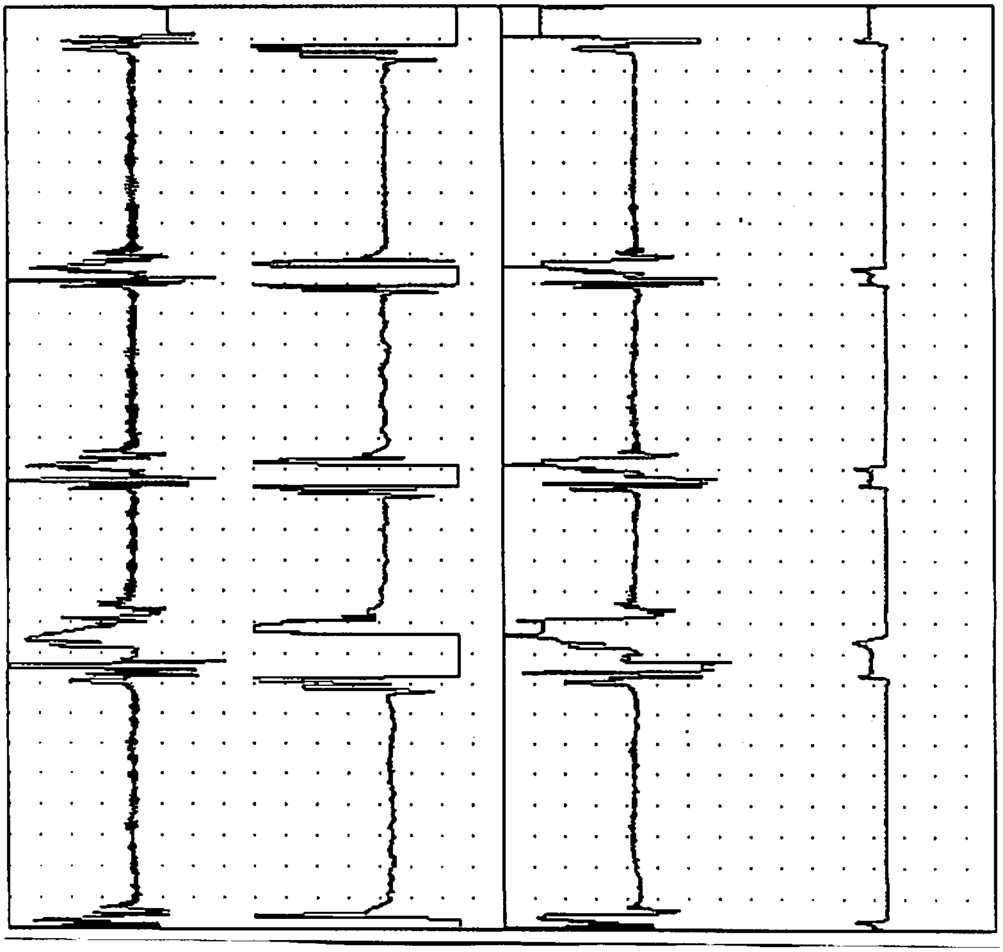
Calibration Tube Evaporator



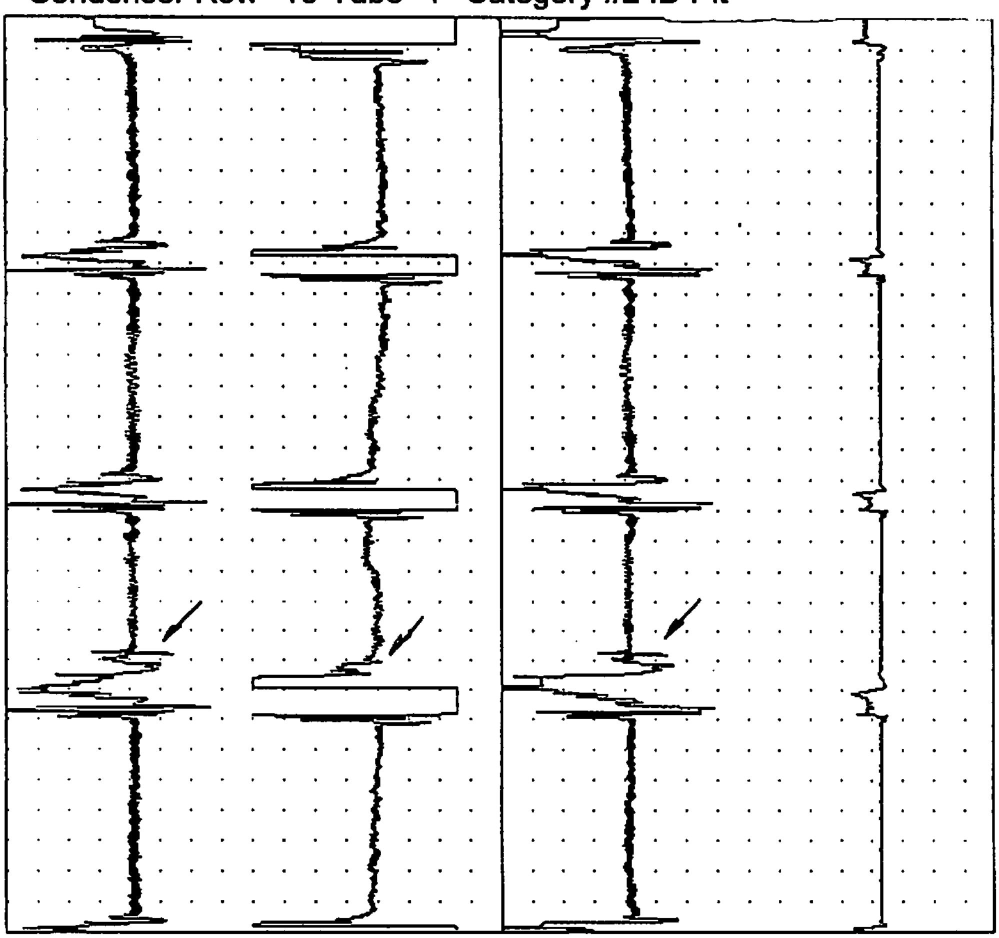
8.108B 98MAR26 File: 02525035	Frequency	Phase	Gain	Horiz V/div	Vert V/div	Angle Amp	LP Filter	HP	Bal X	Bal Y	Screen
Channel 1	16,000	22	240	1.00	1.00	Off	135	Off	+32767	+32767	A
Channel 2	8,000	54	240	1.00	1.00	Off	135	Off	+32767	-32768	B
Channel 3	5,000	234	170	1.00	1.00	Off	135	Off	-32768	+32767	C
Channel 4	2,600	223	70	2.00	2.00	Off	135	Off	-32768	-32768	D

	Horiz Weight	Vert Weight	Input Phase	Out Phase	Horiz V/div	Vert V/div	Angle Amp	Screen	HP Filter	Zone	Row	Tube
Mixer 1	47	42	246	13	0.25	0.25	Off	Off	Off	1	0	0
Mixer 2	71	56	250	17	0.13	0.13	Off	Off	Off			

