Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

Eddy Current Report
For

East Kentucky Power Co-Op
Spurlock Station
LPFWH 2A and 2B

November 2021

Conco Job #33098

Prepared By:	
Approved By:	Bob Prentice

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

TABLE OF CONTENTS

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

1.0 SCOPE OF WORK

During the November 2021 maintenance outage at Spurlock Station, an Eddy Current inspection was performed on 100% of all in-service tubes in LPFWH 2A and 2B. The tube specifications are as follows:

Material	OD Dimension	Wall Thickness	BWG	Length
304 SS	0.750”	0.035”	20	34’

This inspection of LPFWH 2A and 2B was performed as part of an ongoing maintenance program at the Spurlock Station. The current results will be compared to future inspections to assure performance and trend the progression of previously recorded damage.

Eddy Current Testing is used to inspect a wide range of non-ferrous material for defects and degradation without damaging the test specimen. A digital multi-frequency tester with two-channel mixing was used. The tester is set with high sensitivity to small defects meanwhile still able to size large volume wear.

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

2.0 INSPECTION SUMMARY

	Manufacturer	Type	Serial Number
Test System	CoreStar	Omni 200	0017-0806
Analysis Software	CoreStar	EddyVision 8.1	N/A
Calibration Standard	Ecutec	ASME	CSC-434
Calibration Standard	Ecutec	ASME	CSC-432
Probe	CoreStar	630 ESH/HF	N/A
Probe	CoreStar	610 ESH/HF	N/A

LPFWH 2A and 2B

The results of this inspection are summarized in the Results Summary Table and on the Results Map.

A 100% Eddy Current inspection was performed on the LP Feedwater Heater 2a and 2B.

FWH 2A: A total of 762 tubes were inspected (100%). No tubes were obstructed or restricted after downsizing probe. Two tubes recorded moderate wear of 29 and 41% wall loss. Several tubes recorded possible erosion of the drain cooler end plate in row 1 of the inlet and 2 tubes in row 1 of the outlet.

FWH 2B: A total of 762 tubes were inspected (100%). There were no obstructed or restricted tubes after probe downsizing. Ten tubes showed wear indications of 22 to 33% wall loss. Four tubes recorded small volume ID/OD indications

There was no plugging criteria, supplied by site, at the time of this examination.

Keeping these tubes as clean as possible will help enhance the performance of this heat exchanger. Re-inspect this heat exchanger 1 to 2 operating cycles to assure performance, monitor for any future damage, and trend the progression of previously recorded damage.

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

Data Management Codes*

Condition Abbreviations

ADR	Absolute Drift	**DNT**	Dent	**RES**	Restricted Tube
ADI	Absolute Drift with Indication	**BLG**	Bulge	**OBS**	Obstructed Tube
CRK	Crack(s)	**DSM**	Dissimilar Metals	**RBD**	Retest - Bad Data
DSI	Distorted Support Indication	**STC**	Stuck Cleaner	**RNC**	Retest - Number Count
EPE	End Plate Erosion	**PVN**	Permeability Variation	**RNT**	Retest - No Test
GEN	General Pitting	**PLG**	Plugged Tube	**INC**	Incomplete Test
IDI	ID Indication	**NDD**	No Detectable Defects >20%	**INA**	Inaccessible
NQI	Non-Quantifiable Indication	**COR**	Corrosion		
MUL	Multiple Indications	**ERO**	Erosion		
ODI	OD Indication	**ERI**	Erosion with Impingement		
WAR	OD Fretting Wear	**PIT**	Pitting		
MSS	Missing Support Structure	**PSE**	Possible Support Erosion		

Location Abbreviations

ITE	Inlet Tube End	**NTE**	North Tube End	**BA**	Baffle
OTE	Outlet Tube End	**STE**	South Tube End	**TS**	Tube Support Plate
IO	Inlet/Outlet Tube End	**ETE**	East Tube End	**LA**	Land Area
CTE	Common Tube End	**WTE**	West Tube End	**ID**	Inside Diameter
UB	U-Bend	**RTE**	Return Tube End	**OD**	Outside Diameter
BTS	Bottom Tube Sheet	**TTS**	Top Tube Sheet		

*See the Examination Technique Specification Sheet for all applicable codes.

DATA REPORT
LEGEND

CHANNEL
Channel the indication was sized on
Channel 1 typically for freespan indications
Channel M# typically for tubesupport indications
Channel 6 typically for wear type indications

SECTION

ROW

TUBE

PERCENT
Amount of wall loss

Nearest support structure

Distance off of that structure

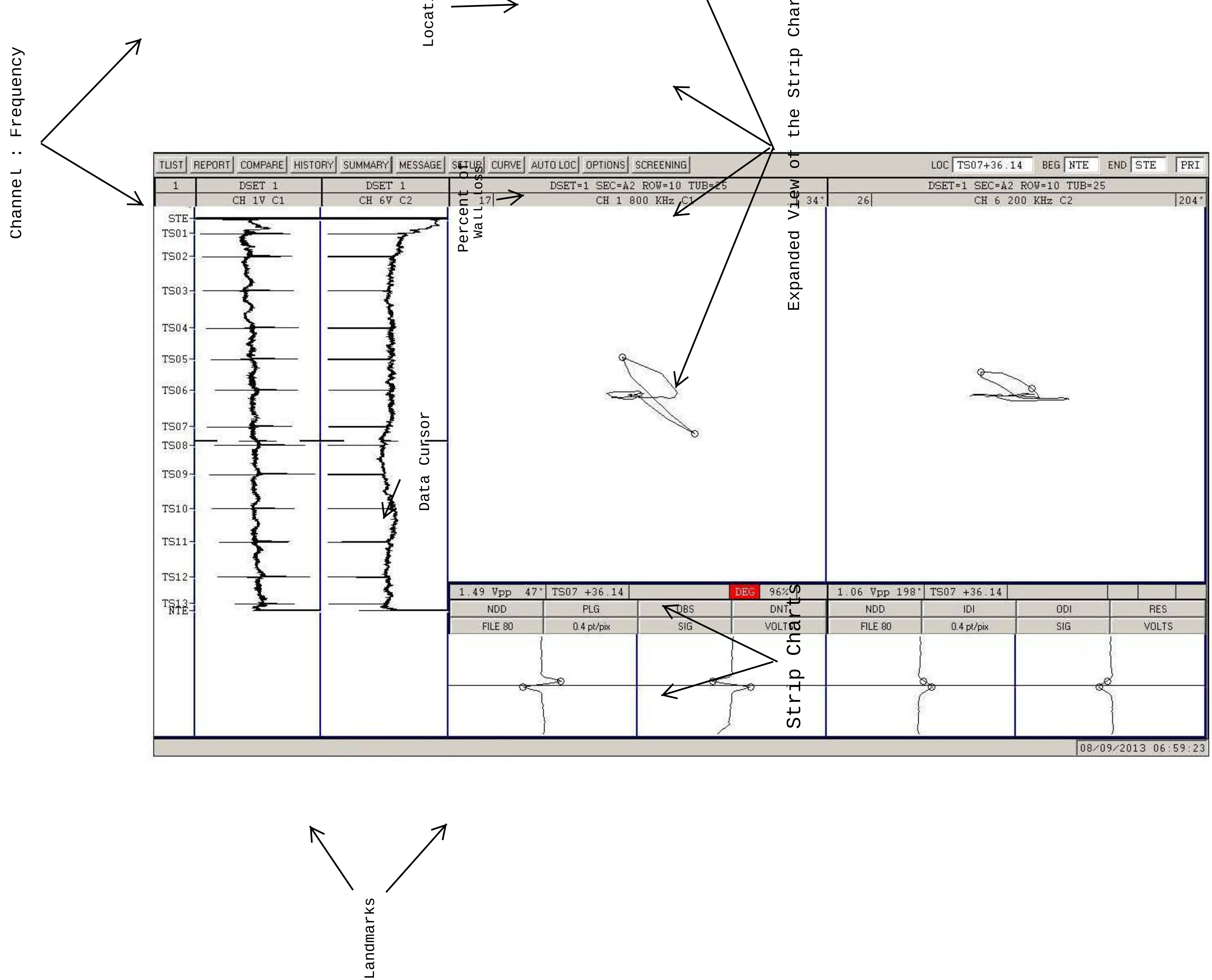
sec	row	tub	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
B	1	14				NDD				NTE	STE
B	1	15	4.49	9	23	IDI	1	TS1	79.91	NTE	STE
B	1	16				PLG					

VOLTS
Volume of lost material

INDICATION CODE

PHASE
Measured in degrees
<40 typically indicates an ID defect
>40 typically indicates an OD defect

Directionally indicates the tube test. In this case the tube was tested from the North tube end to the South tube end


Channel : Frequency
Locat
Expanded View of the Strip Char
Percent of Wall loss
Data Cursor
Strip Charts
Landmarks
TLIST REPORT COMPARE HISTORY SUMMARY MESSAGE SETUP CURVE AUTO LOC OPTIONS SCREENING
LOC TS07+36.14 BEG NTE END STE PRI
DSET 1 CH 1V C1
DSET 1 CH 6V C2
DSET=1 SEC=A2 ROW=10 TUB=25
CH 1 800 KHz C1
CH 6 200 KHz C2
STE TS01 TS02 TS03 TS04 TS05 TS06 TS07 TS08 TS09 TS10 TS11 TS12 TS13 NTE
1.49 Vpp 47° TS07 +36.14 DEG 96%
1.06 Vpp 198° TS07 +36.14
NDD PLG OBS DNT
NDD IDI ODI RES
FILE 80 0.4 pt/pix SIG VOLTS
08/09/2013 06:59:23

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

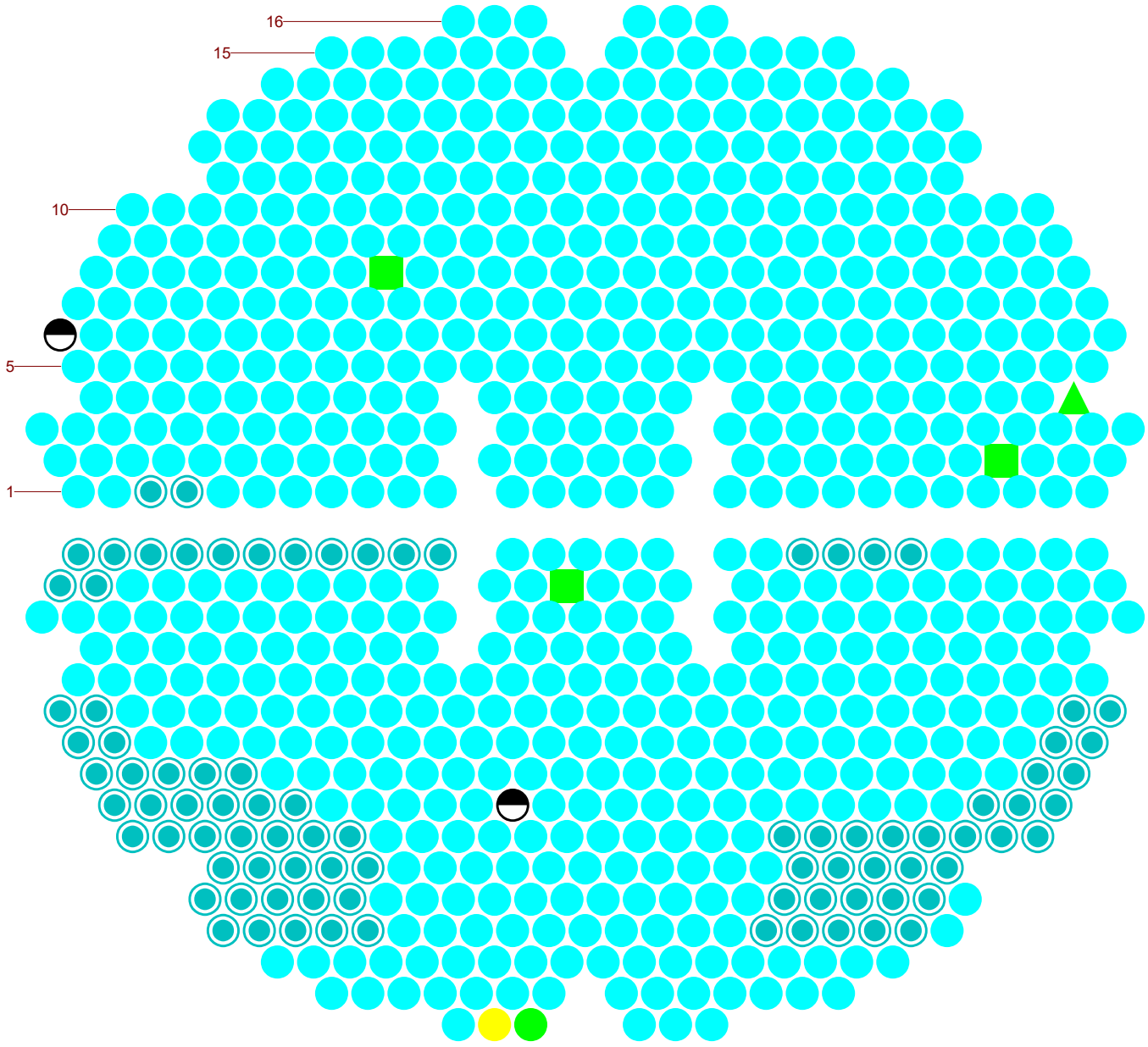
Results Summary
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A

	11-2021 Inspection
Total Tubes in Component (U-Tubes)	**381**
Total Tubes Inspected (Straight Lengths)	**762**
Tubes Recording Damage:	Totals
Approx. Wall Loss 90% & Greater	0
Approx. Wall Loss 80% to 89%	0
Approx. Wall Loss 70% to 79%	0
Approx. Wall Loss 60% to 69%	0
Approx. Wall Loss 50% to 59%	0
Approx. Wall Loss 40% to 49%	1
Approx. Wall Loss 30% to 39%	1
Approx. Wall Loss 20% to 29%	1
Tubes Recording Dents	2
Possible Support Erosion (PSE)	88
Restricted Tubes (Complete Inspection Not Possible)	0
Obstructed Tubes (No Test Possible)	0
Previously Plugged Tubes	0
Tubes Recommended for Plugging	0
Total of Previously Plugged Tubes & Tubes Recommended for Plugging	0

RESULTS MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-2A
11-2021

VIEW FROM INLET/OUTLET



SYM	HITS	TUBES	VIS	TYPE	DESCRIPTION
	4	4	0	QUERY	OBS_RESULTS.qry
	0	0	0	QUERY	RES_RESULTS.qry
	666	666	666	QUERY	NDD_RESULTS.qry
	90	88	88	QUERY	PSE_RESULTS.qry
	3	3	3	QUERY	PVN_RESULTS
	2	2	2	QUERY	DNT_RESULTS.qry
	1	1	1	QUERY	20-29%_RESULTS.qry
	1	1	1	QUERY	30-39%_RESULTS.qry
	1	1	1	QUERY	40-49%_RESULTS.qry
	0	0	0	QUERY	50-59%_RESULTS.qry
	0	0	0	QUERY	60-69%_RESULTS.qry
	0	0	0	QUERY	70-79%_RESULTS.qry
	0	0	0	QUERY	80-89%_RESULTS.qry
	0	0	0	QUERY	90-100%_RESULTS.qry
	0	0	0	QUERY	PLUG_RESULTS.qry
	768	766	762		

