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Eddy Current Report For

**East Kentucky Power Co-
Op Spurlock Station
LPFWH 1A and 1B**

November 2021

Conco Job #33098

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DLR

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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 1A and 1B. The tube specifications are as follows:

Material	OD Dimension	Wall Thickness	BWG	Length
304 SS	0.625"	0.035"	20	34'

This inspection of LPFWH 1A and 1B 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.



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	Ecutech	ASME	CSC-234
Calibration Standard	Ecutech	ASME	CSC-456
Probe	CoreStar	520 ESH/HF	N/A
Probe	CoreStar	500 ESH/HF	N/A

LPFWH 1A and 1B

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 1A and 1B.

FWH 1A: A total of 1,436 tubes were inspected (100%). Two tubes were partially restricted with the .500" dia. probe. One small ID indication (39%) was found.

FWH 1B: A total of 1,434 tubes were inspected (99.9%). Two tubes were obstructed at the tubesheet (OBS) and could not be tested. Three tubes were partially inspected due to restrictions in the tube (RES). A smaller diameter probe (.500") was attempted on these tubes and remain obstructed or restricted. A total of 2 ID damage indications and 2 OD were found, ranging from 27% to 50%. These are small volume indications, and most likely occurred during tube manufacturing. Two tubes have small wear indications of 20-22%.

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.

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					STE

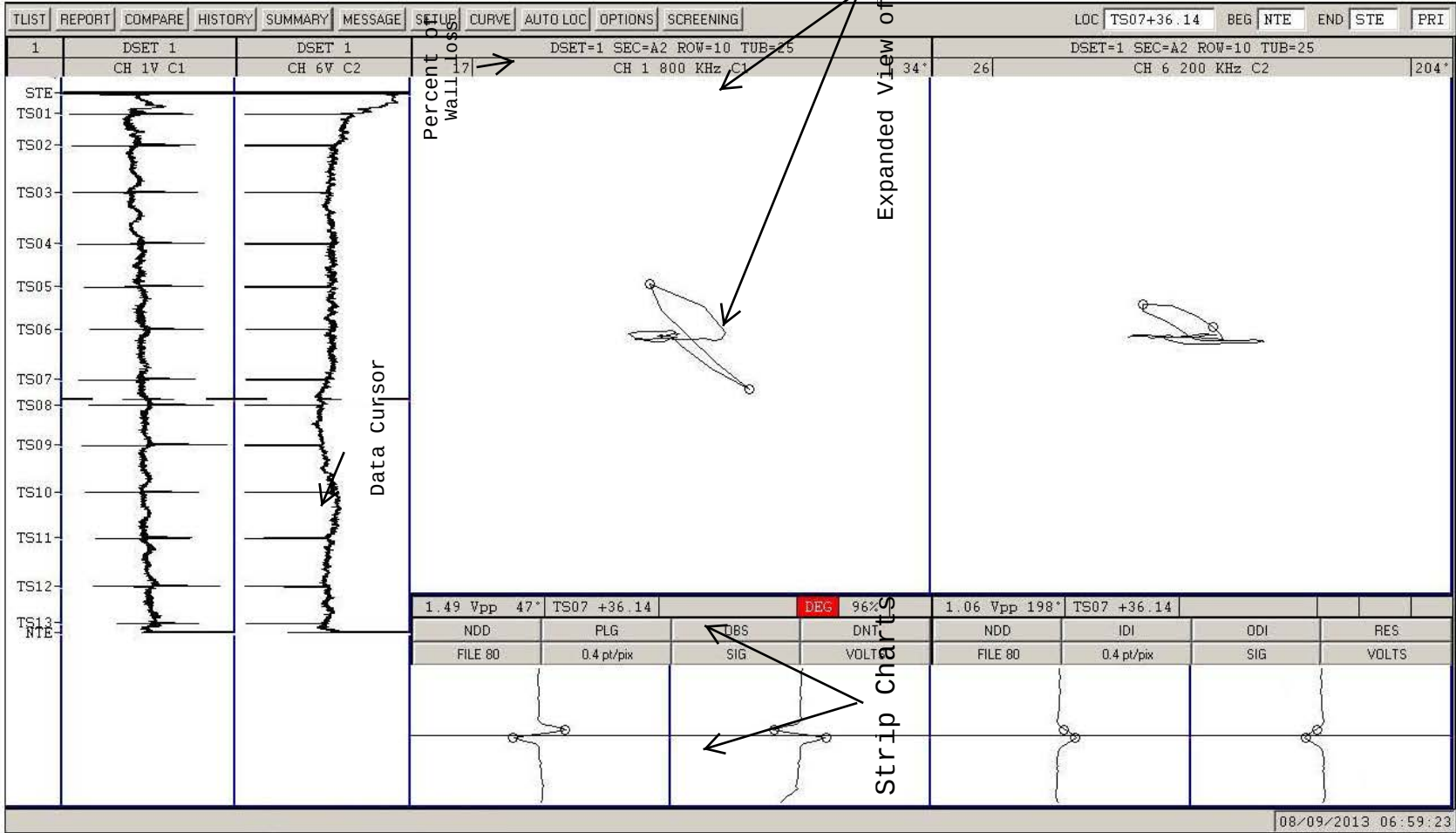
VOLTS
Volume of lost material

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



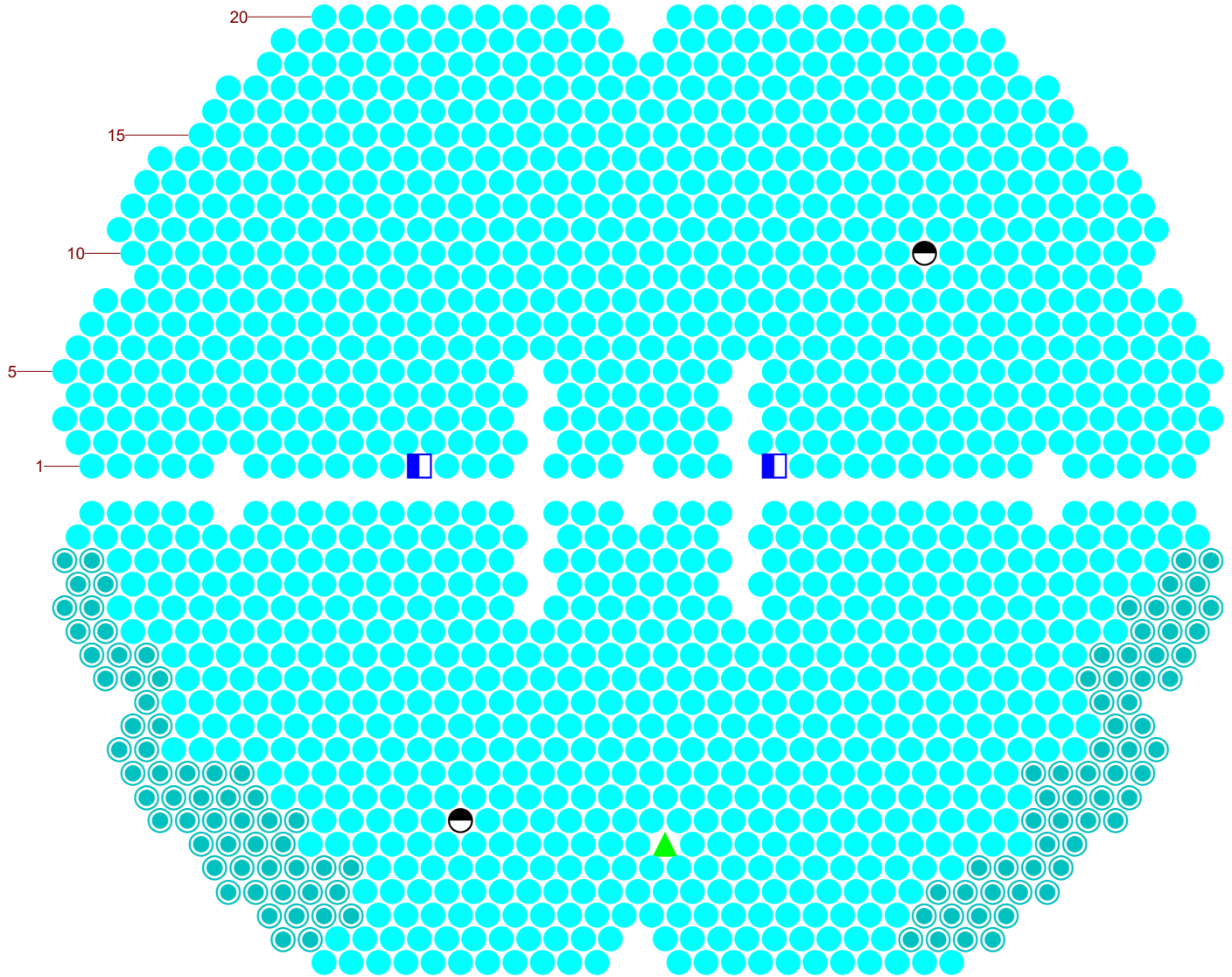


**Results Summary
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A**

	11-2021 Inspection
Total Tubes in Component (U-Tubes)	718
Total Tubes Inspected (Straight Lengths)	1,436
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%	1
Approx. Wall Loss 20% to 29%	0
Tubes Recording Dents	2
Possible Support Erosion	114
Restricted Tubes (Complete Inspection Not Possible)	2
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-1A
11-2021

VIEW FROM INLET/OUTLET



SYM	HITS	TUBES	VIS	TYPE	DESCRIPTION
	0	0	0	QUERY	OBS_RESULTS.qry
	4	2	2	QUERY	RES_RESULTS.qry
	1317	1317	1317	QUERY	NDD_RESULTS.qry
	114	114	114	QUERY	PSE_RESULTS.qry
	0	0	0	QUERY	PVN_RESULTS
	2	2	2	QUERY	DNT_RESULTS.qry
	0	0	0	QUERY	20-29%_RESULTS.qry
	1	1	1	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
	1,438	1,436	1,436		

Model LPFWH-1A (1,436 tubes)
0 open tubes

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	1	1				NDD				SP09	ITE
IN	1	2				NDD				SP09	ITE
IN	1	3				NDD				SP09	ITE
IN	1	4				NDD				SP09	ITE
IN	1	5				NDD				SP09	ITE
IN	1	6				NDD				SP09	ITE
IN	1	7				NDD				SP09	ITE
IN	1	8				NDD				SP09	ITE
IN	1	9				NDD				SP09	ITE
IN	1	10				NDD				SP09	ITE
IN	1	11				NDD				SP09	ITE
IN	1	12				NDD				SP09	ITE
IN	1	13				NDD				SP09	ITE
IN	1	14				NDD				SP09	ITE
IN	1	15				NDD				SP09	ITE
IN	1	16				NDD				SP09	ITE
IN	1	17				NDD				SP09	ITE
IN	1	18				NDD				SP09	ITE
IN	1	19				NDD				SP09	ITE
IN	1	20				NDD				SP09	ITE
IN	1	21				NDD				SP09	ITE
IN	1	22				NDD				SP09	ITE
IN	1	23				NDD				SP09	ITE
IN	1	24				NDD				SP09	ITE
IN	1	25				NDD				SP09	ITE
IN	1	26				NDD				SP09	ITE
IN	1	27				NDD				SP09	ITE
IN	1	28				NDD				SP09	ITE
IN	1	29				NDD				SP09	ITE
IN	1	30				NDD				SP09	ITE
IN	1	31				NDD				SP09	ITE
IN	1	32				NDD				SP09	ITE
IN	1	33				NDD				SP09	ITE
IN	1	34				NDD				SP09	ITE
IN	1	35				NDD				SP09	ITE
IN	1	36				NDD				SP09	ITE
IN	2	1				NDD				SP09	ITE
IN	2	2				NDD				SP09	ITE
IN	2	3				NDD				SP09	ITE
IN	2	4				NDD				SP09	ITE
IN	2	5				NDD				SP09	ITE
IN	2	6				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	2	7				NDD				SP09	ITE
IN	2	8				NDD				SP09	ITE
IN	2	9				NDD				SP09	ITE
IN	2	10				NDD				SP09	ITE
IN	2	11				NDD				SP09	ITE
IN	2	12				NDD				SP09	ITE
IN	2	13				NDD				SP09	ITE
IN	2	14				NDD				SP09	ITE
IN	2	15				NDD				SP09	ITE
IN	2	16				NDD				SP09	ITE
IN	2	17				NDD				SP09	ITE
IN	2	18				NDD				SP09	ITE
IN	2	19				NDD				SP09	ITE
IN	2	20				NDD				SP09	ITE
IN	2	21				NDD				SP09	ITE
IN	2	22				NDD				SP09	ITE
IN	2	23				NDD				SP09	ITE
IN	2	24				NDD				SP09	ITE
IN	2	25				NDD				SP09	ITE
IN	2	26				NDD				SP09	ITE
IN	2	27				NDD				SP09	ITE
IN	2	28				NDD				SP09	ITE
IN	2	29				NDD				SP09	ITE
IN	2	30				NDD				SP09	ITE
IN	2	31				NDD				SP09	ITE
IN	2	32				NDD				SP09	ITE
IN	2	33				NDD				SP09	ITE
IN	2	34				NDD				SP09	ITE
IN	2	35				NDD				SP09	ITE
IN	2	36				NDD				SP09	ITE
IN	2	37				NDD				SP09	ITE
IN	2	38				NDD				SP09	ITE
IN	2	39				NDD				SP09	ITE
IN	2	40				NDD				SP09	ITE
IN	3	1	4.30	181	0	PSE	7	SP05	-0.10	SP09	ITE
IN	3	2	5.29	178	0	PSE	7	SP05	0.00	SP09	ITE
IN	3	3				NDD				SP09	ITE
IN	3	4				NDD				SP09	ITE
IN	3	5				NDD				SP09	ITE
IN	3	6				NDD				SP09	ITE
IN	3	7				NDD				SP09	ITE
IN	3	8				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	3	9				NDD				SP09	ITE
IN	3	10				NDD				SP09	ITE
IN	3	11				NDD				SP09	ITE
IN	3	12				NDD				SP09	ITE
IN	3	13				NDD				SP09	ITE
IN	3	14				NDD				SP09	ITE
IN	3	15				NDD				SP09	ITE
IN	3	16				NDD				SP09	ITE
IN	3	17				NDD				SP09	ITE
IN	3	18				NDD				SP09	ITE
IN	3	19				NDD				SP09	ITE
IN	3	20				NDD				SP09	ITE
IN	3	21				NDD				SP09	ITE
IN	3	22				NDD				SP09	ITE
IN	3	23				NDD				SP09	ITE
IN	3	24				NDD				SP09	ITE
IN	3	25				NDD				SP09	ITE
IN	3	26				NDD				SP09	ITE
IN	3	27				NDD				SP09	ITE
IN	3	28				NDD				SP09	ITE
IN	3	29				NDD				SP09	ITE
IN	3	30				NDD				SP09	ITE
IN	3	31				NDD				SP09	ITE
IN	3	32				NDD				SP09	ITE
IN	3	33				NDD				SP09	ITE
IN	3	34				NDD				SP09	ITE
IN	3	35				NDD				SP09	ITE
IN	3	36				NDD				SP09	ITE
IN	3	37				NDD				SP09	ITE
IN	3	38				NDD				SP09	ITE
IN	3	39				NDD				SP09	ITE
IN	3	40	5.00	173	0	PSE	7	SP04	0.00	SP09	ITE
IN	3	41	3.65	180	0	PSE	7	SP04	-0.05	SP09	ITE
IN	4	1	3.85	179	0	PSE	7	SP05	0.00	SP09	ITE
IN	4	2	4.97	180	0	PSE	7	SP05	0.00	SP09	ITE
IN	4	3				NDD				SP09	ITE
IN	4	4				NDD				SP09	ITE
IN	4	5				NDD				SP09	ITE
IN	4	6				NDD				SP09	ITE
IN	4	7				NDD				SP09	ITE
IN	4	8				NDD				SP09	ITE
IN	4	9				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	4	10				NDD				SP09	ITE
IN	4	11				NDD				SP09	ITE
IN	4	12				NDD				SP09	ITE
IN	4	13				NDD				SP09	ITE
IN	4	14				NDD				SP09	ITE
IN	4	15				NDD				SP09	ITE
IN	4	16				NDD				SP09	ITE
IN	4	17				NDD				SP09	ITE
IN	4	18				NDD				SP09	ITE
IN	4	19				NDD				SP09	ITE
IN	4	20				NDD				SP09	ITE
IN	4	21				NDD				SP09	ITE
IN	4	22				NDD				SP09	ITE
IN	4	23				NDD				SP09	ITE
IN	4	24				NDD				SP09	ITE
IN	4	25				NDD				SP09	ITE
IN	4	26				NDD				SP09	ITE
IN	4	27				NDD				SP09	ITE
IN	4	28				NDD				SP09	ITE
IN	4	29				NDD				SP09	ITE
IN	4	30				NDD				SP09	ITE
IN	4	31				NDD				SP09	ITE
IN	4	32				NDD				SP09	ITE
IN	4	33				NDD				SP09	ITE
IN	4	34				NDD				SP09	ITE
IN	4	35				NDD				SP09	ITE
IN	4	36				NDD				SP09	ITE
IN	4	37				NDD				SP09	ITE
IN	4	38				NDD				SP09	ITE
IN	4	39	2.83	214	0	PSE	7	SP04	-0.08	SP09	ITE
IN	4	40	1.11	181	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	1	3.85	177	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	2	4.56	176	0	PSE	7	SP05	0.00	SP09	ITE
IN	5	3				NDD				SP09	ITE
IN	5	4				NDD				SP09	ITE
IN	5	5				NDD				SP09	ITE
IN	5	6				NDD				SP09	ITE
IN	5	7				NDD				SP09	ITE
IN	5	8				NDD				SP09	ITE
IN	5	9				NDD				SP09	ITE
IN	5	10				NDD				SP09	ITE
IN	5	11				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	5	12				NDD				SP09	ITE
IN	5	13				NDD				SP09	ITE
IN	5	14				NDD				SP09	ITE
IN	5	15				NDD				SP09	ITE
IN	5	16				NDD				SP09	ITE
IN	5	17				NDD				SP09	ITE
IN	5	18				NDD				SP09	ITE
IN	5	19				NDD				SP09	ITE
IN	5	20				NDD				SP09	ITE
IN	5	21				NDD				SP09	ITE
IN	5	22				NDD				SP09	ITE
IN	5	23				NDD				SP09	ITE
IN	5	24				NDD				SP09	ITE
IN	5	25				NDD				SP09	ITE
IN	5	26				NDD				SP09	ITE
IN	5	27				NDD				SP09	ITE
IN	5	28				NDD				SP09	ITE
IN	5	29				NDD				SP09	ITE
IN	5	30				NDD				SP09	ITE
IN	5	31				NDD				SP09	ITE
IN	5	32				NDD				SP09	ITE
IN	5	33				NDD				SP09	ITE
IN	5	34				NDD				SP09	ITE
IN	5	35				NDD				SP09	ITE
IN	5	36				NDD				SP09	ITE
IN	5	37				NDD				SP09	ITE
IN	5	38	2.75	214	0	PSE	7	SP05	-0.10	SP09	ITE
IN	5	39	2.74	220	0	PSE	7	SP04	-0.14	SP09	ITE
IN	5	40	3.50	163	0	PSE	7	SP05	0.00	SP09	ITE
IN	5	41	2.86	176	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	1	2.97	182	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	2	4.82	174	0	PSE	7	SP05	0.00	SP09	ITE
IN	6	3				NDD				SP09	ITE
IN	6	4				NDD				SP09	ITE
IN	6	5				NDD				SP09	ITE
IN	6	6				NDD				SP09	ITE
IN	6	7				NDD				SP09	ITE
IN	6	8				NDD				SP09	ITE
IN	6	9				NDD				SP09	ITE
IN	6	10				NDD				SP09	ITE
IN	6	11				NDD				SP09	ITE
IN	6	12				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	6	13				NDD				SP09	ITE
IN	6	14				NDD				SP09	ITE
IN	6	15				NDD				SP09	ITE
IN	6	16				NDD				SP09	ITE
IN	6	17				NDD				SP09	ITE
IN	6	18				NDD				SP09	ITE
IN	6	19				NDD				SP09	ITE
IN	6	20				NDD				SP09	ITE
IN	6	21				NDD				SP09	ITE
IN	6	22				NDD				SP09	ITE
IN	6	23				NDD				SP09	ITE
IN	6	24				NDD				SP09	ITE
IN	6	25				NDD				SP09	ITE
IN	6	26				NDD				SP09	ITE
IN	6	27				NDD				SP09	ITE
IN	6	28				NDD				SP09	ITE
IN	6	29				NDD				SP09	ITE
IN	6	30				NDD				SP09	ITE
IN	6	31				NDD				SP09	ITE
IN	6	32				NDD				SP09	ITE
IN	6	33				NDD				SP09	ITE
IN	6	34				NDD				SP09	ITE
IN	6	35				NDD				SP09	ITE
IN	6	36				NDD				SP09	ITE
IN	6	37				NDD				SP09	ITE
IN	6	38				NDD				SP09	ITE
IN	6	39				NDD				SP09	ITE
IN	6	40	4.25	178	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	41	2.43	175	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	42	5.62	169	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	1	3.28	180	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	2	3.62	177	0	PSE	7	SP05	0.00	SP09	ITE
IN	7	3	3.22	199	0	PSE	7	SP05	-0.12	SP09	ITE
IN	7	4				NDD				SP09	ITE
IN	7	5				NDD				SP09	ITE
IN	7	6				NDD				SP09	ITE
IN	7	7				NDD				SP09	ITE
IN	7	8				NDD				SP09	ITE
IN	7	9				NDD				SP09	ITE
IN	7	10				NDD				SP09	ITE
IN	7	11				NDD				SP09	ITE
IN	7	12				NDD				SP09	ITE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	7	13				NDD				SP09	ITE
IN	7	14				NDD				SP09	ITE
IN	7	15				NDD				SP09	ITE
IN	7	16				NDD				SP09	ITE
IN	7	17				NDD				SP09	ITE
IN	7	18				NDD				SP09	ITE
IN	7	19				NDD				SP09	ITE
IN	7	20				NDD				SP09	ITE
IN	7	21				NDD				SP09	ITE
IN	7	22				NDD				SP09	ITE
IN	7	23				NDD				SP09	ITE
IN	7	24				NDD				SP09	ITE
IN	7	25				NDD				SP09	ITE
IN	7	26				NDD				SP09	ITE
IN	7	27				NDD				SP09	ITE
IN	7	28				NDD				SP09	ITE
IN	7	29				NDD				SP09	ITE
IN	7	30				NDD				SP09	ITE
IN	7	31				NDD				SP09	ITE
IN	7	32				NDD				SP09	ITE
IN	7	33				NDD				SP09	ITE
IN	7	34				NDD				SP09	ITE
IN	7	35				NDD				SP09	ITE
IN	7	36				NDD				SP09	ITE
IN	7	37				NDD				SP09	ITE
IN	7	38	2.64	211	0	PSE	7	SP04	0.07	SP09	ITE
IN	7	39	1.31	336	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	40	3.08	173	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	41	3.56	179	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	1	3.82	183	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	2	3.43	189	0	PSE	7	SP05	-0.05	SP09	ITE
IN	8	3	3.66	186	0	PSE	7	SP05	0.00	SP09	ITE
IN	8	4				NDD				SP09	ITE
IN	8	5				NDD				SP09	ITE
IN	8	6				NDD				SP09	ITE
IN	8	7				NDD				SP09	ITE
IN	8	8				NDD				SP09	ITE
IN	8	9				NDD				SP09	ITE
IN	8	10				NDD				SP09	ITE
IN	8	11				NDD				SP09	ITE
IN	8	12				NDD				SP09	ITE
IN	8	13				NDD				SP09	ITE