Condenser Row 1 Tube 1 Typical Tube



Condenser Row 10 Tube 1 Category #2 ID Pit



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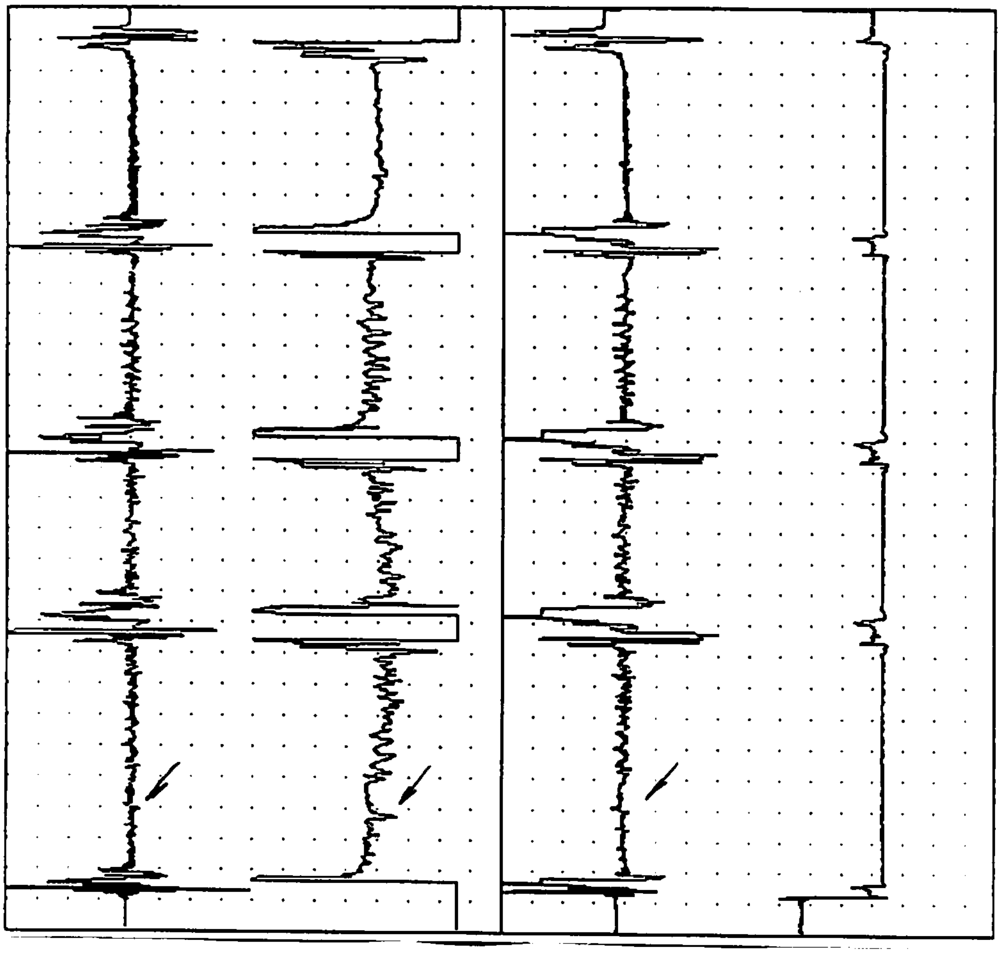
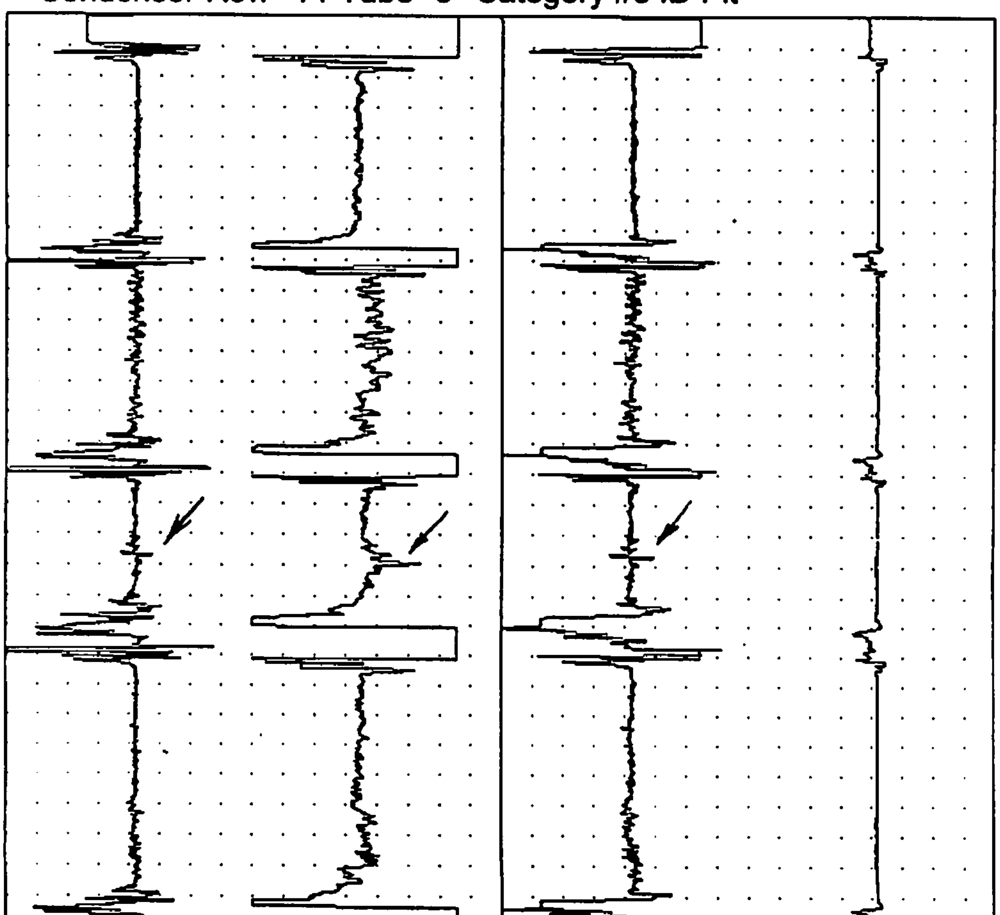
Condenser Row 13 Tube 5 Category #3 ID Pit