Model LPFWH-2A (762 tubes)
0 open tubes

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	1	1	0.27	33	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	2	0.53	192	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	3	0.41	27	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	4	0.38	209	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	5	0.30	195	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	6	0.37	29	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	7	0.29	200	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	8	0.23	10	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	9	0.22	22	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	10	0.39	203	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	11	0.26	185	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	12				NDD				SP08	ITE
IN	1	13				NDD				SP08	ITE
IN	1	14				NDD				SP08	ITE
IN	1	15				NDD				SP08	ITE
IN	1	16				NDD				SP08	ITE
IN	1	17				NDD				SP08	ITE
IN	1	18				NDD				SP08	ITE
IN	1	19	2.06	141	0	PSE	7	DCEP	-0.06	SP08	ITE
IN	1	20	4.02	144	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	21	1.83	183	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	22	2.66	140	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	23				NDD				SP08	ITE
IN	1	24				NDD				SP08	ITE
IN	1	25				NDD				SP08	ITE
IN	1	26				NDD				SP08	ITE
IN	1	27				NDD				SP08	ITE
IN	2	1	1.30	342	0	PSE	7	DCEP	0.00	SP08	ITE
IN	2	2	2.45	339	0	PSE	7	DCEP	0.00	SP08	ITE
IN	2	3				NDD				SP08	ITE
IN	2	4				NDD				SP08	ITE
IN	2	5				NDD				SP08	ITE
IN	2	6				NDD				SP08	ITE
IN	2	7				NDD				SP08	ITE
IN	2	8				NDD				SP08	ITE
IN	2	9				NDD				SP08	ITE
IN	2	10				NDD				SP08	ITE
IN	2	11				NDD				SP08	ITE
IN	2	12				NDD				SP08	ITE
IN	2	13				NDD				SP08	ITE
IN	2	14	25.43	12	0	PVN	1	BAF10	5.09	SP08	ITE
IN	2	15				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	2	16				NDD				SP08	ITE
IN	2	17				NDD				SP08	ITE
IN	2	18				NDD				SP08	ITE
IN	2	19				NDD				SP08	ITE
IN	2	20				NDD				SP08	ITE
IN	2	21				NDD				SP08	ITE
IN	2	22				NDD				SP08	ITE
IN	2	23				NDD				SP08	ITE
IN	2	24				NDD				SP08	ITE
IN	2	25				NDD				SP08	ITE
IN	2	26				NDD				SP08	ITE
IN	2	27				NDD				SP08	ITE
IN	2	28				NDD				SP08	ITE
IN	3	1				NDD				SP08	ITE
IN	3	2				NDD				SP08	ITE
IN	3	3				NDD				SP08	ITE
IN	3	4				NDD				SP08	ITE
IN	3	5				NDD				SP08	ITE
IN	3	6				NDD				SP08	ITE
IN	3	7				NDD				SP08	ITE
IN	3	8				NDD				SP08	ITE
IN	3	9				NDD				SP08	ITE
IN	3	10				NDD				SP08	ITE
IN	3	11				NDD				SP08	ITE
IN	3	12				NDD				SP08	ITE
IN	3	13				NDD				SP08	ITE
IN	3	14				NDD				SP08	ITE
IN	3	15				NDD				SP08	ITE
IN	3	16				NDD				SP08	ITE
IN	3	17				NDD				SP08	ITE
IN	3	18				NDD				SP08	ITE
IN	3	19				NDD				SP08	ITE
IN	3	20				NDD				SP08	ITE
IN	3	21				NDD				SP08	ITE
IN	3	22				NDD				SP08	ITE
IN	3	23				NDD				SP08	ITE
IN	3	24				NDD				SP08	ITE
IN	3	25				NDD				SP08	ITE
IN	3	26				NDD				SP08	ITE
IN	3	27				NDD				SP08	ITE
IN	3	28				NDD				SP08	ITE
IN	3	29				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	4	1				NDD				SP08	ITE
IN	4	2				NDD				SP08	ITE
IN	4	3				NDD				SP08	ITE
IN	4	4				NDD				SP08	ITE
IN	4	5				NDD				SP08	ITE
IN	4	6				NDD				SP08	ITE
IN	4	7				NDD				SP08	ITE
IN	4	8				NDD				SP08	ITE
IN	4	9				NDD				SP08	ITE
IN	4	10				NDD				SP08	ITE
IN	4	11				NDD				SP08	ITE
IN	4	12				NDD				SP08	ITE
IN	4	13				NDD				SP08	ITE
IN	4	14				NDD				SP08	ITE
IN	4	15				NDD				SP08	ITE
IN	4	16				NDD				SP08	ITE
IN	4	17				NDD				SP08	ITE
IN	4	18				NDD				SP08	ITE
IN	4	19				NDD				SP08	ITE
IN	4	20				NDD				SP08	ITE
IN	4	21				NDD				SP08	ITE
IN	4	22				NDD				SP08	ITE
IN	4	23				NDD				SP08	ITE
IN	4	24				NDD				SP08	ITE
IN	4	25				NDD				SP08	ITE
IN	4	26				NDD				SP08	ITE
IN	5	1				NDD				SP08	ITE
IN	5	2				NDD				SP08	ITE
IN	5	3				NDD				SP08	ITE
IN	5	4				NDD				SP08	ITE
IN	5	5				NDD				SP08	ITE
IN	5	6				NDD				SP08	ITE
IN	5	7				NDD				SP08	ITE
IN	5	8				NDD				SP08	ITE
IN	5	9				NDD				SP08	ITE
IN	5	10				NDD				SP08	ITE
IN	5	11				NDD				SP08	ITE
IN	5	12				NDD				SP08	ITE
IN	5	13				NDD				SP08	ITE
IN	5	14				NDD				SP08	ITE
IN	5	15				NDD				SP08	ITE
IN	5	16				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	5	17				NDD				SP08	ITE
IN	5	18				NDD				SP08	ITE
IN	5	19				NDD				SP08	ITE
IN	5	20				NDD				SP08	ITE
IN	5	21				NDD				SP08	ITE
IN	5	22				NDD				SP08	ITE
IN	5	23				NDD				SP08	ITE
IN	5	24				NDD				SP08	ITE
IN	5	25				NDD				SP08	ITE
IN	5	26				NDD				SP08	ITE
IN	5	27				NDD				SP08	ITE
IN	5	28				NDD				SP08	ITE
IN	5	29				NDD				SP08	ITE
IN	6	1	6.37	178	0	PSE	7	SP03	0.00	SP08	ITE
IN	6	2	7.72	178	0	PSE	7	SP03	0.00	SP08	ITE
IN	6	3				NDD				SP08	ITE
IN	6	4				NDD				SP08	ITE
IN	6	5				NDD				SP08	ITE
IN	6	6				NDD				SP08	ITE
IN	6	7				NDD				SP08	ITE
IN	6	8				NDD				SP08	ITE
IN	6	9				NDD				SP08	ITE
IN	6	10				NDD				SP08	ITE
IN	6	11				NDD				SP08	ITE
IN	6	12				NDD				SP08	ITE
IN	6	13				NDD				SP08	ITE
IN	6	14				NDD				SP08	ITE
IN	6	15				NDD				SP08	ITE
IN	6	16				NDD				SP08	ITE
IN	6	17				NDD				SP08	ITE
IN	6	18				NDD				SP08	ITE
IN	6	19				NDD				SP08	ITE
IN	6	20				NDD				SP08	ITE
IN	6	21				NDD				SP08	ITE
IN	6	22				NDD				SP08	ITE
IN	6	23				NDD				SP08	ITE
IN	6	24				NDD				SP08	ITE
IN	6	25				NDD				SP08	ITE
IN	6	26				NDD				SP08	ITE
IN	6	27				NDD				SP08	ITE
IN	6	28				NDD				SP08	ITE
IN	6	29	5.62	182	0	PSE	7	SP03	0.00	SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	6	30	3.28	181	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	1	5.51	174	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	2	8.45	179	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	3				NDD				SP08	ITE
IN	7	4				NDD				SP08	ITE
IN	7	5				NDD				SP08	ITE
IN	7	6				NDD				SP08	ITE
IN	7	7				NDD				SP08	ITE
IN	7	8				NDD				SP08	ITE
IN	7	9				NDD				SP08	ITE
IN	7	10				NDD				SP08	ITE
IN	7	11				NDD				SP08	ITE
IN	7	12				NDD				SP08	ITE
IN	7	13				NDD				SP08	ITE
IN	7	14				NDD				SP08	ITE
IN	7	15				NDD				SP08	ITE
IN	7	16				NDD				SP08	ITE
IN	7	17				NDD				SP08	ITE
IN	7	18				NDD				SP08	ITE
IN	7	19				NDD				SP08	ITE
IN	7	20				NDD				SP08	ITE
IN	7	21				NDD				SP08	ITE
IN	7	22				NDD				SP08	ITE
IN	7	23				NDD				SP08	ITE
IN	7	24				NDD				SP08	ITE
IN	7	25				NDD				SP08	ITE
IN	7	26				NDD				SP08	ITE
IN	7	27				NDD				SP08	ITE
IN	7	28	6.08	179	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	29	2.95	180	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	1	0.99	2	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	2	3.75	179	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	3	4.70	176	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	4	5.94	177	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	5	6.79	181	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	6				NDD				SP08	ITE
IN	8	7				NDD				SP08	ITE
IN	8	8				NDD				SP08	ITE
IN	8	9				NDD				SP08	ITE
IN	8	10				NDD				SP08	ITE
IN	8	11				NDD				SP08	ITE
IN	8	12				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	8	13				NDD				SP08	ITE
IN	8	14				NDD				SP08	ITE
IN	8	15				NDD				SP08	ITE
IN	8	16				NDD				SP08	ITE
IN	8	17				NDD				SP08	ITE
IN	8	18				NDD				SP08	ITE
IN	8	19				NDD				SP08	ITE
IN	8	20				NDD				SP08	ITE
IN	8	21				NDD				SP08	ITE
IN	8	22				NDD				SP08	ITE
IN	8	23				NDD				SP08	ITE
IN	8	24				NDD				SP08	ITE
IN	8	25				NDD				SP08	ITE
IN	8	26				NDD				SP08	ITE
IN	8	27	4.90	180	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	28	2.62	180	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	1	16.71	166	0	PSE	7	SP03	0.37	SP08	ITE
IN	9	1	16.71	166	0	PSE	7	SP03	0.13	SP08	ITE
IN	9	1				OBS					
IN	9	2	3.62	178	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	3	4.34	177	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	4	2.81	172	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	5	7.34	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	6	9.11	164	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	7				NDD				SP08	ITE
IN	9	8				NDD				SP08	ITE
IN	9	9				NDD				SP08	ITE
IN	9	10				NDD				SP08	ITE
IN	9	11				NDD				SP08	ITE
IN	9	12	22.69	181	0	DNT	1	SP03	47.10	SP08	ITE
IN	9	13				NDD				SP08	ITE
IN	9	14				NDD				SP08	ITE
IN	9	15				NDD				SP08	ITE
IN	9	16				NDD				SP08	ITE
IN	9	17				NDD				SP08	ITE
IN	9	18				NDD				SP08	ITE
IN	9	19				NDD				SP08	ITE
IN	9	20				NDD				SP08	ITE
IN	9	21				NDD				SP08	ITE
IN	9	22				NDD				SP08	ITE
IN	9	23				NDD				SP08	ITE
IN	9	24				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	9	25	4.14	183	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	26	5.36	177	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	27	2.27	335	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	1	29.35	167	0	PSE	7	SP03	0.05	SP08	ITE
IN	10	1				OBS					
IN	10	2	6.64	177	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	3	5.88	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	4	6.57	175	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	5	3.77	193	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	6	5.88	172	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	7	6.08	170	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	8				NDD				SP08	ITE
IN	10	9				NDD				SP08	ITE
IN	10	10				NDD				SP08	ITE
IN	10	11				NDD				SP08	ITE
IN	10	12				NDD				SP08	ITE
IN	10	13				NDD				SP08	ITE
IN	10	14				NDD				SP08	ITE
IN	10	15				NDD				SP08	ITE
IN	10	16				NDD				SP08	ITE
IN	10	17				NDD				SP08	ITE
IN	10	18				NDD				SP08	ITE
IN	10	19	3.88	226	0	PSE	7	SP03	-0.05	SP08	ITE
IN	10	20	6.37	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	21	8.12	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	22	3.15	214	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	23	4.04	196	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	24	3.83	214	0	PSE	7	SP03	-0.26	SP08	ITE
IN	10	25	4.03	301	0	PSE	7	SP03	-0.13	SP08	ITE
IN	10	26	26.96	163	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	26				OBS					
IN	11	1	8.70	167	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	2	4.54	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	3	3.18	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	4	10.45	166	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	5	6.67	157	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	6				NDD				SP08	ITE
IN	11	7				NDD				SP08	ITE
IN	11	8				NDD				SP08	ITE
IN	11	9				NDD				SP08	ITE
IN	11	10				NDD				SP08	ITE
IN	11	11				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	11	12				NDD				SP08	ITE
IN	11	13				NDD				SP08	ITE
IN	11	14				NDD				SP08	ITE
IN	11	15				NDD				SP08	ITE
IN	11	16				NDD				SP08	ITE
IN	11	17	5.83	167	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	18	5.88	167	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	19	6.08	170	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	20	4.93	192	0	PSE	7	SP03	0.07	SP08	ITE
IN	11	21	4.30	294	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	1	4.94	178	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	2	5.32	162	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	3	1.76	134	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	4	1.56	135	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	5	7.14	174	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	6				NDD				SP08	ITE
IN	12	7				NDD				SP08	ITE
IN	12	8				NDD				SP08	ITE
IN	12	9				NDD				SP08	ITE
IN	12	10				NDD				SP08	ITE
IN	12	11				NDD				SP08	ITE
IN	12	12				NDD				SP08	ITE
IN	12	13				NDD				SP08	ITE
IN	12	14				NDD				SP08	ITE
IN	12	15				NDD				SP08	ITE
IN	12	16				NDD				SP08	ITE
IN	12	17	6.63	166	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	17	6.63	166	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	18	5.57	165	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	19	4.67	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	20	8.41	165	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	21	5.07	176	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	22				NDD				SP08	ITE
IN	13	1	4.05	202	0	PSE	7	SP03	0.11	SP08	ITE
IN	13	2	4.87	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	3	7.73	167	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	4	6.66	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	5	7.77	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	6				NDD				SP08	ITE
IN	13	7				NDD				SP08	ITE
IN	13	8				NDD				SP08	ITE
IN	13	9				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	13	10				NDD				SP08	ITE
IN	13	11				NDD				SP08	ITE
IN	13	12				NDD				SP08	ITE
IN	13	13				NDD				SP08	ITE
IN	13	14				NDD				SP08	ITE
IN	13	15				NDD				SP08	ITE
IN	13	16	5.44	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	17	7.89	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	18	4.40	173	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	19	6.85	173	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	20	4.19	310	0	PSE	7	SP03	-0.21	SP08	ITE
IN	13	21				NDD				SP08	ITE
IN	14	1				NDD				SP08	ITE
IN	14	2				NDD				SP08	ITE
IN	14	3				NDD				SP08	ITE
IN	14	4				NDD				SP08	ITE
IN	14	5				NDD				SP08	ITE
IN	14	6				NDD				SP08	ITE
IN	14	7				NDD				SP08	ITE
IN	14	8				NDD				SP08	ITE
IN	14	9				NDD				SP08	ITE
IN	14	10				NDD				SP08	ITE
IN	14	11				NDD				SP08	ITE
IN	14	12				NDD				SP08	ITE
IN	14	13				NDD				SP08	ITE
IN	14	14				NDD				SP08	ITE
IN	14	15				NDD				SP08	ITE
IN	14	16				NDD				SP08	ITE
IN	14	17				NDD				SP08	ITE
IN	14	18				NDD				SP08	ITE
IN	15	1				NDD				SP08	ITE
IN	15	2				NDD				SP08	ITE
IN	15	3				NDD				SP08	ITE
IN	15	4				NDD				SP08	ITE
IN	15	5				NDD				SP08	ITE
IN	15	6				NDD				SP08	ITE
IN	15	7				NDD				SP08	ITE
IN	15	8				NDD				SP08	ITE
IN	15	9				NDD				SP08	ITE
IN	15	10				NDD				SP08	ITE
IN	15	11				NDD				SP08	ITE
IN	15	12				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	15	13				NDD				SP08	ITE
IN	15	14				NDD				SP08	ITE
IN	16	1				NDD				SP08	ITE
IN	16	2	3.24	0	41	WAR	M2	SP07	0.13	SP08	ITE
IN	16	3	1.28	0	29	WAR	M2	SP07	0.29	SP08	ITE
IN	16	4				NDD				SP08	ITE
IN	16	5				NDD				SP08	ITE
IN	16	6				NDD				SP08	ITE
OUT	1	1				NDD				SP08	OTE
OUT	1	2				NDD				SP08	OTE
OUT	1	3	7.70	180	0	PSE	7	SP03	-0.23	SP08	OTE
OUT	1	4	8.42	176	0	PSE	7	SP03	0.00	SP08	OTE
OUT	1	5				NDD				SP08	OTE
OUT	1	6				NDD				SP08	OTE
OUT	1	7				NDD				SP08	OTE
OUT	1	8				NDD				SP08	OTE
OUT	1	9				NDD				SP08	OTE
OUT	1	10				NDD				SP08	OTE
OUT	1	11				NDD				SP08	OTE
OUT	1	12				NDD				SP08	OTE
OUT	1	13				NDD				SP08	OTE
OUT	1	14				NDD				SP08	OTE
OUT	1	15				NDD				SP08	OTE
OUT	1	16				NDD				SP08	OTE
OUT	1	17				NDD				SP08	OTE
OUT	1	18				NDD				SP08	OTE
OUT	1	19				NDD				SP08	OTE
OUT	1	20				NDD				SP08	OTE
OUT	1	21				NDD				SP08	OTE
OUT	1	22				NDD				SP08	OTE
OUT	1	23				NDD				SP08	OTE
OUT	1	24				NDD				SP08	OTE
OUT	1	25				NDD				SP08	OTE
OUT	1	26				NDD				SP08	OTE
OUT	1	27				NDD				SP08	OTE
OUT	2	1				NDD				SP08	OTE
OUT	2	2				NDD				SP08	OTE
OUT	2	3				NDD				SP08	OTE
OUT	2	4				NDD				SP08	OTE
OUT	2	5				NDD				SP08	OTE
OUT	2	6				NDD				SP08	OTE
OUT	2	7				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	2	8				NDD				SP08	OTE
OUT	2	9				NDD				SP08	OTE
OUT	2	10				NDD				SP08	OTE
OUT	2	11				NDD				SP08	OTE
OUT	2	12				NDD				SP08	OTE
OUT	2	13				NDD				SP08	OTE
OUT	2	14				NDD				SP08	OTE
OUT	2	15				NDD				SP08	OTE
OUT	2	16				NDD				SP08	OTE
OUT	2	17				NDD				SP08	OTE
OUT	2	18				NDD				SP08	OTE
OUT	2	19				NDD				SP08	OTE
OUT	2	20				NDD				SP08	OTE
OUT	2	21				NDD				SP08	OTE
OUT	2	22				NDD				SP08	OTE
OUT	2	23				NDD				SP08	OTE
OUT	2	24				NDD				SP08	OTE
OUT	2	25	14.36	14	0	PVN	1	SP06	21.20	SP08	OTE
OUT	2	26				NDD				SP08	OTE
OUT	2	27				NDD				SP08	OTE
OUT	2	28				NDD				SP08	OTE
OUT	3	1				NDD				SP08	OTE
OUT	3	2				NDD				SP08	OTE
OUT	3	3				NDD				SP08	OTE
OUT	3	4				NDD				SP08	OTE
OUT	3	5				NDD				SP08	OTE
OUT	3	6				NDD				SP08	OTE
OUT	3	7				NDD				SP08	OTE
OUT	3	8				NDD				SP08	OTE
OUT	3	9				NDD				SP08	OTE
OUT	3	10				NDD				SP08	OTE
OUT	3	11				NDD				SP08	OTE
OUT	3	12				NDD				SP08	OTE
OUT	3	13				NDD				SP08	OTE
OUT	3	14				NDD				SP08	OTE
OUT	3	15				NDD				SP08	OTE
OUT	3	16				NDD				SP08	OTE
OUT	3	17				NDD				SP08	OTE
OUT	3	18				NDD				SP08	OTE
OUT	3	19				NDD				SP08	OTE
OUT	3	20				NDD				SP08	OTE
OUT	3	21				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	3	22				NDD				SP08	OTE
OUT	3	23				NDD				SP08	OTE
OUT	3	24				NDD				SP08	OTE
OUT	3	25				NDD				SP08	OTE
OUT	3	26				NDD				SP08	OTE
OUT	3	27				NDD				SP08	OTE
OUT	3	28				NDD				SP08	OTE
OUT	3	29				NDD				SP08	OTE
OUT	4	1				NDD				SP08	OTE
OUT	4	2				NDD				SP08	OTE
OUT	4	3				NDD				SP08	OTE
OUT	4	4				NDD				SP08	OTE
OUT	4	5				RIC					
OUT	4	5				NDD				SP08	OTE
OUT	4	6				NDD				SP08	OTE
OUT	4	7				NDD				SP08	OTE
OUT	4	8				NDD				SP08	OTE
OUT	4	9				NDD				SP08	OTE
OUT	4	10				NDD				SP08	OTE
OUT	4	11				NDD				SP08	OTE
OUT	4	12				NDD				SP08	OTE
OUT	4	13				NDD				SP08	OTE
OUT	4	14				NDD				SP08	OTE
OUT	4	15				NDD				SP08	OTE
OUT	4	16				NDD				SP08	OTE
OUT	4	17				NDD				SP08	OTE
OUT	4	18				NDD				SP08	OTE
OUT	4	19				NDD				SP08	OTE
OUT	4	20				NDD				SP08	OTE
OUT	4	21				NDD				SP08	OTE
OUT	4	22				NDD				SP08	OTE
OUT	4	23				NDD				SP08	OTE
OUT	4	24				NDD				SP08	OTE
OUT	4	25				NDD				SP08	OTE
OUT	4	26				RAD		SP05	28.69	SP08	OTE
OUT	4	26	1.98	12	30	IDI	1	SP05	29.25	SP08	OTE
OUT	5	1				NDD				SP08	OTE
OUT	5	2				NDD				SP08	OTE
OUT	5	3				NDD				SP08	OTE
OUT	5	4				NDD				SP08	OTE
OUT	5	5				NDD				SP08	OTE
OUT	5	6				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	5	7				NDD				SP08	OTE
OUT	5	8				NDD				SP08	OTE
OUT	5	9				NDD				SP08	OTE
OUT	5	10				NDD				SP08	OTE
OUT	5	11				NDD				SP08	OTE
OUT	5	12				NDD				SP08	OTE
OUT	5	13				NDD				SP08	OTE
OUT	5	14				NDD				SP08	OTE
OUT	5	15				NDD				SP08	OTE
OUT	5	16				NDD				SP08	OTE
OUT	5	17				NDD				SP08	OTE
OUT	5	18				NDD				SP08	OTE
OUT	5	19				NDD				SP08	OTE
OUT	5	20				NDD				SP08	OTE
OUT	5	21				NDD				SP08	OTE
OUT	5	22				NDD				SP08	OTE
OUT	5	23				NDD				SP08	OTE
OUT	5	24				NDD				SP08	OTE
OUT	5	25				NDD				SP08	OTE
OUT	5	26				NDD				SP08	OTE
OUT	5	27				NDD				SP08	OTE
OUT	5	28				NDD				SP08	OTE
OUT	5	29				NDD				SP08	OTE
OUT	6	1	21.95	191	0	DNT	1	SP06	2.16	SP08	OTE
OUT	6	2				NDD				SP08	OTE
OUT	6	3				NDD				SP08	OTE
OUT	6	4				NDD				SP08	OTE
OUT	6	5				NDD				SP08	OTE
OUT	6	6				NDD				SP08	OTE
OUT	6	7				NDD				SP08	OTE
OUT	6	8				NDD				SP08	OTE
OUT	6	9				NDD				SP08	OTE
OUT	6	10				NDD				SP08	OTE
OUT	6	11				NDD				SP08	OTE
OUT	6	12				NDD				SP08	OTE
OUT	6	13				NDD				SP08	OTE
OUT	6	14				NDD				SP08	OTE
OUT	6	15				NDD				SP08	OTE
OUT	6	16				NDD				SP08	OTE
OUT	6	17				NDD				SP08	OTE
OUT	6	18				NDD				SP08	OTE
OUT	6	19				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	6	20				NDD				SP08	OTE
OUT	6	21				NDD				SP08	OTE
OUT	6	22				NDD				SP08	OTE
OUT	6	23				NDD				SP08	OTE
OUT	6	24				NDD				SP08	OTE
OUT	6	25				NDD				SP08	OTE
OUT	6	26				NDD				SP08	OTE
OUT	6	27				NDD				SP08	OTE
OUT	6	28				NDD				SP08	OTE
OUT	6	29				NDD				SP08	OTE
OUT	6	30				NDD				SP08	OTE
OUT	7	1				NDD				SP08	OTE
OUT	7	2				NDD				SP08	OTE
OUT	7	3				NDD				SP08	OTE
OUT	7	4				NDD				SP08	OTE
OUT	7	5				NDD				SP08	OTE
OUT	7	6				NDD				SP08	OTE
OUT	7	7				NDD				SP08	OTE
OUT	7	8				NDD				SP08	OTE
OUT	7	9				NDD				SP08	OTE
OUT	7	10				NDD				SP08	OTE
OUT	7	11				NDD				SP08	OTE
OUT	7	12				NDD				SP08	OTE
OUT	7	13				NDD				SP08	OTE
OUT	7	14				NDD				SP08	OTE
OUT	7	15				NDD				SP08	OTE
OUT	7	16				NDD				SP08	OTE
OUT	7	17				NDD				SP08	OTE
OUT	7	18				NDD				SP08	OTE
OUT	7	19				NDD				SP08	OTE
OUT	7	20				NDD				SP08	OTE
OUT	7	21				NDD				SP08	OTE
OUT	7	22				NDD				SP08	OTE
OUT	7	23				NDD				SP08	OTE
OUT	7	24				NDD				SP08	OTE
OUT	7	25				NDD				SP08	OTE
OUT	7	26				NDD				SP08	OTE
OUT	7	27				NDD				SP08	OTE
OUT	7	28				NDD				SP08	OTE
OUT	7	29				NDD				SP08	OTE
OUT	8	1				NDD				SP08	OTE
OUT	8	2				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	8	3				NDD				SP08	OTE
OUT	8	4				NDD				SP08	OTE
OUT	8	5				NDD				SP08	OTE
OUT	8	6				NDD				SP08	OTE
OUT	8	7				NDD				SP08	OTE
OUT	8	8				NDD				SP08	OTE
OUT	8	9	14.32	15	0	PVN	1	OTE	5.54	SP08	OTE
OUT	8	10				NDD				SP08	OTE
OUT	8	11				NDD				SP08	OTE
OUT	8	12				NDD				SP08	OTE
OUT	8	13				NDD				SP08	OTE
OUT	8	14				NDD				SP08	OTE
OUT	8	15				NDD				SP08	OTE
OUT	8	16				NDD				SP08	OTE
OUT	8	17				NDD				SP08	OTE
OUT	8	18				NDD				SP08	OTE
OUT	8	19				NDD				SP08	OTE
OUT	8	20				NDD				SP08	OTE
OUT	8	21				NDD				SP08	OTE
OUT	8	22				NDD				SP08	OTE
OUT	8	23				NDD				SP08	OTE
OUT	8	24				NDD				SP08	OTE
OUT	8	25				NDD				SP08	OTE
OUT	8	26				NDD				SP08	OTE
OUT	8	27				NDD				SP08	OTE
OUT	8	28				NDD				SP08	OTE
OUT	9	1				NDD				SP08	OTE
OUT	9	2				NDD				SP08	OTE
OUT	9	3				NDD				SP08	OTE
OUT	9	4				NDD				SP08	OTE
OUT	9	5				NDD				SP08	OTE
OUT	9	6				NDD				SP08	OTE
OUT	9	7				NDD				SP08	OTE
OUT	9	8				NDD				SP08	OTE
OUT	9	9				NDD				SP08	OTE
OUT	9	10				NDD				SP08	OTE
OUT	9	11				NDD				SP08	OTE
OUT	9	12				NDD				SP08	OTE
OUT	9	13				NDD				SP08	OTE
OUT	9	14				NDD				SP08	OTE
OUT	9	15				NDD				SP08	OTE
OUT	9	16				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	9	17				NDD				SP08	OTE
OUT	9	18				NDD				SP08	OTE
OUT	9	19				NDD				SP08	OTE
OUT	9	20				NDD				SP08	OTE
OUT	9	21				NDD				SP08	OTE
OUT	9	22				NDD				SP08	OTE
OUT	9	23				NDD				SP08	OTE
OUT	9	24				NDD				SP08	OTE
OUT	9	25				NDD				SP08	OTE
OUT	9	26				NDD				SP08	OTE
OUT	9	27				NDD				SP08	OTE
OUT	10	1				NDD				SP08	OTE
OUT	10	2				NDD				SP08	OTE
OUT	10	3				NDD				SP08	OTE
OUT	10	4				NDD				SP08	OTE
OUT	10	5				NDD				SP08	OTE
OUT	10	6				NDD				SP08	OTE
OUT	10	7				NDD				SP08	OTE
OUT	10	8				NDD				SP08	OTE
OUT	10	9				NDD				SP08	OTE
OUT	10	10				NDD				SP08	OTE
OUT	10	11				NDD				SP08	OTE
OUT	10	12				NDD				SP08	OTE
OUT	10	13				NDD				SP08	OTE
OUT	10	14				NDD				SP08	OTE
OUT	10	15				NDD				SP08	OTE
OUT	10	16				NDD				SP08	OTE
OUT	10	17				NDD				SP08	OTE
OUT	10	18				NDD				SP08	OTE
OUT	10	19				NDD				SP08	OTE
OUT	10	20				NDD				SP08	OTE
OUT	10	21				NDD				SP08	OTE
OUT	10	22				NDD				SP08	OTE
OUT	10	23				NDD				SP08	OTE
OUT	10	24				NDD				SP08	OTE
OUT	10	25				NDD				SP08	OTE
OUT	10	26				NDD				SP08	OTE
OUT	11	1				NDD				SP08	OTE
OUT	11	2				NDD				SP08	OTE
OUT	11	3				NDD				SP08	OTE
OUT	11	4				NDD				SP08	OTE
OUT	11	5				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	11	6				NDD				SP08	OTE
OUT	11	7				NDD				SP08	OTE
OUT	11	8				NDD				SP08	OTE
OUT	11	9				NDD				SP08	OTE
OUT	11	10				NDD				SP08	OTE
OUT	11	11				NDD				SP08	OTE
OUT	11	12				NDD				SP08	OTE
OUT	11	13				NDD				SP08	OTE
OUT	11	14				NDD				SP08	OTE
OUT	11	15				NDD				SP08	OTE
OUT	11	16				NDD				SP08	OTE
OUT	11	17				NDD				SP08	OTE
OUT	11	18				NDD				SP08	OTE
OUT	11	19				NDD				SP08	OTE
OUT	11	20				NDD				SP08	OTE
OUT	11	21				NDD				SP08	OTE
OUT	12	1				NDD				SP08	OTE
OUT	12	2				NDD				SP08	OTE
OUT	12	3				NDD				SP08	OTE
OUT	12	4				NDD				SP08	OTE
OUT	12	5				NDD				SP08	OTE
OUT	12	6				NDD				SP08	OTE
OUT	12	7				NDD				SP08	OTE
OUT	12	8				NDD				SP08	OTE
OUT	12	9				NDD				SP08	OTE
OUT	12	10				NDD				SP08	OTE
OUT	12	11				NDD				SP08	OTE
OUT	12	12				NDD				SP08	OTE
OUT	12	13				NDD				SP08	OTE
OUT	12	14				NDD				SP08	OTE
OUT	12	15				NDD				SP08	OTE
OUT	12	16				NDD				SP08	OTE
OUT	12	17				NDD				SP08	OTE
OUT	12	18				NDD				SP08	OTE
OUT	12	19				NDD				SP08	OTE
OUT	12	20				NDD				SP08	OTE
OUT	12	21				NDD				SP08	OTE
OUT	12	22				NDD				SP08	OTE
OUT	13	1				NDD				SP08	OTE
OUT	13	2				NDD				SP08	OTE
OUT	13	3				NDD				SP08	OTE
OUT	13	4				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	13	5				NDD				SP08	OTE
OUT	13	6				NDD				SP08	OTE
OUT	13	7				NDD				SP08	OTE
OUT	13	8				NDD				SP08	OTE
OUT	13	9				NDD				SP08	OTE
OUT	13	10				NDD				SP08	OTE
OUT	13	11				NDD				SP08	OTE
OUT	13	12				NDD				SP08	OTE
OUT	13	13				NDD				SP08	OTE
OUT	13	14				NDD				SP08	OTE
OUT	13	15				NDD				SP08	OTE
OUT	13	16				NDD				SP08	OTE
OUT	13	17				NDD				SP08	OTE
OUT	13	18				NDD				SP08	OTE
OUT	13	19				NDD				SP08	OTE
OUT	13	20				NDD				SP08	OTE
OUT	13	21				NDD				SP08	OTE
OUT	14	1				NDD				SP08	OTE
OUT	14	2				NDD				SP08	OTE
OUT	14	3				NDD				SP08	OTE
OUT	14	4				NDD				SP08	OTE
OUT	14	5				NDD				SP08	OTE
OUT	14	6				NDD				SP08	OTE
OUT	14	7				NDD				SP08	OTE
OUT	14	8				NDD				SP08	OTE
OUT	14	9				NDD				SP08	OTE
OUT	14	10				NDD				SP08	OTE
OUT	14	11				NDD				SP08	OTE
OUT	14	12				NDD				SP08	OTE
OUT	14	13				NDD				SP08	OTE
OUT	14	14				NDD				SP08	OTE
OUT	14	15				NDD				SP08	OTE
OUT	14	16				NDD				SP08	OTE
OUT	14	17				NDD				SP08	OTE
OUT	14	18				NDD				SP08	OTE
OUT	15	1				NDD				SP08	OTE
OUT	15	2				NDD				SP08	OTE
OUT	15	3				NDD				SP08	OTE
OUT	15	4				NDD				SP08	OTE
OUT	15	5				NDD				SP08	OTE
OUT	15	6				NDD				SP08	OTE
OUT	15	7				NDD				SP08	OTE