Data Report
 East Kentucky Power Co-Op
 Spurlock Station
 Unit 2
 LPFWH-1A
 11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	8	14				NDD				SP09	ITE
IN	8	15				NDD				SP09	ITE
IN	8	16				NDD				SP09	ITE
IN	8	17				NDD				SP09	ITE
IN	8	18				NDD				SP09	ITE
IN	8	19				NDD				SP09	ITE
IN	8	20				NDD				SP09	ITE
IN	8	21				NDD				SP09	ITE
IN	8	22				NDD				SP09	ITE
IN	8	23				NDD				SP09	ITE
IN	8	24				NDD				SP09	ITE
IN	8	25				NDD				SP09	ITE
IN	8	26				NDD				SP09	ITE
IN	8	27				NDD				SP09	ITE
IN	8	28				NDD				SP09	ITE
IN	8	29				NDD				SP09	ITE
IN	8	30				NDD				SP09	ITE
IN	8	31				NDD				SP09	ITE
IN	8	32				NDD				SP09	ITE
IN	8	33				NDD				SP09	ITE
IN	8	34				NDD				SP09	ITE
IN	8	35				NDD				SP09	ITE
IN	8	36				NDD				SP09	ITE
IN	8	37	2.77	204	0	PSE	7	SP05	0.00	SP09	ITE
IN	8	38	3.10	183	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	39	3.52	182	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	40	3.36	177	0	PSE	7	SP04	0.00	SP09	ITE
IN	9	1	3.07	203	0	PSE	7	SP05	-0.08	SP09	ITE
IN	9	2				NDD				SP09	ITE
IN	9	3				NDD				SP09	ITE
IN	9	4				NDD				SP09	ITE
IN	9	5				NDD				SP09	ITE
IN	9	6				NDD				SP09	ITE
IN	9	7				NDD				SP09	ITE
IN	9	8				NDD				SP09	ITE
IN	9	9				NDD				SP09	ITE
IN	9	10				NDD				SP09	ITE
IN	9	11				NDD				SP09	ITE
IN	9	12				NDD				SP09	ITE
IN	9	13				NDD				SP09	ITE
IN	9	14				NDD				SP09	ITE
IN	9	15				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	9	16				NDD				SP09	ITE
IN	9	17				NDD				SP09	ITE
IN	9	18				NDD				SP09	ITE
IN	9	19				NDD				SP09	ITE
IN	9	20				NDD				SP09	ITE
IN	9	21				NDD				SP09	ITE
IN	9	22				NDD				SP09	ITE
IN	9	23				NDD				SP09	ITE
IN	9	24				NDD				SP09	ITE
IN	9	25				NDD				SP09	ITE
IN	9	26				NDD				SP09	ITE
IN	9	27				NDD				SP09	ITE
IN	9	28				NDD				SP09	ITE
IN	9	29				NDD				SP09	ITE
IN	9	30				NDD				SP09	ITE
IN	9	31				NDD				SP09	ITE
IN	9	32				NDD				SP09	ITE
IN	9	33				NDD				SP09	ITE
IN	9	34				NDD				SP09	ITE
IN	9	35				NDD				SP09	ITE
IN	9	36	2.69	205	0	PSE	7	SP05	0.32	SP09	ITE
IN	9	37	2.68	210	0	PSE	7	SP05	-0.18	SP09	ITE
IN	10	1	1.98	182	0	PSE	7	SP05	0.00	SP09	ITE
IN	10	2	3.48	197	0	PSE	7	SP05	0.08	SP09	ITE
IN	10	3				NDD				SP09	ITE
IN	10	4				NDD				SP09	ITE
IN	10	5				NDD				SP09	ITE
IN	10	6				NDD				SP09	ITE
IN	10	7				NDD				SP09	ITE
IN	10	8				NDD				SP09	ITE
IN	10	9				NDD				SP09	ITE
IN	10	10				NDD				SP09	ITE
IN	10	11				NDD				SP09	ITE
IN	10	12				NDD				SP09	ITE
IN	10	13				NDD				SP09	ITE
IN	10	14				NDD				SP09	ITE
IN	10	15				NDD				SP09	ITE
IN	10	16				NDD				SP09	ITE
IN	10	17				NDD				SP09	ITE
IN	10	18				NDD				SP09	ITE
IN	10	19				NDD				SP09	ITE
IN	10	20				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	10	21				NDD				SP09	ITE
IN	10	22				NDD				SP09	ITE
IN	10	23				NDD				SP09	ITE
IN	10	24				NDD				SP09	ITE
IN	10	25				NDD				SP09	ITE
IN	10	26				NDD				SP09	ITE
IN	10	27				NDD				SP09	ITE
IN	10	28				NDD				SP09	ITE
IN	10	29				NDD				SP09	ITE
IN	10	30				NDD				SP09	ITE
IN	10	31				NDD				SP09	ITE
IN	10	32				NDD				SP09	ITE
IN	10	33				NDD				SP09	ITE
IN	10	34				NDD				SP09	ITE
IN	10	35				NDD				SP09	ITE
IN	10	36				NDD				SP09	ITE
IN	10	37	3.55	192	0	PSE	7	SP04	-0.13	SP09	ITE
IN	10	38	4.74	179	0	PSE	7	SP04	-0.11	SP09	ITE
IN	11	1	3.16	182	0	PSE	7	SP05	-0.03	SP09	ITE
IN	11	2	3.78	180	0	PSE	7	SP05	0.00	SP09	ITE
IN	11	3				NDD				SP09	ITE
IN	11	4				NDD				SP09	ITE
IN	11	5				NDD				SP09	ITE
IN	11	6				NDD				SP09	ITE
IN	11	7				NDD				SP09	ITE
IN	11	8				NDD				SP09	ITE
IN	11	9				NDD				SP09	ITE
IN	11	10				NDD				SP09	ITE
IN	11	11				NDD				SP09	ITE
IN	11	12				NDD				SP09	ITE
IN	11	13				NDD				SP09	ITE
IN	11	14				NDD				SP09	ITE
IN	11	15				NDD				SP09	ITE
IN	11	16				NDD				SP09	ITE
IN	11	17				NDD				SP09	ITE
IN	11	18				NDD				SP09	ITE
IN	11	19				NDD				SP09	ITE
IN	11	20				NDD				SP09	ITE
IN	11	21				NDD				SP09	ITE
IN	11	22				NDD				SP09	ITE
IN	11	23				NDD				SP09	ITE
IN	11	24				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	11	25				NDD				SP09	ITE
IN	11	26				NDD				SP09	ITE
IN	11	27				NDD				SP09	ITE
IN	11	28				NDD				SP09	ITE
IN	11	29				NDD				SP09	ITE
IN	11	30				NDD				SP09	ITE
IN	11	31				NDD				SP09	ITE
IN	11	32				NDD				SP09	ITE
IN	11	33				NDD				SP09	ITE
IN	11	34				NDD				SP09	ITE
IN	11	35				NDD				SP09	ITE
IN	11	36				NDD				SP09	ITE
IN	11	37	3.07	205	0	PSE	7	SP05	-0.50	SP09	ITE
IN	11	38	2.84	201	0	PSE	7	SP05	-0.18	SP09	ITE
IN	11	39	4.72	176	0	PSE	7	SP04	0.00	SP09	ITE
IN	12	1	3.50	190	0	PSE	7	SP05	0.00	SP09	ITE
IN	12	2	3.96	187	0	PSE	7	SP05	0.00	SP09	ITE
IN	12	3	3.10	201	0	PSE	7	SP05	-0.03	SP09	ITE
IN	12	4	3.37	202	0	PSE	7	SP05	0.00	SP09	ITE
IN	12	5	3.96	201	0	PSE	7	SP05	-0.15	SP09	ITE
IN	12	6				NDD				SP09	ITE
IN	12	7				RIC					
IN	12	7				NDD				SP08	ITE
IN	12	8				NDD				SP09	ITE
IN	12	9				NDD				SP09	ITE
IN	12	10				NDD				SP09	ITE
IN	12	11				NDD				SP09	ITE
IN	12	12				NDD				SP09	ITE
IN	12	13				NDD				SP09	ITE
IN	12	14				NDD				SP09	ITE
IN	12	15				NDD				SP09	ITE
IN	12	16				NDD				SP09	ITE
IN	12	17				NDD				SP09	ITE
IN	12	18				NDD				SP09	ITE
IN	12	19				NDD				SP09	ITE
IN	12	20				NDD				SP09	ITE
IN	12	21				NDD				SP09	ITE
IN	12	22				NDD				SP09	ITE
IN	12	23				NDD				SP09	ITE
IN	12	24				NDD				SP09	ITE
IN	12	25				NDD				SP09	ITE
IN	12	26				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	12	27				NDD				SP09	ITE
IN	12	28				NDD				SP09	ITE
IN	12	29				NDD				SP09	ITE
IN	12	30				NDD				SP09	ITE
IN	12	31				NDD				SP09	ITE
IN	12	32				NDD				SP09	ITE
IN	12	33				NDD				SP09	ITE
IN	12	34	3.60	200	0	PSE	7	SP06	-0.10	SP09	ITE
IN	12	35	3.85	196	0	PSE	7	SP06	0.65	SP09	ITE
IN	12	36	3.64	196	0	PSE	7	SP06	0.00	SP09	ITE
IN	12	37	3.45	195	0	PSE	7	SP05	0.23	SP09	ITE
IN	12	38	2.34	211	0	PSE	7	SP05	-0.10	SP09	ITE
IN	13	1	3.11	203	0	PSE	7	SP05	-0.20	SP09	ITE
IN	13	2	3.17	200	0	PSE	7	SP05	-0.05	SP09	ITE
IN	13	3	2.89	208	0	PSE	7	SP05	0.05	SP09	ITE
IN	13	4	3.74	198	0	PSE	7	SP05	-0.10	SP09	ITE
IN	13	5	3.44	203	0	PSE	7	SP05	-0.20	SP09	ITE
IN	13	6				NDD				SP09	ITE
IN	13	7				NDD				SP09	ITE
IN	13	8				NDD				SP09	ITE
IN	13	9				NDD				SP09	ITE
IN	13	10				NDD				SP09	ITE
IN	13	11				NDD				SP09	ITE
IN	13	12				NDD				SP09	ITE
IN	13	13				NDD				SP09	ITE
IN	13	14				NDD				SP09	ITE
IN	13	15				NDD				SP09	ITE
IN	13	16				NDD				SP09	ITE
IN	13	17				NDD				SP09	ITE
IN	13	18				NDD				SP09	ITE
IN	13	19				NDD				SP09	ITE
IN	13	20				NDD				SP09	ITE
IN	13	21				NDD				SP09	ITE
IN	13	22				NDD				SP09	ITE
IN	13	23				NDD				SP09	ITE
IN	13	24				NDD				SP09	ITE
IN	13	25				NDD				SP09	ITE
IN	13	26				NDD				SP09	ITE
IN	13	27				NDD				SP09	ITE
IN	13	28				NDD				SP09	ITE
IN	13	29				NDD				SP09	ITE
IN	13	30				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	13	31				NDD				SP09	ITE
IN	13	32				NDD				SP09	ITE
IN	13	33				NDD				SP09	ITE
IN	13	34	3.14	202	0	PSE	7	SP06	0.00	SP09	ITE
IN	13	35	2.87	205	0	PSE	7	SP06	0.02	SP09	ITE
IN	13	36	3.00	200	0	PSE	7	SP06	0.00	SP09	ITE
IN	13	37	2.73	204	0	PSE	7	SP05	-0.05	SP09	ITE
IN	14	1	3.68	193	0	PSE	7	SP05	-0.05	SP09	ITE
IN	14	2	3.13	207	0	PSE	7	SP05	-0.48	SP09	ITE
IN	14	3	3.75	199	0	PSE	7	SP05	-0.18	SP09	ITE
IN	14	4	3.96	196	0	PSE	7	SP05	-0.18	SP09	ITE
IN	14	5	3.76	196	0	PSE	7	SP05	0.00	SP09	ITE
IN	14	6	3.62	206	0	PSE	7	SP05	0.00	SP09	ITE
IN	14	7				NDD				SP09	ITE
IN	14	8				NDD				SP09	ITE
IN	14	9				NDD				SP09	ITE
IN	14	10				NDD				SP09	ITE
IN	14	11				NDD				SP09	ITE
IN	14	12	21.83	185	0	DNT	1	SP07	36.64	SP09	ITE
IN	14	13				NDD				SP09	ITE
IN	14	14				NDD				SP09	ITE
IN	14	15				NDD				SP09	ITE
IN	14	16				NDD				SP09	ITE
IN	14	17				NDD				SP09	ITE
IN	14	18				NDD				SP09	ITE
IN	14	19				NDD				SP09	ITE
IN	14	20				NDD				SP09	ITE
IN	14	21				NDD				SP09	ITE
IN	14	22				NDD				SP09	ITE
IN	14	23				NDD				SP09	ITE
IN	14	24				NDD				SP09	ITE
IN	14	25				NDD				SP09	ITE
IN	14	26				NDD				SP09	ITE
IN	14	27				NDD				SP09	ITE
IN	14	28				NDD				SP09	ITE
IN	14	29				NDD				SP09	ITE
IN	14	30				NDD				SP09	ITE
IN	14	31				NDD				SP09	ITE
IN	14	32				NDD				SP09	ITE
IN	14	33	3.54	198	0	PSE	7	SP06	-0.09	SP09	ITE
IN	14	34	3.11	203	0	PSE	7	SP06	0.30	SP09	ITE
IN	14	35	2.87	202	0	PSE	7	SP06	-0.20	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	14	36	2.86	208	0	PSE	7	SP06	0.00	SP09	ITE
IN	15	1	2.84	209	0	PSE	7	SP05	-0.02	SP09	ITE
IN	15	2	3.38	207	0	PSE	7	SP06	0.00	SP09	ITE
IN	15	3	3.31	202	0	PSE	7	SP06	0.00	SP09	ITE
IN	15	4	3.51	212	0	PSE	7	SP06	0.00	SP09	ITE
IN	15	5				NDD				SP09	ITE
IN	15	6				NDD				SP09	ITE
IN	15	7				NDD				SP09	ITE
IN	15	8				NDD				SP09	ITE
IN	15	9				NDD				SP09	ITE
IN	15	10				NDD				SP09	ITE
IN	15	11				NDD				SP09	ITE
IN	15	12				NDD				SP09	ITE
IN	15	13				NDD				SP09	ITE
IN	15	14				NDD				SP09	ITE
IN	15	15				NDD				SP09	ITE
IN	15	16				NDD				SP09	ITE
IN	15	17				NDD				SP09	ITE
IN	15	18	3.19	16	39	IDI	1	SP06	16.64	SP09	ITE
IN	15	19				NDD				SP09	ITE
IN	15	20				NDD				SP09	ITE
IN	15	21				NDD				SP09	ITE
IN	15	22				NDD				SP09	ITE
IN	15	23				NDD				SP09	ITE
IN	15	24				NDD				SP09	ITE
IN	15	25				NDD				SP09	ITE
IN	15	26				NDD				SP09	ITE
IN	15	27				NDD				SP09	ITE
IN	15	28				NDD				SP09	ITE
IN	15	29				NDD				SP09	ITE
IN	15	30				NDD				SP09	ITE
IN	15	31				NDD				SP09	ITE
IN	15	32	3.45	199	0	PSE	7	SP06	-0.27	SP09	ITE
IN	15	33	3.20	202	0	PSE	7	SP06	0.00	SP09	ITE
IN	16	1	3.09	207	0	PSE	7	SP06	0.22	SP09	ITE
IN	16	2	3.08	205	0	PSE	7	SP06	-0.09	SP09	ITE
IN	16	3	3.63	197	0	PSE	7	SP06	-0.02	SP09	ITE
IN	16	4	3.32	197	0	PSE	7	SP06	-0.17	SP09	ITE
IN	16	5	3.75	198	0	PSE	7	SP05	0.05	SP09	ITE
IN	16	6	3.59	202	0	PSE	7	SP05	-0.15	SP09	ITE
IN	16	7				NDD				SP09	ITE
IN	16	8				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	16	9				NDD				SP09	ITE
IN	16	10				NDD				SP09	ITE
IN	16	11				NDD				SP09	ITE
IN	16	12				NDD				SP09	ITE
IN	16	13				NDD				SP09	ITE
IN	16	14				NDD				SP09	ITE
IN	16	15				NDD				SP09	ITE
IN	16	16				NDD				SP09	ITE
IN	16	17				NDD				SP09	ITE
IN	16	18				NDD				SP09	ITE
IN	16	19				RAD		BAF8	22.17	SP09	ITE
IN	16	19				NDD				SP09	ITE
IN	16	20				NDD				SP09	ITE
IN	16	21				NDD				SP09	ITE
IN	16	22				NDD				SP09	ITE
IN	16	23				NDD				SP09	ITE
IN	16	24				NDD				SP09	ITE
IN	16	25				NDD				SP09	ITE
IN	16	26				NDD				SP09	ITE
IN	16	27				NDD				SP09	ITE
IN	16	28				NDD				SP09	ITE
IN	16	29	3.87	195	0	PSE	7	SP06	-0.03	SP09	ITE
IN	16	30	3.52	198	0	PSE	7	SP06	0.00	SP09	ITE
IN	16	31	3.77	201	0	PSE	7	SP05	0.00	SP09	ITE
IN	16	32	2.89	209	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	1	3.07	205	0	PSE	7	SP07	0.00	SP09	ITE
IN	17	2	2.62	207	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	3	2.38	216	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	4	3.32	199	0	PSE	7	SP06	-0.14	SP09	ITE
IN	17	5	3.21	201	0	PSE	7	SP05	0.00	SP09	ITE
IN	17	6				NDD				SP09	ITE
IN	17	7				NDD				SP09	ITE
IN	17	8				NDD				SP09	ITE
IN	17	9				NDD				SP09	ITE
IN	17	10				NDD				SP09	ITE
IN	17	11				NDD				SP09	ITE
IN	17	12				NDD				SP09	ITE
IN	17	13				NDD				SP09	ITE
IN	17	14				NDD				SP09	ITE
IN	17	15				NDD				SP09	ITE
IN	17	16				NDD				SP09	ITE
IN	17	17				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	17	18				NDD				SP09	ITE
IN	17	19				NDD				SP09	ITE
IN	17	20				NDD				SP09	ITE
IN	17	21				NDD				SP09	ITE
IN	17	22				NDD				SP08	ITE
IN	17	23				NDD				SP09	ITE
IN	17	24				NDD				SP09	ITE
IN	17	25				NDD				SP09	ITE
IN	17	26				NDD				SP09	ITE
IN	17	27	3.76	199	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	28	3.38	201	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	29	3.31	201	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	30	4.13	198	0	PSE	7	SP05	0.04	SP09	ITE
IN	17	31	2.63	213	0	PSE	7	SP06	0.22	SP09	ITE
IN	18	1	2.61	211	0	PSE	7	SP05	-0.02	SP09	ITE
IN	18	2	2.76	205	0	PSE	7	SP06	0.00	SP09	ITE
IN	18	3	3.24	213	0	PSE	7	SP06	-0.03	SP09	ITE
IN	18	4	3.38	208	0	PSE	7	SP05	-0.25	SP09	ITE
IN	18	5				NDD				SP09	ITE
IN	18	6				NDD				SP09	ITE
IN	18	7				NDD				SP09	ITE
IN	18	8				NDD				SP09	ITE
IN	18	9				NDD				SP09	ITE
IN	18	10				NDD				SP09	ITE
IN	18	11				NDD				SP09	ITE
IN	18	12				NDD				SP09	ITE
IN	18	13				NDD				SP09	ITE
IN	18	14				NDD				SP09	ITE
IN	18	15				NDD				SP09	ITE
IN	18	16				NDD				SP09	ITE
IN	18	17				NDD				SP09	ITE
IN	18	18				NDD				SP09	ITE
IN	18	19				NDD				SP09	ITE
IN	18	20				NDD				SP09	ITE
IN	18	21				NDD				SP09	ITE
IN	18	22				NDD				SP09	ITE
IN	18	23				NDD				SP09	ITE
IN	18	24				NDD				SP09	ITE
IN	18	25	3.58	201	0	PSE	7	SP06	-0.15	SP09	ITE
IN	18	26	3.68	203	0	PSE	7	SP06	0.00	SP09	ITE
IN	18	27	3.30	200	0	PSE	7	SP06	0.24	SP09	ITE
IN	18	28	3.21	206	0	PSE	7	SP06	-0.19	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	19	1	2.94	207	0	PSE	7	SP06	-0.12	SP09	ITE
IN	19	2	3.52	207	0	PSE	7	SP05	-0.44	SP09	ITE
IN	19	3				NDD				SP09	ITE
IN	19	4				NDD				SP09	ITE
IN	19	5				NDD				SP09	ITE
IN	19	6				NDD				SP09	ITE
IN	19	7				NDD				SP09	ITE
IN	19	8				NDD				SP09	ITE
IN	19	9				NDD				SP09	ITE
IN	19	10				NDD				SP09	ITE
IN	19	11				NDD				SP09	ITE
IN	19	12				NDD				SP09	ITE
IN	19	13				NDD				SP09	ITE
IN	19	14				NDD				SP09	ITE
IN	19	15				NDD				SP09	ITE
IN	19	16				NDD				SP09	ITE
IN	19	17				NDD				SP09	ITE
IN	19	18				NDD				SP09	ITE
IN	19	19				NDD				SP09	ITE
IN	19	20				NDD				SP09	ITE
IN	19	21				NDD				SP09	ITE
IN	19	22				NDD				SP09	ITE
IN	19	23	3.70	204	0	PSE	7	SP06	-0.03	SP09	ITE
IN	19	24	3.60	198	0	PSE	7	SP06	0.39	SP09	ITE
IN	19	25	3.48	199	0	PSE	7	SP06	-0.04	SP09	ITE
IN	19	26	3.07	201	0	PSE	7	SP06	0.00	SP09	ITE
IN	20	1				NDD				SP09	ITE
IN	20	2				NDD				SP09	ITE
IN	20	3				NDD				SP09	ITE
IN	20	4				NDD				SP09	ITE
IN	20	5				NDD				SP09	ITE
IN	20	6				NDD				SP09	ITE
IN	20	7				NDD				SP09	ITE
IN	20	8				NDD				SP09	ITE
IN	20	9				NDD				SP09	ITE
IN	20	10				NDD				SP09	ITE
IN	20	11				NDD				SP09	ITE
IN	20	12				NDD				SP09	ITE
IN	20	13				NDD				SP09	ITE
IN	20	14				NDD				SP09	ITE
IN	20	15				NDD				SP09	ITE
IN	20	16				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	20	17				NDD				SP09	ITE
IN	20	18				NDD				SP09	ITE
IN	20	19				NDD				SP08	ITE
IN	20	20				NDD				SP09	ITE
IN	20	21				NDD				SP09	ITE
IN	20	22				NDD				SP09	ITE
OUT	1	1				NDD				SP09	OTE
OUT	1	2				NDD				SP09	OTE
OUT	1	3				NDD				SP09	OTE
OUT	1	4				NDD				SP09	OTE
OUT	1	5				NDD				SP09	OTE
OUT	1	6				NDD				SP09	OTE
OUT	1	7				NDD				SP09	OTE
OUT	1	8				NDD				SP09	OTE
OUT	1	9				NDD				SP09	OTE
OUT	1	10				NDD				SP09	OTE
OUT	1	11				NDD				SP09	OTE
OUT	1	11				RAD		SP01	30.00	SP09	OTE
OUT	1	12				RES		SP02	18.11	SP02	OTE
OUT	1	12				RES		SP05	2.07	SP09	OTE
OUT	1	13				NDD				SP09	OTE
OUT	1	14				NDD				SP09	OTE
OUT	1	15				NDD				SP09	OTE
OUT	1	16				NDD				SP09	OTE
OUT	1	17				NDD				SP09	OTE
OUT	1	18				NDD				SP09	OTE
OUT	1	19				NDD				SP09	OTE
OUT	1	20				NDD				SP09	OTE
OUT	1	21				NDD				SP09	OTE
OUT	1	22				RES		SP03	2.39	SP03	OTE
OUT	1	22				RES		SP07	37.78	SP09	OTE
OUT	1	23				NDD				SP09	OTE
OUT	1	24				NDD				SP09	OTE
OUT	1	25				NDD				SP09	OTE
OUT	1	26				NDD				SP09	OTE
OUT	1	27				NDD				SP09	OTE
OUT	1	28				NDD				SP09	OTE
OUT	1	29				NDD				SP09	OTE
OUT	1	30				NDD				SP09	OTE
OUT	1	31				NDD				SP09	OTE
OUT	1	32				NDD				SP09	OTE
OUT	1	33				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	1	34				NDD				SP09	OTE
OUT	1	35				NDD				SP09	OTE
OUT	1	36				NDD				SP09	OTE
OUT	2	1				NDD				SP09	OTE
OUT	2	2				NDD				SP09	OTE
OUT	2	3				NDD				SP09	OTE
OUT	2	4				NDD				SP09	OTE
OUT	2	5				NDD				SP09	OTE
OUT	2	6				NDD				SP09	OTE
OUT	2	7				NDD				SP09	OTE
OUT	2	8				NDD				SP09	OTE
OUT	2	9				NDD				SP09	OTE
OUT	2	10				NDD				SP09	OTE
OUT	2	11				NDD				SP09	OTE
OUT	2	12				NDD				SP09	OTE
OUT	2	13				NDD				SP09	OTE
OUT	2	14				NDD				SP09	OTE
OUT	2	15				NDD				SP09	OTE
OUT	2	16				NDD				SP09	OTE
OUT	2	17				NDD				SP09	OTE
OUT	2	18				NDD				SP09	OTE
OUT	2	19				NDD				SP09	OTE
OUT	2	20				NDD				SP09	OTE
OUT	2	21				NDD				SP09	OTE
OUT	2	22				NDD				SP09	OTE
OUT	2	23				NDD				SP09	OTE
OUT	2	24				NDD				SP09	OTE
OUT	2	25				NDD				SP09	OTE
OUT	2	26				NDD				SP09	OTE
OUT	2	27				NDD				SP09	OTE
OUT	2	28				NDD				SP09	OTE
OUT	2	29				NDD				SP09	OTE
OUT	2	30				NDD				SP09	OTE
OUT	2	31				NDD				SP09	OTE
OUT	2	32				NDD				SP09	OTE
OUT	2	33				NDD				SP09	OTE
OUT	2	34				NDD				SP09	OTE
OUT	2	35				NDD				SP09	OTE
OUT	2	36				NDD				SP09	OTE
OUT	2	37				NDD				SP09	OTE
OUT	2	38				NDD				SP09	OTE
OUT	2	39				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	2	40				NDD				SP09	OTE
OUT	3	1				NDD				SP09	OTE
OUT	3	2				NDD				SP09	OTE
OUT	3	3				NDD				SP09	OTE
OUT	3	3				RAD		SP03	1.66	SP09	OTE
OUT	3	4				NDD				SP09	OTE
OUT	3	5				NDD				SP09	OTE
OUT	3	6				NDD				SP09	OTE
OUT	3	7				NDD				SP09	OTE
OUT	3	8				NDD				SP09	OTE
OUT	3	9				NDD				SP09	OTE
OUT	3	10				NDD				SP09	OTE
OUT	3	11				NDD				SP09	OTE
OUT	3	12				NDD				SP09	OTE
OUT	3	13				NDD				SP09	OTE
OUT	3	14				NDD				SP09	OTE
OUT	3	15				NDD				SP09	OTE
OUT	3	16				NDD				SP09	OTE
OUT	3	17				NDD				SP09	OTE
OUT	3	18				NDD				SP09	OTE
OUT	3	19				NDD				SP09	OTE
OUT	3	20				NDD				SP09	OTE
OUT	3	21				NDD				SP09	OTE
OUT	3	22				NDD				SP09	OTE
OUT	3	23				NDD				SP09	OTE
OUT	3	24				NDD				SP09	OTE
OUT	3	25				NDD				SP09	OTE
OUT	3	26				NDD				SP09	OTE
OUT	3	27				NDD				SP09	OTE
OUT	3	28				NDD				SP09	OTE
OUT	3	29				NDD				SP09	OTE
OUT	3	30				NDD				SP09	OTE
OUT	3	31				NDD				SP09	OTE
OUT	3	32				NDD				SP09	OTE
OUT	3	33				NDD				SP09	OTE
OUT	3	34				NDD				SP09	OTE
OUT	3	35				NDD				SP09	OTE
OUT	3	36				NDD				SP09	OTE
OUT	3	37				NDD				SP09	OTE
OUT	3	38				NDD				SP09	OTE
OUT	3	39				NDD				SP09	OTE
OUT	3	40				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	3	41				NDD				SP09	OTE
OUT	4	1				NDD				SP09	OTE
OUT	4	2				NDD				SP09	OTE
OUT	4	3				NDD				SP09	OTE
OUT	4	4				NDD				SP09	OTE
OUT	4	5				NDD				SP09	OTE
OUT	4	6				NDD				SP09	OTE
OUT	4	7				NDD				SP09	OTE
OUT	4	8				NDD				SP09	OTE
OUT	4	9				NDD				SP09	OTE
OUT	4	10				NDD				SP09	OTE
OUT	4	11				NDD				SP09	OTE
OUT	4	12				NDD				SP09	OTE
OUT	4	13				NDD				SP09	OTE
OUT	4	14				NDD				SP09	OTE
OUT	4	15				NDD				SP09	OTE
OUT	4	16				NDD				SP09	OTE
OUT	4	17				NDD				SP09	OTE
OUT	4	18				NDD				SP09	OTE
OUT	4	19				NDD				SP09	OTE
OUT	4	20				NDD				SP09	OTE
OUT	4	21				NDD				SP09	OTE
OUT	4	22				NDD				SP09	OTE
OUT	4	23				NDD				SP09	OTE
OUT	4	24				NDD				SP09	OTE
OUT	4	25				NDD				SP09	OTE
OUT	4	26				NDD				SP09	OTE
OUT	4	27				NDD				SP09	OTE
OUT	4	28				NDD				SP09	OTE
OUT	4	29				NDD				SP09	OTE
OUT	4	30				NDD				SP09	OTE
OUT	4	31				NDD				SP09	OTE
OUT	4	32				NDD				SP09	OTE
OUT	4	33				NDD				SP09	OTE
OUT	4	34				NDD				SP09	OTE
OUT	4	35				NDD				SP09	OTE
OUT	4	36				NDD				SP09	OTE
OUT	4	37				NDD				SP09	OTE
OUT	4	38				NDD				SP09	OTE
OUT	4	39				NDD				SP09	OTE
OUT	4	40				NDD				SP09	OTE
OUT	5	1				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	5	2				NDD				SP09	OTE
OUT	5	3				NDD				SP09	OTE
OUT	5	4				NDD				SP09	OTE
OUT	5	5				NDD				SP09	OTE
OUT	5	6				NDD				SP09	OTE
OUT	5	7				NDD				SP09	OTE
OUT	5	8				NDD				SP09	OTE
OUT	5	9				NDD				SP09	OTE
OUT	5	10				NDD				SP09	OTE
OUT	5	11				NDD				SP09	OTE
OUT	5	12				NDD				SP09	OTE
OUT	5	13				NDD				SP09	OTE
OUT	5	14				NDD				SP09	OTE
OUT	5	15				NDD				SP09	OTE
OUT	5	16				NDD				SP09	OTE
OUT	5	17				NDD				SP09	OTE
OUT	5	18				NDD				SP09	OTE
OUT	5	19				NDD				SP09	OTE
OUT	5	20				NDD				SP09	OTE
OUT	5	21				NDD				SP09	OTE
OUT	5	22				NDD				SP09	OTE
OUT	5	23				NDD				SP09	OTE
OUT	5	24				NDD				SP09	OTE
OUT	5	25				NDD				SP09	OTE
OUT	5	26				NDD				SP09	OTE
OUT	5	27				NDD				SP09	OTE
OUT	5	28				NDD				SP09	OTE
OUT	5	29				NDD				SP09	OTE
OUT	5	30				NDD				SP09	OTE
OUT	5	31				NDD				SP09	OTE
OUT	5	32				NDD				SP09	OTE
OUT	5	33				NDD				SP09	OTE
OUT	5	34				NDD				SP09	OTE
OUT	5	35				NDD				SP09	OTE
OUT	5	36				NDD				SP09	OTE
OUT	5	37				NDD				SP09	OTE
OUT	5	38				NDD				SP09	OTE
OUT	5	39				NDD				SP09	OTE
OUT	5	40				NDD				SP09	OTE
OUT	5	41				NDD				SP09	OTE
OUT	6	1				NDD				SP09	OTE
OUT	6	2				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	6	3				NDD				SP09	OTE
OUT	6	4				NDD				SP09	OTE
OUT	6	5				NDD				SP09	OTE
OUT	6	6				NDD				SP09	OTE
OUT	6	7				NDD				SP09	OTE
OUT	6	8				NDD				SP09	OTE
OUT	6	9				NDD				SP09	OTE
OUT	6	10				NDD				SP09	OTE
OUT	6	11				NDD				SP09	OTE
OUT	6	12				NDD				SP09	OTE
OUT	6	13				NDD				SP09	OTE
OUT	6	14				NDD				SP09	OTE
OUT	6	15				NDD				SP09	OTE
OUT	6	16				NDD				SP09	OTE
OUT	6	17				NDD				SP09	OTE
OUT	6	18				NDD				SP09	OTE
OUT	6	19				NDD				SP09	OTE
OUT	6	20				NDD				SP09	OTE
OUT	6	21				NDD				SP09	OTE
OUT	6	22				NDD				SP09	OTE
OUT	6	23				NDD				SP09	OTE
OUT	6	24				NDD				SP09	OTE
OUT	6	25				NDD				SP09	OTE
OUT	6	26				NDD				SP09	OTE
OUT	6	27				NDD				SP09	OTE
OUT	6	28				NDD				SP09	OTE
OUT	6	29				NDD				SP09	OTE
OUT	6	30				NDD				SP09	OTE
OUT	6	31				NDD				SP09	OTE
OUT	6	32				NDD				SP09	OTE
OUT	6	33				NDD				SP09	OTE
OUT	6	34				NDD				SP09	OTE
OUT	6	35				NDD				SP09	OTE
OUT	6	36				NDD				SP09	OTE
OUT	6	37				NDD				SP09	OTE
OUT	6	38				NDD				SP09	OTE
OUT	6	39				NDD				SP09	OTE
OUT	6	40				NDD				SP09	OTE
OUT	6	41				NDD				SP09	OTE
OUT	6	42				NDD				SP09	OTE
OUT	7	1				NDD				SP09	OTE
OUT	7	2				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	7	3				NDD				SP09	OTE
OUT	7	4				NDD				SP09	OTE
OUT	7	5				NDD				SP09	OTE
OUT	7	6				NDD				SP09	OTE
OUT	7	7				NDD				SP09	OTE
OUT	7	8				NDD				SP09	OTE
OUT	7	9				NDD				SP09	OTE
OUT	7	10				NDD				SP09	OTE
OUT	7	11				NDD				SP09	OTE
OUT	7	12				NDD				SP09	OTE
OUT	7	13				NDD				SP09	OTE
OUT	7	14				NDD				SP09	OTE
OUT	7	15				NDD				SP09	OTE
OUT	7	16				NDD				SP09	OTE
OUT	7	17				NDD				SP09	OTE
OUT	7	18				NDD				SP09	OTE
OUT	7	19				NDD				SP09	OTE
OUT	7	20				NDD				SP09	OTE
OUT	7	21				NDD				SP09	OTE
OUT	7	22				NDD				SP09	OTE
OUT	7	23				NDD				SP09	OTE
OUT	7	24				RIC					
OUT	7	24				NDD				SP09	OTE
OUT	7	25				NDD				SP09	OTE
OUT	7	26				NDD				SP09	OTE
OUT	7	27				NDD				SP09	OTE
OUT	7	28				NDD				SP09	OTE
OUT	7	29				NDD				SP09	OTE
OUT	7	30				NDD				SP09	OTE
OUT	7	31				NDD				SP09	OTE
OUT	7	32				NDD				SP09	OTE
OUT	7	33				NDD				SP09	OTE
OUT	7	34				NDD				SP09	OTE
OUT	7	35				NDD				SP09	OTE
OUT	7	36				NDD				SP09	OTE
OUT	7	37				NDD				SP09	OTE
OUT	7	38				NDD				SP09	OTE
OUT	7	39				NDD				SP09	OTE
OUT	7	40				NDD				SP09	OTE
OUT	7	41				NDD				SP09	OTE
OUT	8	1				NDD				SP09	OTE
OUT	8	2				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	8	3				NDD				SP09	OTE
OUT	8	4				NDD				SP09	OTE
OUT	8	5				NDD				SP09	OTE
OUT	8	6				NDD				SP09	OTE
OUT	8	7				NDD				SP09	OTE
OUT	8	8				NDD				SP09	OTE
OUT	8	9				NDD				SP09	OTE
OUT	8	10				NDD				SP09	OTE
OUT	8	11				NDD				SP09	OTE
OUT	8	12				NDD				SP09	OTE
OUT	8	13				NDD				SP09	OTE
OUT	8	14				NDD				SP09	OTE
OUT	8	15				NDD				SP09	OTE
OUT	8	16				NDD				SP09	OTE
OUT	8	17				NDD				SP09	OTE
OUT	8	18				NDD				SP09	OTE
OUT	8	19				NDD				SP09	OTE
OUT	8	20				NDD				SP09	OTE
OUT	8	21				NDD				SP09	OTE
OUT	8	22				NDD				SP09	OTE
OUT	8	23				NDD				SP09	OTE
OUT	8	24				NDD				SP09	OTE
OUT	8	25				NDD				SP09	OTE
OUT	8	26				NDD				SP09	OTE
OUT	8	27				NDD				SP09	OTE
OUT	8	28				NDD				SP09	OTE
OUT	8	29				NDD				SP09	OTE
OUT	8	30				NDD				SP09	OTE
OUT	8	31				NDD				SP09	OTE
OUT	8	32				NDD				SP09	OTE
OUT	8	33				NDD				SP09	OTE
OUT	8	34				NDD				SP09	OTE
OUT	8	35				NDD				SP09	OTE
OUT	8	36				NDD				SP09	OTE
OUT	8	37				NDD				SP09	OTE
OUT	8	38				NDD				SP09	OTE
OUT	8	39				NDD				SP09	OTE
OUT	8	40				NDD				SP09	OTE
OUT	9	1				NDD				SP09	OTE
OUT	9	2				NDD				SP09	OTE
OUT	9	3				NDD				SP09	OTE
OUT	9	4				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	9	5				NDD				SP09	OTE
OUT	9	6				NDD				SP09	OTE
OUT	9	7				NDD				SP09	OTE
OUT	9	8				NDD				SP09	OTE
OUT	9	9				NDD				SP09	OTE
OUT	9	10				NDD				SP09	OTE
OUT	9	11				NDD				SP09	OTE
OUT	9	12				NDD				SP09	OTE
OUT	9	13				NDD				SP09	OTE
OUT	9	14				NDD				SP09	OTE
OUT	9	15				NDD				SP09	OTE
OUT	9	16				NDD				SP09	OTE
OUT	9	17				NDD				SP09	OTE
OUT	9	18				NDD				SP09	OTE
OUT	9	19				NDD				SP09	OTE
OUT	9	20				NDD				SP09	OTE
OUT	9	21				NDD				SP09	OTE
OUT	9	22				NDD				SP09	OTE
OUT	9	23				NDD				SP09	OTE
OUT	9	24				NDD				SP09	OTE
OUT	9	25				NDD				SP09	OTE
OUT	9	26				NDD				SP09	OTE
OUT	9	27				NDD				SP09	OTE
OUT	9	28				NDD				SP09	OTE
OUT	9	29				NDD				SP09	OTE
OUT	9	30				NDD				SP09	OTE
OUT	9	31				NDD				SP09	OTE
OUT	9	32				NDD				SP09	OTE
OUT	9	33				NDD				SP09	OTE
OUT	9	34				NDD				SP09	OTE
OUT	9	35				NDD				SP09	OTE
OUT	9	36				NDD				SP09	OTE
OUT	9	37				NDD				SP09	OTE
OUT	10	1				NDD				SP09	OTE
OUT	10	2				NDD				SP09	OTE
OUT	10	3				NDD				SP09	OTE
OUT	10	4				NDD				SP09	OTE
OUT	10	5				NDD				SP09	OTE
OUT	10	6				NDD				SP09	OTE
OUT	10	7				NDD				SP09	OTE
OUT	10	8				NDD				SP09	OTE
OUT	10	9				NDD				SP09	OTE