Condenser Row 14 Tube 8 Category #3 ID Pit



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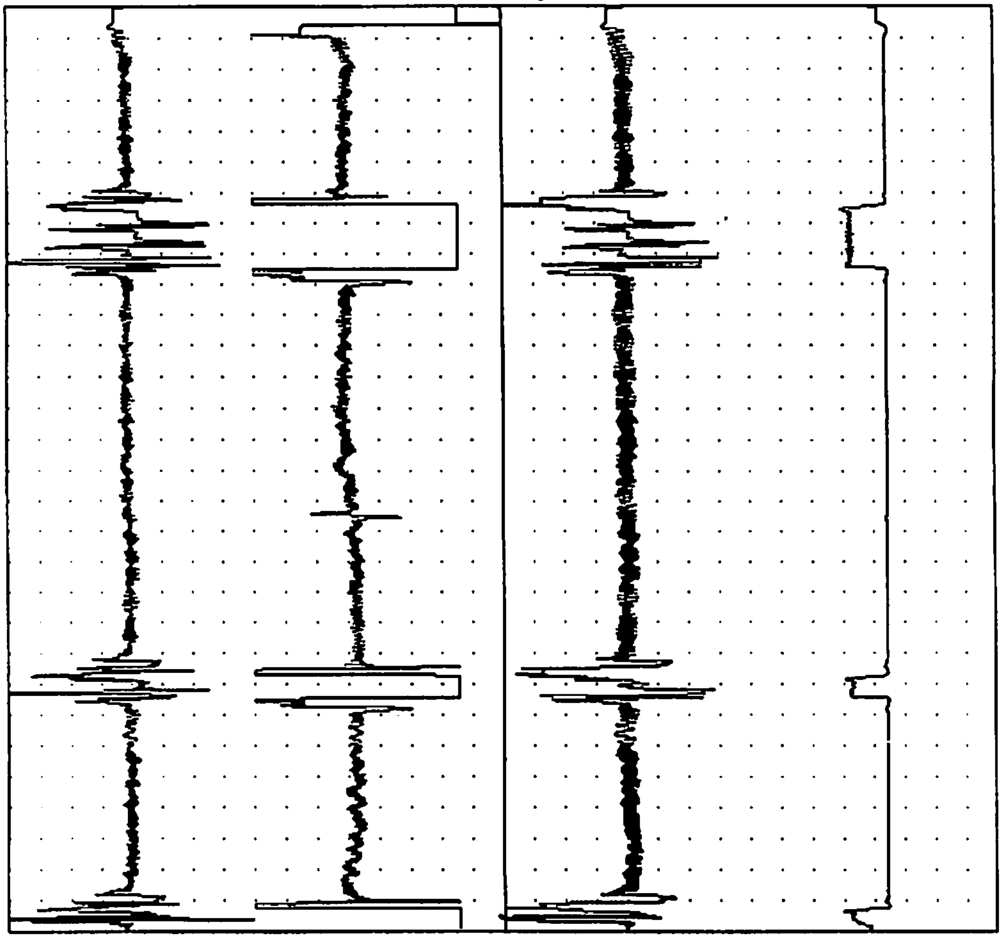
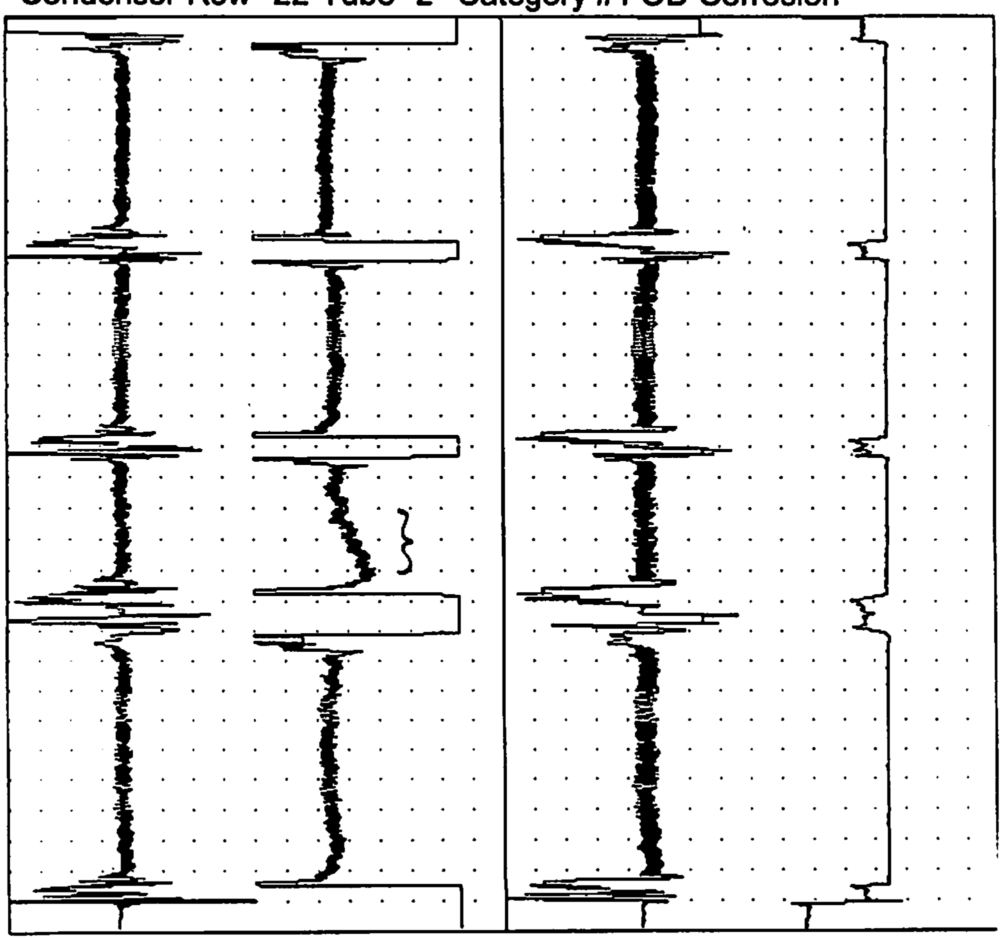
Condenser Row 16 Tube 23 Missing Land Area