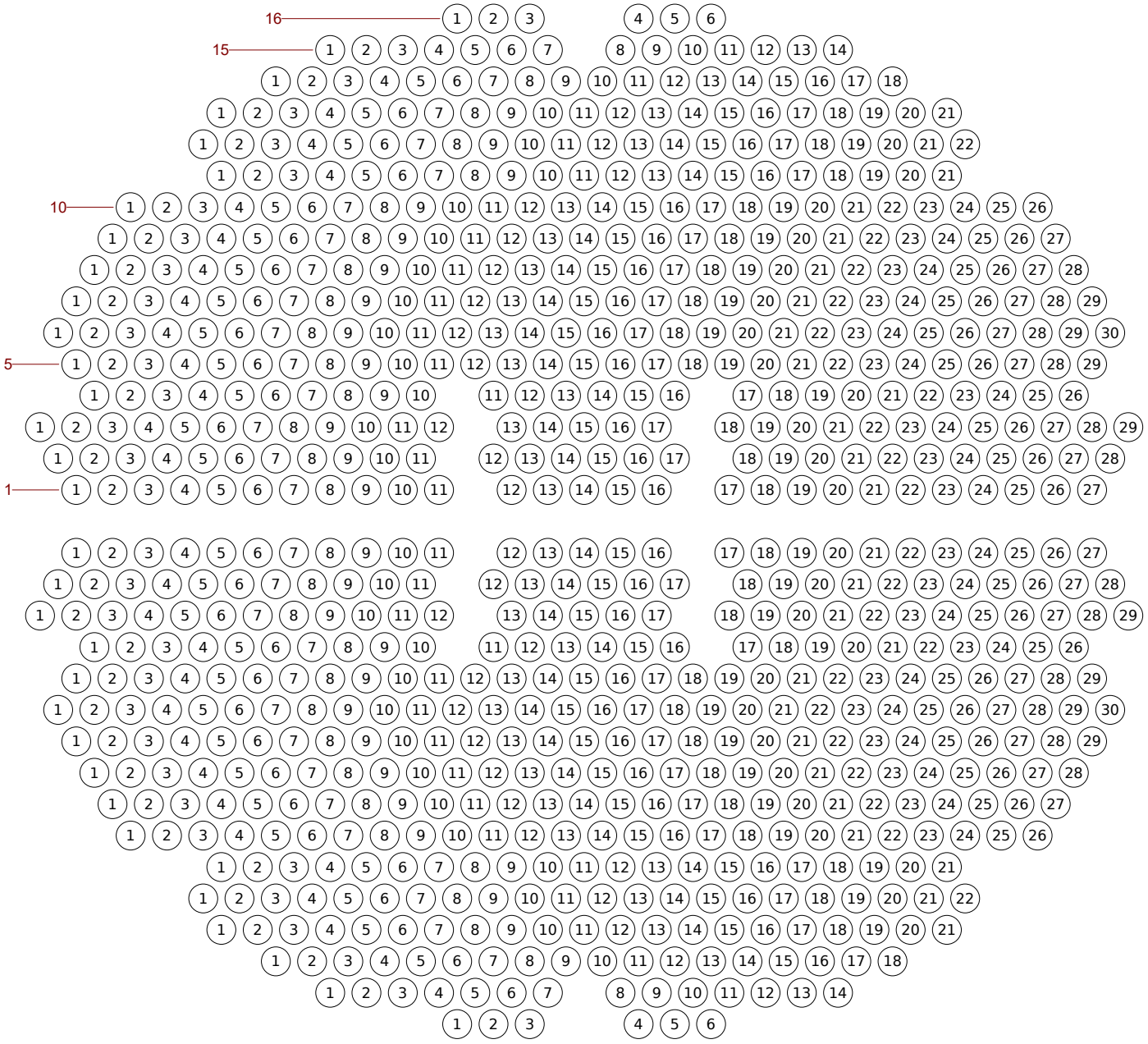
Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	15	8				NDD				SP08	OTE
OUT	15	9				NDD				SP08	OTE
OUT	15	10				NDD				SP08	OTE
OUT	15	11				NDD				SP08	OTE
OUT	15	12				NDD				SP08	OTE
OUT	15	13				NDD				SP08	OTE
OUT	15	14				NDD				SP08	OTE
OUT	16	1				OBS					
OUT	16	1				NDD				SP08	OTE
OUT	16	2				NDD				SP08	OTE
OUT	16	3				NDD				SP08	OTE
OUT	16	4				NDD				SP08	OTE
OUT	16	5				NDD				SP08	OTE
OUT	16	6				NDD				SP08	OTE

TUBESHEET LAYOUT MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-2A

VIEW FROM:INLET/OUTLET



Model LPFWH-2A (762 tubes)
762 open tubes

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

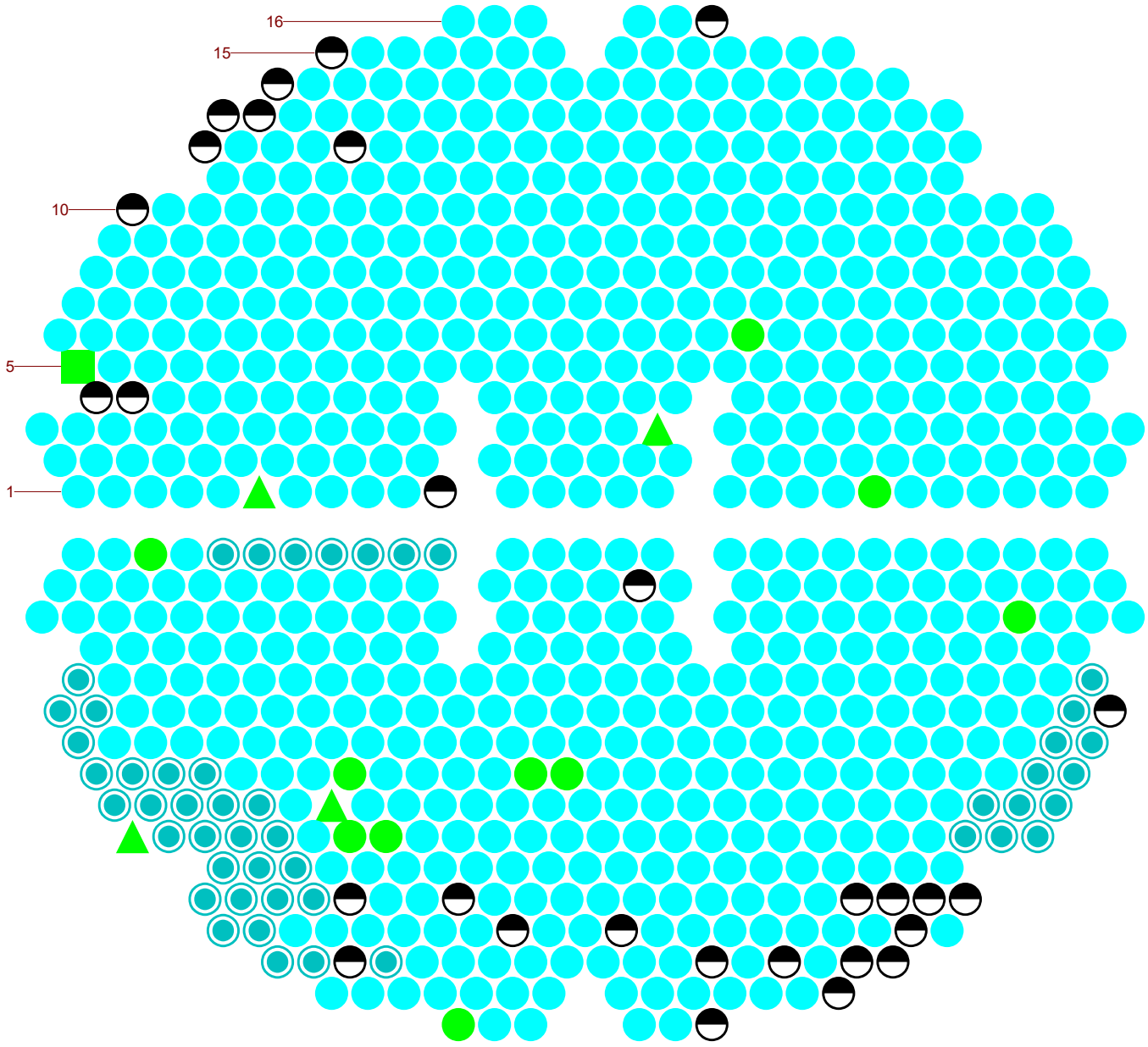
Results Summary
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B

	11-2021 Inspection
Total Tubes in Component (U-Tubes)	**381**
Total Tubes Inspected (Straight Lengths)	**762**
Tubes Recording Damage:	Totals
Approx. Wall Loss 90% & Greater	0
Approx. Wall Loss 80% to 89%	0
Approx. Wall Loss 70% to 79%	0
Approx. Wall Loss 60% to 69%	0
Approx. Wall Loss 50% to 59%	0
Approx. Wall Loss 40% to 49%	0
Approx. Wall Loss 30% to 39%	4
Approx. Wall Loss 20% to 29%	10
Tubes Recording Dents	29
Possible Support Erosion (PSE)	48
Restricted Tubes (Complete Inspection Not Possible)	0
Obstructed Tubes (No Test Possible)	0
Previously Plugged Tubes	0
Tubes Recommended for Plugging	0
Total of Previously Plugged Tubes & Tubes Recommended for Plugging	0

RESULTS MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-2B
11-2021

VIEW FROM INLET/OUTLET



SYM	HITS	TUBES	VIS	TYPE	DESCRIPTION
	1	1	0	QUERY	OBS_RESULTS.qry
	0	0	0	QUERY	RES_RESULTS.qry
	670	670	670	QUERY	NDD_RESULTS.qry
	52	52	48	QUERY	PSE_RESULTS.qry
	1	1	1	QUERY	PVN_RESULTS
	35	29	29	QUERY	DNT_RESULTS.qry
	10	10	10	QUERY	20-29%_RESULTS.qry
	4	4	4	QUERY	30-39%_RESULTS.qry
	0	0	0	QUERY	40-49%_RESULTS.qry
	0	0	0	QUERY	50-59%_RESULTS.qry
	0	0	0	QUERY	60-69%_RESULTS.qry
	0	0	0	QUERY	70-79%_RESULTS.qry
	0	0	0	QUERY	80-89%_RESULTS.qry
	0	0	0	QUERY	90-100%_RESULTS.qry
	0	0	0	QUERY	PLUG_RESULTS.qry
	773	767	762		