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11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	10	10				NDD				SP09	OTE
OUT	10	11				RIC				SP08	OTE
OUT	10	11				NDD				SP09	OTE
OUT	10	12				NDD				SP09	OTE
OUT	10	13				NDD				SP09	OTE
OUT	10	14				NDD				SP09	OTE
OUT	10	15				NDD				SP09	OTE
OUT	10	16				NDD				SP09	OTE
OUT	10	17				NDD				SP09	OTE
OUT	10	18				NDD				SP09	OTE
OUT	10	19				NDD				SP09	OTE
OUT	10	20				NDD				SP09	OTE
OUT	10	21				NDD				SP09	OTE
OUT	10	22				NDD				SP09	OTE
OUT	10	23				NDD				SP09	OTE
OUT	10	24				NDD				SP09	OTE
OUT	10	25				NDD				SP09	OTE
OUT	10	26				NDD				SP09	OTE
OUT	10	27				NDD				SP09	OTE
OUT	10	28				NDD				SP09	OTE
OUT	10	29				NDD				SP09	OTE
OUT	10	30	20.65	181	0	DNT	M1	SP09	0.22	SP09	OTE
OUT	10	31				NDD				SP09	OTE
OUT	10	32				NDD				SP09	OTE
OUT	10	33				NDD				SP09	OTE
OUT	10	34				NDD				SP09	OTE
OUT	10	35				NDD				SP09	OTE
OUT	10	36				NDD				SP09	OTE
OUT	10	37				NDD				SP09	OTE
OUT	10	38				NDD				SP09	OTE
OUT	11	1				NDD				SP09	OTE
OUT	11	2				NDD				SP09	OTE
OUT	11	3				NDD				SP09	OTE
OUT	11	4				NDD				SP09	OTE
OUT	11	5				NDD				SP09	OTE
OUT	11	6				NDD				SP09	OTE
OUT	11	7				NDD				SP09	OTE
OUT	11	8				NDD				SP09	OTE
OUT	11	9				NDD				SP09	OTE
OUT	11	10				NDD				SP09	OTE
OUT	11	11				NDD				SP09	OTE
OUT	11	12				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	11	13				NDD				SP09	OTE
OUT	11	14				NDD				SP09	OTE
OUT	11	15				NDD				SP09	OTE
OUT	11	16				NDD				SP09	OTE
OUT	11	17				NDD				SP09	OTE
OUT	11	18				NDD				SP09	OTE
OUT	11	19				NDD				SP09	OTE
OUT	11	20				NDD				SP09	OTE
OUT	11	21				NDD				SP09	OTE
OUT	11	22				NDD				SP09	OTE
OUT	11	23				NDD				SP09	OTE
OUT	11	24				NDD				SP09	OTE
OUT	11	25				NDD				SP09	OTE
OUT	11	26				NDD				SP09	OTE
OUT	11	27				NDD				SP09	OTE
OUT	11	28				NDD				SP09	OTE
OUT	11	29				NDD				SP09	OTE
OUT	11	30				NDD				SP09	OTE
OUT	11	31				NDD				SP09	OTE
OUT	11	32				NDD				SP09	OTE
OUT	11	33				NDD				SP09	OTE
OUT	11	34				NDD				SP09	OTE
OUT	11	35				NDD				SP09	OTE
OUT	11	36				NDD				SP09	OTE
OUT	11	37				NDD				SP09	OTE
OUT	11	38				NDD				SP09	OTE
OUT	11	39				NDD				SP09	OTE
OUT	12	1				NDD				SP09	OTE
OUT	12	2				NDD				SP09	OTE
OUT	12	3				NDD				SP09	OTE
OUT	12	4				NDD				SP09	OTE
OUT	12	5				NDD				SP09	OTE
OUT	12	6				NDD				SP09	OTE
OUT	12	7				NDD				SP09	OTE
OUT	12	8				NDD				SP09	OTE
OUT	12	9				NDD				SP09	OTE
OUT	12	10				NDD				SP09	OTE
OUT	12	11				NDD				SP09	OTE
OUT	12	12				NDD				SP09	OTE
OUT	12	13				NDD				SP09	OTE
OUT	12	14				NDD				SP09	OTE
OUT	12	15				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	12	16				NDD				SP09	OTE
OUT	12	17				NDD				SP09	OTE
OUT	12	18				NDD				SP09	OTE
OUT	12	19				NDD				SP09	OTE
OUT	12	20				NDD				SP09	OTE
OUT	12	21				NDD				SP09	OTE
OUT	12	22				NDD				SP09	OTE
OUT	12	23				NDD				SP09	OTE
OUT	12	24				NDD				SP09	OTE
OUT	12	25				NDD				SP09	OTE
OUT	12	26				NDD				SP09	OTE
OUT	12	27				NDD				SP09	OTE
OUT	12	28				NDD				SP09	OTE
OUT	12	29				NDD				SP09	OTE
OUT	12	30				NDD				SP09	OTE
OUT	12	31				NDD				SP09	OTE
OUT	12	32				NDD				SP09	OTE
OUT	12	33				NDD				SP09	OTE
OUT	12	34				NDD				SP09	OTE
OUT	12	35				NDD				SP09	OTE
OUT	12	36				NDD				SP09	OTE
OUT	12	37				NDD				SP09	OTE
OUT	12	38				NDD				SP09	OTE
OUT	13	1				NDD				SP09	OTE
OUT	13	2				NDD				SP09	OTE
OUT	13	3				NDD				SP09	OTE
OUT	13	4				NDD				SP09	OTE
OUT	13	5				NDD				SP09	OTE
OUT	13	6				NDD				SP09	OTE
OUT	13	7				NDD				SP09	OTE
OUT	13	8				NDD				SP09	OTE
OUT	13	9				NDD				SP09	OTE
OUT	13	10				NDD				SP09	OTE
OUT	13	11				NDD				SP09	OTE
OUT	13	12				NDD				SP09	OTE
OUT	13	13				NDD				SP09	OTE
OUT	13	14				NDD				SP09	OTE
OUT	13	15				NDD				SP09	OTE
OUT	13	16				NDD				SP09	OTE
OUT	13	17				NDD				SP09	OTE
OUT	13	18				NDD				SP09	OTE
OUT	13	19				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	13	20				NDD				SP09	OTE
OUT	13	21				NDD				SP09	OTE
OUT	13	22				NDD				SP09	OTE
OUT	13	23				NDD				SP09	OTE
OUT	13	24				NDD				SP09	OTE
OUT	13	25				NDD				SP09	OTE
OUT	13	26				NDD				SP09	OTE
OUT	13	27				NDD				SP09	OTE
OUT	13	28				NDD				SP09	OTE
OUT	13	29				NDD				SP09	OTE
OUT	13	30				NDD				SP09	OTE
OUT	13	31				NDD				SP09	OTE
OUT	13	32				NDD				SP09	OTE
OUT	13	33				NDD				SP09	OTE
OUT	13	34				NDD				SP09	OTE
OUT	13	35				NDD				SP09	OTE
OUT	13	36				NDD				SP09	OTE
OUT	13	37				NDD				SP09	OTE
OUT	14	1				NDD				SP09	OTE
OUT	14	2				NDD				SP09	OTE
OUT	14	3				NDD				SP09	OTE
OUT	14	4				NDD				SP09	OTE
OUT	14	5				NDD				SP09	OTE
OUT	14	6				NDD				SP09	OTE
OUT	14	7				NDD				SP09	OTE
OUT	14	8				NDD				SP09	OTE
OUT	14	9				NDD				SP09	OTE
OUT	14	10				NDD				SP09	OTE
OUT	14	11				NDD				SP09	OTE
OUT	14	12				NDD				SP09	OTE
OUT	14	13				NDD				SP09	OTE
OUT	14	14				NDD				SP09	OTE
OUT	14	15				NDD				SP09	OTE
OUT	14	16				NDD				SP09	OTE
OUT	14	17				NDD				SP09	OTE
OUT	14	18				NDD				SP09	OTE
OUT	14	19				NDD				SP09	OTE
OUT	14	20				NDD				SP09	OTE
OUT	14	21				NDD				SP09	OTE
OUT	14	22				NDD				SP09	OTE
OUT	14	23				NDD				SP09	OTE
OUT	14	24				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	14	25				NDD				SP09	OTE
OUT	14	26				NDD				SP09	OTE
OUT	14	27				NDD				SP09	OTE
OUT	14	28				NDD				SP09	OTE
OUT	14	29				NDD				SP09	OTE
OUT	14	30				NDD				SP09	OTE
OUT	14	31				NDD				SP09	OTE
OUT	14	32				NDD				SP09	OTE
OUT	14	33				NDD				SP09	OTE
OUT	14	34				NDD				SP09	OTE
OUT	14	35				NDD				SP09	OTE
OUT	14	36				NDD				SP09	OTE
OUT	15	1				NDD				SP09	OTE
OUT	15	2				NDD				SP09	OTE
OUT	15	3				NDD				SP09	OTE
OUT	15	4				NDD				SP09	OTE
OUT	15	5				NDD				SP09	OTE
OUT	15	6				NDD				SP09	OTE
OUT	15	7				NDD				SP09	OTE
OUT	15	8				NDD				SP09	OTE
OUT	15	9				NDD				SP09	OTE
OUT	15	10				NDD				SP09	OTE
OUT	15	11				NDD				SP09	OTE
OUT	15	12				NDD				SP09	OTE
OUT	15	13				NDD				SP09	OTE
OUT	15	14				NDD				SP09	OTE
OUT	15	15				NDD				SP09	OTE
OUT	15	16				NDD				SP09	OTE
OUT	15	17				NDD				SP09	OTE
OUT	15	18				NDD				SP09	OTE
OUT	15	19				NDD				SP09	OTE
OUT	15	20				NDD				SP09	OTE
OUT	15	21				NDD				SP09	OTE
OUT	15	22				NDD				SP09	OTE
OUT	15	23				NDD				SP09	OTE
OUT	15	24				NDD				SP09	OTE
OUT	15	25				NDD				SP09	OTE
OUT	15	26				NDD				SP09	OTE
OUT	15	27				NDD				SP09	OTE
OUT	15	28				NDD				SP09	OTE
OUT	15	29				NDD				SP09	OTE
OUT	15	30				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	15	31				NDD				SP09	OTE
OUT	15	32				NDD				SP09	OTE
OUT	15	33				NDD				SP09	OTE
OUT	16	1				NDD				SP09	OTE
OUT	16	2				NDD				SP09	OTE
OUT	16	3				NDD				SP09	OTE
OUT	16	4				NDD				SP09	OTE
OUT	16	5				NDD				SP09	OTE
OUT	16	6				NDD				SP09	OTE
OUT	16	7				NDD				SP09	OTE
OUT	16	8				NDD				SP09	OTE
OUT	16	9				NDD				SP09	OTE
OUT	16	10				NDD				SP09	OTE
OUT	16	11				NDD				SP09	OTE
OUT	16	12				NDD				SP09	OTE
OUT	16	13				NDD				SP09	OTE
OUT	16	14				NDD				SP09	OTE
OUT	16	15				NDD				SP09	OTE
OUT	16	16				NDD				SP09	OTE
OUT	16	17				NDD				SP09	OTE
OUT	16	18				NDD				SP09	OTE
OUT	16	19				NDD				SP09	OTE
OUT	16	20				NDD				SP09	OTE
OUT	16	21				NDD				SP09	OTE
OUT	16	22				NDD				SP09	OTE
OUT	16	23				NDD				SP09	OTE
OUT	16	24				NDD				SP09	OTE
OUT	16	25				NDD				SP09	OTE
OUT	16	26				NDD				SP09	OTE
OUT	16	27				NDD				SP09	OTE
OUT	16	28				NDD				SP09	OTE
OUT	16	29				NDD				SP09	OTE
OUT	16	30				NDD				SP09	OTE
OUT	16	31				NDD				SP09	OTE
OUT	16	32				NDD				SP09	OTE
OUT	17	1				NDD				SP09	OTE
OUT	17	2				NDD				SP09	OTE
OUT	17	3				NDD				SP09	OTE
OUT	17	4				NDD				SP09	OTE
OUT	17	5				NDD				SP09	OTE
OUT	17	6				NDD				SP09	OTE
OUT	17	7				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	17	8				NDD				SP09	OTE
OUT	17	9				NDD				SP09	OTE
OUT	17	10				NDD				SP09	OTE
OUT	17	11				NDD				SP09	OTE
OUT	17	12				NDD				SP09	OTE
OUT	17	13				NDD				SP09	OTE
OUT	17	14				NDD				SP09	OTE
OUT	17	15				NDD				SP09	OTE
OUT	17	16				NDD				SP09	OTE
OUT	17	17				NDD				SP09	OTE
OUT	17	18				NDD				SP09	OTE
OUT	17	19				NDD				SP09	OTE
OUT	17	20				NDD				SP09	OTE
OUT	17	21				NDD				SP09	OTE
OUT	17	22				NDD				SP09	OTE
OUT	17	23				NDD				SP09	OTE
OUT	17	24				NDD				SP09	OTE
OUT	17	25				NDD				SP09	OTE
OUT	17	26				NDD				SP09	OTE
OUT	17	27				NDD				SP09	OTE
OUT	17	28				NDD				SP09	OTE
OUT	17	29				NDD				SP09	OTE
OUT	17	30				NDD				SP09	OTE
OUT	17	31				NDD				SP09	OTE
OUT	18	1				NDD				SP09	OTE
OUT	18	2				NDD				SP09	OTE
OUT	18	3				NDD				SP09	OTE
OUT	18	4				NDD				SP09	OTE
OUT	18	5				NDD				SP09	OTE
OUT	18	6				NDD				SP09	OTE
OUT	18	7				NDD				SP09	OTE
OUT	18	8				NDD				SP09	OTE
OUT	18	9				NDD				SP09	OTE
OUT	18	10				NDD				SP09	OTE
OUT	18	11				NDD				SP09	OTE
OUT	18	12				NDD				SP09	OTE
OUT	18	13				NDD				SP09	OTE
OUT	18	14				NDD				SP09	OTE
OUT	18	15				NDD				SP09	OTE
OUT	18	16				NDD				SP09	OTE
OUT	18	17				NDD				SP09	OTE
OUT	18	18				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1A
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	18	19				NDD				SP09	OTE
OUT	18	20				NDD				SP09	OTE
OUT	18	21				NDD				SP09	OTE
OUT	18	22				NDD				SP09	OTE
OUT	18	23				NDD				SP09	OTE
OUT	18	24				NDD				SP09	OTE
OUT	18	25				NDD				SP09	OTE
OUT	18	26				NDD				SP09	OTE
OUT	18	27				NDD				SP09	OTE
OUT	18	28				NDD				SP09	OTE
OUT	19	1				NDD				SP09	OTE
OUT	19	2				NDD				SP09	OTE
OUT	19	3				NDD				SP09	OTE
OUT	19	4				NDD				SP09	OTE
OUT	19	5				NDD				SP09	OTE
OUT	19	6				NDD				SP09	OTE
OUT	19	7				NDD				SP09	OTE
OUT	19	8				NDD				SP09	OTE
OUT	19	9				NDD				SP09	OTE
OUT	19	10				NDD				SP09	OTE
OUT	19	11				NDD				SP09	OTE
OUT	19	12				NDD				SP09	OTE
OUT	19	13				NDD				SP09	OTE
OUT	19	14				NDD				SP09	OTE
OUT	19	15				NDD				SP09	OTE
OUT	19	16				NDD				SP09	OTE
OUT	19	17				NDD				SP09	OTE
OUT	19	18				NDD				SP09	OTE
OUT	19	19				NDD				SP09	OTE
OUT	19	20				NDD				SP09	OTE
OUT	19	21				NDD				SP09	OTE
OUT	19	22				NDD				SP09	OTE
OUT	19	23				NDD				SP09	OTE
OUT	19	24				NDD				SP09	OTE
OUT	19	25				NDD				SP09	OTE
OUT	19	26				NDD				SP09	OTE
OUT	20	1				NDD				SP09	OTE
OUT	20	2				NDD				SP09	OTE
OUT	20	3				NDD				SP09	OTE
OUT	20	4				NDD				SP09	OTE
OUT	20	5				NDD				SP09	OTE
OUT	20	6				NDD				SP09	OTE