Condenser Row 22 Tube 2 Category #1 OD Corrosion



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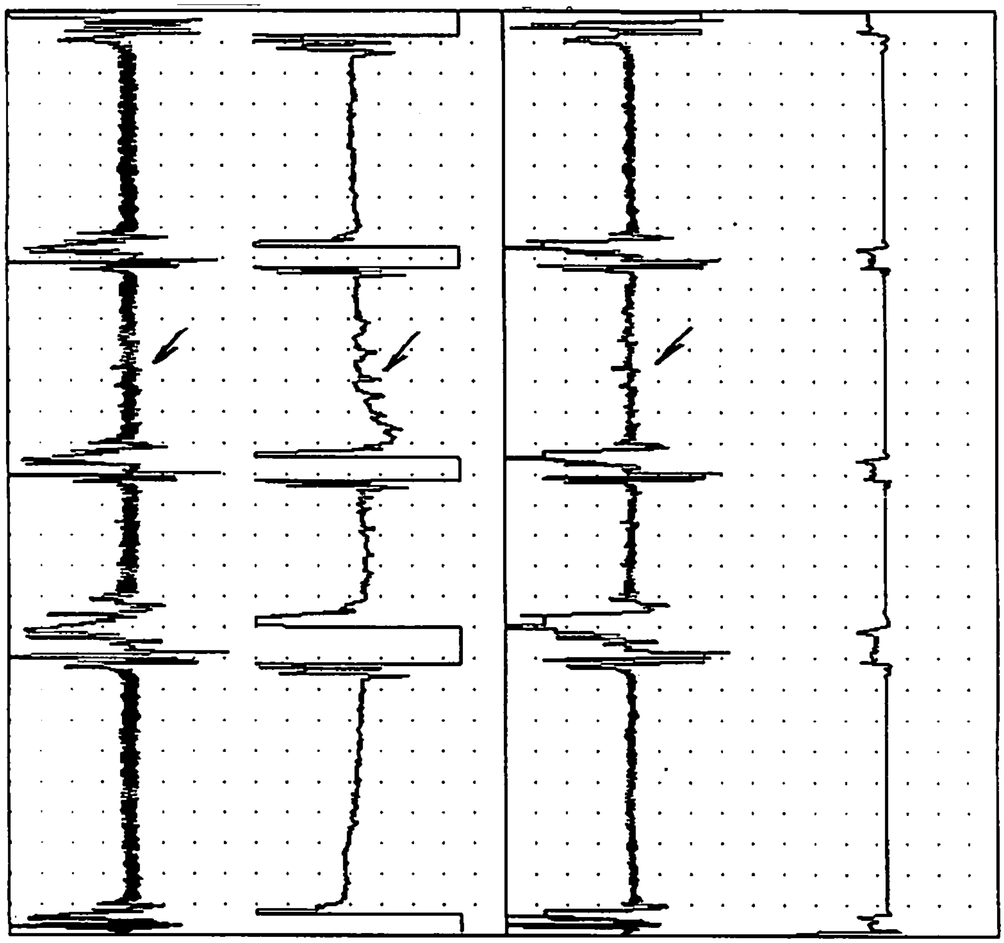
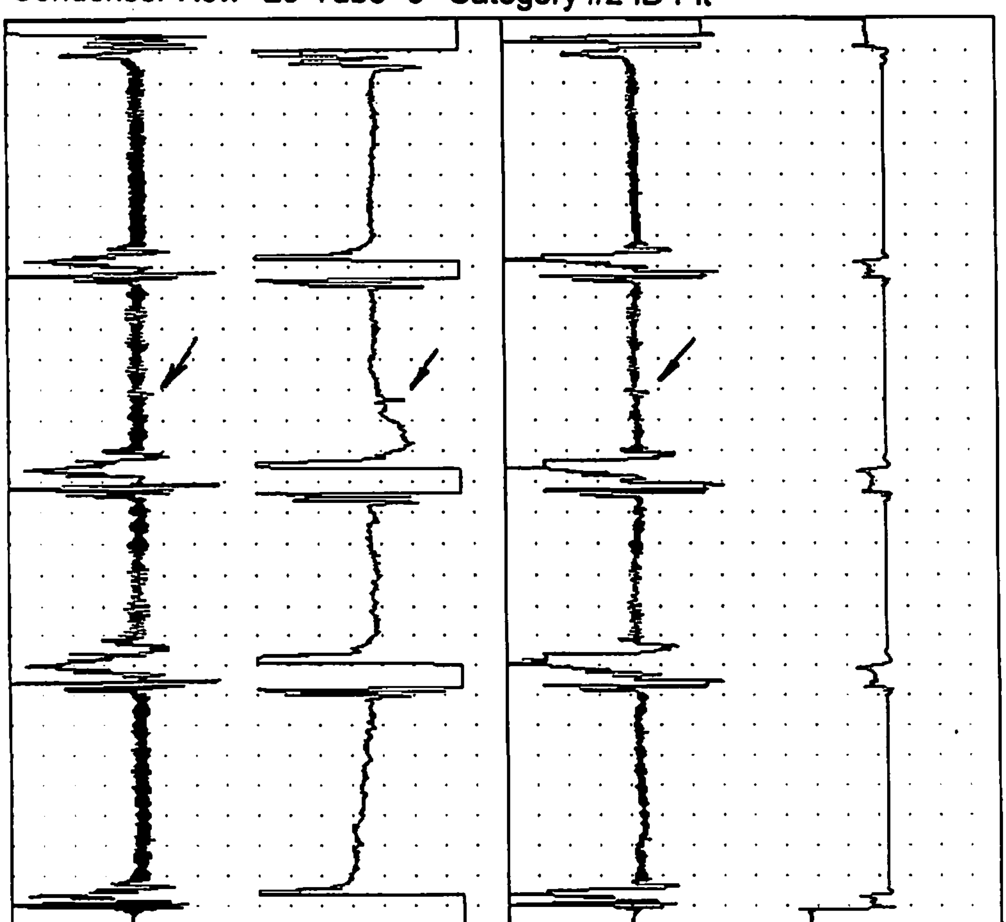
Condenser Row 29 Tube 8 Category #2 ID Pit



Condenser Row 29 Tube 9 Category #2 ID Pit



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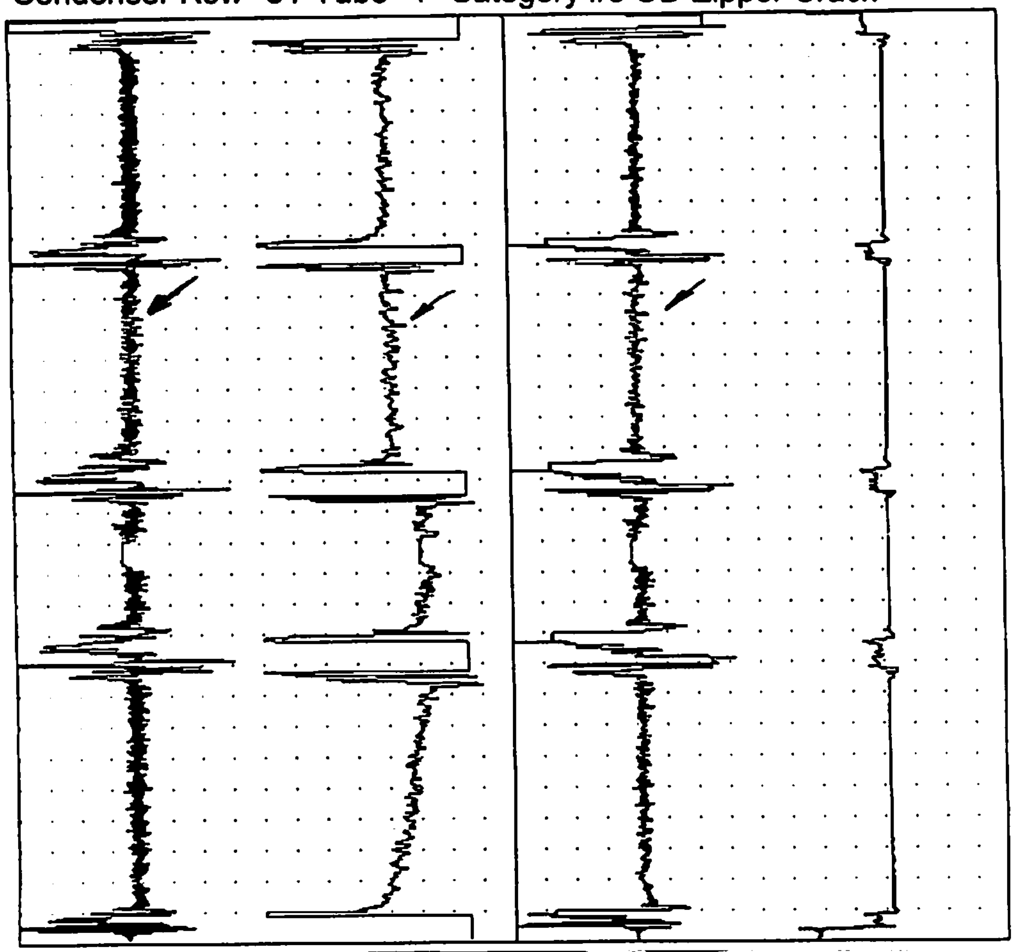
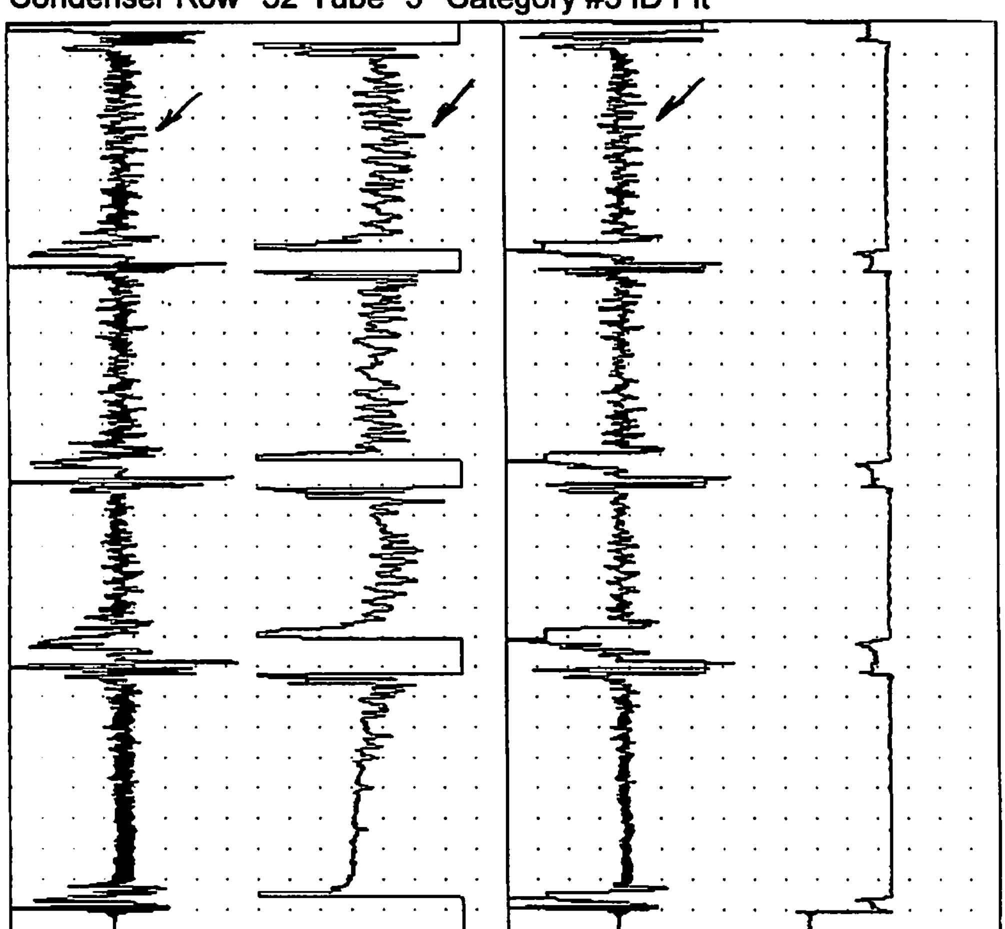
Condenser Row 31 Tube 4 Category #3 OD Zipper Crack