Model LPFWH-2B (762 tubes)
0 open tubes

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	1	1				NDD				SP08	ITE
IN	1	2				NDD				SP08	ITE
IN	1	3	0.83	166	27	ODI	1	SP06	43.96	SP08	ITE
IN	1	4				NDD				SP08	ITE
IN	1	5	5.16	174	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	6	4.99	169	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	7	3.31	175	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	8	3.06	150	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	9	3.54	170	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	10	3.01	172	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	11	3.25	161	0	PSE	7	DCEP	0.00	SP08	ITE
IN	1	12				NDD				SP08	ITE
IN	1	13				NDD				SP08	ITE
IN	1	14				NDD				SP08	ITE
IN	1	15				NDD				SP08	ITE
IN	1	16				NDD				SP08	ITE
IN	1	17				NDD				SP08	ITE
IN	1	18				NDD				SP08	ITE
IN	1	19				NDD				SP08	ITE
IN	1	20				NDD				SP08	ITE
IN	1	21				NDD				SP08	ITE
IN	1	22				NDD				SP08	ITE
IN	1	23				NDD				SP08	ITE
IN	1	24				NDD				SP08	ITE
IN	1	25				NDD				SP08	ITE
IN	1	26				NDD				SP08	ITE
IN	1	27				NDD				SP08	ITE
IN	2	1				NDD				SP08	ITE
IN	2	2				NDD				SP08	ITE
IN	2	3				NDD				SP08	ITE
IN	2	4				NDD				SP08	ITE
IN	2	5				NDD				SP08	ITE
IN	2	6				NDD				SP08	ITE
IN	2	7				NDD				SP08	ITE
IN	2	8				NDD				SP08	ITE
IN	2	9				NDD				SP08	ITE
IN	2	10				NDD				SP08	ITE
IN	2	11				NDD				SP08	ITE
IN	2	12				NDD				SP08	ITE
IN	2	13				NDD				SP08	ITE
IN	2	14				NDD				SP08	ITE
IN	2	15				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	2	16	33.20	186	0	DNT	1	SP03	12.55	SP08	ITE
IN	2	17				NDD				SP08	ITE
IN	2	18				NDD				SP08	ITE
IN	2	19				NDD				SP08	ITE
IN	2	20				NDD				SP08	ITE
IN	2	21				NDD				SP08	ITE
IN	2	22				NDD				SP08	ITE
IN	2	23				NDD				SP08	ITE
IN	2	24				NDD				SP08	ITE
IN	2	25				NDD				SP08	ITE
IN	2	26				NDD				SP08	ITE
IN	2	27				NDD				SP08	ITE
IN	2	28				NDD				SP08	ITE
IN	3	1				NDD				SP08	ITE
IN	3	2				NDD				SP08	ITE
IN	3	3				NDD				SP08	ITE
IN	3	4				NDD				SP08	ITE
IN	3	5				NDD				SP08	ITE
IN	3	6				NDD				SP08	ITE
IN	3	7				NDD				SP08	ITE
IN	3	8				NDD				SP08	ITE
IN	3	9				NDD				SP08	ITE
IN	3	10				NDD				SP08	ITE
IN	3	11				NDD				SP08	ITE
IN	3	12				NDD				SP08	ITE
IN	3	13				NDD				SP08	ITE
IN	3	14				NDD				SP08	ITE
IN	3	15				NDD				SP08	ITE
IN	3	16				NDD				SP08	ITE
IN	3	17				NDD				SP08	ITE
IN	3	18				NDD				SP08	ITE
IN	3	19				NDD				SP08	ITE
IN	3	20				NDD				SP08	ITE
IN	3	21				NDD				SP08	ITE
IN	3	22				NDD				SP08	ITE
IN	3	23				NDD				SP08	ITE
IN	3	24				NDD				SP08	ITE
IN	3	25				NDD				SP08	ITE
IN	3	26	0.72	0	22	WAR	M2	BAF6	0.00	SP08	ITE
IN	3	27				NDD				SP08	ITE
IN	3	28				NDD				SP08	ITE
IN	3	29				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	4	1				NDD				SP08	ITE
IN	4	2				NDD				SP08	ITE
IN	4	3				NDD				SP08	ITE
IN	4	4				NDD				SP08	ITE
IN	4	5				NDD				SP08	ITE
IN	4	6				NDD				SP08	ITE
IN	4	7				NDD				SP08	ITE
IN	4	8				NDD				SP08	ITE
IN	4	9				NDD				SP08	ITE
IN	4	10				NDD				SP08	ITE
IN	4	11				NDD				SP08	ITE
IN	4	12				NDD				SP08	ITE
IN	4	13				NDD				SP08	ITE
IN	4	14				NDD				SP08	ITE
IN	4	15				NDD				SP08	ITE
IN	4	16				NDD				SP08	ITE
IN	4	17				NDD				SP08	ITE
IN	4	18				NDD				SP08	ITE
IN	4	19				NDD				SP08	ITE
IN	4	20				NDD				SP08	ITE
IN	4	21				NDD				SP08	ITE
IN	4	22				NDD				SP08	ITE
IN	4	23				NDD				SP08	ITE
IN	4	24				NDD				SP08	ITE
IN	4	25				NDD				SP08	ITE
IN	4	26				NDD				SP08	ITE
IN	5	1	7.28	172	0	PSE	7	SP03	0.00	SP08	ITE
IN	5	2				NDD				SP08	ITE
IN	5	3				NDD				SP08	ITE
IN	5	4				NDD				SP08	ITE
IN	5	5				NDD				SP08	ITE
IN	5	6				NDD				SP08	ITE
IN	5	7				NDD				SP08	ITE
IN	5	8				NDD				SP08	ITE
IN	5	9				NDD				SP08	ITE
IN	5	10				NDD				SP08	ITE
IN	5	11				NDD				SP08	ITE
IN	5	12				NDD				SP08	ITE
IN	5	13				NDD				SP08	ITE
IN	5	14				NDD				SP08	ITE
IN	5	15				NDD				SP08	ITE
IN	5	16				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	5	17				NDD				SP08	ITE
IN	5	18				NDD				SP08	ITE
IN	5	19				NDD				SP08	ITE
IN	5	20				NDD				SP08	ITE
IN	5	21				NDD				SP08	ITE
IN	5	22				NDD				SP08	ITE
IN	5	23				NDD				SP08	ITE
IN	5	24				NDD				SP08	ITE
IN	5	25				NDD				SP08	ITE
IN	5	26				NDD				SP08	ITE
IN	5	27				NDD				SP08	ITE
IN	5	28				NDD				SP08	ITE
IN	5	29	5.69	174	0	PSE	7	SP03	-0.40	SP08	ITE
IN	6	1	5.72	168	0	PSE	7	SP03	0.00	SP08	ITE
IN	6	2	7.16	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	6	3				NDD				SP08	ITE
IN	6	4				NDD				SP08	ITE
IN	6	5				NDD				SP08	ITE
IN	6	6				NDD				SP08	ITE
IN	6	7				NDD				SP08	ITE
IN	6	8				NDD				SP08	ITE
IN	6	9				NDD				SP08	ITE
IN	6	10				NDD				SP08	ITE
IN	6	11				NDD				SP08	ITE
IN	6	12				NDD				SP08	ITE
IN	6	13				NDD				SP08	ITE
IN	6	14				NDD				SP08	ITE
IN	6	15				NDD				SP08	ITE
IN	6	16				NDD				SP08	ITE
IN	6	17				NDD				SP08	ITE
IN	6	18				NDD				SP08	ITE
IN	6	19				NDD				SP08	ITE
IN	6	20				NDD				SP08	ITE
IN	6	21				NDD				SP08	ITE
IN	6	22				NDD				SP08	ITE
IN	6	23				NDD				SP08	ITE
IN	6	24				NDD				SP08	ITE
IN	6	25				NDD				SP08	ITE
IN	6	26				NDD				SP08	ITE
IN	6	27				NDD				SP08	ITE
IN	6	28				NDD				SP08	ITE
IN	6	29	3.55	218	0	PSE	7	SP03	-0.05	SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	6	30	47.31	188	0	DNT	1	SP07	0.00	SP08	ITE
IN	6	30	32.17	187	0	DNT	1	SP07	0.00	SP08	ITE
IN	6	30	3.55	179	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	1	5.43	172	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	2				NDD				SP08	ITE
IN	7	3				NDD				SP08	ITE
IN	7	4				NDD				SP08	ITE
IN	7	5				NDD				SP08	ITE
IN	7	6				NDD				SP08	ITE
IN	7	7				NDD				SP08	ITE
IN	7	8				NDD				SP08	ITE
IN	7	9				NDD				SP08	ITE
IN	7	10				NDD				SP08	ITE
IN	7	11				NDD				SP08	ITE
IN	7	12				NDD				SP08	ITE
IN	7	13				NDD				SP08	ITE
IN	7	14				NDD				SP08	ITE
IN	7	15				NDD				SP08	ITE
IN	7	16				NDD				SP08	ITE
IN	7	17				NDD				SP08	ITE
IN	7	18				NDD				SP08	ITE
IN	7	19				NDD				SP08	ITE
IN	7	20				NDD				SP08	ITE
IN	7	21				NDD				SP08	ITE
IN	7	22				NDD				SP08	ITE
IN	7	23				NDD				SP08	ITE
IN	7	24				NDD				SP08	ITE
IN	7	25				NDD				SP08	ITE
IN	7	26				NDD				SP08	ITE
IN	7	27				NDD				SP08	ITE
IN	7	28	4.08	211	0	PSE	7	SP03	0.00	SP08	ITE
IN	7	29	2.94	175	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	1	2.65	333	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	2	1.46	324	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	3	3.16	165	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	4	8.53	166	0	PSE	7	SP02	0.00	SP08	ITE
IN	8	5				NDD				SP08	ITE
IN	8	6				NDD				SP08	ITE
IN	8	7				NDD				SP08	ITE
IN	8	8	1.16	0	26	WAR	M2	SP06	0.17	SP08	ITE
IN	8	9				NDD				SP08	ITE
IN	8	10				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	8	11				NDD				SP08	ITE
IN	8	12				NDD				SP08	ITE
IN	8	13	1.12	0	26	WAR	M2	SP05	0.32	SP08	ITE
IN	8	14	0.99	0	25	WAR	M2	SP05	0.29	SP08	ITE
IN	8	15				NDD				SP08	ITE
IN	8	16				NDD				SP08	ITE
IN	8	17				NDD				SP08	ITE
IN	8	18				NDD				SP08	ITE
IN	8	19				NDD				SP08	ITE
IN	8	20				NDD				SP08	ITE
IN	8	21				NDD				SP08	ITE
IN	8	22				NDD				SP08	ITE
IN	8	23				NDD				SP08	ITE
IN	8	24				NDD				SP08	ITE
IN	8	25				NDD				SP08	ITE
IN	8	26				NDD				SP08	ITE
IN	8	27	5.79	167	0	PSE	7	SP03	0.00	SP08	ITE
IN	8	28	4.34	172	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	1	6.39	313	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	2	7.68	162	0	PSE	7	SP03	-0.05	SP08	ITE
IN	9	3	2.25	140	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	4	0.37	15	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	5	11.11	165	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	6				NDD				SP08	ITE
IN	9	7	3.20	0	32	WAR	M2	SP06	0.00	SP08	ITE
IN	9	8				NDD				SP08	ITE
IN	9	9				NDD				SP08	ITE
IN	9	10				NDD				SP08	ITE
IN	9	11				NDD				SP08	ITE
IN	9	12				NDD				SP08	ITE
IN	9	13				NDD				SP08	ITE
IN	9	14				NDD				SP08	ITE
IN	9	15				NDD				SP08	ITE
IN	9	16				NDD				SP08	ITE
IN	9	17				NDD				SP08	ITE
IN	9	18				NDD				SP08	ITE
IN	9	19				NDD				SP08	ITE
IN	9	20				NDD				SP08	ITE
IN	9	21				NDD				SP08	ITE
IN	9	22				NDD				SP08	ITE
IN	9	23				NDD				SP08	ITE
IN	9	24				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	9	25	3.69	173	0	PSE	7	SP03	-0.25	SP08	ITE
IN	9	26	0.42	14	0	PSE	7	SP03	0.00	SP08	ITE
IN	9	27	4.87	330	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	1	3.42	0	33	WAR	M2	SP06	-0.11	SP08	ITE
IN	10	1	8.25	175	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	2	8.58	175	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	3	10.80	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	4	6.60	166	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	5	11.07	161	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	6				NDD				SP08	ITE
IN	10	7	2.52	0	29	WAR	M2	SP06	0.00	SP08	ITE
IN	10	8	2.01	0	27	WAR	M2	SP07	0.22	SP08	ITE
IN	10	9				NDD				SP08	ITE
IN	10	10				NDD				SP08	ITE
IN	10	11				NDD				SP08	ITE
IN	10	12				NDD				SP08	ITE
IN	10	13				NDD				SP08	ITE
IN	10	14				NDD				SP08	ITE
IN	10	15				NDD				SP08	ITE
IN	10	16				NDD				SP08	ITE
IN	10	17				NDD				SP08	ITE
IN	10	18				NDD				SP08	ITE
IN	10	19				NDD				SP08	ITE
IN	10	20				NDD				SP08	ITE
IN	10	21				NDD				SP08	ITE
IN	10	22				NDD				SP08	ITE
IN	10	23				NDD				SP08	ITE
IN	10	24	7.79	179	0	PSE	7	SP03	0.10	SP08	ITE
IN	10	25	6.55	324	0	PSE	7	SP03	0.00	SP08	ITE
IN	10	26	6.06	329	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	1	10.53	170	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	2	9.26	321	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	3	11.41	162	0	PSE	7	SP03	0.00	SP08	ITE
IN	11	4				NDD				SP08	ITE
IN	11	5				NDD				SP08	ITE
IN	11	6				NDD				SP08	ITE
IN	11	7				NDD				SP08	ITE
IN	11	8				NDD				SP08	ITE
IN	11	9				NDD				SP08	ITE
IN	11	10				NDD				SP08	ITE
IN	11	11				NDD				SP08	ITE
IN	11	12				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	11	13				NDD				SP08	ITE
IN	11	14				NDD				SP08	ITE
IN	11	15				NDD				SP08	ITE
IN	11	16				NDD				SP08	ITE
IN	11	17				NDD				SP08	ITE
IN	11	18				NDD				SP08	ITE
IN	11	19				NDD				SP08	ITE
IN	11	20				NDD				SP08	ITE
IN	11	21				NDD				SP08	ITE
IN	12	1	13.03	171	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	2	10.50	156	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	3	13.20	169	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	4	12.04	173	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	5	36.51	182	0	DNT	1	SP06	42.60	SP08	ITE
IN	12	5	8.94	190	0	PSE	7	SP03	0.00	SP08	ITE
IN	12	6				NDD				SP08	ITE
IN	12	7				NDD				SP08	ITE
IN	12	8	35.27	184	0	DNT	1	SP03	42.32	SP08	ITE
IN	12	9				NDD				SP08	ITE
IN	12	10				NDD				SP08	ITE
IN	12	11				NDD				SP08	ITE
IN	12	12				NDD				SP08	ITE
IN	12	13				NDD				SP08	ITE
IN	12	14				NDD				SP08	ITE
IN	12	15				NDD				SP08	ITE
IN	12	16				NDD				SP08	ITE
IN	12	17				NDD				SP08	ITE
IN	12	18				NDD				SP08	ITE
IN	12	19	41.03	183	0	DNT	1	SP07	43.24	SP08	ITE
IN	12	20	36.15	185	0	DNT	1	SP07	42.81	SP08	ITE
IN	12	21	40.83	182	0	DNT	1	SP07	39.44	SP08	ITE
IN	12	22	90.27	180	0	DNT	M1	SP08	-0.16	SP08	ITE
IN	13	1	9.26	279	0	PSE	7	SP03	-0.13	SP08	ITE
IN	13	2	8.60	191	0	PSE	7	SP03	0.00	SP08	ITE
IN	13	3				NDD				SP08	ITE
IN	13	4				NDD				SP08	ITE
IN	13	5				NDD				SP08	ITE
IN	13	6				NDD				SP08	ITE
IN	13	7				NDD				SP08	ITE
IN	13	8				NDD				SP08	ITE
IN	13	9	21.81	180	0	DNT	M1	SP08	-0.36	SP08	ITE
IN	13	10				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	13	11				NDD				SP08	ITE
IN	13	12	78.89	181	0	DNT	M1	SP08	-0.81	SP08	ITE
IN	13	13				NDD				SP08	ITE
IN	13	14				NDD				SP08	ITE
IN	13	15				NDD				SP08	ITE
IN	13	16				NDD				SP08	ITE
IN	13	17				NDD				SP08	ITE
IN	13	18				NDD				SP08	ITE
IN	13	19				NDD				SP08	ITE
IN	13	20	35.24	185	0	DNT	1	SP03	41.91	SP08	ITE
IN	13	20	20.22	183	0	DNT	1	SP03	39.76	SP08	ITE
IN	13	21				NDD				SP08	ITE
IN	14	1	8.43	287	0	PSE	7	SP03	0.94	SP08	ITE
IN	14	2	7.76	192	0	PSE	7	SP03	0.00	SP08	ITE
IN	14	3	27.43	182	0	DNT	1	SP05	44.35	SP08	ITE
IN	14	3	12.75	177	0	PSE	7	SP03	0.00	SP08	ITE
IN	14	4	9.54	192	0	PSE	7	SP03	-0.26	SP08	ITE
IN	14	5				NDD				SP08	ITE
IN	14	6				NDD				SP08	ITE
IN	14	7				NDD				SP08	ITE
IN	14	8				NDD				SP08	ITE
IN	14	9				NDD				SP08	ITE
IN	14	10				NDD				SP08	ITE
IN	14	11				NDD				SP08	ITE
IN	14	12				NDD				SP08	ITE
IN	14	13	77.76	183	0	DNT	M1	SP08	1.45	SP08	ITE
IN	14	13	80.36	180	0	DNT	M1	SP08	-0.81	SP08	ITE
IN	14	14				NDD				SP08	ITE
IN	14	15	34.39	181	0	DNT	M1	SP08	0.30	SP08	ITE
IN	14	16				NDD				SP08	ITE
IN	14	17	44.94	183	0	DNT	1	SP07	42.84	SP08	ITE
IN	14	18	22.07	184	0	DNT	M1	SP08	-0.18	SP08	ITE
IN	15	1				NDD				SP08	ITE
IN	15	2				NDD				SP08	ITE
IN	15	3				NDD				SP08	ITE
IN	15	4				NDD				SP08	ITE
IN	15	5				NDD				SP08	ITE
IN	15	6				NDD				SP08	ITE
IN	15	7				NDD				SP08	ITE
IN	15	8				NDD				SP08	ITE
IN	15	9				NDD				SP08	ITE
IN	15	10				NDD				SP08	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	15	11				NDD				SP08	ITE
IN	15	12				NDD				SP08	ITE
IN	15	13				NDD				SP08	ITE
IN	15	14	34.97	181	0	DNT	M1	SP08	0.00	SP08	ITE
IN	16	1	2.01	0	27	WAR	M2	SP06	0.11	SP08	ITE
IN	16	2				NDD				SP08	ITE
IN	16	3				NDD				SP08	ITE
IN	16	4				NDD				SP08	ITE
IN	16	5				NDD				SP08	ITE
IN	16	6	66.71	179	0	DNT	M1	SP08	0.20	SP08	ITE
OUT	1	1				NDD				SP08	OTE
OUT	1	2				NDD				SP08	OTE
OUT	1	3				NDD				SP08	OTE
OUT	1	4				NDD				SP08	OTE
OUT	1	5				NDD				SP08	OTE
OUT	1	6	3.42	13	34	IDI	1	OTE	12.16	SP08	OTE
OUT	1	7				NDD				SP08	OTE
OUT	1	8				NDD				SP08	OTE
OUT	1	9				NDD				SP08	OTE
OUT	1	10				NDD				SP08	OTE
OUT	1	11	24.25	184	0	DNT	1	SP07	-1.58	SP08	OTE
OUT	1	12				NDD				SP08	OTE
OUT	1	13				NDD				SP08	OTE
OUT	1	14				NDD				SP08	OTE
OUT	1	15				NDD				SP08	OTE
OUT	1	16				NDD				SP08	OTE
OUT	1	17				NDD				SP08	OTE
OUT	1	18				NDD				SP08	OTE
OUT	1	19				NDD				SP08	OTE
OUT	1	20				NDD				SP08	OTE
OUT	1	21	9.30	10	27	IDI	1	SP02	35.99	SP08	OTE
OUT	1	22				NDD				SP08	OTE
OUT	1	23				NDD				SP08	OTE
OUT	1	24				NDD				SP08	OTE
OUT	1	25				NDD				SP08	OTE
OUT	1	26				NDD				SP08	OTE
OUT	1	27				NDD				SP08	OTE
OUT	2	1				NDD				SP08	OTE
OUT	2	2				NDD				SP08	OTE
OUT	2	3				NDD				SP08	OTE
OUT	2	4				NDD				SP08	OTE
OUT	2	5				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	2	6				NDD				SP08	OTE
OUT	2	7				NDD				SP08	OTE
OUT	2	8				NDD				SP08	OTE
OUT	2	9				NDD				SP08	OTE
OUT	2	10				NDD				SP08	OTE
OUT	2	11				NDD				SP08	OTE
OUT	2	12				NDD				SP08	OTE
OUT	2	13				NDD				SP08	OTE
OUT	2	14				NDD				SP08	OTE
OUT	2	15				NDD				SP08	OTE
OUT	2	16				NDD				SP08	OTE
OUT	2	17				NDD				SP08	OTE
OUT	2	18				NDD				SP08	OTE
OUT	2	19				NDD				SP08	OTE
OUT	2	20				NDD				SP08	OTE
OUT	2	21				NDD				SP08	OTE
OUT	2	22				NDD				SP08	OTE
OUT	2	23				NDD				SP08	OTE
OUT	2	24				NDD				SP08	OTE
OUT	2	25				NDD				SP08	OTE
OUT	2	26				NDD				SP08	OTE
OUT	2	27				NDD				SP08	OTE
OUT	2	28				NDD				SP08	OTE
OUT	3	1				NDD				SP08	OTE
OUT	3	2				NDD				SP08	OTE
OUT	3	3				NDD				SP08	OTE
OUT	3	4				NDD				SP08	OTE
OUT	3	5				NDD				SP08	OTE
OUT	3	6				NDD				SP08	OTE
OUT	3	7				NDD				SP08	OTE
OUT	3	8				NDD				SP08	OTE
OUT	3	9				NDD				SP08	OTE
OUT	3	10				NDD				SP08	OTE
OUT	3	11				NDD				SP08	OTE
OUT	3	12				NDD				SP08	OTE
OUT	3	13				NDD				SP08	OTE
OUT	3	14				NDD				SP08	OTE
OUT	3	15				NDD				SP08	OTE
OUT	3	16				NDD				SP08	OTE
OUT	3	17	6.25	12	32	IDI	1	SP02	43.90	SP08	OTE
OUT	3	18				NDD				SP08	OTE
OUT	3	19				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	3	20				NDD				SP08	OTE
OUT	3	21				NDD				SP08	OTE
OUT	3	22				NDD				SP08	OTE
OUT	3	23				NDD				SP08	OTE
OUT	3	24				NDD				SP08	OTE
OUT	3	25				NDD				SP08	OTE
OUT	3	26				RIC					
OUT	3	26				NDD				SP08	OTE
OUT	3	27				NDD				SP08	OTE
OUT	3	28				NDD				SP08	OTE
OUT	3	29				NDD				SP08	OTE
OUT	4	1	34.02	179	0	DNT	M1	SP08	1.38	SP08	OTE
OUT	4	1	32.73	186	0	DNT	1	SP07	48.73	SP08	OTE
OUT	4	2	32.37	182	0	DNT	M1	SP08	-0.43	SP08	OTE
OUT	4	3				NDD				SP08	OTE
OUT	4	4				NDD				SP08	OTE
OUT	4	5				NDD				SP08	OTE
OUT	4	6				NDD				SP08	OTE
OUT	4	7				NDD				SP08	OTE
OUT	4	8				NDD				SP08	OTE
OUT	4	9				NDD				SP08	OTE
OUT	4	10				NDD				SP08	OTE
OUT	4	11				NDD				SP08	OTE
OUT	4	12				NDD				SP08	OTE
OUT	4	13				NDD				SP08	OTE
OUT	4	14				NDD				SP08	OTE
OUT	4	15				NDD				SP08	OTE
OUT	4	16				RIC					
OUT	4	16				NDD				SP08	OTE
OUT	4	17				NDD				SP08	OTE
OUT	4	18				NDD				SP08	OTE
OUT	4	19				NDD				SP08	OTE
OUT	4	20				NDD				SP08	OTE
OUT	4	21				NDD				SP08	OTE
OUT	4	22				NDD				SP08	OTE
OUT	4	23				NDD				SP08	OTE
OUT	4	24				NDD				SP08	OTE
OUT	4	25				NDD				SP08	OTE
OUT	4	26				NDD				SP08	OTE
OUT	5	1	12.02	28	0	PVN	1	SP01	23.02	SP08	OTE
OUT	5	2				NDD				SP08	OTE
OUT	5	3				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	5	4				NDD				SP08	OTE
OUT	5	5				NDD				SP08	OTE
OUT	5	6				NDD				SP08	OTE
OUT	5	7				NDD				SP08	OTE
OUT	5	8				NDD				SP08	OTE
OUT	5	9				NDD				SP08	OTE
OUT	5	10				NDD				SP08	OTE
OUT	5	11				NDD				SP08	OTE
OUT	5	12				NDD				SP08	OTE
OUT	5	13				NDD				SP08	OTE
OUT	5	14				NDD				SP08	OTE
OUT	5	15				NDD				SP08	OTE
OUT	5	16				NDD				SP08	OTE
OUT	5	17				NDD				SP08	OTE
OUT	5	18				NDD				SP08	OTE
OUT	5	19				NDD				SP08	OTE
OUT	5	20				NDD				SP08	OTE
OUT	5	21				NDD				SP08	OTE
OUT	5	22				NDD				SP08	OTE
OUT	5	23				NDD				SP08	OTE
OUT	5	24				NDD				SP08	OTE
OUT	5	25				NDD				SP08	OTE
OUT	5	26				NDD				SP08	OTE
OUT	5	27				NDD				SP08	OTE
OUT	5	28				NDD				SP08	OTE
OUT	5	29				NDD				SP08	OTE
OUT	6	1				NDD				SP08	OTE
OUT	6	2				NDD				SP08	OTE
OUT	6	3				NDD				SP08	OTE
OUT	6	4				NDD				SP08	OTE
OUT	6	5				NDD				SP08	OTE
OUT	6	6				NDD				SP08	OTE
OUT	6	7				NDD				SP08	OTE
OUT	6	8				NDD				SP08	OTE
OUT	6	9				NDD				SP08	OTE
OUT	6	10				NDD				SP08	OTE
OUT	6	11				NDD				SP08	OTE
OUT	6	12				NDD				SP08	OTE
OUT	6	13				NDD				SP08	OTE
OUT	6	14				NDD				SP08	OTE
OUT	6	15				NDD				SP08	OTE
OUT	6	16				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	6	17				NDD				SP08	OTE
OUT	6	18				NDD				SP08	OTE
OUT	6	19				NDD				SP08	OTE
OUT	6	20	1.48	0	29	WAR	M2	SP07	-0.03	SP08	OTE
OUT	6	21				NDD				SP08	OTE
OUT	6	22				NDD				SP08	OTE
OUT	6	23				NDD				SP08	OTE
OUT	6	24				NDD				SP08	OTE
OUT	6	25				NDD				SP08	OTE
OUT	6	26				NDD				SP08	OTE
OUT	6	27				NDD				SP08	OTE
OUT	6	28				NDD				SP08	OTE
OUT	6	29				NDD				SP08	OTE
OUT	6	30				NDD				SP08	OTE
OUT	7	1				NDD				SP08	OTE
OUT	7	2				NDD				SP08	OTE
OUT	7	3				NDD				SP08	OTE
OUT	7	4				NDD				SP08	OTE
OUT	7	5				NDD				SP08	OTE
OUT	7	6				NDD				SP08	OTE
OUT	7	7				NDD				SP08	OTE
OUT	7	8				NDD				SP08	OTE
OUT	7	9				NDD				SP08	OTE
OUT	7	10				NDD				SP08	OTE
OUT	7	11				NDD				SP08	OTE
OUT	7	12				NDD				SP08	OTE
OUT	7	13				NDD				SP08	OTE
OUT	7	14				NDD				SP08	OTE
OUT	7	15				NDD				SP08	OTE
OUT	7	16				NDD				SP08	OTE
OUT	7	17				NDD				SP08	OTE
OUT	7	18				NDD				SP08	OTE
OUT	7	19				NDD				SP08	OTE
OUT	7	20				NDD				SP08	OTE
OUT	7	21				NDD				SP08	OTE
OUT	7	22				NDD				SP08	OTE
OUT	7	23				NDD				SP08	OTE
OUT	7	24				NDD				SP08	OTE
OUT	7	25				NDD				SP08	OTE
OUT	7	26				NDD				SP08	OTE
OUT	7	27				NDD				SP08	OTE
OUT	7	28				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	7	29				NDD				SP08	OTE
OUT	8	1				NDD				SP08	OTE
OUT	8	2				NDD				SP08	OTE
OUT	8	3				NDD				SP08	OTE
OUT	8	4				NDD				SP08	OTE
OUT	8	5				NDD				SP08	OTE
OUT	8	6				NDD				SP08	OTE
OUT	8	7				NDD				SP08	OTE
OUT	8	8				NDD				SP08	OTE
OUT	8	9				NDD				SP08	OTE
OUT	8	10				NDD				SP08	OTE
OUT	8	11				NDD				SP08	OTE
OUT	8	12				NDD				SP08	OTE
OUT	8	13				NDD				SP08	OTE
OUT	8	14				NDD				SP08	OTE
OUT	8	15				NDD				SP08	OTE
OUT	8	16				NDD				SP08	OTE
OUT	8	17				NDD				SP08	OTE
OUT	8	18				NDD				SP08	OTE
OUT	8	19				NDD				SP08	OTE
OUT	8	20				NDD				SP08	OTE
OUT	8	21				NDD				SP08	OTE
OUT	8	22				NDD				SP08	OTE
OUT	8	23				NDD				SP08	OTE
OUT	8	24				NDD				SP08	OTE
OUT	8	25				NDD				SP08	OTE
OUT	8	26				NDD				SP08	OTE
OUT	8	27				NDD				SP08	OTE
OUT	8	28				NDD				SP08	OTE
OUT	9	1				NDD				SP08	OTE
OUT	9	2				NDD				SP08	OTE
OUT	9	3				NDD				SP08	OTE
OUT	9	4				NDD				SP08	OTE
OUT	9	5				NDD				SP08	OTE
OUT	9	6				NDD				SP08	OTE
OUT	9	7				NDD				SP08	OTE
OUT	9	8				NDD				SP08	OTE
OUT	9	9				NDD				SP08	OTE
OUT	9	10				NDD				SP08	OTE
OUT	9	11				NDD				SP08	OTE
OUT	9	12				NDD				SP08	OTE
OUT	9	13				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	9	14				NDD				SP08	OTE
OUT	9	15				NDD				SP08	OTE
OUT	9	16				NDD				SP08	OTE
OUT	9	17				NDD				SP08	OTE
OUT	9	18				NDD				SP08	OTE
OUT	9	19				NDD				SP08	OTE
OUT	9	20				NDD				SP08	OTE
OUT	9	21				NDD				SP08	OTE
OUT	9	22				NDD				SP08	OTE
OUT	9	23				NDD				SP08	OTE
OUT	9	24				NDD				SP08	OTE
OUT	9	25				NDD				SP08	OTE
OUT	9	26				NDD				SP08	OTE
OUT	9	27				NDD				SP08	OTE
OUT	10	1	27.09	181	0	DNT	M1	SP08	-0.26	SP08	OTE
OUT	10	2				NDD				SP08	OTE
OUT	10	3				NDD				SP08	OTE
OUT	10	4				NDD				SP08	OTE
OUT	10	5				NDD				SP08	OTE
OUT	10	6				NDD				SP08	OTE
OUT	10	7				NDD				SP08	OTE
OUT	10	8				NDD				SP08	OTE
OUT	10	9				NDD				SP08	OTE
OUT	10	10				NDD				SP08	OTE
OUT	10	11				NDD				SP08	OTE
OUT	10	12				NDD				SP08	OTE
OUT	10	13				NDD				SP08	OTE
OUT	10	14				NDD				SP08	OTE
OUT	10	15				NDD				SP08	OTE
OUT	10	16				NDD				SP08	OTE
OUT	10	17				NDD				SP08	OTE
OUT	10	18				NDD				SP08	OTE
OUT	10	19				NDD				SP08	OTE
OUT	10	20				NDD				SP08	OTE
OUT	10	21				NDD				SP08	OTE
OUT	10	22				NDD				SP08	OTE
OUT	10	23				NDD				SP08	OTE
OUT	10	24				NDD				SP08	OTE
OUT	10	25				NDD				SP08	OTE
OUT	10	26				NDD				SP08	OTE
OUT	10	26				OBS					
OUT	11	1				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	11	2				NDD				SP08	OTE
OUT	11	3				NDD				SP08	OTE
OUT	11	4				NDD				SP08	OTE
OUT	11	5				NDD				SP08	OTE
OUT	11	6				NDD				SP08	OTE
OUT	11	7				NDD				SP08	OTE
OUT	11	8				NDD				SP08	OTE
OUT	11	9				NDD				SP08	OTE
OUT	11	10				NDD				SP08	OTE
OUT	11	11				NDD				SP08	OTE
OUT	11	12				NDD				SP08	OTE
OUT	11	13				NDD				SP08	OTE
OUT	11	14				NDD				SP08	OTE
OUT	11	15				NDD				SP08	OTE
OUT	11	16				NDD				SP08	OTE
OUT	11	17				NDD				SP08	OTE
OUT	11	18				NDD				SP08	OTE
OUT	11	19				NDD				SP08	OTE
OUT	11	20				NDD				SP08	OTE
OUT	11	21				NDD				SP08	OTE
OUT	12	1	36.65	179	0	DNT	M1	SP08	0.40	SP08	OTE
OUT	12	1	39.20	181	0	DNT	M1	SP08	-0.42	SP08	OTE
OUT	12	2				NDD				SP08	OTE
OUT	12	3				NDD				SP08	OTE
OUT	12	4				NDD				SP08	OTE
OUT	12	5	22.75	189	0	DNT	1	SP07	44.40	SP08	OTE
OUT	12	6				NDD				SP08	OTE
OUT	12	7				NDD				SP08	OTE
OUT	12	8				NDD				SP08	OTE
OUT	12	9				NDD				SP08	OTE
OUT	12	10				NDD				SP08	OTE
OUT	12	11				NDD				SP08	OTE
OUT	12	12				NDD				SP08	OTE
OUT	12	13				NDD				SP08	OTE
OUT	12	14				NDD				SP08	OTE
OUT	12	15				NDD				SP08	OTE
OUT	12	16				NDD				SP08	OTE
OUT	12	17				NDD				SP08	OTE
OUT	12	18				NDD				SP08	OTE
OUT	12	19				NDD				SP08	OTE
OUT	12	20				NDD				SP08	OTE
OUT	12	21				NDD				SP08	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	12	22				NDD				SP08	OTE
OUT	13	1	34.14	179	0	DNT	M1	SP08	0.33	SP08	OTE
OUT	13	1	30.54	183	0	DNT	M1	SP08	-0.24	SP08	OTE
OUT	13	2	31.62	182	0	DNT	M1	SP08	-0.59	SP08	OTE
OUT	13	3				NDD				SP08	OTE
OUT	13	4				NDD				SP08	OTE
OUT	13	5				NDD				SP08	OTE
OUT	13	6				NDD				SP08	OTE
OUT	13	7				NDD				SP08	OTE
OUT	13	8				NDD				SP08	OTE
OUT	13	9				NDD				SP08	OTE
OUT	13	10				NDD				SP08	OTE
OUT	13	11				NDD				SP08	OTE
OUT	13	12				NDD				SP08	OTE
OUT	13	13				NDD				SP08	OTE
OUT	13	14				NDD				SP08	OTE
OUT	13	15				NDD				SP08	OTE
OUT	13	16				NDD				SP08	OTE
OUT	13	17				NDD				SP08	OTE
OUT	13	18				NDD				SP08	OTE
OUT	13	19				NDD				SP08	OTE
OUT	13	20				NDD				SP08	OTE
OUT	13	21				NDD				SP08	OTE
OUT	14	1	45.88	182	0	DNT	M1	SP08	-0.12	SP08	OTE
OUT	14	2				NDD				SP08	OTE
OUT	14	3				NDD				SP08	OTE
OUT	14	4				NDD				SP08	OTE
OUT	14	5				NDD				SP08	OTE
OUT	14	6				NDD				SP08	OTE
OUT	14	7				NDD				SP08	OTE
OUT	14	8				NDD				SP08	OTE
OUT	14	9				NDD				SP08	OTE
OUT	14	10				NDD				SP08	OTE
OUT	14	11				NDD				SP08	OTE
OUT	14	12				NDD				SP08	OTE
OUT	14	13				NDD				SP08	OTE
OUT	14	14				NDD				SP08	OTE
OUT	14	15				NDD				SP08	OTE
OUT	14	16				NDD				SP08	OTE
OUT	14	17				NDD				SP08	OTE
OUT	14	18				NDD				SP08	OTE
OUT	15	1	29.66	179	0	DNT	M1	SP08	0.16	SP08	OTE

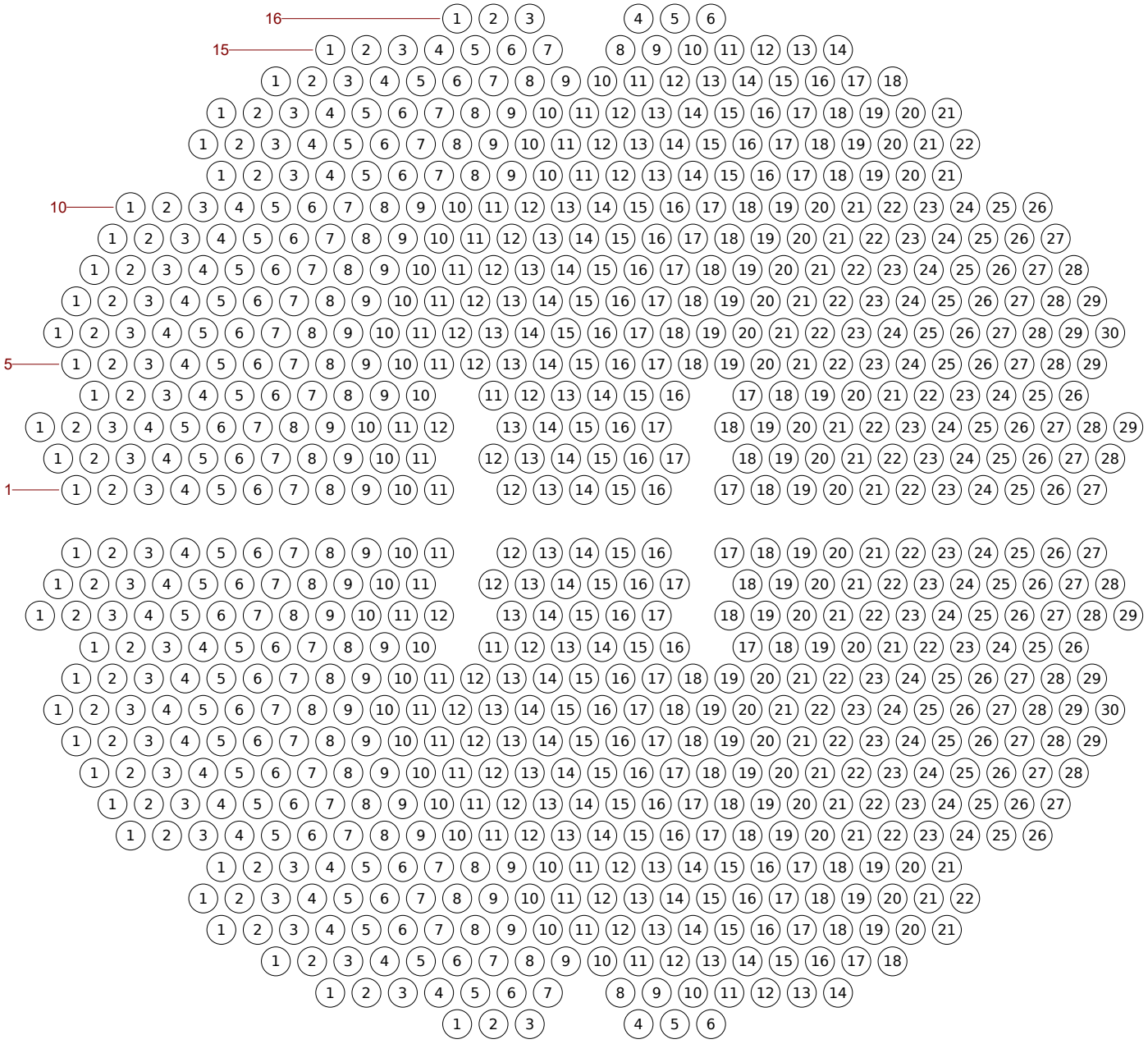
Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-2B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	15	2				NDD				SP08	OTE
OUT	15	3				NDD				SP08	OTE
OUT	15	4				NDD				SP08	OTE
OUT	15	5				NDD				SP08	OTE
OUT	15	6				NDD				SP08	OTE
OUT	15	7				NDD				SP08	OTE
OUT	15	8				NDD				SP08	OTE
OUT	15	9				NDD				SP08	OTE
OUT	15	10				NDD				SP08	OTE
OUT	15	11				NDD				SP08	OTE
OUT	15	12				NDD				SP08	OTE
OUT	15	13				NDD				SP08	OTE
OUT	15	14				NDD				SP08	OTE
OUT	16	1				NDD				SP08	OTE
OUT	16	2				NDD				SP08	OTE
OUT	16	3				NDD				SP08	OTE
OUT	16	4				NDD				SP08	OTE
OUT	16	5				NDD				SP08	OTE
OUT	16	6	20.87	183	0	DNT	M1	SP08	2.76	SP08	OTE

TUBESHEET LAYOUT MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-2B

VIEW FROM:INLET/OUTLET



Model LPFWH-2B (762 tubes)
762 open tubes

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

3.0 INSPECTION PROCEDURE

Technicians

Conco EC technicians are certified to CSC-QAP-9.1 (SNT-TC-1A guidelines, CP-189) and also trained in confined space, first aid, and CPR. All Conco Analysts have passed an industry recognized Data-Analysis level IIA or level IIIA class.