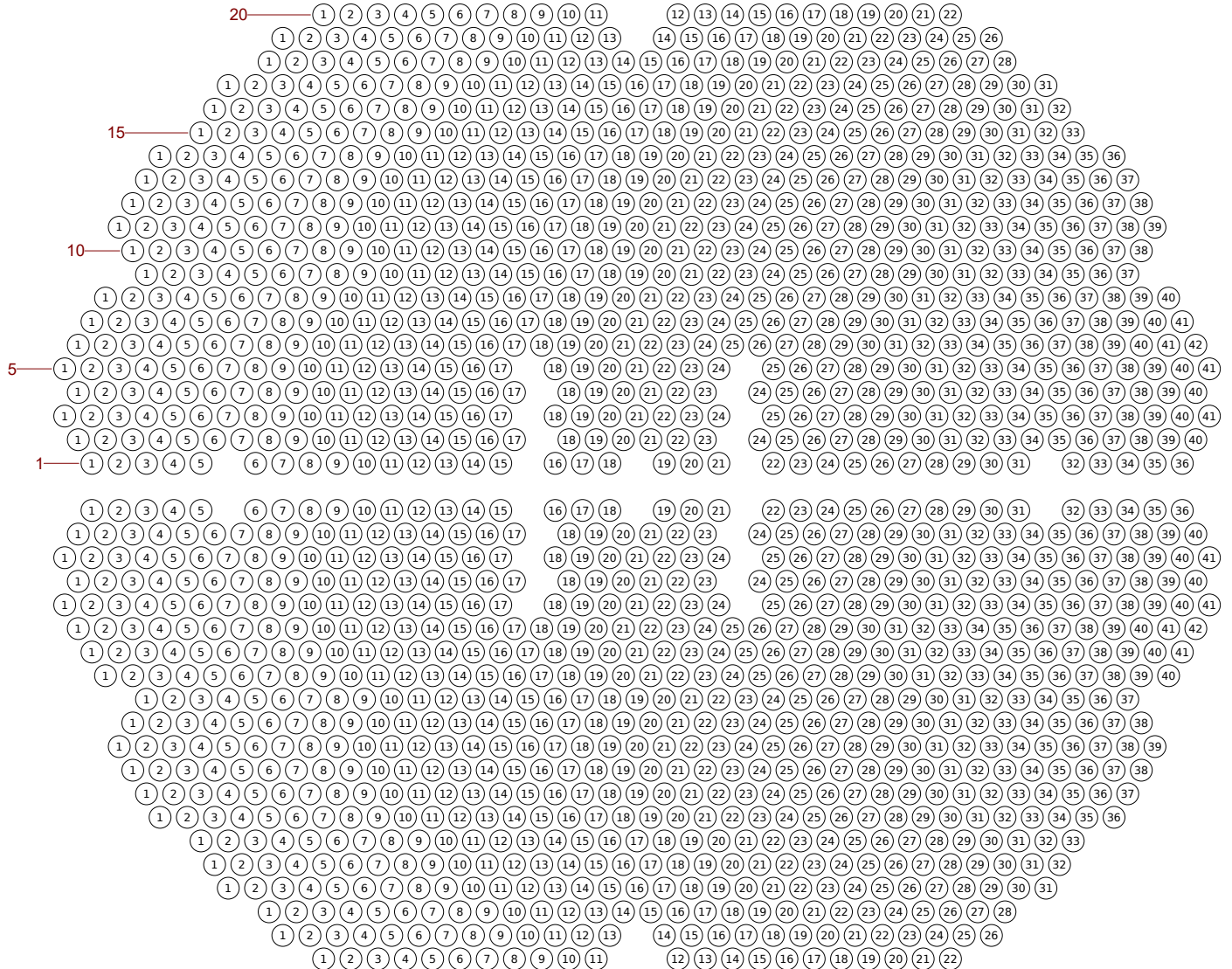
Data Report
 East Kentucky Power Co-Op
 Spurlock Station
 Unit 2
 LPFWH-1A
 11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	20	7				NDD				SP09	OTE
OUT	20	8				NDD				SP09	OTE
OUT	20	9				NDD				SP09	OTE
OUT	20	10				NDD				SP09	OTE
OUT	20	11				NDD				SP09	OTE
OUT	20	12				NDD				SP09	OTE
OUT	20	13				NDD				SP09	OTE
OUT	20	14				NDD				SP09	OTE
OUT	20	15				NDD				SP09	OTE
OUT	20	16				NDD				SP09	OTE
OUT	20	17				NDD				SP09	OTE
OUT	20	18				NDD				SP09	OTE
OUT	20	19				NDD				SP09	OTE
OUT	20	20				NDD				SP09	OTE
OUT	20	21				NDD				SP09	OTE
OUT	20	22				NDD				SP09	OTE