Condenser Row 32 Tube 5 Category #3 ID Pit



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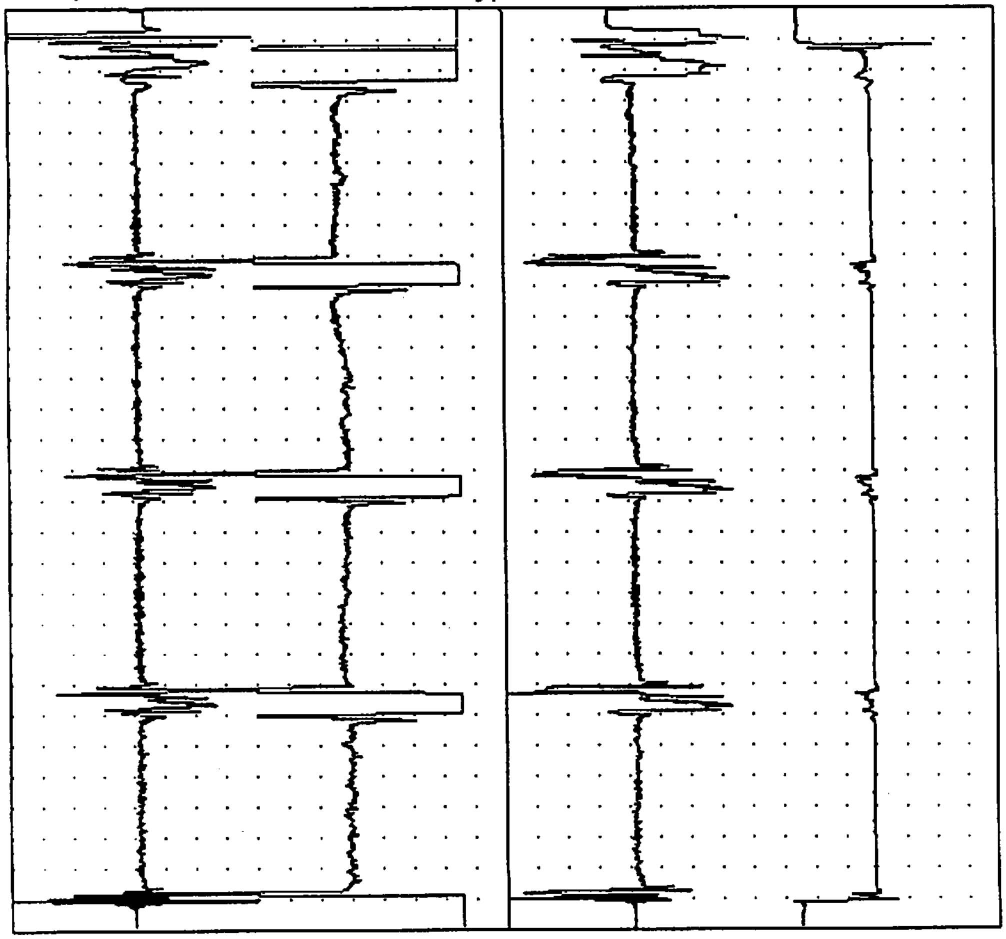
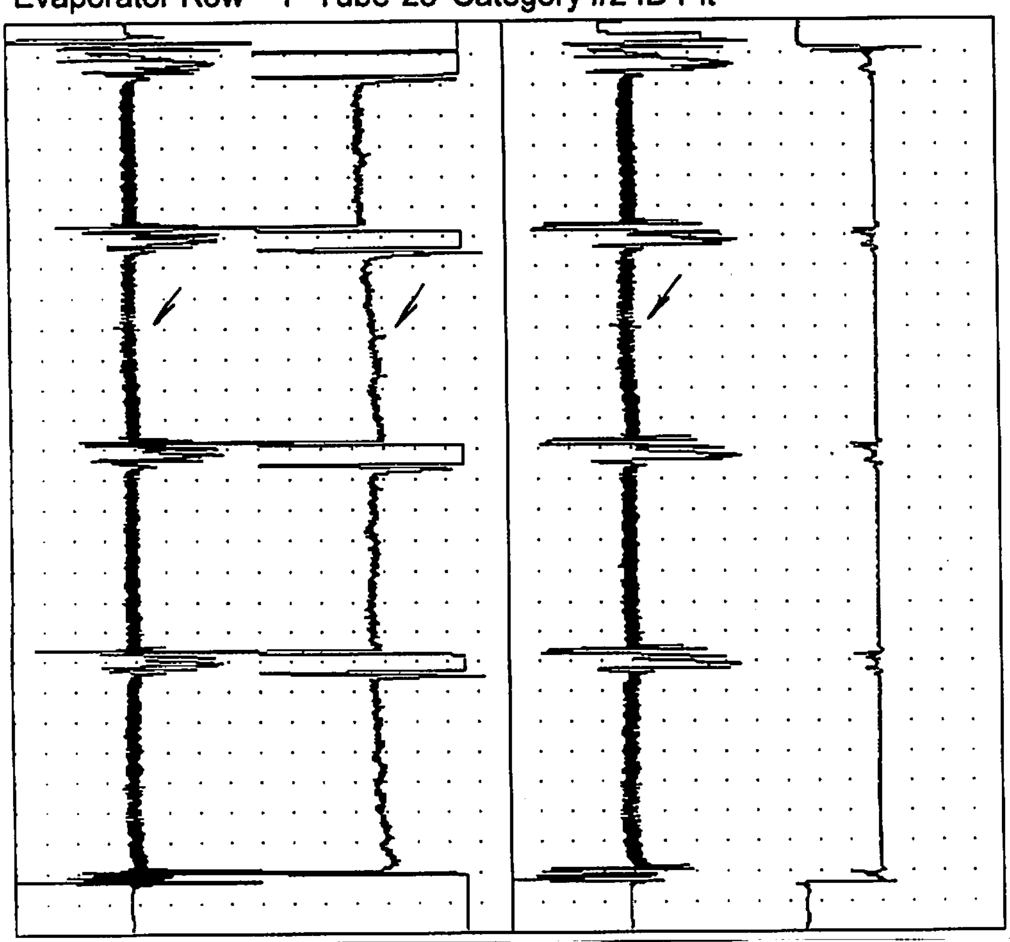
Evaporator Row 1 Tube 2 Typical Tube