Process

All inspections are performed in accordance with CSC-NDE-11.0 Rev 4 Data Acquisition and Analysis. Conco will use CoreStar equipment recording data with 4 frequencies and on 8 channels (4-differential channels and 4-absolute channels). The data will be recorded on medium consistent with the tester used (Magnetic Optical disk, compact flash disk, or USB flash drive). The data will be interpreted by qualified data analyst using the CoreStar analysis software. The results will be stored in the CoreStar DBMS software. This will enable future trending and inspection planning of the unit. While on site, Conco will visually inspect the tube sheet and they will generate a list of plugged tubes to be included on the tube sheet maps. All test equipment will be visually inspected prior to use to ensure the equipment is suitable for the inspection. All test equipment will also be within calibration as per manufacture specifications.

Eddy Current probes are purchased to conform to specific metallurgical characteristics, inside diameter and wall thickness of the tubes in this proposal. The probe diameter is calculated to achieve a fill-factor of approximately 85% between the probe head diameter and the tube ID.

We propose to use our services on a "best effort" basis. The detection of particular defect or variable in the material tested cannot be guaranteed.

CONCO SERVICES LLC
530 JONES STREET·VERONA, PA 15147
(412) 828-1166 · FAX: (412) 826-8255

ESTABLISHED 1923

Form No	1085
Title	Examination Technique Specification Sheet OMNI
Revision:	2
Date:	January 3, 2017
Page 1 of 4	

Utility/Site/Unit: East Kentucky Power Cooperative/Spurlock/Unit 2	ETSS Version: 1 Date: 11/5/2021
Component: LPFWH 2	Component ID: 2A, 2B
Examination Scope	
Applicability: This technique is for the bobbin examination of 0.750" x .035" wall 304 SS tubes	
Instrument	**Tubing**
Manufacturer/Model: CoreStar OMNI 200/100	Material Type: 304 SS
	# Of Tubes: 381 U-Tubes
	OD/Wall (inch): 0.750" x 0.035"
Data Recording Equipment	Length: ~34'
Manuf./Media: Hard drive / Network or Equiv	**Calibration Standard(s)**
Software	Type/SN: ASME CSC-434 Type/SN: Wall Thinning CSC-432 Type/SN: Internal Reference
Manufacturer: Corestar	**Analog Signal Path**
Version/Revision: 8.1	Probe Shaft /Length: 80"
Examination Procedure	Extension Type & Length N/A
Number/Revision: CSC-NDE-11.0 Rev 4	Slip Ring Model Number: N/A

Scan Parameters

Scan Direction: Pull

Digitization Rate, Samples Per Inch (minimum): ≥ 30 SPI	Axial Direction: Pull	N/A	Circ. Direction	N/A

Probe Speed	Sample Rate	RPM Set	RPM Min	RPM Max
46 inches / second	2000 (Max.)	N/A	N/A	N/A
30 inches / second	1200 (Min.)	N/A	N/A	N/A

Probe/Motor Unit

Description (Model/Diameter/Frequency/Coil Dimensions)	Manufacturer	Length
610-630 ESH/HF	Corestar	N/A

Data Acquisition

Calibration Coil 1 Channels

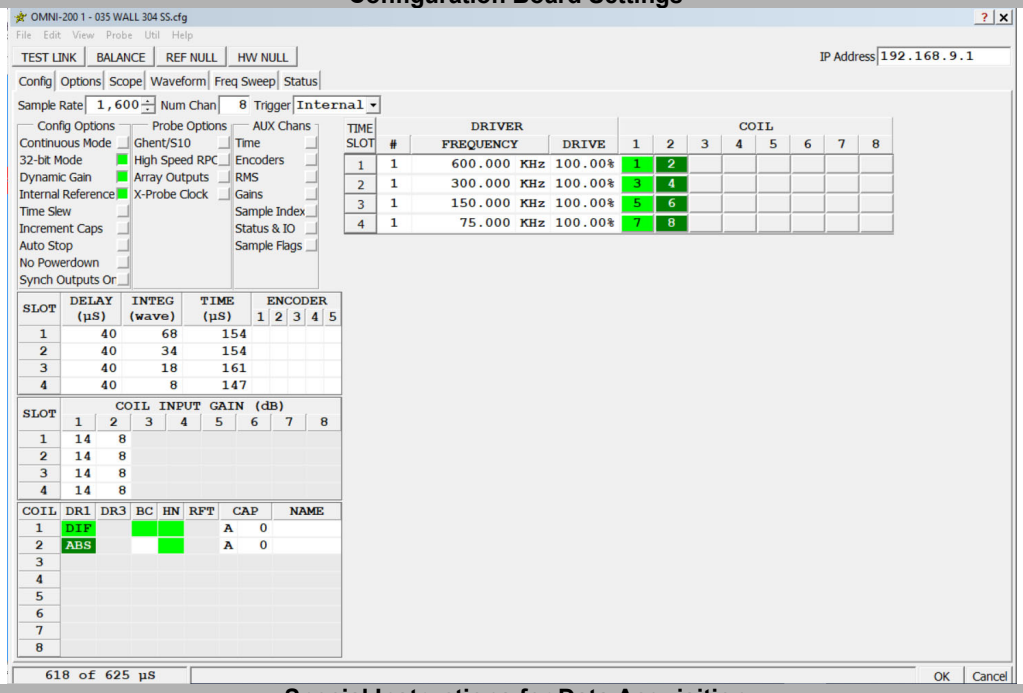
Channel & Frequency	Channel #1 600 kHz	Channel #3 300 kHz	Channel #5 150 kHz	Channel #7 75 kHz
Phase Rotation	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3
Span Setting	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions
Drive Voltage	100%	100%	100%	100%
Gain Setting	14	14	14	14

Calibration Coil 2 Channels

Channel & Frequency	Channel #2 600 kHz	Channel #4 300 kHz	Channel #6 150 kHz	Channel #8 75 kHz
Phase Rotation	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up
Span Setting	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions
Drive Voltage	100%	100%	100%	100%
Gain setting	8	8	8	8

Examination Technique Specification Sheet

Configuration Board Settings



Special Instructions for Data Acquisition

1. Probes should be pulled @ 40 inches/second or less.
2. Review each data channel and ensure that adequate/expected signal responses are achieved before recording the calibration. Do not record data until the proper spans and rotations have been set.
3. Monitor the data by setting the left strip chart to channel 1 vertical, right strip chart to channel 6 vertical and the lissajous display set to channel 1 as a minimum. The operator will determine the specific strip chart settings and lissajous display to verify the system is functioning properly and that data quality is acceptable.
4. Follow the Conco NDE procedure CSC-NDE-11.0 Rev 4.
5. Encode the tube ID's as per map for respective sections.
6. The initial exam attempt shall be performed with the 630 ESH/HF probe.
7. Tubes that will not allow the probe to enter, report as "Obstructed".
8. Tubes unable to be examine the desired extent, report as "Restricted".
9. Write a message for all tubes that are unable to be examined full length explaining the reason.
10. Encode the ASME Std. as "999", Thinning Std as "999" with a message.
11. Perform "System Null" only if "Display Null" is ineffective in balancing the signal.

Examination Technique Specification Sheet

Data Analysis				
Calibration Differential Channels				
Channel & Frequency	Channel #1 600 kHz	Channel #3 300 kHz	Channel #5 150 kHz	Channel #7 75 kHz
Phase Rotation	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3
Span Setting Minimum	100% TWH @ 4 divisions	100% TWH @ 4 divisions	100% TWH @ 4 divisions	100% TWH @ 4 divisions
Calibration Absolute Channels				
Channel & Frequency	Channel #2 600 kHz	Channel #4 300 kHz	Channel #6 150 kHz	Channel #8 75 kHz
Phase Rotation	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up
Span Setting Minimum	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions
Calibration Process and Other Channels				
Channel & Frequency	M-1 1/5 Diff	M-2 4/6 Abs.	M-3 / Diff.	M-4 / Diff.
Phase Rotation	100% TWH 40 degrees ± 3	Probe Motion Horiz. Flaws Up		
Span Setting Minimum	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions		
Suppress On	Support Ring	Support Ring		

Voltage Normalization				Calibration Curves		
CH	Signal	Set	Normalize	Type	CH	Set Points
1	4x20% FBH	4 Vp-p	Save/Store to all	Phase Curve	1, 3, 5, M1	100,60,20%
1	4x20% FBH	4 Vp-p	Save/Store to all	Magnitude Curve	6, M2	75, 50,25%

Data Screening				
Left Strip Chart	Center Strip Chart	Right Strip Chart	Left Lissajous	Right Lissajous
Channel M1 Vertical	Channel 1 Vertical	Channel 6 Vertical	Channel 1	Channel 6

Special Instructions for Analysis

1. Calibration curves shall be constructed using the “As-Built” dimensions from the calibration standard drawings.
2. Normalize to 4 volts on the 4 X 20% flat bottom holes using channel #1 differential and store to all channels.
3. All Quantifiable indications of tube wall degradation ≥ 20% TW and 1 Volt shall be reported (however, not to exceed 6 reportable ID defects).
4. Locate all defect indications in inches measured from the test end.
5. Previously reported indications shall be addressed by the primary analyst. Report previously reported Inds. In same channel as history. Report previous indications that are not found as “INF” and indications not recordable as “INR”.
6. If test data appears to be un-interpretable shall be report as “RBD”.

Job Lead Approval	Customer Approval (if required)
Signature /Date: Jeff Pomarico IIIA 11/5/2021	Signature /Date N/A

Additional Component Information

Examination Technique Specification Sheet

Reporting Requirements							
Code	**Description**	**Meas.**	**%**	**Volts**	**Ch**	**Loc**	**Ext.**
ADR	Absolute Drift	Y	N	Any	6	Y	Y
CRK	Crack-Like Indication	Y	N	Any	5, 6	Y	Y
DNT	Dent	Y	N	20 >	1, M1	Y	Y
DTS	Distorted Support Indication	Y	N	Any	M1	Y	Y
ERI	Erosion With Indication	Y	20% >	Any	6	Y	Y
ERO	Erosion	Y	20% >	Any	6	Y	Y
GEN	General Pitting / Wall Loss	N	N	N	N	N	Y
IDC	ID Chatter	Y	N	20 >	1	Y	Y
IDI	ID Indication	Y	20% >	Any	1, M1	Y	Y
INA	Inaccessible	N	N	N	N	N	N
INF	Indication Not Found	N	N	N	N	Y	Y
INR	Indication Not Recordable	N	N	N	N	Y	Y
NDD	No Degradation Detected	N	N	N	N	N	Y
NQI	Non Quantifiable Indication	Y	N	Any	1, M1	Y	Y
OBS	Obstructed	N	N	N	N	N	N
ODI	OD Indication	Y	20% >	Any	1, M1	Y	Y
PID	Positive Identification	Y	N	Y	Y	Y	Y
PLG	Plug	N	N	N	N	N	N
PVN	Permeability Variation	Y	N	20 >	1, M1	Y	Y
RAD	Retest Analyst Discretion	N	N	N	N	N	N
RBD	Retest Bad Data	N	N	N	N	N	N
RES	Restricted	N	N	N	N	Y	Y
RIC	Retest Incomplete	N	N	N	N	N	N
STC	Stuck Cleaner	N	N	N	N	N	N
WAR	OD Fretting Wear	Y	20% >	Any	6, M2	Y	Y

Refer to the Data Management Code list in the report for landmark abbreviations.

Site

Owner	EKPC		
Site Code	SPURLOCK	Unit	2
Comp	LPFWH-2B	Model	LPFWH-2B
Outage	11-2021	Date	11/05/2021

Cal

Cal Num	2	Disk		Leg	INLET
Material	304 SS	ID	0.555	OD	0.625

Operators

Operator ID	S5349	Level	I
Operator ID	S8014	Level	II

Standards

Type	ASME	SN	CSC-434
Type	W/T	SN	CSC-432
Type		SN	

Probe

Model	630 ESH/HF	Vendor	CORESTAR
Ext Type	4 PIN	Vendor	CORESTAR
Head Size	630	Head SN	
Shaft Length	80	Shaft SN	
Ext Length	50	Ref Head SN	
Slip SN		Ref Shaft SN	

Tester Config

IDX	TYPE	CHAN	FREQ	SPAN	Y/X	ROT	COIL	CTX
1	DATA32	1	600 KHz	150		287°	1 DIF	1
2	DATA32	2	600 KHz	80		296°	2 ABS	1
3	DATA32	3	300 KHz	41		88°	1 DIF	2
4	DATA32	4	300 KHz	100		89°	2 ABS	2
5	DATA32	5	150 KHz	40		337°	1 DIF	3
6	DATA32	6	150 KHz	87		342°	2 ABS	3
7	DATA32	7	75 KHz	40		271°	1 DIF	4
8	DATA32	8	75 KHz	40		278°	2 ABS	4

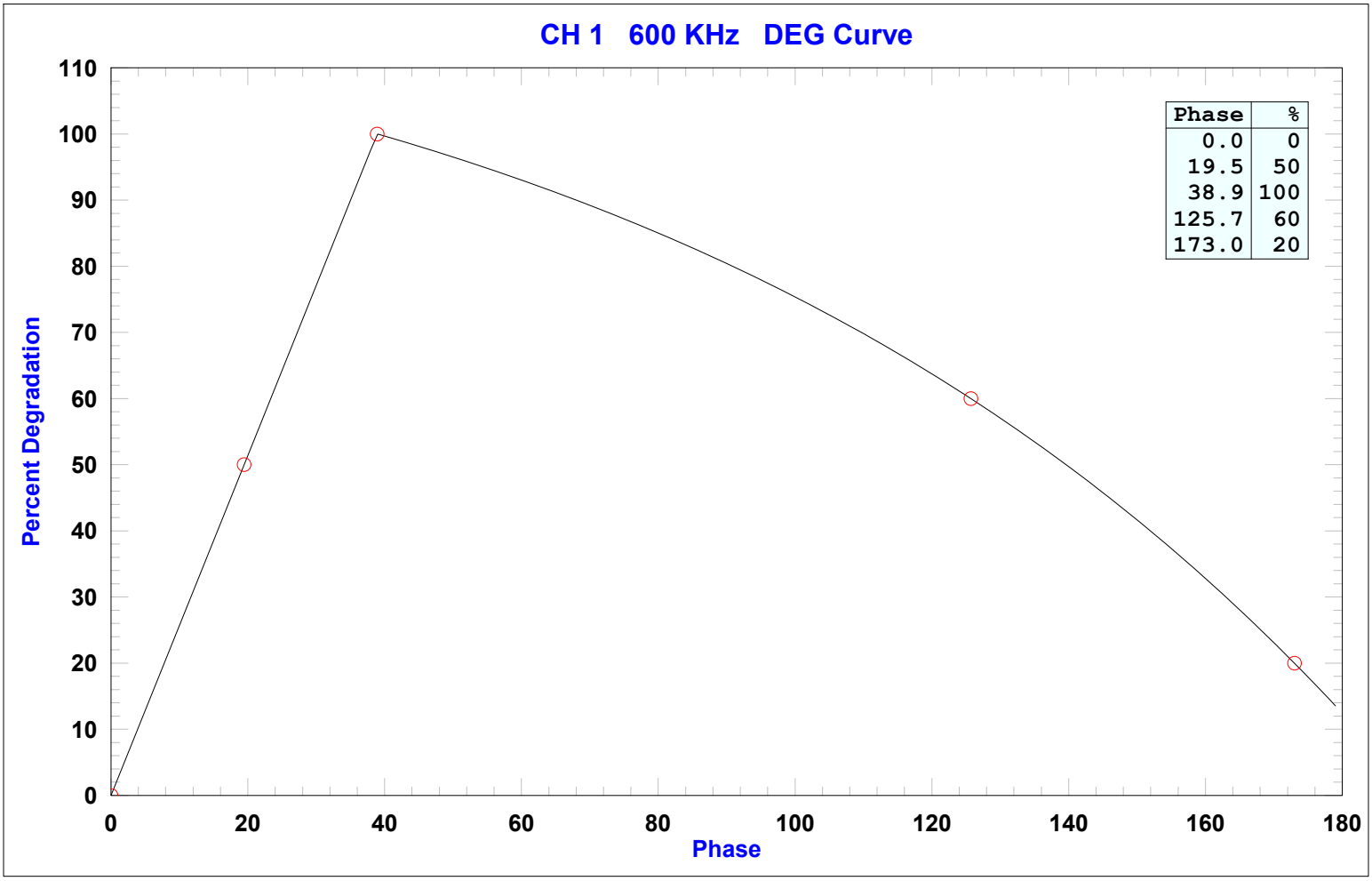
Config	035 WALL 304 SS				
Auto Mode	Manual				
Sample Rate	1,600	Num Chan	8	Offset	1,754
Acq Speed	36.00	RPC RPM		Acq Dir	PULL

File

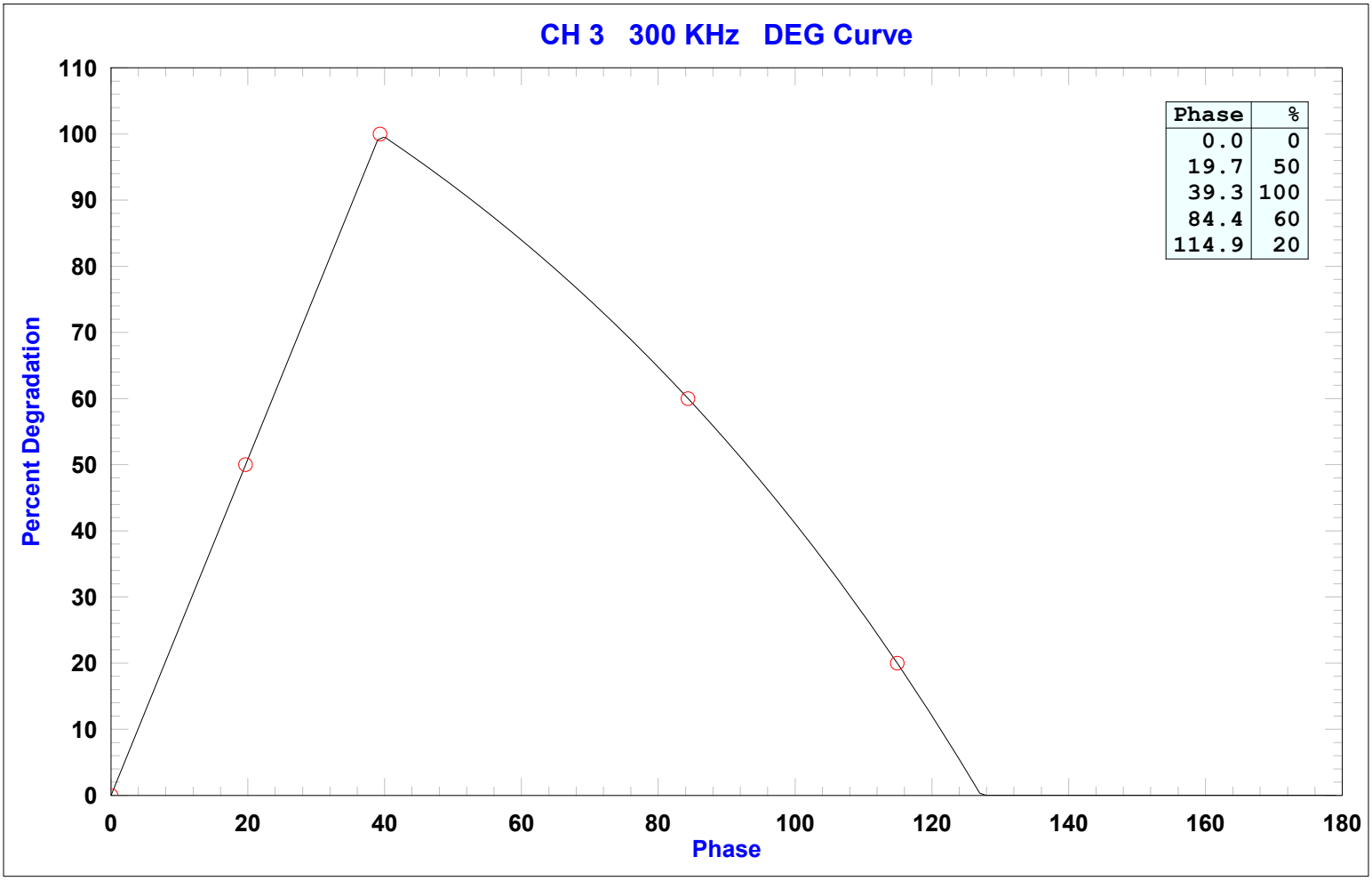
Source	CoreStar	Samples	16,200
Procedure			
Software	CoreStar EddyVision 8.1		

Equipment

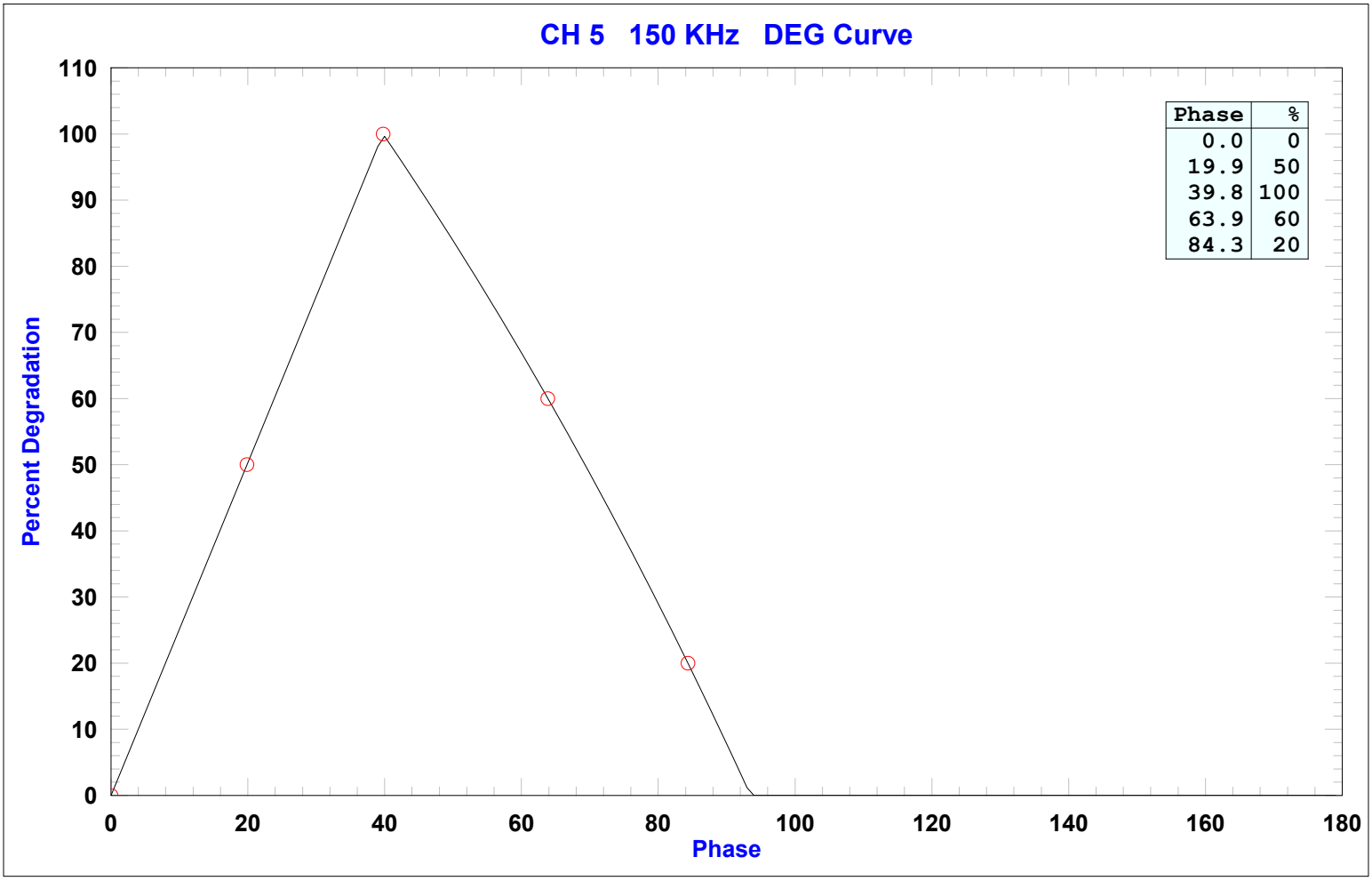
Tester	OMNI-200	SN	0017-0806
Pusher	TrackDrive-100	SN	N/A
Fixture		SN	