TUBESHEET LAYOUT MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-1A

VIEW FROM:INLET/OUTLET



Model LPFWH-1A (1,436 tubes)
1,436 open tubes

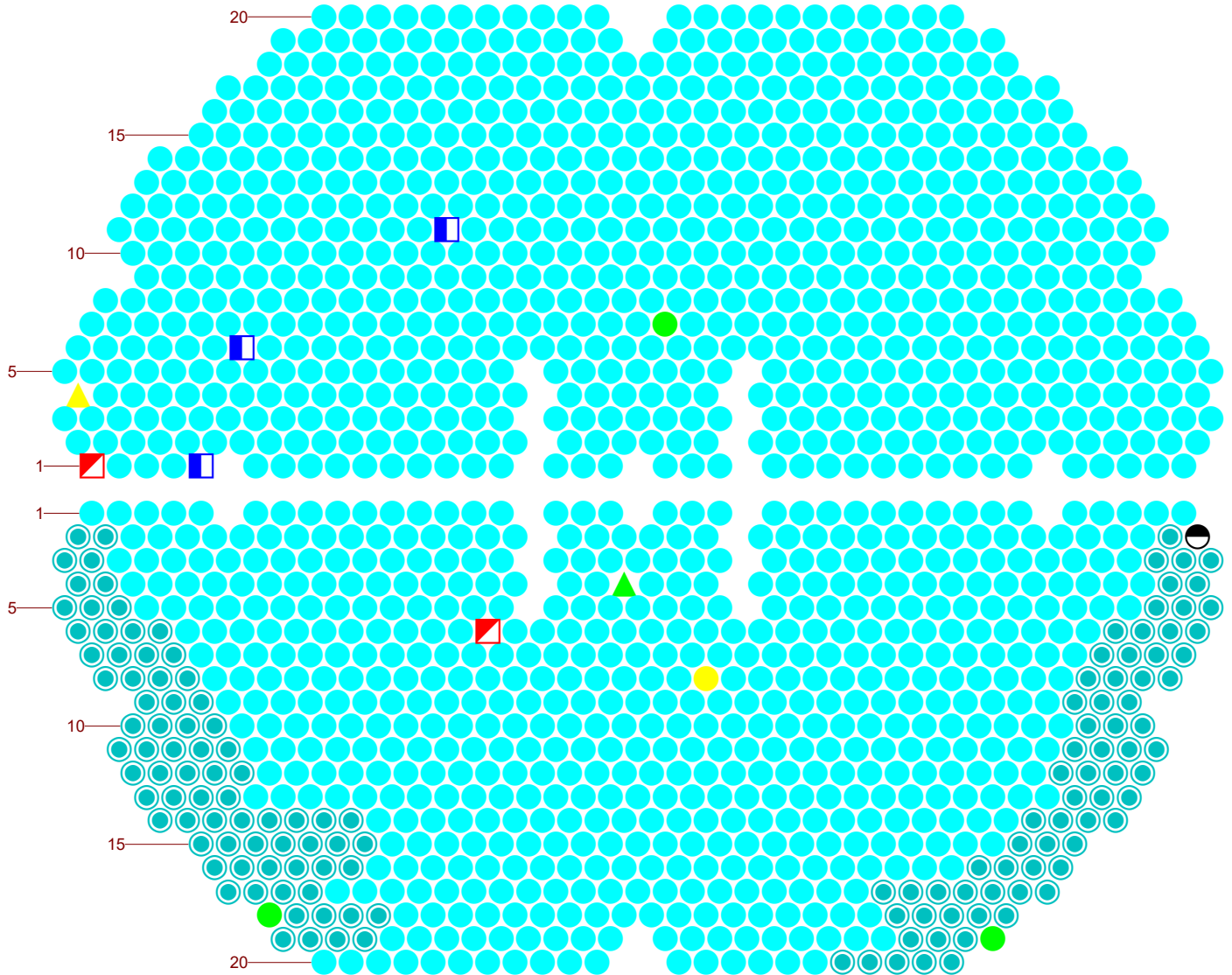


**Results Summary
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B**

	11-2021 Inspection
Total Tubes in Component (U-Tubes)	718
Total Tubes Inspected (Straight Lengths)	1,434
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%	1
Approx. Wall Loss 40% to 49%	1
Approx. Wall Loss 30% to 39%	1
Approx. Wall Loss 20% to 29%	3
Tubes Recording Dents	1
Possible Support Erosion (PSE)	144
Restricted Tubes (Complete Inspection Not Possible)	3
Obstructed Tubes (No Test Possible)	2
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-1B
11-2021

VIEW FROM INLET/OUTLET



SYM	HITS	TUBES	VIS	TYPE	DESCRIPTION
■	4	2	2	QUERY	OBS_RESULTS.qry
■	6	4	3	QUERY	RES_RESULTS.qry
●	1280	1280	1280	QUERY	NDD_RESULTS.qry
●	163	146	144	QUERY	POSSIBLE SUPPORT EROSION.qry
■	0	0	0	QUERY	PVN_RESULTS
●	1	1	1	QUERY	DNT_RESULTS.qry
●	4	3	3	QUERY	20-29%_RESULTS.qry
▲	1	1	1	QUERY	30-39%_RESULTS.qry
●	2	2	1	QUERY	40-49%_RESULTS.qry
▲	1	1	1	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
	1,462	1,440	1,436		