Evaporator Row 1 Tube 23 Category #2 ID Pit



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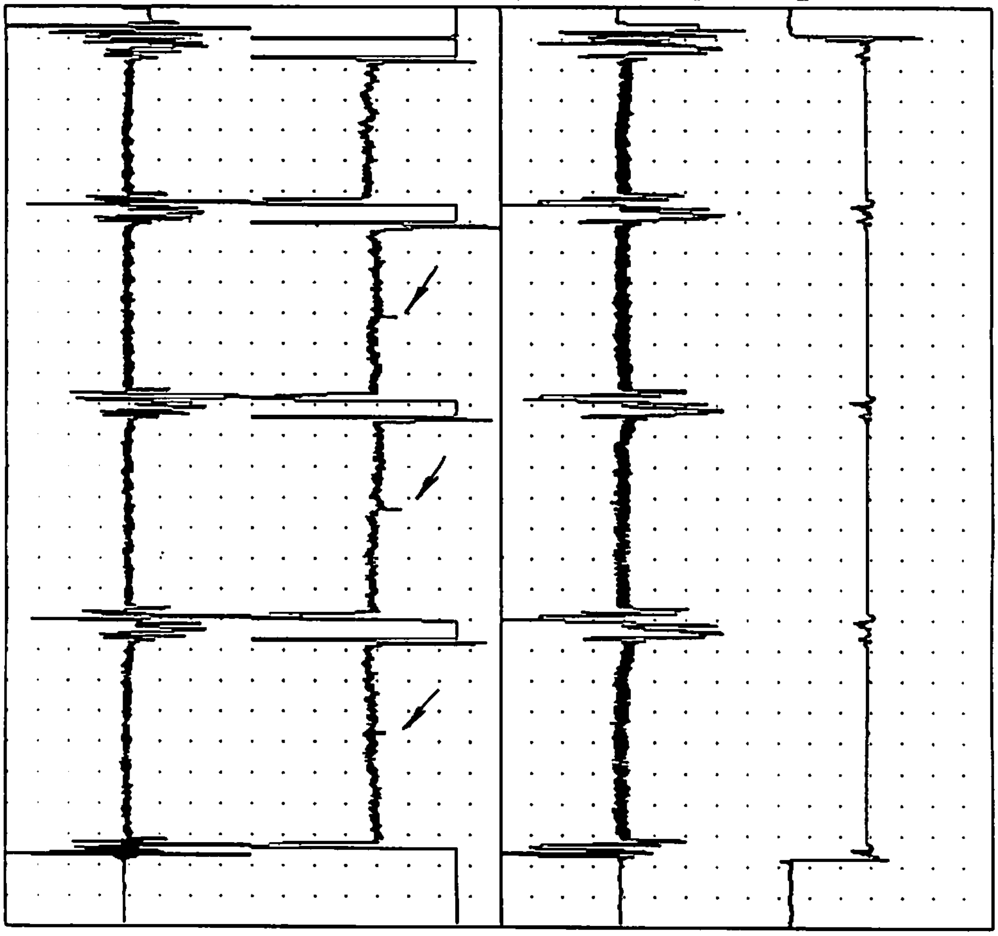
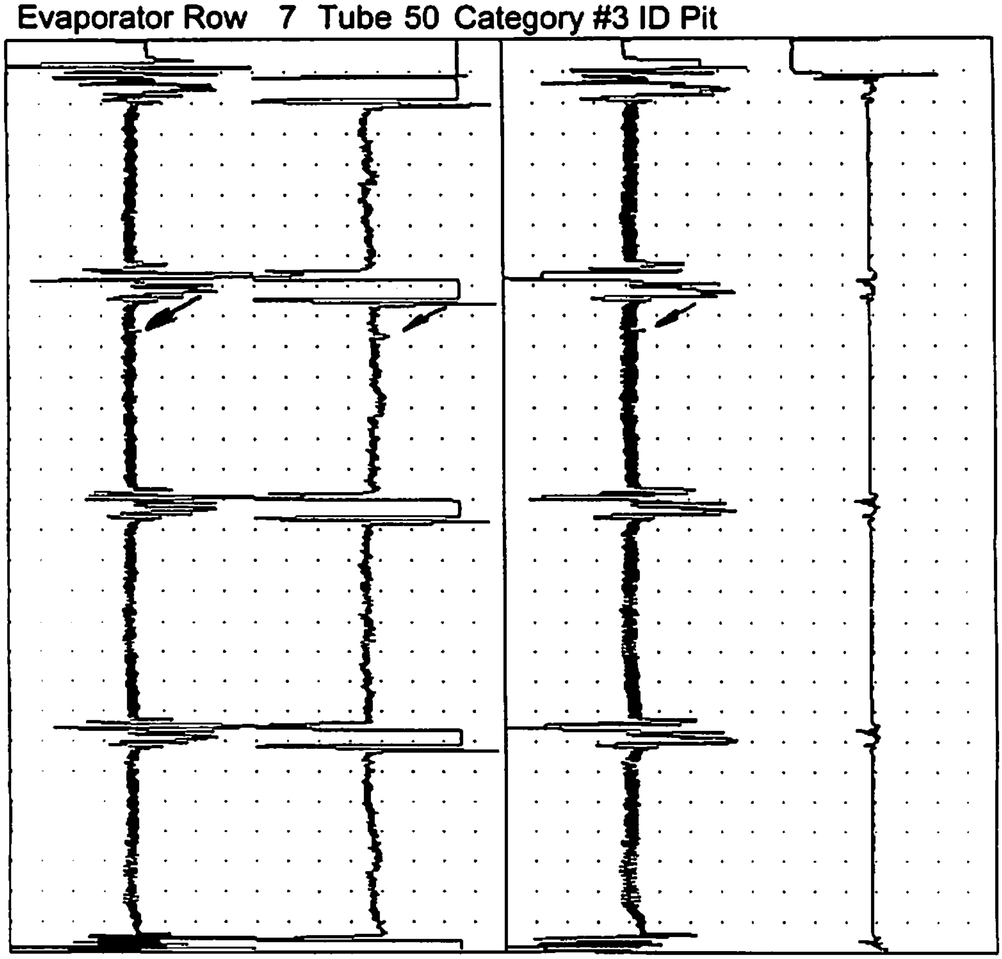
Evaporator Row 5 Tube 25 Sample Geometry Change