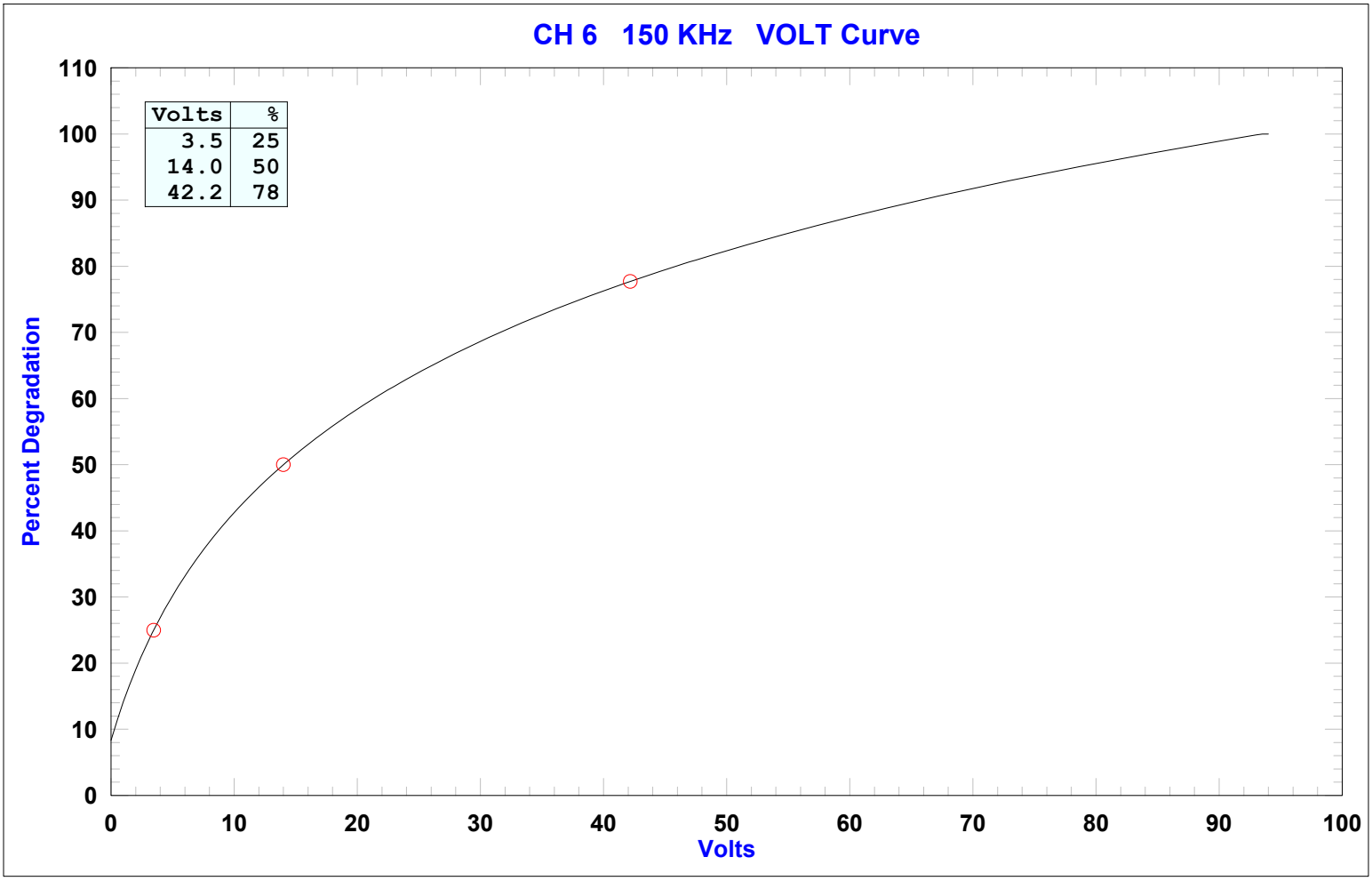
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	85	66.0	91	99.0	76	132.0	56	165.0	28
1.0	3	34.0	87	67.0	90	100.0	75	133.0	55	166.0	27
2.0	5	35.0	90	68.0	90	101.0	75	134.0	54	167.0	26
3.0	8	36.0	93	69.0	90	102.0	74	135.0	53	168.0	25
4.0	10	37.0	95	70.0	89	103.0	74	136.0	53	169.0	24
5.0	13	38.0	98	71.0	89	104.0	73	137.0	52	170.0	23
6.0	15	39.0	100	72.0	88	105.0	73	138.0	51	171.0	22
7.0	18	40.0	100	73.0	88	106.0	72	139.0	50	172.0	21
8.0	21	41.0	99	74.0	88	107.0	72	140.0	50	173.0	20
9.0	23	42.0	99	75.0	87	108.0	71	141.0	49	174.0	19
10.0	26	43.0	99	76.0	87	109.0	70	142.0	48	175.0	18
11.0	28	44.0	98	77.0	86	110.0	70	143.0	47	176.0	17
12.0	31	45.0	98	78.0	86	111.0	69	144.0	47	177.0	16
13.0	33	46.0	98	79.0	85	112.0	69	145.0	46	178.0	15
14.0	36	47.0	97	80.0	85	113.0	68	146.0	45	179.0	14
15.0	39	48.0	97	81.0	85	114.0	67	147.0	44		
16.0	41	49.0	97	82.0	84	115.0	67	148.0	43		
17.0	44	50.0	97	83.0	84	116.0	66	149.0	42		
18.0	46	51.0	96	84.0	83	117.0	66	150.0	42		
19.0	49	52.0	96	85.0	83	118.0	65	151.0	41		
20.0	51	53.0	95	86.0	82	119.0	64	152.0	40		
21.0	54	54.0	95	87.0	82	120.0	64	153.0	39		
22.0	57	55.0	95	88.0	81	121.0	63	154.0	38		
23.0	59	56.0	94	89.0	81	122.0	62	155.0	37		
24.0	62	57.0	94	90.0	80	123.0	62	156.0	36		
25.0	64	58.0	94	91.0	80	124.0	61	157.0	36		
26.0	67	59.0	93	92.0	79	125.0	60	158.0	35		
27.0	69	60.0	93	93.0	79	126.0	60	159.0	34		
28.0	72	61.0	93	94.0	78	127.0	59	160.0	33		
29.0	75	62.0	92	95.0	78	128.0	58	161.0	32		
30.0	77	63.0	92	96.0	77	129.0	58	162.0	31		
31.0	80	64.0	92	97.0	77	130.0	57	163.0	30		
32.0	82	65.0	91	98.0	76	131.0	56	164.0	29		



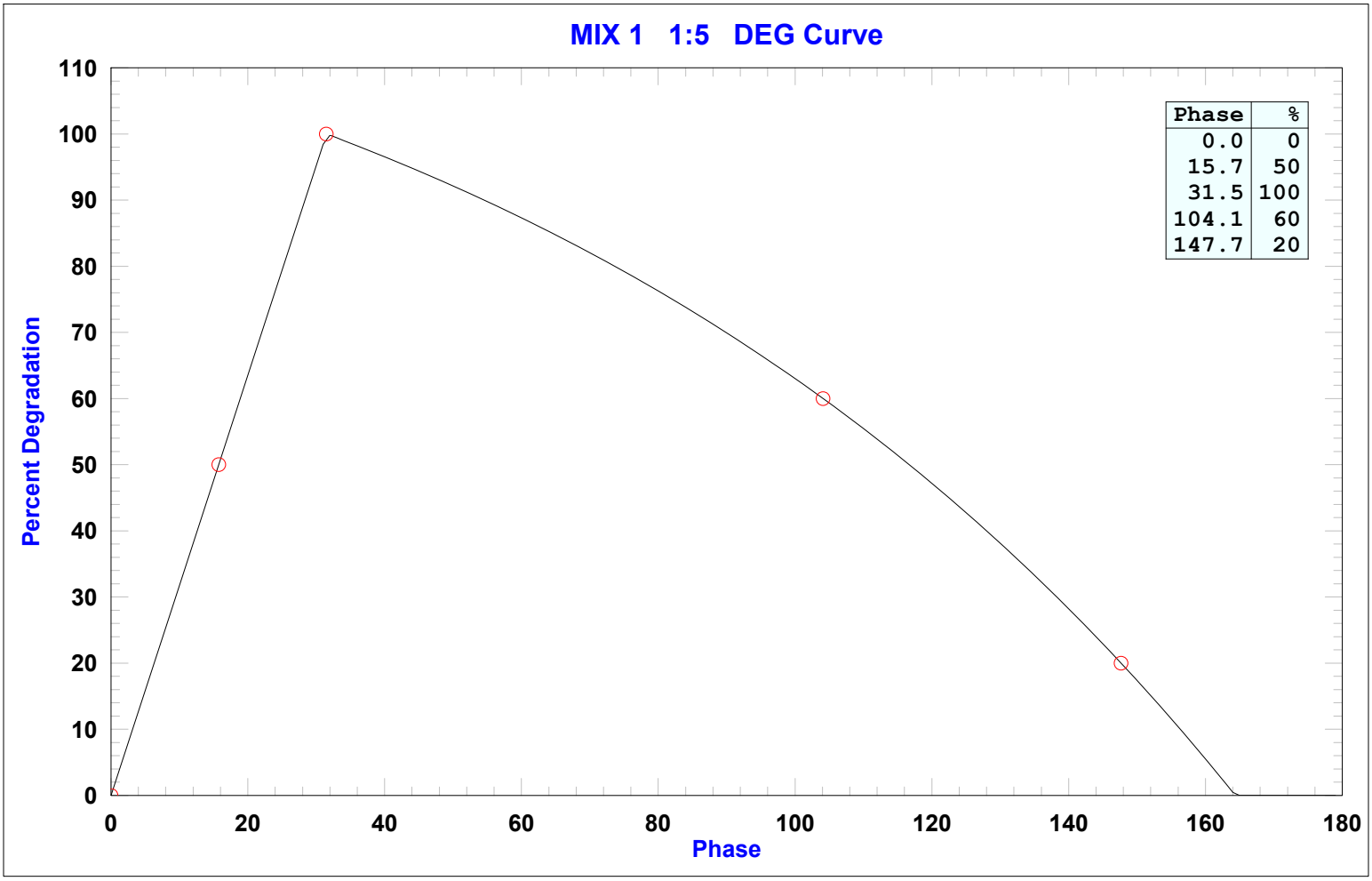
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	84	66.0	79	99.0	42	132.0	0	165.0	0
1.0	3	34.0	86	67.0	78	100.0	41	133.0	0	166.0	0
2.0	5	35.0	89	68.0	77	101.0	40	134.0	0	167.0	0
3.0	8	36.0	91	69.0	76	102.0	38	135.0	0	168.0	0
4.0	10	37.0	94	70.0	75	103.0	37	136.0	0	169.0	0
5.0	13	38.0	97	71.0	74	104.0	36	137.0	0	170.0	0
6.0	15	39.0	99	72.0	73	105.0	34	138.0	0	171.0	0
7.0	18	40.0	100	73.0	72	106.0	33	139.0	0	172.0	0
8.0	20	41.0	99	74.0	71	107.0	32	140.0	0	173.0	0
9.0	23	42.0	98	75.0	70	108.0	30	141.0	0	174.0	0
10.0	25	43.0	97	76.0	69	109.0	29	142.0	0	175.0	0
11.0	28	44.0	97	77.0	68	110.0	27	143.0	0	176.0	0
12.0	30	45.0	96	78.0	67	111.0	26	144.0	0	177.0	0
13.0	33	46.0	95	79.0	66	112.0	24	145.0	0	178.0	0
14.0	36	47.0	94	80.0	65	113.0	23	146.0	0	179.0	0
15.0	38	48.0	94	81.0	64	114.0	21	147.0	0		
16.0	41	49.0	93	82.0	63	115.0	20	148.0	0		
17.0	43	50.0	92	83.0	62	116.0	18	149.0	0		
18.0	46	51.0	91	84.0	60	117.0	17	150.0	0		
19.0	48	52.0	91	85.0	59	118.0	15	151.0	0		
20.0	51	53.0	90	86.0	58	119.0	14	152.0	0		
21.0	53	54.0	89	87.0	57	120.0	12	153.0	0		
22.0	56	55.0	88	88.0	56	121.0	10	154.0	0		
23.0	58	56.0	87	89.0	55	122.0	9	155.0	0		
24.0	61	57.0	86	90.0	54	123.0	7	156.0	0		
25.0	64	58.0	86	91.0	52	124.0	5	157.0	0		
26.0	66	59.0	85	92.0	51	125.0	4	158.0	0		
27.0	69	60.0	84	93.0	50	126.0	2	159.0	0		
28.0	71	61.0	83	94.0	49	127.0	0	160.0	0		
29.0	74	62.0	82	95.0	47	128.0	0	161.0	0		
30.0	76	63.0	81	96.0	46	129.0	0	162.0	0		
31.0	79	64.0	80	97.0	45	130.0	0	163.0	0		
32.0	81	65.0	80	98.0	44	131.0	0	164.0	0		



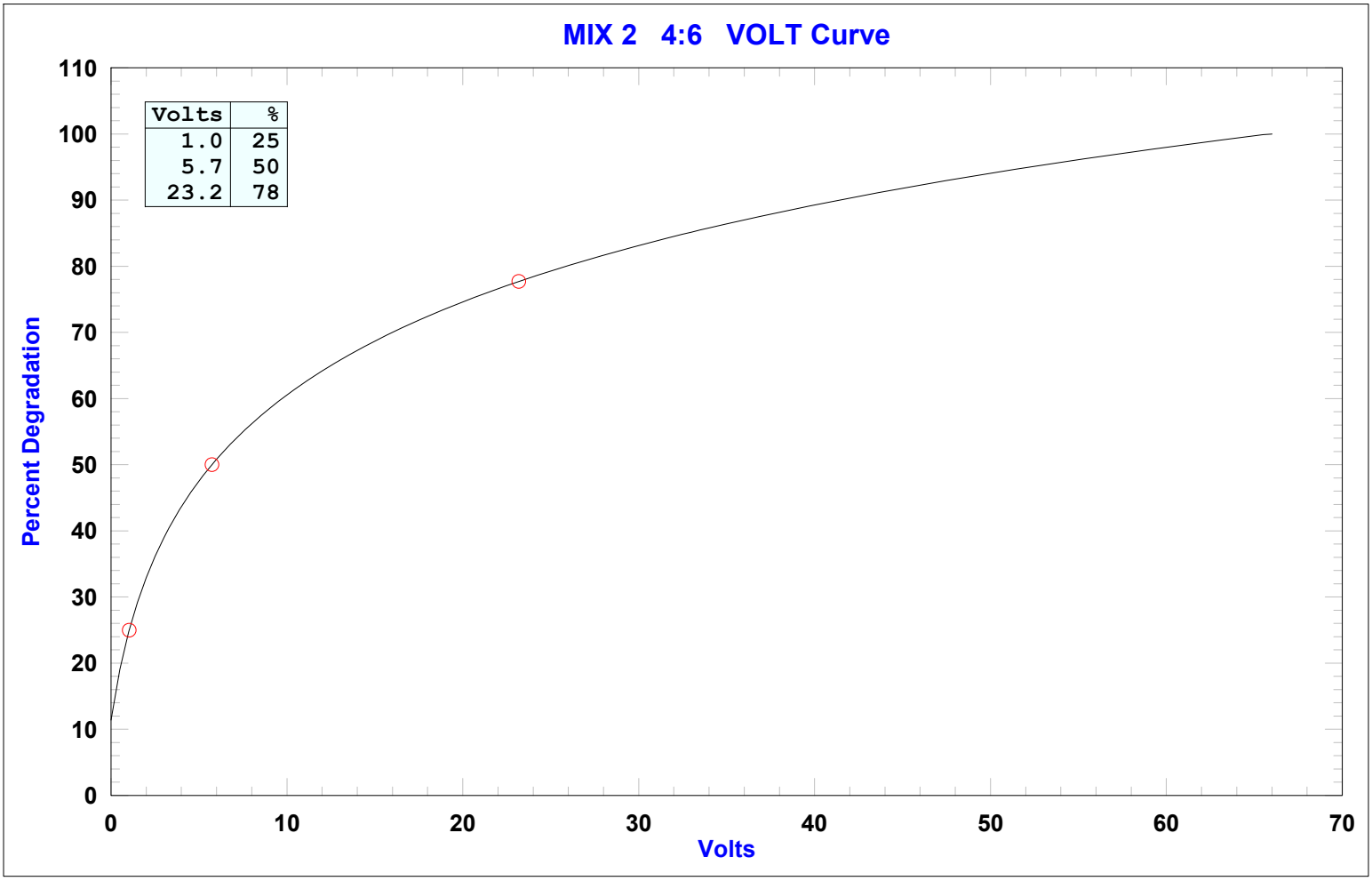
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	83	66.0	56	99.0	0	132.0	0	165.0	0
1.0	3	34.0	86	67.0	54	100.0	0	133.0	0	166.0	0
2.0	5	35.0	88	68.0	52	101.0	0	134.0	0	167.0	0
3.0	8	36.0	91	69.0	51	102.0	0	135.0	0	168.0	0
4.0	10	37.0	93	70.0	49	103.0	0	136.0	0	169.0	0
5.0	13	38.0	96	71.0	47	104.0	0	137.0	0	170.0	0
6.0	15	39.0	98	72.0	45	105.0	0	138.0	0	171.0	0
7.0	18	40.0	100	73.0	43	106.0	0	139.0	0	172.0	0
8.0	20	41.0	98	74.0	41	107.0	0	140.0	0	173.0	0
9.0	23	42.0	97	75.0	39	108.0	0	141.0	0	174.0	0
10.0	25	43.0	95	76.0	37	109.0	0	142.0	0	175.0	0
11.0	28	44.0	93	77.0	35	110.0	0	143.0	0	176.0	0
12.0	30	45.0	92	78.0	33	111.0	0	144.0	0	177.0	0
13.0	33	46.0	90	79.0	31	112.0	0	145.0	0	178.0	0
14.0	35	47.0	89	80.0	29	113.0	0	146.0	0	179.0	0
15.0	38	48.0	87	81.0	27	114.0	0	147.0	0		
16.0	40	49.0	86	82.0	25	115.0	0	148.0	0		
17.0	43	50.0	84	83.0	23	116.0	0	149.0	0		
18.0	45	51.0	82	84.0	21	117.0	0	150.0	0		
19.0	48	52.0	81	85.0	19	118.0	0	151.0	0		
20.0	50	53.0	79	86.0	16	119.0	0	152.0	0		
21.0	53	54.0	77	87.0	14	120.0	0	153.0	0		
22.0	55	55.0	76	88.0	12	121.0	0	154.0	0		
23.0	58	56.0	74	89.0	10	122.0	0	155.0	0		
24.0	60	57.0	72	90.0	8	123.0	0	156.0	0		
25.0	63	58.0	70	91.0	6	124.0	0	157.0	0		
26.0	65	59.0	69	92.0	3	125.0	0	158.0	0		
27.0	68	60.0	67	93.0	1	126.0	0	159.0	0		
28.0	70	61.0	65	94.0	0	127.0	0	160.0	0		
29.0	73	62.0	63	95.0	0	128.0	0	161.0	0		
30.0	75	63.0	62	96.0	0	129.0	0	162.0	0		
31.0	78	64.0	60	97.0	0	130.0	0	163.0	0		
32.0	80	65.0	58	98.0	0	131.0	0	164.0	0		



Volts	%	Volts	%	Volts	%	Volts	%	Volts	%	Volts	%
0.0	8	16.5	54	33.0	71	49.5	82	66.0	90	82.5	96
0.5	11	17.0	54	33.5	72	50.0	82	66.5	90	83.0	97
1.0	14	17.5	55	34.0	72	50.5	83	67.0	91	83.5	97
1.5	17	18.0	56	34.5	72	51.0	83	67.5	91	84.0	97
2.0	19	18.5	57	35.0	73	51.5	83	68.0	91	84.5	97
2.5	21	19.0	57	35.5	73	52.0	83	68.5	91	85.0	97
3.0	23	19.5	58	36.0	73	52.5	84	69.0	91	85.5	97
3.5	25	20.0	58	36.5	74	53.0	84	69.5	92	86.0	98
4.0	27	20.5	59	37.0	74	53.5	84	70.0	92	86.5	98
4.5	29	21.0	60	37.5	75	54.0	84	70.5	92	87.0	98
5.0	30	21.5	60	38.0	75	54.5	85	71.0	92	87.5	98
5.5	32	22.0	61	38.5	75	55.0	85	71.5	92	88.0	98
6.0	33	22.5	61	39.0	76	55.5	85	72.0	93	88.5	98
6.5	35	23.0	62	39.5	76	56.0	85	72.5	93	89.0	99
7.0	36	23.5	62	40.0	76	56.5	86	73.0	93	89.5	99
7.5	37	24.0	63	40.5	77	57.0	86	73.5	93	90.0	99
8.0	38	24.5	63	41.0	77	57.5	86	74.0	93	90.5	99
8.5	40	25.0	64	41.5	77	58.0	86	74.5	94	91.0	99
9.0	41	25.5	64	42.0	78	58.5	87	75.0	94	91.5	99
9.5	42	26.0	65	42.5	78	59.0	87	75.5	94	92.0	100
10.0	43	26.5	65	43.0	78	59.5	87	76.0	94	92.5	100
10.5	44	27.0	66	43.5	79	60.0	87	76.5	94	93.0	100
11.0	45	27.5	66	44.0	79	60.5	88	77.0	94	93.5	100
11.5	46	28.0	67	44.5	79	61.0	88	77.5	95	94.0	100
12.0	47	28.5	67	45.0	79	61.5	88	78.0	95		
12.5	47	29.0	68	45.5	80	62.0	88	78.5	95		
13.0	48	29.5	68	46.0	80	62.5	89	79.0	95		
13.5	49	30.0	69	46.5	80	63.0	89	79.5	95		
14.0	50	30.5	69	47.0	81	63.5	89	80.0	96		
14.5	51	31.0	69	47.5	81	64.0	89	80.5	96		
15.0	52	31.5	70	48.0	81	64.5	89	81.0	96		
15.5	52	32.0	70	48.5	82	65.0	90	81.5	96		
16.0	53	32.5	71	49.0	82	65.5	90	82.0	96		



Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	99	66.0	84	99.0	64	132.0	36	165.0	0
1.0	3	34.0	99	67.0	84	100.0	63	133.0	35	166.0	0
2.0	6	35.0	99	68.0	83	101.0	62	134.0	34	167.0	0
3.0	10	36.0	98	69.0	83	102.0	62	135.0	33	168.0	0
4.0	13	37.0	98	70.0	82	103.0	61	136.0	32	169.0	0
5.0	16	38.0	97	71.0	81	104.0	60	137.0	31	170.0	0
6.0	19	39.0	97	72.0	81	105.0	59	138.0	30	171.0	0
7.0	22	40.0	97	73.0	80	106.0	59	139.0	29	172.0	0
8.0	25	41.0	96	74.0	80	107.0	58	140.0	28	173.0	0
9.0	29	42.0	96	75.0	79	108.0	57	141.0	27	174.0	0
10.0	32	43.0	95	76.0	79	109.0	56	142.0	26	175.0	0
11.0	35	44.0	95	77.0	78	110.0	55	143.0	25	176.0	0
12.0	38	45.0	94	78.0	77	111.0	55	144.0	24	177.0	0
13.0	41	46.0	94	79.0	77	112.0	54	145.0	23	178.0	0
14.0	44	47.0	94	80.0	76	113.0	53	146.0	22	179.0	0
15.0	48	48.0	93	81.0	76	114.0	52	147.0	21		
16.0	51	49.0	93	82.0	75	115.0	51	148.0	20		
17.0	54	50.0	92	83.0	74	116.0	51	149.0	19		
18.0	57	51.0	92	84.0	74	117.0	50	150.0	17		
19.0	60	52.0	91	85.0	73	118.0	49	151.0	16		
20.0	64	53.0	91	86.0	73	119.0	48	152.0	15		
21.0	67	54.0	90	87.0	72	120.0	47	153.0	14		
22.0	70	55.0	90	88.0	71	121.0	46	154.0	13		
23.0	73	56.0	89	89.0	71	122.0	45	155.0	12		
24.0	76	57.0	89	90.0	70	123.0	45	156.0	10		
25.0	79	58.0	88	91.0	69	124.0	44	157.0	9		
26.0	83	59.0	88	92.0	69	125.0	43	158.0	8		
27.0	86	60.0	87	93.0	68	126.0	42	159.0	7		
28.0	89	61.0	87	94.0	67	127.0	41	160.0	6		
29.0	92	62.0	86	95.0	67	128.0	40	161.0	4		
30.0	95	63.0	86	96.0	66	129.0	39	162.0	3		
31.0	98	64.0	85	97.0	65	130.0	38	163.0	2		
32.0	100	65.0	85	98.0	64	131.0	37	164.0	0		