Model LPFWH-1B (1,436 tubes)
0 open tubes

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	1	1				NDD				SP09	ITE
IN	1	2				NDD				SP09	ITE
IN	1	3				NDD				SP09	ITE
IN	1	4				NDD				SP09	ITE
IN	1	5				NDD				SP09	ITE
IN	1	6				NDD				SP09	ITE
IN	1	7				NDD				SP09	ITE
IN	1	8				NDD				SP09	ITE
IN	1	9				NDD				SP09	ITE
IN	1	10				NDD				SP09	ITE
IN	1	11				NDD				SP09	ITE
IN	1	12				NDD				SP09	ITE
IN	1	13				NDD				SP09	ITE
IN	1	14				NDD				SP09	ITE
IN	1	15				NDD				SP09	ITE
IN	1	16				NDD				SP09	ITE
IN	1	17				NDD				SP09	ITE
IN	1	18				NDD				SP09	ITE
IN	1	19				NDD				SP09	ITE
IN	1	20				NDD				SP09	ITE
IN	1	21				NDD				SP09	ITE
IN	1	22				NDD				SP09	ITE
IN	1	23				NDD				SP09	ITE
IN	1	24				NDD				SP09	ITE
IN	1	25				NDD				SP09	ITE
IN	1	26				NDD				SP09	ITE
IN	1	27				NDD				SP09	ITE
IN	1	28				NDD				SP09	ITE
IN	1	29				NDD				SP09	ITE
IN	1	30				NDD				SP09	ITE
IN	1	31				NDD				SP09	ITE
IN	1	32				NDD				SP09	ITE
IN	1	33				NDD				SP09	ITE
IN	1	34				NDD				SP09	ITE
IN	1	35				NDD				SP09	ITE
IN	1	36				NDD				SP09	ITE
IN	2	1	2.94	175	0	PSE	7	SP04	0.08	SP09	ITE
IN	2	2	4.33	172	0	PSE	7	SP04	-0.10	SP09	ITE
IN	2	3				NDD				SP09	ITE
IN	2	4				NDD				SP09	ITE
IN	2	5				NDD				SP09	ITE
IN	2	6				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	2	7				NDD				SP09	ITE
IN	2	8				NDD				SP09	ITE
IN	2	9				NDD				SP09	ITE
IN	2	10				NDD				SP09	ITE
IN	2	11				NDD				SP09	ITE
IN	2	12				NDD				SP09	ITE
IN	2	13				NDD				SP09	ITE
IN	2	14				NDD				SP09	ITE
IN	2	15				NDD				SP09	ITE
IN	2	16				NDD				SP09	ITE
IN	2	17				NDD				SP09	ITE
IN	2	18				NDD				SP09	ITE
IN	2	19				NDD				SP09	ITE
IN	2	20				NDD				SP09	ITE
IN	2	21				NDD				SP09	ITE
IN	2	22				NDD				SP09	ITE
IN	2	23				NDD				SP09	ITE
IN	2	24				NDD				SP09	ITE
IN	2	25				NDD				SP09	ITE
IN	2	26				NDD				SP09	ITE
IN	2	27				NDD				SP09	ITE
IN	2	28				NDD				SP09	ITE
IN	2	29				NDD				SP09	ITE
IN	2	30				NDD				SP09	ITE
IN	2	31				NDD				SP09	ITE
IN	2	32				NDD				SP09	ITE
IN	2	33				NDD				SP09	ITE
IN	2	34				NDD				SP09	ITE
IN	2	35				NDD				SP09	ITE
IN	2	36				NDD				SP09	ITE
IN	2	37				NDD				SP09	ITE
IN	2	38				NDD				SP09	ITE
IN	2	39	2.72	175	0	PSE	7	SP04	-0.03	SP09	ITE
IN	2	40	3.33	182	0	PSE	7	SP04	0.01	SP09	ITE
IN	2	40	3.33	182	0	PSE	7	SP04	0.01	SP09	ITE
IN	2	40	20.44	181	0	DNT	1	BAF7	14.99	SP09	ITE
IN	3	1	2.26	176	0	PSE	7	SP04	0.05	SP09	ITE
IN	3	2	1.14	173	0	PSE	7	SP04	-0.31	SP09	ITE
IN	3	3				NDD				SP09	ITE
IN	3	4				NDD				SP09	ITE
IN	3	5				NDD				SP09	ITE
IN	3	6				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	3	7				NDD				SP09	ITE
IN	3	8				NDD				SP09	ITE
IN	3	9				NDD				SP09	ITE
IN	3	10				NDD				SP09	ITE
IN	3	11				NDD				SP09	ITE
IN	3	12				NDD				SP09	ITE
IN	3	13				NDD				SP09	ITE
IN	3	14				NDD				SP09	ITE
IN	3	15				NDD				SP09	ITE
IN	3	16				NDD				SP09	ITE
IN	3	17				NDD				SP09	ITE
IN	3	18				NDD				SP09	ITE
IN	3	19				NDD				SP09	ITE
IN	3	20				NDD				SP09	ITE
IN	3	21				NDD				SP09	ITE
IN	3	22				NDD				SP09	ITE
IN	3	23				NDD				SP09	ITE
IN	3	24				NDD				SP09	ITE
IN	3	25				NDD				SP09	ITE
IN	3	26				NDD				SP09	ITE
IN	3	27				NDD				SP09	ITE
IN	3	28				NDD				SP09	ITE
IN	3	29				NDD				SP09	ITE
IN	3	30				NDD				SP09	ITE
IN	3	31				NDD				SP09	ITE
IN	3	32				NDD				SP09	ITE
IN	3	33				NDD				SP09	ITE
IN	3	34				NDD				SP09	ITE
IN	3	35				NDD				SP09	ITE
IN	3	36				NDD				SP09	ITE
IN	3	37				NDD				SP09	ITE
IN	3	38				NDD				SP09	ITE
IN	3	39	2.72	178	0	PSE	7	SP04	0.13	SP09	ITE
IN	3	40	0.28	139	0	PSE	7	SP04	0.05	SP09	ITE
IN	3	41	2.26	180	0	PSE	7	SP04	0.00	SP09	ITE
IN	4	1	0.00	0	0	PSE	7	SP04	0.00	SP09	ITE
IN	4	2	1.11	176	0	PSE	7	SP04	0.00	SP09	ITE
IN	4	3				NDD				SP09	ITE
IN	4	4				NDD				SP09	ITE
IN	4	5				NDD				SP09	ITE
IN	4	6				NDD				SP09	ITE
IN	4	7				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	4	8				NDD				SP09	ITE
IN	4	9				NDD				SP09	ITE
IN	4	10				NDD				SP09	ITE
IN	4	11				NDD				SP09	ITE
IN	4	12				NDD				SP09	ITE
IN	4	13				NDD				SP09	ITE
IN	4	14				NDD				SP09	ITE
IN	4	15				NDD				SP09	ITE
IN	4	16				NDD				SP09	ITE
IN	4	17				NDD				SP09	ITE
IN	4	18				NDD				SP09	ITE
IN	4	19				NDD				SP09	ITE
IN	4	20	4.16	14	35	IDI	1	SP08	5.98	SP09	ITE
IN	4	21				NDD				SP09	ITE
IN	4	22				NDD				SP09	ITE
IN	4	23				NDD				SP09	ITE
IN	4	24				NDD				SP09	ITE
IN	4	25				NDD				SP09	ITE
IN	4	26				NDD				SP09	ITE
IN	4	27				NDD				SP09	ITE
IN	4	28				NDD				SP09	ITE
IN	4	29				NDD				SP09	ITE
IN	4	30				NDD				SP09	ITE
IN	4	31				NDD				SP09	ITE
IN	4	32				NDD				SP09	ITE
IN	4	33				NDD				SP09	ITE
IN	4	34				NDD				SP09	ITE
IN	4	35				NDD				SP09	ITE
IN	4	36				NDD				SP09	ITE
IN	4	37				NDD				SP09	ITE
IN	4	38				NDD				SP09	ITE
IN	4	39	0.19	172	0	PSE	7	SP04	0.00	SP09	ITE
IN	4	40	0.07	168	0	PSE	7	SP04	0.32	SP09	ITE
IN	5	1	0.03	290	0	PSE	7	SP04	3.04	SP09	ITE
IN	5	1	0.06	171	0	PSE	7	SP04	-0.77	SP09	ITE
IN	5	2	0.45	134	0	PSE	7	SP05	-1.59	SP09	ITE
IN	5	2	0.66	321	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	2	0.12	314	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	3	0.26	169	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	4				NDD				SP09	ITE
IN	5	5				NDD				SP09	ITE
IN	5	6				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	5	7				NDD				SP09	ITE
IN	5	8				NDD				SP09	ITE
IN	5	9				NDD				SP09	ITE
IN	5	10				NDD				SP09	ITE
IN	5	11				NDD				SP09	ITE
IN	5	12				NDD				SP09	ITE
IN	5	13				NDD				SP09	ITE
IN	5	14				NDD				SP09	ITE
IN	5	15				NDD				SP09	ITE
IN	5	16				NDD				SP09	ITE
IN	5	17				NDD				SP09	ITE
IN	5	18				NDD				SP09	ITE
IN	5	19				NDD				SP09	ITE
IN	5	20				NDD				SP09	ITE
IN	5	21				NDD				SP09	ITE
IN	5	22				NDD				SP09	ITE
IN	5	23				NDD				SP09	ITE
IN	5	24				NDD				SP09	ITE
IN	5	25				NDD				SP09	ITE
IN	5	26				NDD				SP09	ITE
IN	5	27				NDD				SP09	ITE
IN	5	28				NDD				SP09	ITE
IN	5	29				NDD				SP09	ITE
IN	5	30				NDD				SP09	ITE
IN	5	31				NDD				SP09	ITE
IN	5	32				NDD				SP09	ITE
IN	5	33				NDD				SP09	ITE
IN	5	34				NDD				SP09	ITE
IN	5	35				NDD				SP09	ITE
IN	5	36				NDD				SP09	ITE
IN	5	37				NDD				SP09	ITE
IN	5	38				NDD				SP09	ITE
IN	5	39	0.34	176	0	PSE	7	SP04	0.00	SP09	ITE
IN	5	40	3.21	161	0	PSE	7	SP04	0.07	SP09	ITE
IN	5	41	1.75	183	0	PSE	7	SP04	0.05	SP09	ITE
IN	6	1	1.88	181	0	PSE	7	SP04	-0.13	SP09	ITE
IN	6	2	5.12	165	0	PSE	7	SP05	0.00	SP09	ITE
IN	6	2	0.09	238	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	3	3.75	175	0	PSE	7	SP05	0.20	SP09	ITE
IN	6	3	1.64	175	0	PSE	7	SP04	0.05	SP09	ITE
IN	6	4	5.86	175	0	PSE	7	SP05	0.00	SP09	ITE
IN	6	4	4.90	178	0	PSE	7	SP04	0.07	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	6	5				NDD				SP09	ITE
IN	6	6				NDD				SP09	ITE
IN	6	7				NDD				SP09	ITE
IN	6	8				NDD				SP09	ITE
IN	6	9				NDD				SP09	ITE
IN	6	10				NDD				SP09	ITE
IN	6	11				NDD				SP09	ITE
IN	6	12				NDD				SP09	ITE
IN	6	13				NDD				SP09	ITE
IN	6	14				NDD				SP09	ITE
IN	6	15				NDD				SP09	ITE
IN	6	16				OBS					
IN	6	16				OBS					
IN	6	17				NDD				SP09	ITE
IN	6	18				NDD				SP09	ITE
IN	6	19				NDD				SP09	ITE
IN	6	20				NDD				SP09	ITE
IN	6	21				NDD				SP09	ITE
IN	6	22				NDD				SP09	ITE
IN	6	23				NDD				SP09	ITE
IN	6	24				NDD				SP09	ITE
IN	6	25				NDD				SP09	ITE
IN	6	26				NDD				SP09	ITE
IN	6	27				NDD				SP09	ITE
IN	6	28				NDD				SP09	ITE
IN	6	29				NDD				SP09	ITE
IN	6	30				NDD				SP09	ITE
IN	6	31				NDD				SP09	ITE
IN	6	32				NDD				SP09	ITE
IN	6	33				NDD				SP09	ITE
IN	6	34				NDD				SP09	ITE
IN	6	35				NDD				SP09	ITE
IN	6	36				NDD				SP09	ITE
IN	6	37				NDD				SP09	ITE
IN	6	38				NDD				SP09	ITE
IN	6	39	0.13	317	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	40	0.17	322	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	41	0.12	324	0	PSE	7	SP04	0.00	SP09	ITE
IN	6	42	2.99	150	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	1	1.51	182	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	2	2.16	176	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	3	0.35	318	0	PSE	7	SP05	0.00	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	7	3	0.05	142	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	4	5.34	175	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	5				NDD				SP09	ITE
IN	7	6				NDD				SP09	ITE
IN	7	7				NDD				SP09	ITE
IN	7	8				NDD				SP09	ITE
IN	7	9				NDD				SP09	ITE
IN	7	10				NDD				SP09	ITE
IN	7	11				NDD				SP09	ITE
IN	7	12				NDD				SP09	ITE
IN	7	13				NDD				SP09	ITE
IN	7	14				NDD				SP09	ITE
IN	7	15				NDD				SP09	ITE
IN	7	16				NDD				SP09	ITE
IN	7	17				NDD				SP09	ITE
IN	7	18				NDD				SP09	ITE
IN	7	19				NDD				SP09	ITE
IN	7	20				NDD				SP09	ITE
IN	7	21				NDD				SP09	ITE
IN	7	22				NDD				SP09	ITE
IN	7	23				NDD				SP09	ITE
IN	7	24				NDD				SP09	ITE
IN	7	25				NDD				SP09	ITE
IN	7	26				NDD				SP09	ITE
IN	7	27				NDD				SP09	ITE
IN	7	28				NDD				SP09	ITE
IN	7	29				RIC					
IN	7	29				NDD				SP09	ITE
IN	7	30				NDD				SP09	ITE
IN	7	31				NDD				SP09	ITE
IN	7	32				NDD				SP09	ITE
IN	7	33				NDD				SP09	ITE
IN	7	34				NDD				SP09	ITE
IN	7	35				NDD				SP09	ITE
IN	7	36				NDD				SP09	ITE
IN	7	37				NDD				SP09	ITE
IN	7	38	0.93	177	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	39	2.24	144	0	PSE	7	SP04	0.51	SP09	ITE
IN	7	40	5.98	175	0	PSE	7	SP05	0.00	SP09	ITE
IN	7	40	1.73	173	0	PSE	7	SP04	0.00	SP09	ITE
IN	7	41	2.28	177	0	PSE	7	SP04	0.02	SP09	ITE
IN	8	1	4.16	180	0	PSE	7	SP04	0.00	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	8	2	0.14	35	0	PSE	7	SP04	31.80	SP09	ITE
IN	8	2	3.01	169	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	3	3.53	176	0	PSE	7	SP05	0.00	SP09	ITE
IN	8	3	2.15	175	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	4	1.24	173	0	PSE	7	SP05	0.00	SP09	ITE
IN	8	4	4.65	172	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	5				NDD				SP09	ITE
IN	8	6				NDD				SP09	ITE
IN	8	7				NDD				SP09	ITE
IN	8	8				NDD				SP09	ITE
IN	8	9				NDD				SP09	ITE
IN	8	10				NDD				SP09	ITE
IN	8	11				NDD				SP09	ITE
IN	8	12				NDD				SP09	ITE
IN	8	13				NDD				SP09	ITE
IN	8	14				NDD				SP09	ITE
IN	8	15				NDD				SP09	ITE
IN	8	16				NDD				SP09	ITE
IN	8	17				NDD				SP09	ITE
IN	8	18				NDD				SP09	ITE
IN	8	19				NDD				SP09	ITE
IN	8	20				NDD				SP09	ITE
IN	8	21				NDD				SP09	ITE
IN	8	22				NDD				SP09	ITE
IN	8	23	2.92	17	44	IDI	1	SP05	16.91	SP09	ITE
IN	8	24				NDD				SP09	ITE
IN	8	25				NDD				SP09	ITE
IN	8	26				NDD				SP09	ITE
IN	8	27				NDD				SP09	ITE
IN	8	28				NDD				SP09	ITE
IN	8	29				NDD				SP09	ITE
IN	8	30				NDD				SP09	ITE
IN	8	31				NDD				SP09	ITE
IN	8	32				NDD				SP09	ITE
IN	8	33				NDD				SP09	ITE
IN	8	34				NDD				SP09	ITE
IN	8	35				NDD				SP09	ITE
IN	8	36				NDD				SP09	ITE
IN	8	37	4.04	176	0	PSE	7	SP04	0.07	SP09	ITE
IN	8	38	0.05	347	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	39	2.40	168	0	PSE	7	SP04	0.00	SP09	ITE
IN	8	40	3.86	174	0	PSE	7	SP04	0.15	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	9	1	6.60	171	0	PSE	7	SP04	0.13	SP09	ITE
IN	9	2	0.08	214	0	PSE	7	SP05	0.00	SP09	ITE
IN	9	2	4.11	169	0	PSE	7	SP04	0.03	SP09	ITE
IN	9	3	1.68	173	0	PSE	7	SP05	0.10	SP09	ITE
IN	9	3	3.91	171	0	PSE	7	SP04	-0.15	SP09	ITE
IN	9	4				NDD				SP09	ITE
IN	9	5				NDD				SP09	ITE
IN	9	6				NDD				SP09	ITE
IN	9	7				NDD				SP09	ITE
IN	9	8				NDD				SP09	ITE
IN	9	9				NDD				SP09	ITE
IN	9	10				NDD				SP09	ITE
IN	9	11				NDD				SP09	ITE
IN	9	12				NDD				SP09	ITE
IN	9	13				NDD				SP09	ITE
IN	9	14				NDD				SP09	ITE
IN	9	15				NDD				SP09	ITE
IN	9	16				NDD				SP09	ITE
IN	9	17				NDD				SP09	ITE
IN	9	18				NDD				SP09	ITE
IN	9	19				NDD				SP09	ITE
IN	9	20				NDD				SP09	ITE
IN	9	21				NDD				SP09	ITE
IN	9	22				NDD				SP09	ITE
IN	9	23				NDD				SP09	ITE
IN	9	24				NDD				SP09	ITE
IN	9	25				NDD				SP09	ITE
IN	9	26				NDD				SP09	ITE
IN	9	27				NDD				SP09	ITE
IN	9	28				NDD				SP09	ITE
IN	9	29				NDD				SP09	ITE
IN	9	30				NDD				SP09	ITE
IN	9	31				NDD				SP09	ITE
IN	9	32				NDD				SP09	ITE
IN	9	33				NDD				SP09	ITE
IN	9	34				NDD				SP09	ITE
IN	9	35	4.74	174	0	PSE	7	SP04	0.05	SP09	ITE
IN	9	36	1.65	172	0	PSE	7	SP04	-0.11	SP09	ITE
IN	9	37	2.93	175	0	PSE	7	SP04	0.02	SP09	ITE
IN	10	1	3.91	169	0	PSE	7	SP05	0.00	SP09	ITE
IN	10	1	4.69	171	0	PSE	7	SP04	0.00	SP09	ITE
IN	10	2	0.21	356	0	PSE	7	SP05	-0.78	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	10	3	0.08	255	0	PSE	7	SP05	-0.20	SP09	ITE
IN	10	3	3.61	176	0	PSE	7	SP04	0.14	SP09	ITE
IN	10	4	0.01	72	0	PSE	7	SP05	0.00	SP09	ITE
IN	10	4	4.79	174	0	PSE	7	SP04	0.00	SP09	ITE
IN	10	5				NDD				SP09	ITE