Evaporator Row 7 Tube 50 Category #3 ID Pit



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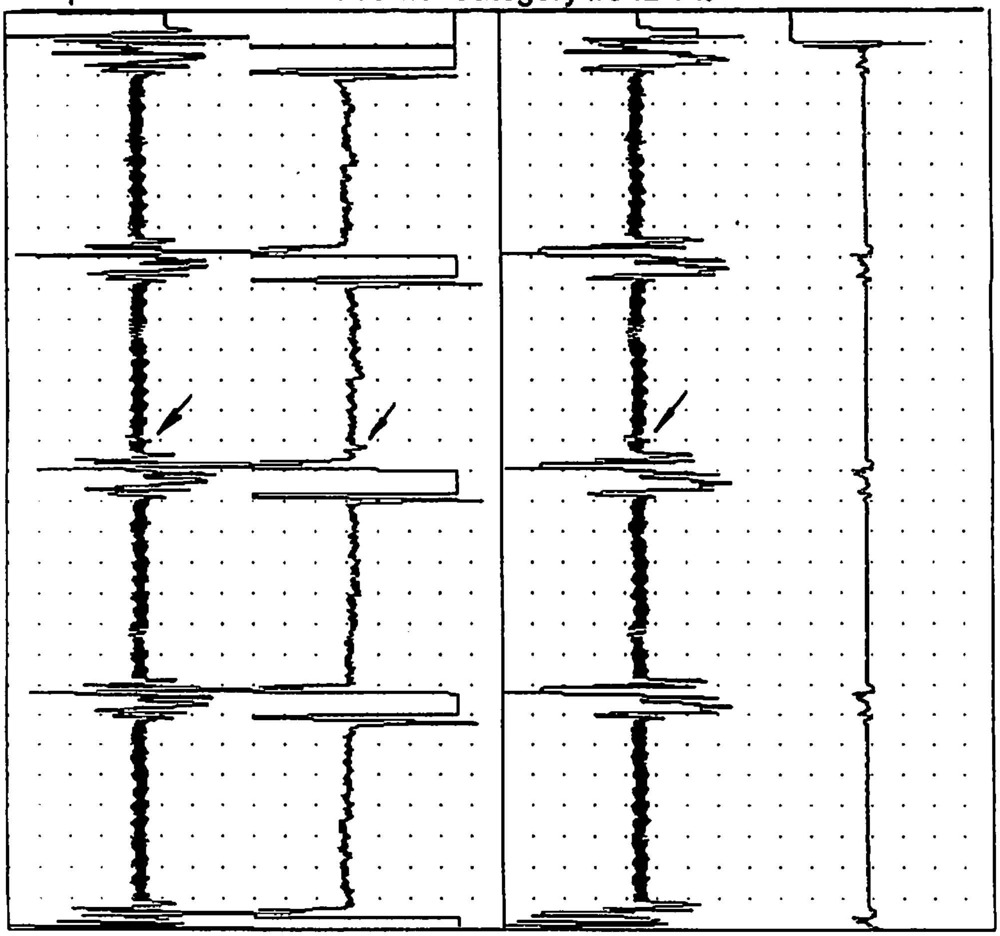
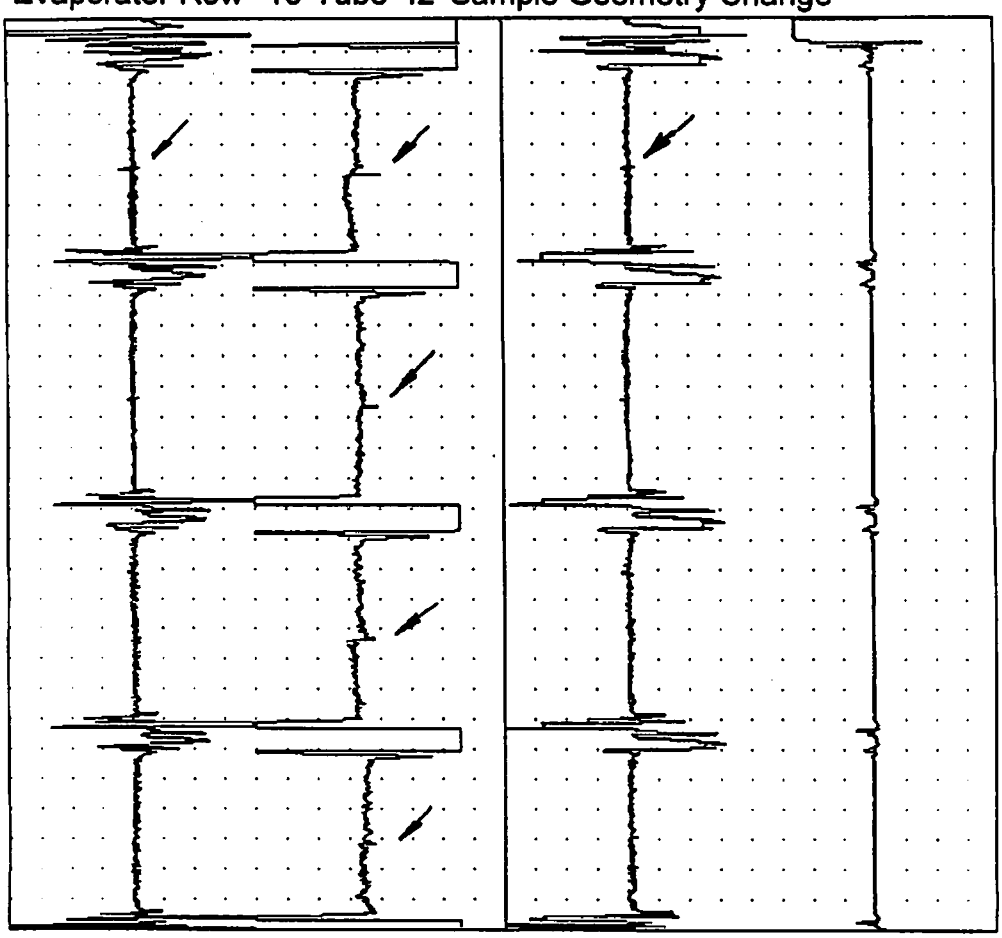
Evaporator Row 8 Tube 26 Category #3 ID Pit



Evaporator Row 10 Tube 42 Sample Geometry Change



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CHILLER INFORMATION

CHILLER TYPE	
MODEL NUMBER	
SERIAL NUMBER	
TOTAL TUBE COUNT	1866

CONDENSER

TUBE MATERIAL	COPPER
TUBE WALL THICKNESS (AT FINS)	.035"
TUBE WALL THICKNESS (AT LAND)	.049"
TUBE O.D.	.750"
TUBE LENGTH	12'
NUMBER OF SUPPORTS	3
END TESTED (FACING CONTROL)	LEFT
STYLE OF TUBE	STANDARD
AMOUNT OF TUBES IN CONDENSER	1048
AMOUNT OF TUBES RESTRICTED	NONE
AMOUNT OF TUBES MECHANICALLY PLUGGED	2

EVAPORTATOR

TUBE MATERIAL	COPPER
TUBE WALL THICKNESS (AT FINS)	.035"
TUBE WALL THICKNESS (AT LAND)	.049"
TUBE O.D.	.750"
TUBE LENGTH	12'
NUMBER OF SUPPORTS	3
END TESTED (FACING CONTROL)	LEFT
STYLE OF TUBES	STANDARD
AMOUNT OF TUBES IN EVAPORATOR	818
AMOUNT OF TUBES RESTRICTED	NONE
AMOUNT OF TUBES MECHANICALLY PLUGGED	NONE