Volts	%	Volts	%	Volts	%	Volts	%	Volts	%
0.0	11	16.5	71	33.0	85	49.5	94	66.0	100
0.5	19	17.0	71	33.5	85	50.0	94		
1.0	25	17.5	72	34.0	86	50.5	94		
1.5	29	18.0	72	34.5	86	51.0	94		
2.0	33	18.5	73	35.0	86	51.5	95		
2.5	36	19.0	74	35.5	87	52.0	95		
3.0	39	19.5	74	36.0	87	52.5	95		
3.5	41	20.0	75	36.5	87	53.0	95		
4.0	44	20.5	75	37.0	88	53.5	96		
4.5	46	21.0	76	37.5	88	54.0	96		
5.0	48	21.5	76	38.0	88	54.5	96		
5.5	49	22.0	77	38.5	88	55.0	96		
6.0	51	22.5	77	39.0	89	55.5	96		
6.5	52	23.0	78	39.5	89	56.0	96		
7.0	54	23.5	78	40.0	89	56.5	97		
7.5	55	24.0	78	40.5	90	57.0	97		
8.0	56	24.5	79	41.0	90	57.5	97		
8.5	57	25.0	79	41.5	90	58.0	97		
9.0	58	25.5	80	42.0	90	58.5	97		
9.5	60	26.0	80	42.5	91	59.0	98		
10.0	61	26.5	81	43.0	91	59.5	98		
10.5	62	27.0	81	43.5	91	60.0	98		
11.0	62	27.5	81	44.0	91	60.5	98		
11.5	63	28.0	82	44.5	92	61.0	98		
12.0	64	28.5	82	45.0	92	61.5	99		
12.5	65	29.0	82	45.5	92	62.0	99		
13.0	66	29.5	83	46.0	92	62.5	99		
13.5	67	30.0	83	46.5	92	63.0	99		
14.0	67	30.5	83	47.0	93	63.5	99		
14.5	68	31.0	84	47.5	93	64.0	99		
15.0	69	31.5	84	48.0	93	64.5	100		
15.5	69	32.0	85	48.5	93	65.0	100		
16.0	70	32.5	85	49.0	94	65.5	100		

CONCO SERVICES LLC
530 JONES STREET · VERONA, PA 15147
(412) 828-1166 · FAX: (412) 826-8255

ESTABLISHED 1923

Procedure No	CSC-NDE-11.0
Title	Data Acquisition & Analysis
Revision:	4
Date:	January 7, 2021
Page 1 of 12	

Title: Data Acquisition & Analysis

	Name	Date	Initials
Written	Frank Jerina	June 15, 2010	On File
Revised	James Kocher	January 7, 2021	JAK
Reviewed	James Halloran	January 8, 2021	
Approved	Regina Godish	Jan 8, 2021	
Approved	Edward Saxon	JAN 8, 2021	EJS
LIII Approval	Jeff Pomarico	1/8/2021	

1. Purpose/ Scope
   This procedure establishes the techniques for performing multi-frequency eddy current (ET) examination of non-ferromagnetic heat exchanger tubing. This includes magnetic saturation techniques for mildly ferritic thin walled tubing. All personnel utilizing the procedure shall follow each manufacturer's instructions and operations of the applicable instrumentation used.

2. Attachments
   2.1. Sample Examination Technique Specification Sheet (ETSS)

3. References
   3.1. ASME Boiler and Pressure Vessel Code, Section XI (2007 edition, through 2009 addenda).

   3.2. ASME Boiler and Pressure Vessel Code, Section V, Article 8 (2007 edition, through 2009 addenda).

   3.3. CSC-QAP-9.1 – "Certification of NDE Personnel"

   3.4. CSC-QAP-12.1 – "Control of M&TE"

   3.5. CSC-NDE-3.4 – "Optimum Test Frequency Manual"

4. Definitions
   4.1. ASME – American society of Mechanical Engineers.

   4.2. Absolute Test (external-reference) – An eddy current test utilizing one inspection coil in the test material, which references against another single coil in a reference material.

   4.3. Differential Test (self-comparison) – An eddy current test arrangement utilizing, two or more inspection coils electrically connected in series opposition, which compares a section of the test specimen against another section of the same test specimen.

   4.4. ASME Calibration Standard – A specimen of the same material, size, wall thickness, and heat treatment, as the material being inspected. This standard may contain artificial discontinuities used for system set-up.

   4.5. Reference Standard – A material of the same size, wall thickness, and heat treatment, as the material being inspected. This standard shall be free from defects and used for comparison purposes.

4.6. Examination Technique Specification Sheet (ETSS) – Documentation completed by the Lead Analyst (or designee), that outlines the eddy current parameters for a particular inspection. The ETSS contains specific information regarding the test subject, frequency selection, setup parameters, proper probes and test equipment required to complete the inspection. The ETSS also outlines the analysis parameters such as voltage settings, reporting channels, curves (phase or magnitude), reporting thresholds and applicable codes for defects and other conditions encountered.

5. Responsibilities

5.1. Level IT personnel may operate equipment under the direct supervision of a Level II or Level III. Level IT personnel shall not evaluate or accept the results of a nondestructive examination.

5.2. Level I personnel shall use written procedures when performing specific setups, calibrations, and examinations and when recording data. The activities shall be conducted under the direct guidance of Level II or Level III personnel. Level I NDE personnel shall not evaluate or accept the results of a nondestructive examination.

5.3. Level II personnel shall be familiar with the operation of the equipment, applicable examination techniques, and recording or the examination data. Level II personnel shall be familiar with the codes, standards, and specifications of any inspection being performed.

5.4. Level IIA personnel shall be responsible for data interpretation or evaluation and give guidance to Level II personnel as needed. The Data Analyst has the right to request a retest on any tube with an unusual condition. The Lead Analyst may alter the original inspection technique or plans to address any special condition encountered. The Lead Analyst is responsible for the correct inspection probes, calibration standards, and any other information on the ETSS sheet.

5.5. Level III personnel shall hold the same responsibilities as Level IIA. The Level III, with approval of the customer, may alter the original inspection technique or plans to address any special condition encountered. The Level III is responsible for the correct inspection probes, calibration standards, and any other information on the ETSS sheet.

6. Procedure

6.1. Code and Procedure Requirements – All Eddy Current technicians shall be familiar with this procedure and examination program prior to the start of the examination.

6.2. Personnel Criteria – Personnel performing Eddy Current examinations shall be certified in accordance with the Quality Assurance Procedure CSC-QAP-9.1, “Certification of NDE Personnel” or their employers, written practice that has been approved by Conco Services Corporation.

6.3. Heat Exchangers under inspection must be shut down or isolated and the system drained. Manways shall be opened and sufficient time should be allowed for cool down prior to the start of the job.

6.4. All personnel engaging in eddy current at operating nuclear facilities shall receive instructions and understand radiation rules and guidelines in effect at the plant site.

6.5. Equipment

6.5.1. Eddy current test instrument

6.5.1.1. The eddy current test instrument shall be capable of multi-frequency inspection in multiplexed mode, simultaneous injection mode and operation in the differential and/or absolute mode.

6.5.1.2. The eddy current test instrument shall be capable of recording and playing back data, real time, in a format suitable for evaluation and archival storage.

6.5.1.3. The test instrument outputs shall provide phase and amplitude information.

6.5.1.4. The eddy current inspection system shall be capable of detecting and recording dimensional changes, metallurgical changes, deposits and determine if discontinuities are ID or OD initiated.

6.5.1.5. Testing equipment shall hold current calibration in accordance with CSC-QAP-12.1 and the interval shall not exceed one year or whenever the equipment has been overhauled or repaired as a result of malfunction or damage.

6.5.2. The acceptable eddy current probes for an inspection shall be listed on the ETSS and may include bobbin coil, cross-wound and pancake coil designs from various manufacturers. The sensitivity for the differential bobbin probes technique shall be sufficient to produce a response from the 20% flat bottom holes with a minimum peak to peak response of 30% screen height of the Lissajous. A minimum fill factor of 80% should be used. For special interest regions (i.e. obstructions and restrictions), a lower fill factor may be used. If the minimum sensitivity requirements can not be met, the test will be considered a best effort examination. Customer approval shall be obtained prior to examination. Customer requirements for higher fill factor values will be followed and documented on the ETSS.

6.5.3. ASME Calibration Standards

6.5.3.1. The ASME calibration standard shall be manufactured in accordance with the specifications of the ASME Boiler and Pressure Vessel Code, Section V, Article 8. The standard shall contain the following artificial discontinuities at a minimum: 100% through wall hole, 60% through wall flat bottom hole, and four 20% through wall flat bottom holes spaced 90 degrees apart in a single plane around the tube circumference.

6.5.3.2. A simulated support ring should be used to simulate a support plate in the unit being inspected. If an “artificial” ring cannot be obtained, a support plate in the unit can be used for mixing/process channels.

6.5.3.3. Each standard shall be identified by a unique serial number and have an associated drawing or data sheet showing the actual flaw depths. The eddy current system response shall become part of the permanent record of the standard.

6.5.3.4. Other calibration standards may be used in addition to the ASME standard for unique applications.

6.5.4. Digital Data Analysis System

6.5.4.1. The eddy current data analysis system shall be capable of displaying and evaluating the recorded data from all frequency channels.

6.5.4.2. The system shall have multi-parameter mixing capability.

6.5.4.3. The system shall have a minimum resolution of 12 bits per data point.

6.5.4.4. The Lissajous display shall have a minimum resolution of 7 bits full scale.

6.5.4.5. The strip chart display shall have a minimum resolution of 6 bits full scale.

6.5.4.6. The strip chart display shall be selectable to display either the X or Y component of the raw or processed (mixed) data.

6.5.4.7. In addition, the system shall meet the "General System Requirements", stated in ASME Boiler and Pressure Vessel Code, Section V, Article 8, II-830.5.1.

6.6. System Set-up

6.6.1. Preparation

6.6.1.1. Review all safety and radiological procedures with plant personnel as applicable (i.e. air sample, radiation surveys, confined space requirements, etc.)

6.6.1.2. Review all Foreign Material Exclusion (FME) procedures with plant personnel as necessary.

6.6.1.3. Examine work area for any potential hazards or interference and resolve any problems.

6.6.1.4. Establish location of the test station and placement of the test instrument.

6.6.1.5. Locate 110 VAC power source. (Clean power source)

6.6.1.6. Establish location of cable routing.

6.6.1.7. Acquire copies of the ETSS and all applicable procedures from the Lead Analyst (or designee). Verify the probes and standards listed on the ETSS are appropriate for the component or material to be examined.

6.6.1.8. Acquire copies of the inspection plan and tubesheet maps if available. Verify that the tubesheet map is correct for the component and the view or test end is correct.

6.6.2. Equipment Set-up

6.6.2.1. Connect and power-up eddy current system per owners manual

6.6.2.2. Attach probe extensions, of equal length, and probes to the test instrument

6.6.2.3. Establish communication for personnel engaging in the examination

6.6.2.4. Set configurations for channels and gain setting on test instrument.

6.6.2.5. Verify recording path

6.6.2.6. Set and verify pull speed (if a probe pusher is being used).

6.6.3. Acquisition Set-Up (Configuration)

6.6.3.1. Test Parameters

6.6.3.1.1. Set the frequencies, drives, and gains in the configuration of the test instrument, per the ETSS. The primary frequency shall be set to obtain a response of the 4X20% FBH's to fall within 90° to 120° from the 100% thruwall hole set at 40°.

6.6.3.1.2. Set the proper sample rate, in the test instrument, per the ETSS. The sample rate should meet the minimum of 30 samples per inch of tubing per ASME Section V, Article 8.

6.6.3.1.3. With the proper settings, a signal-to-noise ratio of 3:1 or higher shall be obtained.

6.6.3.1.4. Assure the reference probe has been placed in the reference tubing or the component. Test systems with internal reference capabilities can be used in lieu of a reference probe.

6.6.3.1.5. Place the test probe in the end of the ASME Calibration standard assuring that none of the coils are influenced by the flaws in the standard and perform a hardware null.

6.6.3.1.6. Open a calibration group, with the proper recording path, to allow the calibration standard data to be recorded.

6.6.3.1.7. Turn on the acquire function of the tester and assure data is in the strip charts, on the left of the acquisition screen.

6.6.3.1.8. Assure both the reference, and test probes are in good metal and center the data in the Lissajous.

6.6.3.1.9. Push the test probe out of the end of the ASME Calibration standard.

6.6.3.1.10. Start recording the data and pull the probe back through the calibration. (If a probe pusher is being used for the inspection, it should be used to pull the calibration standards also. If this is the case, care should be taken to minimize snap of the probe as it is retracted through the calibration standard.)

6.6.3.1.11. Stop recording data and review the calibration standard to ensure compliance with the ETSS.

6.6.3.1.12. Set spans and rotations on all absolute and differential channels for the ASME standard, identified on the approved ETSS.

6.6.3.1.13. Store the set-up with the new values for the spans and rotations of the calibration standard.

6.6.3.1.14. Repeat steps from above, (6.6.3.1 – (6.6.3.1.6) through (6.6.3.1.9)) for all calibration standards being used for the inspection.

Note: If Wear Scar and/or Thinning Standards are being used, check all channels to assure that none of the signals are saturated. If any signals are saturated, adjust the gains in the configuration screen, notify the Level IIA/III of changes needed to ETSS, and repeat the entire calibration process with the updated ETSS settings.

6.7. Examination

6.7.1. Summary Form

6.7.1.1. Select the "Summary Form" and complete all designated input areas. The summary form shall be written to the storage media and contain the following information as a minimum:

- Owner
- Plant site and unit number
- Heat Exchanger identification and test end
- Recording media identification (i.e. calibration group)
- Date of examination
- Serial number of the calibration standard(s)
- Operator's identification and certification level
- Examination frequencies
- Lengths of probe and probe extension cables
- Size and type of probes
- Probe manufacturer's name and manufacturer's part number or probe description
- Serial number of the eddy current test instrument
- Calibration "Due Date", from the test instrument being used

6.7.2. Record Calibration Standards

6.7.2.1. Identify the ASME standard run as Row 999 Tube 999 or as stated on the ETSS. If other standards are utilized refer to the ETSS for identification.

6.7.2.2. Place the test probe in a defect-free portion of the standard and balance the tester.

6.7.2.3. Record a minimum of three standard runs in the direction and at the speed that the inspection will be performed.

6.7.2.4. Retrieve a standard run from the storage media to verify proper system operation.

6.7.2.5. Calibration standard runs shall be recorded for the following conditions:

6.7.2.5.1. At the beginning and end of a directory/cal group or when changing storage media

6.7.2.5.2. At the beginning and end of a work shift

6.7.2.5.3. When changing equipment, including probes and cables

6.7.2.5.4. When four hours time has elapsed since the last calibration verification

6.7.2.5.5. When a power failure or system lockup has occurred

6.7.2.5.6. At anytime the operator deems it necessary to check the system integrity

6.7.2.6. A written message to the data disk should precede or follow a calibration run stating

the reason the calibration run is being performed.

6.7.2.7. If a system is found out of tolerance, recalibration is required. This should be noted by recording an updated summary and message to the recording media. In addition to this, if any part of the test system is changed, due to damage or any other issue, recalibration is required.

6.7.2.8. The analyst will determine if any or all tubes need to be retested.

6.7.2.9. The "End of Calibration" standard run shall be performed at the same pull speed used during the examination.

6.7.2.10. If a calibration run cannot be performed at the four-hour interval, a detailed message shall be recorded on the recording media stating the reason for the "missed" standard run and the site lead shall be notified. A calibration standard run shall then be performed at the first opportunity and prior to the continuation of the inspection.

6.7.3. Typical examination process

6.7.3.1. Identify and encode the tube identification using the appropriate identification/numbering scheme.

6.7.3.2. Insert the probe into the tube to be examined, check balance of the data and rebalance if required.

6.7.3.3. Insert the Probe to the intended examination extent.

6.7.3.4. Initiate data recording.

6.7.3.5. Withdraw the probe at the speed noted on the ETSS.

6.7.3.6. Monitor the data quality during the recording process. Ensure that acceptable data is being acquired in all channels.

6.7.3.7. Stop recording data when the examination is complete.

6.7.4. If the probe cannot traverse the entire length of the scheduled examination and the tube is considered restricted, record a message identifying the tube number or group of tubes. Include an explanation as to why the tubes(s) cannot be examined over the entire length (if known).

6.7.5. When an error in tube identification occurs, the operator shall clearly identify which tube entries are incorrect with a recorded message.

6.8. Data Analysis and Reporting

6.8.1. Evaluate the recorded digital data from the acquisition process.

6.8.2. Evaluate any indications. Indication types that must be reported shall be characterized using the frequencies or frequency mixes and analysis curves (Phase or Magnitude) appropriate for the damage mechanism as identified in the Examination Technique Specification Sheet (ETSS).

6.8.3. Provide a preliminary report following the examination. Include in the report a record indicating the tube(s) examined, any scanning limitations, the location and depth (or descriptive code) of each reported flaw, and any specific reporting requirements identified by the customer.

6.8.4. Unless otherwise requested by the customer, only the deepest flaw in each tube will be identified.

6.8.5. Graphic printouts of typical and questionable defect types shall be added at the customer's request.

6.8.6. Report all obstructions restrictions, or conditions known to limit the desired extent of test for all tubes on the examination plan (e.g. dents, tube cleanliness, foreign material).

6.8.7. Report any addition conditions deemed necessary.

7. Records

7.1. Records and documentation are handled in accordance to CSC-QAP-17.1.

7.2. A copy of this procedure, personnel certifications and equipment certifications shall be submitted to the customer upon request.

7.3. The examination results and technical information regarding test parameters and inspection requirements shall be included in the final report.

Attachment 2.1 Sample ETSS

CONCO SERVICES LLC
530 JONES STREET·VERONA, PA 15147
(412) 828-1166 · FAX: (412) 826-8255

Form No	1085
Title	Examination Technique Specification Sheet OMNI
Revision:	2
Date:	January 3, 2017
Page 1 of 4	

Utility/Site/Unit: **Sample ETSS**			ETSS Version: Date:	
Component:			Component ID:	
Examination Scope				
Applicability:				
Instrument			**Tubing**	
Manufacturer/Model: CoreStar OMNI 200/100			Material Type:	
			# Of Tubes:	
			OD/Wall (inch):	
Data Recording Equipment			Length:	
Manuf./Media: Hard drive / Network or Equiv			**Calibration Standard(s)**	
Software			Type/SN: ASME Type/SN: Wall Thinning Type/SN: Reference	
Manufacturer: Corestar			**Analog Signal Path**	
Version/Revision: 8.0			Probe Shaft /Length:	
Examination Procedure			Extension Type & Length N/A	
Number/Revision: CSC-NDE-11.0 Rev 3			Slip Ring Model Number: N/A	
Scan Parameters				
Scan Direction: Pull				
Digitization Rate, Samples Per Inch (minimum): ≥ 30 SPI		Axial Direction: Pull	N/A	Circ. Direction N/A

Probe Speed	Sample Rate	RPM Set	RPM Min	RPM Max
46 inches / second	2000 (Max.)	N/A	N/A	N/A
30 inches / second	1200 (Min.)	N/A	N/A	N/A

Probe/Motor Unit		
Description (Model/Diameter/Frequency/Coil Dimensions)	Manufacturer	Length

Data Acquisition				
Calibration Coil 1 Channels				
Channel & Frequency	Channel #1 kHz	Channel #3 kHz	Channel #5 kHz	Channel #7 kHz
Phase Rotation	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3
Span Setting	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions	4 x 20% FBH's @ 3 divisions
Drive Voltage	75%	75%	75%	75%
Gain Setting	14	14	14	14
Calibration Coil 2 Channels				
Channel & Frequency	Channel #2 kHz	Channel #4 kHz	Channel #6 kHz	Channel #8 kHz
Phase Rotation	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up
Span Setting	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions	4 x 20% FBH's @ 1.5 divisions
Drive Voltage	75%	75%	75%	75%
Gain setting	8	8	8	8

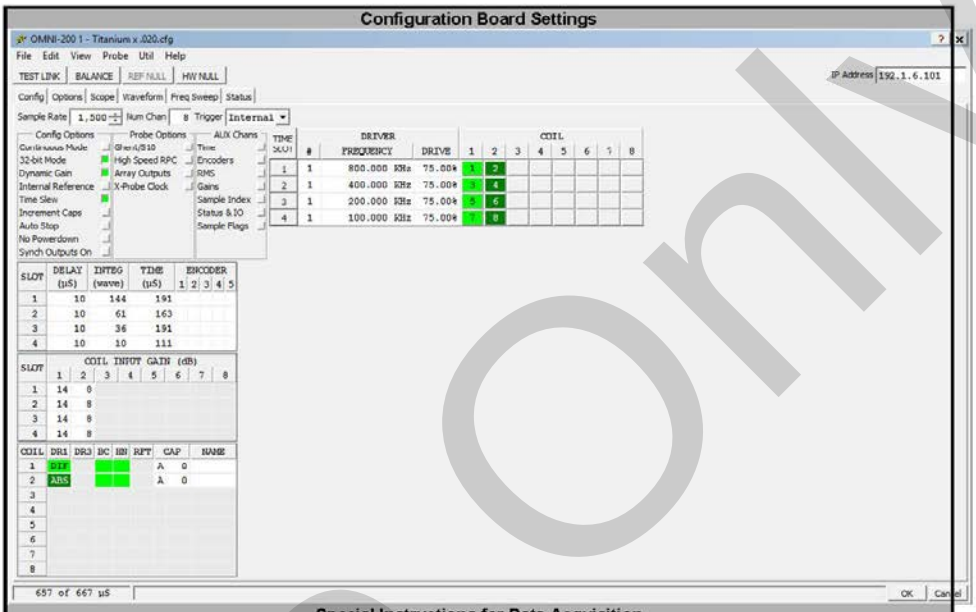
01/08/21, 9:04 AM

CONCO SERVICES LLC
530 JONES STREET·VERONA, PA 15147
(412) 828-1166 · FAX: (412) 826-8255

ESTABLISHED 1923

Examination Technique Specification Sheet

Configuration Board Settings



Special Instructions for Data Acquisition

1. Probes should be pulled @ 40 inches/second or less.
2. Review each data channel and ensure that adequate/expected signal responses are achieved before recording the calibration. Do not record data until the proper spans and rotations have been set.
3. Monitor the data by setting the left strip chart to channel 1 vertical, right strip chart to channel 6 vertical and the lissajous display set to channel 1 as a minimum. The operator will determine the specific strip chart settings and lissajous display to verify the system is functioning properly and that data quality is acceptable.
4. Follow the Conco NDE procedure CSC-NDE-11.0 Rev 3.
5. Encode the tube ID's as per map for respective sections.
6. The initial exam attempt shall be performed with the XXX ESH/HF probe.
7. Tubes that will not allow the probe to enter report as "Obstructed".
8. Tubes that are unable to examine the desired extent report as "Restricted".
9. Write a message for all tubes that are unable to be examined full length explaining the reason.
10. Encode the ASME Std. as "999", Thinning Std as "999" with a message.
11. Perform "System Null" only if "Display Null" is ineffective in balancing the signal.