IN	10	6				NDD				SP09	ITE
IN	10	7				NDD				SP09	ITE
IN	10	8				NDD				SP09	ITE
IN	10	9				NDD				SP09	ITE
IN	10	10				NDD				SP09	ITE
IN	10	11				NDD				SP09	ITE
IN	10	12				NDD				SP09	ITE
IN	10	13				NDD				SP09	ITE
IN	10	14				NDD				SP09	ITE
IN	10	15				NDD				SP09	ITE
IN	10	16				NDD				SP09	ITE
IN	10	17				NDD				SP09	ITE
IN	10	18				NDD				SP09	ITE
IN	10	19				NDD				SP09	ITE
IN	10	20				NDD				SP09	ITE
IN	10	21				NDD				SP09	ITE
IN	10	22				NDD				SP09	ITE
IN	10	23				NDD				SP09	ITE
IN	10	24				NDD				SP09	ITE
IN	10	25				NDD				SP09	ITE
IN	10	26				NDD				SP09	ITE
IN	10	27				NDD				SP09	ITE
IN	10	28				NDD				SP09	ITE
IN	10	29				NDD				SP09	ITE
IN	10	30				NDD				SP09	ITE
IN	10	31				NDD				SP09	ITE
IN	10	32				NDD				SP09	ITE
IN	10	33				NDD				SP09	ITE
IN	10	33				RIC					
IN	10	34				NDD				SP09	ITE
IN	10	35				NDD				SP09	ITE
IN	10	36	2.09	173	0	PSE	7	SP04	0.00	SP09	ITE
IN	10	37	1.59	165	0	PSE	7	SP04	0.00	SP09	ITE
IN	10	38	2.54	164	0	PSE	7	SP04	0.05	SP09	ITE
IN	11	1	4.08	175	0	PSE	7	SP04	0.13	SP09	ITE
IN	11	2				RIC					
IN	11	2	4.74	167	0	PSE	7	SP04	0.10	SP00	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	11	3	0.21	148	0	PSE	7	SP05	0.00	SP09	ITE
IN	11	4	1.74	176	0	PSE	7	SP05	0.00	SP09	ITE
IN	11	5	0.18	174	0	PSE	7	SP05	5.36	SP09	ITE
IN	11	6				NDD				SP09	ITE
IN	11	7				NDD				SP09	ITE
IN	11	8				NDD				SP09	ITE
IN	11	9				NDD				SP09	ITE
IN	11	10				NDD				SP09	ITE
IN	11	11				NDD				SP09	ITE
IN	11	12				NDD				SP09	ITE
IN	11	13				NDD				SP09	ITE
IN	11	14				NDD				SP09	ITE
IN	11	15				NDD				SP09	ITE
IN	11	16				NDD				SP09	ITE
IN	11	17				NDD				SP09	ITE
IN	11	18				NDD				SP09	ITE
IN	11	19				NDD				SP09	ITE
IN	11	20				NDD				SP09	ITE
IN	11	21				NDD				SP09	ITE
IN	11	22				NDD				SP09	ITE
IN	11	23				NDD				SP09	ITE
IN	11	24				NDD				SP09	ITE
IN	11	25				NDD				SP09	ITE
IN	11	26				NDD				SP09	ITE
IN	11	27				NDD				SP09	ITE
IN	11	28				NDD				SP09	ITE
IN	11	29				NDD				SP09	ITE
IN	11	30				NDD				SP09	ITE
IN	11	31				NDD				SP09	ITE
IN	11	32				NDD				SP09	ITE
IN	11	33				NDD				SP09	ITE
IN	11	34				NDD				SP09	ITE
IN	11	35				NDD				SP09	ITE
IN	11	36	3.77	172	0	PSE	7	SP04	0.20	SP09	ITE
IN	11	37	3.36	169	0	PSE	7	SP04	0.26	SP09	ITE
IN	11	38	3.64	160	0	PSE	7	SP04	-0.03	SP09	ITE
IN	11	39	3.10	178	0	PSE	7	SP04	0.02	SP09	ITE
IN	12	1	5.88	173	0	PSE	7	SP04	0.12	SP09	ITE
IN	12	2	2.92	177	0	PSE	7	SP05	-0.02	SP09	ITE
IN	12	3	2.83	175	0	PSE	7	SP05	0.00	SP09	ITE
IN	12	4	3.50	174	0	PSE	7	SP05	0.23	SP09	ITE
IN	12	5	3.83	175	0	PSE	7	SP05	0.00	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	12	6				NDD				SP09	ITE
IN	12	7				NDD				SP09	ITE
IN	12	8				NDD				SP09	ITE
IN	12	9				NDD				SP09	ITE
IN	12	10				NDD				SP09	ITE
IN	12	11				NDD				SP09	ITE
IN	12	11				RBD					
IN	12	12				NDD				SP09	ITE
IN	12	12				RBD					
IN	12	13				NDD				SP09	ITE
IN	12	14				NDD				SP09	ITE
IN	12	15				NDD				SP09	ITE
IN	12	16				NDD				SP09	ITE
IN	12	17				NDD				SP09	ITE
IN	12	18				NDD				SP09	ITE
IN	12	19				NDD				SP09	ITE
IN	12	20				NDD				SP09	ITE
IN	12	21				NDD				SP09	ITE
IN	12	22				NDD				SP09	ITE
IN	12	23				NDD				SP09	ITE
IN	12	24				NDD				SP09	ITE
IN	12	25				NDD				SP09	ITE
IN	12	26				NDD				SP09	ITE
IN	12	27				NDD				SP09	ITE
IN	12	28				NDD				SP09	ITE
IN	12	29				NDD				SP09	ITE
IN	12	30				NDD				SP09	ITE
IN	12	31				NDD				SP09	ITE
IN	12	32				NDD				SP09	ITE
IN	12	33				NDD				SP09	ITE
IN	12	34				NDD				SP09	ITE
IN	12	35	5.94	169	0	PSE	7	SP05	0.10	SP09	ITE
IN	12	36	2.08	173	0	PSE	7	SP05	0.02	SP09	ITE
IN	12	37	0.71	311	0	PSE	7	SP04	0.00	SP09	ITE
IN	12	38	4.99	172	0	PSE	7	SP04	0.03	SP09	ITE
IN	13	1	3.19	195	0	PSE	7	SP04	0.08	SP09	ITE
IN	13	2	4.71	176	0	PSE	7	SP05	0.05	SP09	ITE
IN	13	3	4.52	177	0	PSE	7	SP05	0.15	SP09	ITE
IN	13	4	4.66	176	0	PSE	7	SP05	0.18	SP09	ITE
IN	13	5				NDD				SP09	ITE
IN	13	6				NDD				SP09	ITE
IN	13	7				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	13	8				NDD				SP09	ITE
IN	13	9				NDD				SP09	ITE
IN	13	10				NDD				SP09	ITE
IN	13	11				NDD				SP09	ITE
IN	13	12				NDD				SP09	ITE
IN	13	13				NDD				SP09	ITE
IN	13	14				NDD				SP09	ITE
IN	13	15				NDD				SP09	ITE
IN	13	16				NDD				SP09	ITE
IN	13	17				NDD				SP09	ITE
IN	13	18				NDD				SP09	ITE
IN	13	19				NDD				SP09	ITE
IN	13	20				NDD				SP09	ITE
IN	13	21				NDD				SP09	ITE
IN	13	22				NDD				SP09	ITE
IN	13	23				NDD				SP09	ITE
IN	13	24				NDD				SP09	ITE
IN	13	25				NDD				SP09	ITE
IN	13	26				NDD				SP09	ITE
IN	13	27				NDD				SP09	ITE
IN	13	28				NDD				SP09	ITE
IN	13	29				NDD				SP09	ITE
IN	13	30				NDD				SP09	ITE
IN	13	31				NDD				SP09	ITE
IN	13	32				NDD				SP09	ITE
IN	13	33				NDD				SP09	ITE
IN	13	34				NDD				SP09	ITE
IN	13	35	4.88	174	0	PSE	7	SP05	0.03	SP09	ITE
IN	13	36	4.11	172	0	PSE	7	SP05	-0.05	SP09	ITE
IN	13	37	2.82	182	0	PSE	7	SP04	0.10	SP09	ITE
IN	14	1	3.50	198	0	PSE	7	SP04	0.33	SP09	ITE
IN	14	2	4.41	179	0	PSE	7	SP05	0.10	SP09	ITE
IN	14	3	4.64	173	0	PSE	7	SP05	-0.23	SP09	ITE
IN	14	4	4.92	172	0	PSE	7	SP05	0.08	SP09	ITE
IN	14	5	4.66	175	0	PSE	7	SP05	0.07	SP09	ITE
IN	14	6	3.48	194	0	PSE	7	SP05	0.02	SP09	ITE
IN	14	7	3.02	199	0	PSE	7	SP05	0.10	SP09	ITE
IN	14	8	4.05	177	0	PSE	7	SP05	0.16	SP09	ITE
IN	14	9				NDD				SP09	ITE
IN	14	10				NDD				SP09	ITE
IN	14	11				NDD				SP09	ITE
IN	14	12				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	14	13				NDD				SP09	ITE
IN	14	14				NDD				SP09	ITE
IN	14	15				NDD				SP09	ITE
IN	14	16				NDD				SP09	ITE
IN	14	17				NDD				SP09	ITE
IN	14	18				NDD				SP09	ITE
IN	14	19				NDD				SP09	ITE
IN	14	20				NDD				SP09	ITE
IN	14	21				NDD				SP09	ITE
IN	14	22				NDD				SP09	ITE
IN	14	23				NDD				SP09	ITE
IN	14	24				NDD				SP09	ITE
IN	14	25				NDD				SP09	ITE
IN	14	26				NDD				SP09	ITE
IN	14	27				NDD				SP09	ITE
IN	14	28				NDD				SP09	ITE
IN	14	29				NDD				SP09	ITE
IN	14	30				NDD				SP09	ITE
IN	14	31				NDD				SP09	ITE
IN	14	32				NDD				SP09	ITE
IN	14	33	4.61	179	0	PSE	7	SP05	0.05	SP09	ITE
IN	14	34	4.25	178	0	PSE	7	SP05	0.07	SP09	ITE
IN	14	35	3.84	185	0	PSE	7	SP05	0.05	SP09	ITE
IN	14	36	3.32	195	0	PSE	7	SP05	-0.05	SP09	ITE
IN	15	1	3.52	190	0	PSE	7	SP05	0.00	SP09	ITE
IN	15	2	3.34	184	0	PSE	7	SP05	-0.02	SP09	ITE
IN	15	3	2.31	193	0	PSE	7	SP05	0.05	SP09	ITE
IN	15	4	3.84	188	0	PSE	7	SP05	-0.05	SP09	ITE
IN	15	5	3.40	192	0	PSE	7	SP05	-0.20	SP09	ITE
IN	15	6	3.48	193	0	PSE	7	SP05	0.16	SP09	ITE
IN	15	7	3.36	185	0	PSE	7	SP05	-0.13	SP09	ITE
IN	15	8				NDD				SP09	ITE
IN	15	9				NDD				SP09	ITE
IN	15	10				NDD				SP09	ITE
IN	15	11				NDD				SP09	ITE
IN	15	12				NDD				SP09	ITE
IN	15	13				NDD				SP09	ITE
IN	15	14				NDD				SP09	ITE
IN	15	15				NDD				SP09	ITE
IN	15	16				NDD				SP09	ITE
IN	15	17				NDD				SP09	ITE
IN	15	18				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	15	19				NDD				SP09	ITE
IN	15	20				NDD				SP09	ITE
IN	15	21				NDD				SP09	ITE
IN	15	22				NDD				SP09	ITE
IN	15	23				NDD				SP09	ITE
IN	15	24				NDD				SP09	ITE
IN	15	25				NDD				SP09	ITE
IN	15	26				NDD				SP09	ITE
IN	15	27				NDD				SP09	ITE
IN	15	28				NDD				SP09	ITE
IN	15	29				NDD				SP09	ITE
IN	15	30				NDD				SP09	ITE
IN	15	31	3.95	190	0	PSE	7	SP05	0.08	SP09	ITE
IN	15	32	4.09	183	0	PSE	7	SP05	0.03	SP09	ITE
IN	15	33	3.79	196	0	PSE	7	SP05	0.19	SP09	ITE
IN	16	1	2.85	207	0	PSE	7	SP05	-0.10	SP09	ITE
IN	16	2	4.24	182	0	PSE	7	SP05	0.00	SP09	ITE
IN	16	3	4.64	178	0	PSE	7	SP05	0.12	SP09	ITE
IN	16	4	4.26	177	0	PSE	7	SP05	0.00	SP09	ITE
IN	16	5	2.87	201	0	PSE	7	SP05	0.31	SP09	ITE
IN	16	6	3.46	200	0	PSE	7	SP05	0.50	SP09	ITE
IN	16	7				NDD				SP09	ITE
IN	16	8				NDD				SP09	ITE
IN	16	9				NDD				SP09	ITE
IN	16	10				NDD				SP09	ITE
IN	16	11				NDD				SP09	ITE
IN	16	12				NDD				SP09	ITE
IN	16	13				NDD				SP09	ITE
IN	16	14				NDD				SP09	ITE
IN	16	15				NDD				SP09	ITE
IN	16	16				NDD				SP09	ITE
IN	16	17				NDD				SP09	ITE
IN	16	18				NDD				SP09	ITE
IN	16	19				NDD				SP09	ITE
IN	16	20				NDD				SP09	ITE
IN	16	21				NDD				SP09	ITE
IN	16	22				NDD				SP09	ITE
IN	16	23				NDD				SP09	ITE
IN	16	24				NDD				SP09	ITE
IN	16	25				NDD				SP09	ITE
IN	16	26				NDD				SP09	ITE
IN	16	27				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	16	28				NDD				SP09	ITE
IN	16	29	5.18	177	0	PSE	7	SP05	0.17	SP09	ITE
IN	16	30	5.81	173	0	PSE	7	SP05	0.22	SP09	ITE
IN	16	31	4.69	175	0	PSE	7	SP05	-0.02	SP09	ITE
IN	16	32	4.63	181	0	PSE	7	SP05	0.27	SP09	ITE
IN	17	1	2.70	203	0	PSE	7	SP05	0.21	SP09	ITE
IN	17	2	2.77	191	0	PSE	7	SP05	0.00	SP09	ITE
IN	17	3	3.77	191	0	PSE	7	SP05	0.22	SP09	ITE
IN	17	4	4.25	180	0	PSE	7	SP05	-0.05	SP09	ITE
IN	17	5				NDD				SP09	ITE
IN	17	6				NDD				SP09	ITE
IN	17	7				NDD				SP09	ITE
IN	17	8				NDD				SP09	ITE
IN	17	9				NDD				SP09	ITE
IN	17	10				NDD				SP09	ITE
IN	17	11				NDD				SP09	ITE
IN	17	12				NDD				SP09	ITE
IN	17	13				NDD				SP09	ITE
IN	17	14				NDD				SP09	ITE
IN	17	15				NDD				SP09	ITE
IN	17	16				NDD				SP09	ITE
IN	17	17				NDD				SP09	ITE
IN	17	18				NDD				SP09	ITE
IN	17	19				NDD				SP09	ITE
IN	17	20				NDD				SP09	ITE
IN	17	21				NDD				SP09	ITE
IN	17	22				NDD				SP09	ITE
IN	17	23				NDD				SP09	ITE
IN	17	24				NDD				SP09	ITE
IN	17	25	3.97	187	0	PSE	7	SP06	0.35	SP09	ITE
IN	17	26	3.02	208	0	PSE	7	SP06	0.18	SP09	ITE
IN	17	27	4.47	188	0	PSE	7	SP05	-0.20	SP09	ITE
IN	17	28	4.23	190	0	PSE	7	SP05	0.00	SP09	ITE
IN	17	29	2.74	196	0	PSE	7	SP05	-0.08	SP09	ITE
IN	17	30	3.73	193	0	PSE	7	SP06	0.00	SP09	ITE
IN	17	31	3.23	202	0	PSE	7	SP05	-0.12	SP09	ITE
IN	18	1	0.62	0	20	WAR	M2	SP06	-0.02	SP09	ITE
IN	18	1	0.63	0	20	WAR	M2	SP05	0.19	SP09	ITE
IN	18	2	3.01	182	0	PSE	7	SP05	0.00	SP09	ITE
IN	18	3	3.29	183	0	PSE	7	SP05	0.12	SP09	ITE
IN	18	4	2.78	199	0	PSE	7	SP05	0.31	SP09	ITE
IN	18	5	2.94	204	0	PSE	7	SP05	-0.07	SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	18	6				NDD				SP09	ITE
IN	18	7				NDD				SP09	ITE
IN	18	8				NDD				SP09	ITE
IN	18	9				NDD				SP09	ITE
IN	18	10				NDD				SP09	ITE
IN	18	11				NDD				SP09	ITE
IN	18	12				NDD				SP09	ITE
IN	18	13				NDD				SP09	ITE
IN	18	14				NDD				SP09	ITE
IN	18	15				NDD				SP09	ITE
IN	18	16				NDD				SP09	ITE
IN	18	17				NDD				SP09	ITE
IN	18	18				NDD				SP09	ITE
IN	18	19				NDD				SP09	ITE
IN	18	20				NDD				SP09	ITE
IN	18	21				NDD				SP09	ITE
IN	18	22				NDD				SP09	ITE
IN	18	23				NDD				SP09	ITE
IN	18	24	3.09	200	0	PSE	7	SP05	0.12	SP09	ITE
IN	18	25	3.85	187	0	PSE	7	SP05	0.15	SP09	ITE
IN	18	26	4.24	190	0	PSE	7	SP05	0.22	SP09	ITE
IN	18	27	4.56	175	0	PSE	7	SP05	0.07	SP09	ITE
IN	18	28	3.95	185	0	PSE	7	SP05	0.24	SP09	ITE
IN	19	1	2.79	193	0	PSE	7	SP05	-0.24	SP09	ITE
IN	19	2	2.58	193	0	PSE	7	SP05	0.32	SP09	ITE
IN	19	3	2.76	197	0	PSE	7	SP05	-0.05	SP09	ITE
IN	19	4	2.95	192	0	PSE	7	SP05	-0.17	SP09	ITE
IN	19	5				NDD				SP09	ITE
IN	19	6				NDD				SP09	ITE
IN	19	7				NDD				SP09	ITE
IN	19	8				NDD				SP09	ITE
IN	19	9				NDD				SP09	ITE
IN	19	10				NDD				SP09	ITE
IN	19	11				NDD				SP09	ITE
IN	19	12				NDD				SP09	ITE
IN	19	13				NDD				SP09	ITE
IN	19	14				NDD				SP09	ITE
IN	19	15				NDD				SP09	ITE
IN	19	16				NDD				SP09	ITE
IN	19	17				NDD				SP09	ITE
IN	19	18				NDD				SP09	ITE
IN	19	19				NDD				SP09	ITE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
IN	19	20				NDD				SP09	ITE
IN	19	21				NDD				SP09	ITE
IN	19	22				NDD				SP09	ITE
IN	19	23	3.38	182	0	PSE	7	SP06	0.07	SP09	ITE
IN	19	24	3.88	178	0	PSE	7	SP05	0.00	SP09	ITE
IN	19	25	4.83	175	0	PSE	7	SP05	0.03	SP09	ITE
IN	19	26	0.55	0	17	WAR	M2	SP06	-0.14	SP09	ITE
IN	19	26	4.79	178	0	PSE	7	SP05	0.00	SP09	ITE
IN	19	26	0.97	0	22	WAR	M2	SP04	-0.24	SP09	ITE
IN	20	1				NDD				SP09	ITE
IN	20	1				RIC					
IN	20	2				NDD				SP09	ITE
IN	20	2				RIC					
IN	20	3				NDD				SP09	ITE
IN	20	4				NDD				SP09	ITE
IN	20	5				NDD				SP09	ITE
IN	20	6				NDD				SP09	ITE
IN	20	7				NDD				SP09	ITE
IN	20	8				NDD				SP09	ITE
IN	20	9				NDD				SP09	ITE
IN	20	10				NDD				SP09	ITE
IN	20	11				NDD				SP09	ITE
IN	20	12				NDD				SP09	ITE
IN	20	13				NDD				SP09	ITE
IN	20	14				NDD				SP09	ITE
IN	20	15				NDD				SP09	ITE
IN	20	16				NDD				SP09	ITE
IN	20	17				NDD				SP09	ITE
IN	20	18	3.23	191	0	PSE	7	SP06	0.29	SP09	ITE
IN	20	19	2.93	192	0	PSE	7	SP06	0.10	SP09	ITE
IN	20	20	3.53	184	0	PSE	7	SP06	0.02	SP09	ITE
IN	20	21	4.18	181	0	PSE	7	SP06	0.15	SP09	ITE
IN	20	22	2.48	205	0	PSE	7	SP06	-0.18	SP09	ITE
OUT	1	1				OBS					
OUT	1	1				OBS					
OUT	1	2				NDD				SP09	OTE
OUT	1	3				NDD				SP09	OTE
OUT	1	4				NDD				SP09	OTE
OUT	1	5				RES		SP07	20.11	SP07	OTE
OUT	1	5				RES		SP07	16.64	SP07	OTE
OUT	1	6				NDD				SP09	OTE
OUT	1	7				NDD				SP09	OTE