TUBE COUNT PER ROW

CONDENSER

ROW	TUBE COUNT	ROW	TUBE COUNT	ROW	TUBE COUNT	ROW	TUBE COUNT
1	4	14	31	27	35	40	
2	11	15	31	28	35	41	
3	16	16	31	29	36	42	
4	19	17	30	30	35	43	
5	21	18	29	31	34	44	
6	23	19	29	32	33	45	
7	25	20	28	33	32	46	
8	26	21	28	34	31	47	
9	27	22	32	35	30	48	
10	28	23	33	36	27	49	
11	28	24	34	37	26	50	
12	29	25	36	38		51	
13	30	26	35	39		52	
TOTAL	287	TOTAL	407	TOTAL	354	TOTAL	0

CONDENSER TOTAL 1048

EVAPORATOR

ROW	TUBE COUNT	ROW	TUBE COUNT	ROW	TUBE COUNT	ROW	TUBE COUNT
1	31	14	45	27		40	
2	30	15	42	28		41	
3	60	16	41	29		42	
4	59	17	38	30		43	
5	58	18		31		44	
6	57	19		32		45	
7	56	20		33		46	
8	55	21		34		47	
9	52	22		35		48	
10	51	23		36		49	
11	50	24		37		50	
12	47	25		38		51	
13	46	26		39		52	
TOTAL	652	TOTAL	166	TOTAL	0	TOTAL	0

EVAPORATOR TOTAL 818

TUBE COUNT TOTAL 1866

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DEFECT DEFINITION OF CHILLER INSPECTIONS

1) ID PITTING: INSIDE DIAMETER PITTING

This can be caused from poor water treatment, scale getting lodged into the tube and vibrating back and forth, ID Deposits, or from tube manufacturing.

When ID Pitting has occurred under deposits, this defect can be very deep and small in diameter and can be very difficult to accurately depth analyze, and almost impossible if the deposit is magnetic.

2) OD PITTING: OUTSIDE DIAMETER PITTING

This does not normally exist without corrosion being associated with it. OD pits can be directly from manufacturing if there is no corrosion present. OD pits may also be mistaken for Zipper Cracks. (See Section #4).

3) FRETTING: ALSO KNOWN AS SADDLE WEAR

This can be caused by excess machine vibration, surging, the drilled hole in the support plate was drilled to large, or sometimes water flow problems. This type of defect is one of the most unpredictable defects due to the work hardening that takes place at the support plate area because of the continual tube vibration. The result of these two factors may cause the tube to rupture at any time. This defect is tube wear at the tube support plate. Once this phenomena starts, the rate of damage increases exponentially.

4) ZIPPER CRACK:

This type of defect is known to be directly related to tube manufacturing, It is not known if this type of defect propagates deeper into the tube wall, but if it does, it would be due to machine operation such as thermal stress, machine vibration, or machine start ups and shutdowns. These are longitudinal defects that can be anywhere from 1/16" to the full length of the tube, and can be anywhere around the circumference of the tube. It is believed that Zipper Cracks are caused by laps or seams in the material before tube processing. During the tube processing operation, stresses are set up in the tube which eventually cause these laps or seams to open up, or propagate deeper during machine operation. This would explain the different depths of Zipper Cracks found.

If this particular defect was caused by the way the tube was manufactured, then all Zipper Cracks would be very close to the same depth, and also in the same area along the tube length. Eddy Currents are also very sensitive to most Zipper Cracks due to the fact that the coils are very sensitive to any defects that disrupts the coils current in a perpendicular direction.

***NOTE: A ZIPPER CRACK THAT EXTENDS THE FULL LENGTH OF A TUBE CAN NOT BE DETECTED BY EDDY CURRENT, ASSUMING THAT IT'S DEPTH IS CONSTANT. THIS APPLIES TO FINNED TUBES ONLY.*

5) OVER ROLLING:

This is a machine manufacturer defect. Each tube is rolled in the evaporator, at the support plate to stop tube vibration that creates FRETTING, (See Section #3) at the tube support plate. Over Rolling happens when too much pressure has been applied to the rolling machine, causing the copper tube to be EXPANDED into the support plate. There are different degrees of Over Rolling. Over Rolling at the support plate may cause a stress riser, therefore causing a crack at a support plate. This is impossible to detect because of the carbon steel support plate being very close to a crack defect. This can mask the resistive value given by the defect in Eddy Current analysis.

DEFECT DEFINITIONS CONT.

6) **MISALIGNED ROLL:**
This is a machine manufacturer defect. The rolling process is the same as stated in section #5, but has a physical dimension difference. When the actual expansion does not line up with the support plate longitudinally, and the roll just catches the edge of the support plate, or sometimes does not hit the support plate at all. This type of manufacturing defect may also cause a stress riser.

7) **FREEZE BULGE:**
This type of defect is self explanatory, and only occurs in the Evaporator under running conditions. Determining the extent of FREEZE BULGING is very difficult because of the inconsistency and the nature of the defect. The best way to determine the extent of bulging is to have actual samples to compare signals with. A high percentage of FREEZE BULGES are normally considered PLUGGABLE.

8) **OD DEPOSITS:**
Outside Diameter Deposits are caused from moisture that has been in the system for some time, rust from machine manufacturing, or from tube manufacturing. An OD Deposit can look like a defect at normal test frequency, but can be recognized at a proper frequency. OD Deposits can also mask defects on the outside, or inside of the tube.

9) **ID DEPOSITS:**
Inside Diameter Deposits are caused from silty water, slow water flow, poor water treatment, lack of proper tube cleaning, or the unit has been stored for the season with silty water. ID Deposits can cause serious ID Pitting, and can make EDDY CURRENT testing impossible, if the deposit is magnetic.

10) **GEOMETRIC CHANGES:**
This type of indication normally happens in the same area along the length of a tube and is the same for most all tubes in that bundle. This is from tube processing and can be mistaken for many ID defect, OD defects, and Dents in the tube bundle if frequency comparison is not properly utilized. These are referenced as tube manufacturing tool impressions.

11) **CORROSION OD:**
OD Corrosion is sometimes difficult to determine the exact extent of damage, but is easily found. The by-product of corrosion is copper oxide, which has a resistive value to Eddy Current Testing that gives an OD Defect signal. OD Corrosion is caused by excessive moisture, over a period of time in the system, and can effect both Condenser and Evaporator. OD Corrosion is most common in the larger units, but does happen in smaller units also. This type of defect in a worse case can set up stress corrosion cracking.

12) **CIRCUMFERENTIAL CRACKING:**
There are many mechanical variances that can cause this type of defect. Tube manufacturing, tube installation at manufacturing, chiller operation, or a combination of any of the three. Due to the nature of circumferential cracks, and the rarity of this occurrence, detection of this type of defect is virtually impossible with Eddy Current testing.

12) **UNKNOWN INDICATIONS:**
In some units there are indications that can not be accurately analyzed. In some cases, it may be better to plug these tubes just to be safe, unless otherwise stated in the final report. Even the best of Eddy Current equipment, some circumstances still hinder the analyzing capabilities that would normally take place for most Chillers. It is also a general understanding that Eddy Current is not a 100% type of inspection. This is due to the nature of Eddy Current Testing, and to all the different variables in Chiller Tubes. Basically this section is to cover the remaining types of indications not yet recognized.