CONCO SERVICES LLC
530 JONES STREET·VERONA, PA 15147
(412) 828-1166 · FAX: (412) 826-8255

ESTABLISHED 1923

Examination Technique Specification Sheet

Data Analysis				
Calibration Differential Channels				
Channel & Frequency	Channel #1 kHz	Channel #3 kHz	Channel #5 kHz	Channel #7 kHz
Phase Rotation	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3	100% TWH 40 degrees ± 3
Span Setting Minimum	100% TWH @ 4 divisions	100% TWH @ 4 divisions	100% TWH @ 4 divisions	100% TWH @ 4 divisions
Calibration Absolute Channels				
Channel & Frequency	Channel #2 kHz	Channel #4 kHz	Channel #6 kHz	Channel #8 kHz
Phase Rotation	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up	Probe Motion Horiz. Flaws Up
Span Setting Minimum	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions
Calibration Process and Other Channels				
Channel & Frequency	M-1 / Diff	M-2 / Abs.	P-3 / Diff.	P-4 / Diff.
Phase Rotation	100% TWH 40 degrees ± 3	Probe Motion Horiz. Flaws Up		
Span Setting Minimum	100% TWH @ 1.5 divisions	100% TWH @ 1.5 divisions		
Suppress On	Support Ring	Support Ring		

Voltage Normalization				Calibration Curves		
CH	Signal	Set	Normalize	Type	CH	Set Points
1	4x20% FBH	4 Vp-p	Save/Store to all	Phase Curve	1, 3, 5, M1	100,60,20%
1	4x20% FBH	4 Vp-p	Save/Store to all	Magnitude Curve	6,M2	75, 50,25%

Data Screening				
Left Strip Chart	Center Strip Chart	Right Strip Chart	Left Lissajous	Right Lissajous
Channel P1 Vertical	Channel 1 Vertical	Channel 6 Vertical	Channel 1	Channel 3

Special Instructions for Analysis

1. Calibration curves shall be constructed using the "As-Built" dimensions from the calibration standard drawings.
2. Normalize to 4 volts on the 4 X 20% flat bottom holes using channel #1 differential and store to all channels.
3. All Quantifiable indications of tube wall degradation ≥ 20% TW and 1 Volt shall be reported (however, not to exceed 6 reportable ID defects).
4. Locate all defect indications in inches measured from the test end.
5. Previously reported indications shall be addressed by the primary analyst. Report previously reported Inds. In same channel as history. Report previous indications that are not found as "INF" and indications not recordable as "INR".
6. If test data appears to be un-interpretable shall be report as "RBD".

Job Lead Approval	Customer Approval (if required)
Signature /Date	Signature /Date

Additional Component Information

01/08/21, 9:04 AM

Examination Technique Specification Sheet

Reporting Requirements							
Code	Description	Meas.	%	Volts	Ch	Loc	Ext.
ADR	Absolute Drift	Y	N	Any	6	Y	Y
CRK	Crack-Like Indication	Y	N	Any	5, 6	Y	Y
DNT	Dent	Y	N	20 >	1, M1	Y	Y
DTS	Distorted Support Indication	Y	N	Any	M1	Y	Y
ERI	Erosion With Indication	Y	20% >	Any	6	Y	Y
ERO	Erosion	Y	20% >	Any	6	Y	Y
GEN	General Pitting / Wall Loss	N	N	N	N	N	Y
IDC	ID Chatter	Y	N	20 >	1	Y	Y
IDI	ID Indication	Y	20% >	Any	1, M1	Y	Y
INA	Inaccessible	N	N	N	N	N	N
INF	Indication Not Found	N	N	N	N	Y	Y
INR	Indication Not Recordable	N	N	N	N	Y	Y
NDD	No Degradation Detected	N	N	N	N	N	Y
NQI	Non Quantifiable Indication	Y	N	Any	1, M1	Y	Y
OBS	Obstructed	N	N	N	N	N	N
ODI	OD Indication	Y	20% >	Any	1, M1	Y	Y
PID	Positive Identification	Y	N	Y	Y	Y	Y
PLG	Plug	N	N	N	N	N	N
PVN	Permeability Variation	Y	N	20 >	1, M1	Y	Y
RAD	Retest Analyst Discretion	N	N	N	N	N	N
RBD	Retest Bad Data	N	N	N	N	N	N
RES	Restricted	N	N	N	N	Y	Y
RIC	Retest Incomplete	N	N	N	N	N	N
STC	Stuck Cleaner	N	N	N	N	N	N
WAR	Wear	Y	20% >	Any	6, M2	Y	Y

Refer to the Data Management Code list in the report for landmark abbreviations.

Conco Services LLC

530 Jones Street
Verona, PA 15147 U.S.A.
Tel: 1-800-345-3476
Fax: 412-826-8255
www.conco.net

4.0 CERTIFICATIONS

The following personnel were involved with this inspection:

Robert Prentice	ECT IIA	Conco Services
Darwin Shaner	ECT II	Conco Services
Jason Shomo	ECT I	Conco Services

The following testers were used on this inspection:

Corestar OMNI 200 S/N	0017-0806

The following calibration standards were used on this inspection:

ASME	CSC-434
Wall Thinning	CSC-432

Note: see following pages for a copy of all certifications and standard drawings

NDE CERTIFICATION

Name: Prentice, Robert SSN: XXX-XX-3220 Method / Level: ECT-IIA

EDUCATION & TRAINING

Date(s)	School / Facility	Location	Subject	Term	Certification
6-1-86	Notre Dame H. S.	West Haven, CT	N/A	N/A	Diploma
6-1990	Scientific Technologies	Madison, CT	ECT-I	24 Hours	Cert Record
1-1991	Scientific Technologies	Madison, CT	ECT-II	40 Hours	Cert Record
1-1993	Scientific Technologies	Madison, CT	ECT-IIA	80 Hours	Cert Record
1-1994	Westinghouse	New Stanton, PA	ECT IIA-QDA	40 Hours	Cert Record
1-2003	Anatec Intl., Inc.	San Clemente, CA	ECT IIA-QDA	Exam	Cert Record
8-3-20	Conco Services LLC	Verona, PA	ECT-II	40 Hours	Attn. Record
8-10-20	Conco Services LLC	Verona, PA	ECT-IIA	40 Hours	Attn. Record

NDE EXPERIENCE

Date(s)	Company	NDE Method / Highest Level
1-2003	Anatec International (Curtiss Wright)	ECT-IIA-QDA
8-2020	Conco Services LLC	ECT-IIA

EXAMINATION GRADES

General: 96 %	Date: 8-5-20	Basic: N/A	Date:	Specific: 100 %	Date: 8-12-20
Method: N/A	Date:	Practical 99.8 %	Date: 8-14-20	LIII Practical:N/A	Date:
Demonstration:100%	Date: 8-6-20	ASNT: N/A	Date:	ASNT No.	
Composite Grade: 98.9 %					

LIMITATIONS / REMARKS:
The demonstration exam is a L-II acquisition practical required for collecting inspection data in the field.

This certifies that the above-named individual has satisfactorily completed the physical and technical qualifications required by the current Conco Procedure CSC-QAP-9.1 Rev.13, Certification of NDE Personnel.

CERTIFICATION DATE: 8-14-2020 EXPIRATION DATE: 8-5-2023

Certified By: _____ Title: ET Level III-A

Printed Name: James A. Kocher

X Initial Certification ☐ Re-Certification

NDE CERTIFICATION

Name: Shaner, Darwin SSN: XXX-XX-5349 Method / Level: ECT-II

EDUCATION & TRAINING

Date(s)	School / Facility	Location	Subject	Term	Certification
5-19-05	Butler Cty. Comm. College	Butler, PA	N/A	N/A	Diploma
6-6-16	Conco Services Corp.	Verona, PA	ECT-I	40 Hours	Attn. Record
6-24-19	Conco Services Corp.	Verona, PA	ECT-I	24 Hours	Attn. Record
9-5-20	Conco Services LLC	Verona, PA	ECT-II	40 Hours	Attn. Record

NDE EXPERIENCE

Date(s)	Company	NDE Method / Highest Level
6-10-16	Conco Services Corp.	ECT-IT
10-5-18	Conco Services Corp.	ECT-I
9-12-20	Conco Services LLC	ECT-II

EXAMINATION GRADES

General: 96%	Date: 9-6-20	Basic: N/A	Date:	Specific: 92%	Date: 9-6-20
Method: N/A	Date:	Practical: 92.7%	Date: 9-7-20	LIII Practical:N/A	Date:
Demonstration:N/A	Date:	ASNT: N/A	Date:	ASNT No.	
Composite Grade: 93.5%					

LIMITATIONS / REMARKS:

This certifies that the above-named individual has satisfactorily completed the physical and technical qualifications required by the current Conco Procedure CSC-QAP-9.1 Rev.13, Certification of NDE Personnel.

CERTIFICATION DATE: 9-12-2020 EXPIRATION DATE: 9-6-2023

Certified By: _____ Title: ET L-IIIA

Printed Name: James A. Kocher

X Initial Certification ☐ Re-Certification

NDE CERTIFICATION

Name: Shomo, Jason SSN: XXX-XX-8014 Method / Level: ECT-I

EDUCATION & TRAINING

Date(s)	School / Facility	Location	Subject	Term	Certification
7-13-06	PA Dept. of Education	Clearfield, PA	N/A	N/A	Transcript
6-18-12	Conco Services Corp.	Verona, PA	ECT-I	40 Hours	Attn. Record
6-1-15	Conco Services Corp.	Verona, PA	ECT-I	24 Hours	Attn. Record
7-13-20	Conco Services LLC	Verona, PA	ECT-I	40 Hours	Attn. Record

NDE EXPERIENCE

Date(s)	Company	NDE Method / Highest Level
6-22-12	Conco Services Corp.	ECT-IT
5-24-21	Conco Services LLC	ECT-I

EXAMINATION GRADES

General: 100%	Date: 7-15-20	Basic: N/A	Date:	Specific: 98%	Date: 7-15-20
Method: N/A	Date:	Practical 98.6%	Date: 7-17-20	LIII Practical:N/A	Date:
Demonstration: N/A	Date:	ASNT: N/A	Date:	ASNT No.	
Composite Grade: 98.8 %					

LIMITATIONS / REMARKS:

This certifies that the above-named individual has satisfactorily completed the physical and technical qualifications required by the current Conco Procedure CSC-QAP-9.1 Rev.13, Certification of NDE Personnel.

CERTIFICATION DATE: 4/24/2021 EXPIRATION DATE: 7-15-2023

Certified By: _____ Title: ET Level III-A

Printed Name: James A. Kocher

X Initial Certification ☐ Re-Certification

CORESTAR INTERNATIONAL CORPORATION
AS FOUND EQUIPMENT CALIBRATION CERTIFICATE

INSTRUMENT **LAB TEMP: 75.2 °F**

Certificate Number:	CB-210151	**Instrument S/N:**	**0017-0806**
Instrument:	OMNI-200™ AM201R1-10	**Date:**	**24-Jun-2021**
Customer:	**Conco**		
Instruction Number:	CIC-HI002, Rev. 5		

VOLTAGE SPECIFICATION

Instrument:	Agilent Model 34401A Digital Multimeter	**Instrument S/N:**	US36141491
		Calibration Date:	**05-Feb-2021**
Calibration Interval:	1 year	**Calibration Due:**	05-Feb-2022

Voltage (Vdc)	Measured Value (Vdc)	Tolerance (Vdc)	As Found (Vdc)
+3.3	**+3.330**	+/- 0.100	**+3.330**
+15.0	**+14.978**	+/- 0.200	**+14.977**
-15.0	**-15.019**	+/- 0.200	**-15.019**

FREQUENCY SPECIFICATION

Instrument:	Agilent Model 53131A Universal Counter	**Instrument S/N:**	MY40003653
		Calibration Date:	**05-Feb-2021**
Calibration Interval:	1 year	**Calibration Due:**	05-Feb-2022

Frequency (Hz)	Measured Value (Hz)	Tolerance (Hz)	As Found (Hz)
100	**100**	+/- 5	**100**
2,000	**2,000**	+/- 100	**2,000**
30,000	**30,000**	+/- 1,500	**30,000**
400,000	**400,000**	+/- 20,000	**400,000**
2,000,000	**1,999,998**	+/- 100,000	**1,999,998**

COIL GAIN CALIBRATION SPECIFICATION

Calibration Frequencies:	5 kHz to 1 MHz	**Calibration Module SN:**	0269-0307
Test Parameters:	See instructions		

NOTE: The complete table of measured values for each frequency, gain setting, and coil number is permanently stored in the instrument hardware. To view and print the report, go to the Calibration menu in the Tester Config screen.

Gain Step (decibels)	Average Value (Volt/Volt)	Tolerance	As Found (Volt/Volt)
-22 db	0.087	.087 ±.002 V/V	0.087
-16 db	0.173	.173 ±.005 V/V	0.173
-10 db	0.337	.337 ±.010 V/V	0.337
-4 db	0.666	.664 ±.019 V/V	0.666

1044 Sandy Hill Road, Irwin, PA 15642
(724)744-4094

CORESTAR INTERNATIONAL CORPORATION
AS FOUND EQUIPMENT CALIBRATION CERTIFICATE

INSTRUMENT

Certificate Number: CB-210151 **Instrument S/N: 0017-0806**

COIL GAIN CALIBRATION SPECIFICATION (continued)

Gain Step (decibels)	Average Value (Volt/Volt)	Tolerance	As Found (Volt/Volt)
2 db	1.313	1.312 ±.039 V/V	1.313
8 db	2.655	2.652 ±.079 V/V	2.655
14 db	5.142	5.141 ±.154 V/V	5.142
20 db	10.000	10.000 V/V Reference	10.000

COIL FUNCTIONAL CHECK

Test Frequency: 400 kHz **Probe SN:** 0045-0806
Test Parameters: See instructions **Standard SN:** AS-034-03

Coil	TSP Volt	Measured	As Found	Tolerance	TSP Phase	Measured	As Found	Tolerance
1	4.58 V	4.86	4.83	± .45 V	21°	21	21	± 2.0°
2	4.58 V	4.89	4.81	± .45 V	21°	21	21	± 2.0°
3	4.58 V	4.85	4.83	± .45 V	21°	22	21	± 2.0°
4	4.58 V	4.88	4.84	± .45 V	21°	21	20	± 2.0°
5	4.80 V	5.01	5.01	± .48 V	23°	23	23	± 2.0°
6	4.80 V	4.99	4.98	± .48 V	23°	22	23	± 2.0°
7	4.80 V	5.01	5.00	± .48 V	23°	24	23	± 2.0°
8	4.80 V	5.04	5.04	± .48 V	23°	23	23	± 2.0°

All measurement ratios between the standards referenced on this certificate and the M&TE calibrated are greater than or equal to 4:1. X Yes ___ No

All of the equipment used in the calibration of this instrument is traceable to NIST. X Yes ___ No

All test requirements have been met and the checklist is complete. X Yes ___ No

Technician Signature: David Thomas Date: 6-24-2021

QA Signature: Rebecca Casarino Date: 6-24-2021

CORESTAR INTERNATIONAL CORPORATION
EQUIPMENT CALIBRATION CERTIFICATE

INSTRUMENT **LAB TEMP: 72.6 °F**

Certificate Number:	CB-210152	**Instrument S/N:**	**0017-0806**
Instrument:	OMNI-200™ AM201R1-10	**Calibration Date:**	**24-Jun-2021**
Customer:	**Conco**	**Calibration Due:**	23-Jun-2022
Instruction Number:	CIC-HI002, Rev 5	**Calibration Interval:**	1 Year

VOLTAGE SPECIFICATION

Instrument:	Agilent Model 34401A Digital Multimeter	**Instrument S/N:**	US36141491
		Calibration Date:	**05-Feb-2021**
Calibration Interval:	1 year	**Calibration Due:**	05-Feb-2022

Voltage (Vdc)	Measured Value (Vdc)	Tolerance
+3.3	**+3.330**	+/- 0.100
+15.0	**+14.977**	+/- 0.200
-15.0	**-15.019**	+/- 0.200

FREQUENCY SPECIFICATION

Instrument:	Agilent Model 53131A Universal Counter	**Instrument S/N:**	MY40003653
		Calibration Date:	**05-Feb-2021**
Calibration Interval:	1 year	**Calibration Due:**	05-Feb-2022

Frequency (Hz)	Measured Value (Hz)	Tolerance
100	**100**	+/- 5
2,000	**2,000**	+/- 100
30,000	**30,000**	+/- 1,500
400,000	**400,000**	+/- 20,000
2,000,000	**1,999,998**	+/- 100,000

COIL GAIN CALIBRATION SPECIFICATION

Calibration Frequencies:	5 kHz to 1 MHz	**Calibration Module SN:**	0269-0307
Test Parameters:	See instructions		

NOTE: The complete table of measured values for each frequency, gain setting, and coil number is permanently stored in the instrument hardware. To view and print the report, go to the Calibration menu in the Tester Config screen.

Gain Step (decibels)	Average Value (Volt/Volt)	Tolerance	Pass	Fail
-22 db	0.087	.087 ±.002 V/V	X	
-16 db	0.173	.173 ±.005 V/V	X	
-10 db	0.337	.337 ±.010 V/V	X	
-4 db	0.666	.664 ±.019 V/V	X	

1044 Sandy Hill Road, Irwin, PA 15642
(724)744-4094

CORESTAR INTERNATIONAL CORPORATION
EQUIPMENT CALIBRATION CERTIFICATE

INSTRUMENT

Certificate Number: CB-210152	**Instrument S/N: 0017-0806**

COIL GAIN CALIBRATION SPECIFICATION (continued)

Gain Step (decibels)	Average Value (Volt/Volt)	Tolerance	Pass	Fail
2 db	1.313	1.312 ±.039 V/V	X	
8 db	2.655	2.652 ±.079 V/V	X	
14 db	5.142	5.141 ±.154 V/V	X	
20 db	10.000	10.000 V/V Reference	n/a	n/a

COIL FUNCTIONAL CHECK

Test Frequency: 400 kHz **Probe SN:** 0045-0806
Test Parameters: See instructions **Standard SN:** AS-034-03

Coil	TSP Volt	Measured	Tolerance	TSP Phase	Measured	Tolerance
1	4.58 V	4.83	± .45 V	21°	21	± 2.0°
2	4.58 V	4.81	± .45 V	21°	21	± 2.0°
3	4.58 V	4.83	± .45 V	21°	21	± 2.0°
4	4.58 V	4.84	± .45 V	21°	20	± 2.0°
5	4.80 V	5.01	± .48 V	23°	23	± 2.0°
6	4.80 V	4.98	± .48 V	23°	23	± 2.0°
7	4.80 V	5.00	± .48 V	23°	23	± 2.0°
8	4.80 V	5.04	± .48 V	23°	23	± 2.0°

QA RELEASE

All measurement ratios between the standards referenced on this certificate and the M&TE calibrated are greater than or equal to 4:1. _X_ Yes ____ No

All of the equipment used in the calibration of this instrument is traceable to NIST. _X_ Yes ____ No

All test requirements have been met and the checklist is complete. _X_ Yes ____ No

Technician Signature: David Thomas David Thomas Date: 6-24-2021

QA Signature: Rebecca Cavaro Rebecca Cavaro Date: 6.24.2021

1044 Sandy Hill Road, Irwin, PA 15642
(724)744-4094

CSC-434

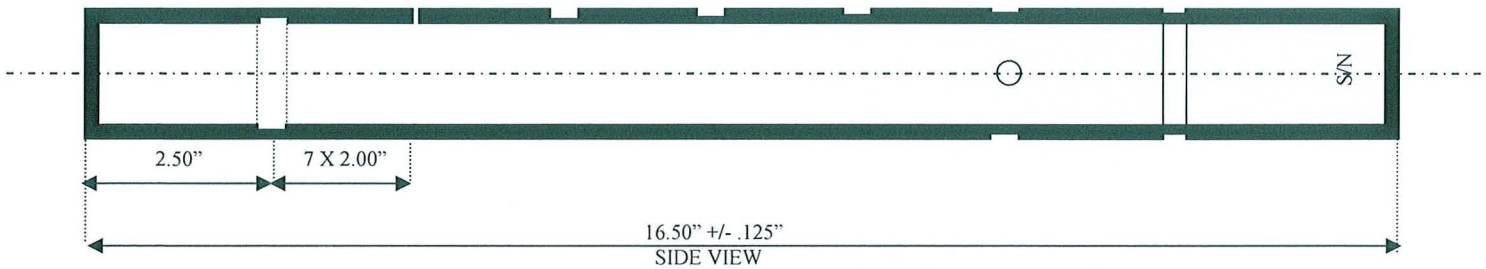
ECUTEC

CALIBRATION STANDARD CERTIFICATION

REV. 01
DATE: 02/10/10

SPECIFIED DEPTH 20% 100% 80% 60% 40% 20% 10%

LOCATION	A	B	C	D	E	F	G	H	I	J
ACTUAL DEPTH	.007"	THRU	.028"	.021"	.014"	.007"	.0035"			
% OF WALL LOSS	20%	100%	80%	60%	40%	20%	10%			
DIA OF DEFECT +/- .005	.062"	see note	.078"	.109"	.187"	.187"	.125"			



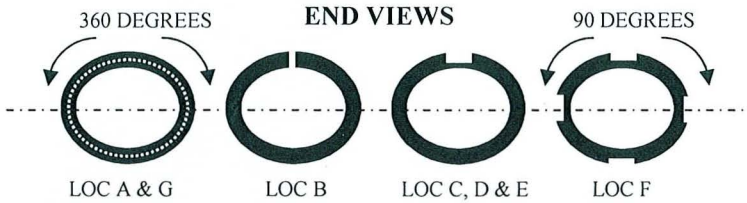
MATERIAL	304 STAINLESS STEEL
O D CONFIGURATION	PRIME
I D CONFIGURATION	PRIME
O D DIAMETER	.750"
NOMINAL WALL	.035"
F P I	N/A
MEASURMENT	INCH
DATE MACHINED	09/30/10
Q A APPROVAL	T MC

NOTE: HOLE DIAMETER AT LOCATION B IS .052" IN TUBES .750" IN DIAMETER AND LESS, .067" IN TUBES ABOVE .750" IN DIAMETER.

NOTE: DUE TO TUBE GEOMETRY 360 DEGREE O D & I D GROOVES MAY BE LESS THAN 360 DEGREES ON SHALLOW DEPTHS AND ARE AS MACHINED

NOTE: MEASURMENT GIVEN FOR 4 FLAT BOTTOM HOLES 90 DEGREES APART IS AN AVERAGE TAKEN FROM ALL 4 MEASURMENTS

LOCATION A SHOWS AN I D GROOVE X 360 DEGREES
LOCATION B SHOWS A THRU WALL HOLE
LOCATIONS C, D, & E SHOW O D FLAT BOTTOM HOLES
LOCATION F SHOWS 4 OD FLAT BOTTOM HOLES 90 DEGREES APART
LOCATION G SHOWS AN O D GROOVE X 360 DEGREES



UNLESS OTHERWISE SPECIFIED
DIM. ARE AS FOLLOWES:

DECIMAL	FRACT. +/- 1/16
XXXX	+/- .003
XXX	+/- .015
XX	+/- .05
ANGULAR	+/- 5 DEGREES

DEFECT DEPTHS ARE +/- .003 OR 20% WHICH EVER IS LESS

SCALE:
NONE
DRAWN BY:
T MCNABB

ECUTEC INC.
ASME CODE CAL. STD.

DRAWN FOR:
CONCO
S/N EU010768
ALL MEASURING DEVICES ARE NIST CERTIFIED

235

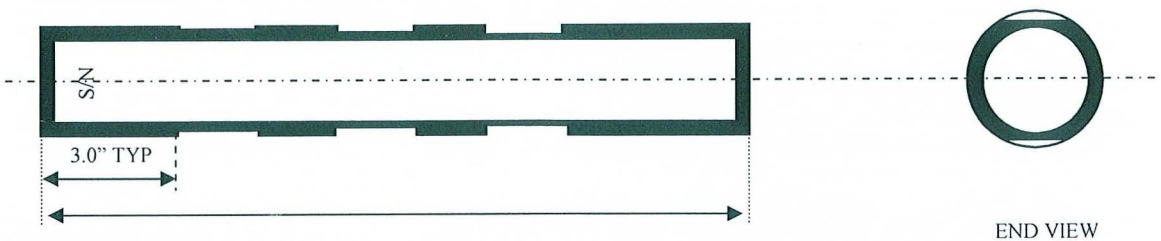
CSC-432

ECUTEC

CALIBRATION STANDARD CERTIFICATION

SPECIFIED DEPTH 25% 50% 75%

LOCATION	A	B	C	D	E	F	G	H	I	J
ACTUAL DEPTH	.0092"	.0185"	.0287"							
% OF WALL LOSS	25%	50%	77.7%							
FLAW WIDTH/DIA. +/- .005"	1.0"	1.0"	1.0"							



15.00" +/- .125"
SIDE VIEW

END VIEW

ALL LOCATIONS SHOW O D FLATS 1.00" IN LENGTH AXIALLY MILLED @ 0 DEG. & 180 DEG.

MATERIAL	304 STAINLESS STEEL
O D CONFIGURATION	PRIME
I D CONFIGURATION	PRIME
O D DIAMETER	.750"
NOMINAL WALL	.037"
F P I	N/A
MEASURMENT	INCH
DATE MACHINED	09/30/10
Q A APPROVAL	T MC

NOTE: MEASUREMENT GIVEN FOR O D FLATS IS AN AVERAGE TAKEN FROM BOTH SIDES

UNLESS OTHERWISE SPECIFIED
DIM. ARE AS FOLLOWES:

DECIMAL	FRACT. +/- 1/16
XXXX	+/- .003
XXX	+/- .015
XX	+/- .05
ANGULAR	+/- 5 DEGREES

DEFECT DEPTHS ARE +/- .003 OR 20% WHICH EVER IS LESS

SCALE:
NONE
DRAWN BY:

T MCNABB

ECUTEC INC.
180 DEGREE THINNING STD.02

DRAWN FOR:
CONCO

S/N EU010943
ALL MEASURING DEVICES ARE NIST CERTIFIED

320