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sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	1	8				NDD				SP09	OTE
OUT	1	9				NDD				SP09	OTE
OUT	1	10				NDD				SP09	OTE
OUT	1	11				NDD				SP09	OTE
OUT	1	12				NDD				SP09	OTE
OUT	1	13				NDD				SP09	OTE
OUT	1	14				NDD				SP09	OTE
OUT	1	15				NDD				SP09	OTE
OUT	1	16				NDD				SP09	OTE
OUT	1	17				NDD				SP09	OTE
OUT	1	18				NDD				SP09	OTE
OUT	1	19				NDD				SP09	OTE
OUT	1	20				NDD				SP09	OTE
OUT	1	21				NDD				SP09	OTE
OUT	1	22				NDD				SP09	OTE
OUT	1	23				NDD				SP09	OTE
OUT	1	24				NDD				SP09	OTE
OUT	1	25				NDD				SP09	OTE
OUT	1	26				NDD				SP09	OTE
OUT	1	27				NDD				SP09	OTE
OUT	1	28				NDD				SP09	OTE
OUT	1	29				NDD				SP09	OTE
OUT	1	30				NDD				SP09	OTE
OUT	1	31				NDD				SP09	OTE
OUT	1	32				NDD				SP09	OTE
OUT	1	33				NDD				SP09	OTE
OUT	1	34				NDD				SP09	OTE
OUT	1	35				NDD				SP09	OTE
OUT	1	36				NDD				SP09	OTE
OUT	2	1				NDD				SP09	OTE
OUT	2	2				NDD				SP09	OTE
OUT	2	3				NDD				SP09	OTE
OUT	2	4				NDD				SP09	OTE
OUT	2	5				NDD				SP09	OTE
OUT	2	6				NDD				SP09	OTE
OUT	2	7				NDD				SP09	OTE
OUT	2	8				NDD				SP09	OTE
OUT	2	9				NDD				SP09	OTE
OUT	2	10				NDD				SP09	OTE
OUT	2	11				NDD				SP09	OTE
OUT	2	12				NDD				SP09	OTE
OUT	2	13				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	2	14				NDD				SP09	OTE
OUT	2	15				NDD				SP09	OTE
OUT	2	16				NDD				SP09	OTE
OUT	2	17				NDD				SP09	OTE
OUT	2	18				NDD				SP09	OTE
OUT	2	19				NDD				SP09	OTE
OUT	2	20				NDD				SP09	OTE
OUT	2	20				RES		SPO8	0.61	SPO8	OTE
OUT	2	21				NDD				SP09	OTE
OUT	2	22				NDD				SP09	OTE
OUT	2	23				NDD				SP09	OTE
OUT	2	24				NDD				SP09	OTE
OUT	2	25				NDD				SP09	OTE
OUT	2	26				NDD				SP09	OTE
OUT	2	27				NDD				SP09	OTE
OUT	2	28				NDD				SP09	OTE
OUT	2	29				NDD				SP09	OTE
OUT	2	30				NDD				SP09	OTE
OUT	2	31				NDD				SP09	OTE
OUT	2	32				NDD				SP09	OTE
OUT	2	33				NDD				SP09	OTE
OUT	2	34				NDD				SP09	OTE
OUT	2	35				NDD				SP09	OTE
OUT	2	36				NDD				SP09	OTE
OUT	2	37				NDD				SP09	OTE
OUT	2	38				NDD				SP09	OTE
OUT	2	39				NDD				SP09	OTE
OUT	2	40				NDD				SP09	OTE
OUT	3	1				NDD				SP09	OTE
OUT	3	1				RIC					
OUT	3	2				NDD				SP09	OTE
OUT	3	3				NDD				SP09	OTE
OUT	3	4				NDD				SP09	OTE
OUT	3	5				NDD				SP09	OTE
OUT	3	6				NDD				SP09	OTE
OUT	3	7				NDD				SP09	OTE
OUT	3	8				NDD				SP09	OTE
OUT	3	9				NDD				SP09	OTE
OUT	3	10				NDD				SP09	OTE
OUT	3	11				NDD				SP09	OTE
OUT	3	12				NDD				SP09	OTE
OUT	3	13				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	3	14				NDD				SP09	OTE
OUT	3	15				NDD				SP09	OTE
OUT	3	16				NDD				SP09	OTE
OUT	3	17				NDD				SP09	OTE
OUT	3	18				NDD				SP09	OTE
OUT	3	19				NDD				SP09	OTE
OUT	3	20				NDD				SP09	OTE
OUT	3	21				NDD				SP09	OTE
OUT	3	22				NDD				SP09	OTE
OUT	3	23				NDD				SP09	OTE
OUT	3	24				NDD				SP09	OTE
OUT	3	25				NDD				SP09	OTE
OUT	3	26				NDD				SP09	OTE
OUT	3	27				NDD				SP09	OTE
OUT	3	28				NDD				SP09	OTE
OUT	3	29				NDD				SP09	OTE
OUT	3	30				NDD				SP09	OTE
OUT	3	31				NDD				SP09	OTE
OUT	3	32				NDD				SP09	OTE
OUT	3	33				NDD				SP09	OTE
OUT	3	34				NDD				SP09	OTE
OUT	3	35				NDD				SP09	OTE
OUT	3	36				NDD				SP09	OTE
OUT	3	37				NDD				SP09	OTE
OUT	3	38				NDD				SP09	OTE
OUT	3	39				NDD				SP09	OTE
OUT	3	40				NDD				SP09	OTE
OUT	3	41				NDD				SP09	OTE
OUT	4	1	0.83	143	43	ODI	1	SP08	17.03	SP09	OTE
OUT	4	1	0.91	138	50	ODI	1	SPO8	15.80	SP09	OTE
OUT	4	2				NDD				SP09	OTE
OUT	4	3				NDD				SPO9	OTE
OUT	4	4				NDD				SP09	OTE
OUT	4	5				NDD				SP09	OTE
OUT	4	6				NDD				SP09	OTE
OUT	4	7				NDD				SP09	OTE
OUT	4	8				NDD				SP09	OTE
OUT	4	9				NDD				SP09	OTE
OUT	4	10				NDD				SP09	OTE
OUT	4	11				NDD				SP09	OTE
OUT	4	12				NDD				SP09	OTE
OUT	4	13				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	4	14				NDD				SP09	OTE
OUT	4	15				NDD				SP09	OTE
OUT	4	16				NDD				SP09	OTE
OUT	4	17				NDD				SP09	OTE
OUT	4	18				NDD				SP09	OTE
OUT	4	19				NDD				SP09	OTE
OUT	4	20				NDD				SP09	OTE
OUT	4	21				NDD				SP09	OTE
OUT	4	22				NDD				SP09	OTE
OUT	4	23				NDD				SP09	OTE
OUT	4	24				NDD				SP09	OTE
OUT	4	25				NDD				SP09	OTE
OUT	4	26				NDD				SP09	OTE
OUT	4	27				NDD				SP09	OTE
OUT	4	28				NDD				SP09	OTE
OUT	4	29				NDD				SP09	OTE
OUT	4	30				NDD				SP09	OTE
OUT	4	31				NDD				SP09	OTE
OUT	4	32				NDD				SP09	OTE
OUT	4	33				NDD				SP09	OTE
OUT	4	34				NDD				SP09	OTE
OUT	4	35				NDD				SP09	OTE
OUT	4	36				NDD				SP09	OTE
OUT	4	37				NDD				SP09	OTE
OUT	4	38				NDD				SP09	OTE
OUT	4	39				NDD				SP09	OTE
OUT	4	40				NDD				SP09	OTE
OUT	5	1				NDD				SP09	OTE
OUT	5	2				NDD				SP09	OTE
OUT	5	3				NDD				SP09	OTE
OUT	5	4				NDD				SP09	OTE
OUT	5	5				NDD				SP09	OTE
OUT	5	6				NDD				SP09	OTE
OUT	5	7				NDD				SP09	OTE
OUT	5	8				NDD				SP09	OTE
OUT	5	9				NDD				SP09	OTE
OUT	5	10				NDD				SP09	OTE
OUT	5	11				NDD				SP09	OTE
OUT	5	12				NDD				SP09	OTE
OUT	5	13				NDD				SP09	OTE
OUT	5	14				NDD				SP09	OTE
OUT	5	15				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	5	16				NDD				SP09	OTE
OUT	5	17				NDD				SP09	OTE
OUT	5	18				NDD				SP09	OTE
OUT	5	19				NDD				SP09	OTE
OUT	5	20				NDD				SP09	OTE
OUT	5	21				NDD				SP09	OTE
OUT	5	22				NDD				SP09	OTE
OUT	5	23				NDD				SP09	OTE
OUT	5	24				NDD				SP09	OTE
OUT	5	25				NDD				SP09	OTE
OUT	5	26				NDD				SP09	OTE
OUT	5	27				NDD				SP09	OTE
OUT	5	28				NDD				SP09	OTE
OUT	5	29				NDD				SP09	OTE
OUT	5	30				NDD				SP09	OTE
OUT	5	31				NDD				SP09	OTE
OUT	5	32				NDD				SP09	OTE
OUT	5	33				NDD				SP09	OTE
OUT	5	34				NDD				SP09	OTE
OUT	5	35				NDD				SP09	OTE
OUT	5	36				NDD				SP09	OTE
OUT	5	37				NDD				SP09	OTE
OUT	5	38				NDD				SP09	OTE
OUT	5	39				NDD				SP09	OTE
OUT	5	40				NDD				SP09	OTE
OUT	5	41				NDD				SP09	OTE
OUT	6	1				NDD				SP09	OTE
OUT	6	2				NDD				SP09	OTE
OUT	6	3				NDD				SP09	OTE
OUT	6	4				NDD				SP09	OTE
OUT	6	5				NDD				SP09	OTE
OUT	6	6				NDD				SP09	OTE
OUT	6	7				RES		SP08	4.65	SP08	OTE
OUT	6	7				RES		SP03	20.52	SP03	OTE
OUT	6	8				NDD				SP09	OTE
OUT	6	9				NDD				SP09	OTE
OUT	6	10				NDD				SP09	OTE
OUT	6	11				NDD				SP09	OTE
OUT	6	12				RIC					
OUT	6	12				NDD				SP09	OTE
OUT	6	13				NDD				SP09	OTE
OUT	6	14				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	6	15				NDD				SP09	OTE
OUT	6	16				NDD				SP09	OTE
OUT	6	17				NDD				SP09	OTE
OUT	6	18				NDD				SP09	OTE
OUT	6	19				NDD				SP09	OTE
OUT	6	20				NDD				SP09	OTE
OUT	6	21				NDD				SP09	OTE
OUT	6	22				NDD				SP09	OTE
OUT	6	23				NDD				SP09	OTE
OUT	6	24				NDD				SP09	OTE
OUT	6	25				NDD				SP09	OTE
OUT	6	26				NDD				SP09	OTE
OUT	6	27				NDD				SP09	OTE
OUT	6	28				NDD				SP09	OTE
OUT	6	29				NDD				SP09	OTE
OUT	6	30				NDD				SP09	OTE
OUT	6	31				NDD				SP09	OTE
OUT	6	32				NDD				SP09	OTE
OUT	6	33				NDD				SP09	OTE
OUT	6	34				NDD				SP09	OTE
OUT	6	35				NDD				SP09	OTE
OUT	6	36				NDD				SP09	OTE
OUT	6	37				NDD				SP09	OTE
OUT	6	38				NDD				SP09	OTE
OUT	6	39				NDD				SP09	OTE
OUT	6	40				NDD				SP09	OTE
OUT	6	41				NDD				SP09	OTE
OUT	6	42				NDD				SP09	OTE
OUT	7	1				NDD				SP09	OTE
OUT	7	2				NDD				SP09	OTE
OUT	7	3				NDD				SP09	OTE
OUT	7	4				NDD				SP09	OTE
OUT	7	5				NDD				SP09	OTE
OUT	7	6				NDD				SP09	OTE
OUT	7	7				NDD				SP09	OTE
OUT	7	8				NDD				SP09	OTE
OUT	7	9				NDD				SP09	OTE
OUT	7	10				NDD				SP09	OTE
OUT	7	11				NDD				SP09	OTE
OUT	7	12				NDD				SP09	OTE
OUT	7	13				NDD				SP09	OTE
OUT	7	14				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	7	15				NDD				SP09	OTE
OUT	7	16				NDD				SP09	OTE
OUT	7	17				NDD				SP09	OTE
OUT	7	18				NDD				SP09	OTE
OUT	7	19				NDD				SP09	OTE
OUT	7	20				NDD				SP09	OTE
OUT	7	21				NDD				SP09	OTE
OUT	7	22	0.96	108	27	ODI	3	SP04	25.20	SP09	OTE
OUT	7	23				NDD				SP09	OTE
OUT	7	24				NDD				SP09	OTE
OUT	7	25				NDD				SP09	OTE
OUT	7	26				NDD				SP09	OTE
OUT	7	27				NDD				SP09	OTE
OUT	7	28				NDD				SP09	OTE
OUT	7	29				NDD				SP09	OTE
OUT	7	30				NDD				SP09	OTE
OUT	7	31				NDD				SP09	OTE
OUT	7	32				NDD				SP09	OTE
OUT	7	33				NDD				SP09	OTE
OUT	7	34				NDD				SP09	OTE
OUT	7	35				NDD				SP09	OTE
OUT	7	36				NDD				SP09	OTE
OUT	7	37				NDD				SP09	OTE
OUT	7	38				NDD				SP09	OTE
OUT	7	39				NDD				SP09	OTE
OUT	7	40				NDD				SP09	OTE
OUT	7	41				NDD				SP09	OTE
OUT	8	1				NDD				SP09	OTE
OUT	8	2				NDD				SP09	OTE
OUT	8	3				NDD				SP09	OTE
OUT	8	4				NDD				SP09	OTE
OUT	8	5				NDD				SP09	OTE
OUT	8	6				NDD				SP09	OTE
OUT	8	7				NDD				SP09	OTE
OUT	8	8				NDD				SP09	OTE
OUT	8	9				NDD				SP09	OTE
OUT	8	10				NDD				SP09	OTE
OUT	8	11				NDD				SP09	OTE
OUT	8	12				NDD				SP09	OTE
OUT	8	13				NDD				SP09	OTE
OUT	8	14				NDD				SP09	OTE
OUT	8	15				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	8	16				NDD				SP09	OTE
OUT	8	17				NDD				SP09	OTE
OUT	8	18				NDD				SP09	OTE
OUT	8	19				NDD				SP09	OTE
OUT	8	20				NDD				SP09	OTE
OUT	8	21				NDD				SP09	OTE
OUT	8	22				NDD				SP09	OTE
OUT	8	23				NDD				SP09	OTE
OUT	8	24				NDD				SP09	OTE
OUT	8	25				NDD				SP09	OTE
OUT	8	26				NDD				SP09	OTE
OUT	8	27				NDD				SP09	OTE
OUT	8	28				NDD				SP09	OTE
OUT	8	29				NDD				SP09	OTE
OUT	8	30				NDD				SP09	OTE
OUT	8	31				NDD				SP09	OTE
OUT	8	32				NDD				SP09	OTE
OUT	8	33				NDD				SP09	OTE
OUT	8	34				NDD				SP09	OTE
OUT	8	35				NDD				SP09	OTE
OUT	8	36				NDD				SP09	OTE
OUT	8	37				NDD				SP09	OTE
OUT	8	38				NDD				SP09	OTE
OUT	8	39				NDD				SP09	OTE
OUT	8	40				NDD				SP09	OTE
OUT	9	1				NDD				SP09	OTE
OUT	9	2				NDD				SP09	OTE
OUT	9	3				NDD				SP09	OTE
OUT	9	4				NDD				SP09	OTE
OUT	9	5				NDD				SP09	OTE
OUT	9	6				NDD				SP09	OTE
OUT	9	7				NDD				SP09	OTE
OUT	9	8				NDD				SP09	OTE
OUT	9	9				NDD				SP09	OTE
OUT	9	10				NDD				SP09	OTE
OUT	9	11				NDD				SP09	OTE
OUT	9	12				NDD				SP09	OTE
OUT	9	13				NDD				SP09	OTE
OUT	9	14				NDD				SP09	OTE
OUT	9	15				NDD				SP09	OTE
OUT	9	16				NDD				SP09	OTE
OUT	9	17				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	9	18				NDD				SP09	OTE
OUT	9	19				NDD				SP09	OTE
OUT	9	20				NDD				SP09	OTE
OUT	9	21				NDD				SP09	OTE
OUT	9	22				NDD				SP09	OTE
OUT	9	23				NDD				SP09	OTE
OUT	9	24				NDD				SP09	OTE
OUT	9	25				NDD				SP09	OTE
OUT	9	26				NDD				SP09	OTE
OUT	9	27				NDD				SP09	OTE
OUT	9	28				NDD				SP09	OTE
OUT	9	29				NDD				SP09	OTE
OUT	9	30				NDD				SP09	OTE
OUT	9	31				NDD				SP09	OTE
OUT	9	32				NDD				SP09	OTE
OUT	9	33				NDD				SP09	OTE
OUT	9	34				NDD				SP09	OTE
OUT	9	35				NDD				SP09	OTE
OUT	9	36				NDD				SP09	OTE
OUT	9	37				NDD				SP09	OTE
OUT	10	1				NDD				SP09	OTE
OUT	10	2				NDD				SP09	OTE
OUT	10	3				NDD				SP09	OTE
OUT	10	4				NDD				SP09	OTE
OUT	10	5				NDD				SP09	OTE
OUT	10	6				NDD				SP09	OTE
OUT	10	7				NDD				SP09	OTE
OUT	10	8				NDD				SP09	OTE
OUT	10	9				NDD				SP09	OTE
OUT	10	10				NDD				SP09	OTE
OUT	10	11				NDD				SP09	OTE
OUT	10	12				NDD				SP09	OTE
OUT	10	13				NDD				SP09	OTE
OUT	10	14				NDD				SP09	OTE
OUT	10	15				NDD				SP09	OTE
OUT	10	16				NDD				SP09	OTE
OUT	10	17				NDD				SP09	OTE
OUT	10	18				NDD				SP09	OTE
OUT	10	19				NDD				SP09	OTE
OUT	10	20				NDD				SP09	OTE
OUT	10	21				NDD				SP09	OTE
OUT	10	22				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	10	23				NDD				SP09	OTE
OUT	10	24				NDD				SP09	OTE
OUT	10	25				NDD				SP09	OTE
OUT	10	26				NDD				SPO9	OTE
OUT	10	27				NDD				SP09	OTE
OUT	10	28				NDD				SP09	OTE
OUT	10	29				NDD				SP09	OTE
OUT	10	30				NDD				SP09	OTE
OUT	10	31				NDD				SP09	OTE
OUT	10	32				NDD				SP09	OTE
OUT	10	33				NDD				SP09	OTE
OUT	10	34				NDD				SP09	OTE
OUT	10	35				NDD				SP09	OTE
OUT	10	36				NDD				SP09	OTE
OUT	10	37				NDD				SP09	OTE
OUT	10	38				NDD				SP09	OTE
OUT	11	1				NDD				SP09	OTE
OUT	11	2				NDD				SP09	OTE
OUT	11	3				NDD				SP09	OTE
OUT	11	4				NDD				SP09	OTE
OUT	11	5				NDD				SP09	OTE
OUT	11	6				NDD				SP09	OTE
OUT	11	7				NDD				SP09	OTE
OUT	11	8				NDD				SP09	OTE
OUT	11	9				NDD				SP09	OTE
OUT	11	10				NDD				SP09	OTE
OUT	11	11				NDD				SP09	OTE
OUT	11	12				NDD				SP09	OTE
OUT	11	13				RIC					
OUT	11	13				RES		SP07	12.97	SP07	OTE
OUT	11	14				NDD				SP09	OTE
OUT	11	15				NDD				SP09	OTE
OUT	11	16				NDD				SP09	OTE
OUT	11	17				NDD				SP09	OTE
OUT	11	18				NDD				SP09	OTE
OUT	11	19				NDD				SP09	OTE
OUT	11	20				NDD				SP09	OTE
OUT	11	21				NDD				SP09	OTE
OUT	11	22				NDD				SP09	OTE
OUT	11	23				NDD				SP09	OTE
OUT	11	24				NDD				SP09	OTE
OUT	11	25				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	11	26				NDD				SP09	OTE
OUT	11	27				NDD				SP09	OTE
OUT	11	28				NDD				SP09	OTE
OUT	11	29				NDD				SP09	OTE
OUT	11	30				NDD				SP09	OTE
OUT	11	31				NDD				SP09	OTE
OUT	11	32				NDD				SP09	OTE
OUT	11	33				NDD				SP09	OTE
OUT	11	34				NDD				SP09	OTE
OUT	11	35				NDD				SP09	OTE
OUT	11	36				NDD				SP09	OTE
OUT	11	37				NDD				SP09	OTE
OUT	11	38				NDD				SP09	OTE
OUT	11	39				NDD				SP09	OTE
OUT	12	1				NDD				SP09	OTE
OUT	12	2				NDD				SP09	OTE
OUT	12	3				NDD				SP09	OTE
OUT	12	4				NDD				SP09	OTE
OUT	12	5				NDD				SP09	OTE
OUT	12	6				NDD				SP09	OTE
OUT	12	7				NDD				SP09	OTE
OUT	12	8				NDD				SP09	OTE
OUT	12	9				NDD				SP09	OTE
OUT	12	10				NDD				SP09	OTE
OUT	12	11				NDD				SP09	OTE
OUT	12	12				NDD				SP09	OTE
OUT	12	13				NDD				SP09	OTE
OUT	12	14				NDD				SPO9	OTE
OUT	12	15				NDD				SP09	OTE
OUT	12	16				NDD				SP09	OTE
OUT	12	17				NDD				SP09	OTE
OUT	12	18				NDD				SP09	OTE
OUT	12	19				NDD				SP09	OTE
OUT	12	20				NDD				SP09	OTE
OUT	12	21				NDD				SP09	OTE
OUT	12	22				NDD				SP09	OTE
OUT	12	23				NDD				SP09	OTE
OUT	12	24				NDD				SP09	OTE
OUT	12	25				NDD				SP09	OTE
OUT	12	26				NDD				SP09	OTE
OUT	12	27				NDD				SP09	OTE
OUT	12	28				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	12	29				NDD				SP09	OTE
OUT	12	30				NDD				SP09	OTE
OUT	12	31				NDD				SP09	OTE
OUT	12	32				NDD				SP09	OTE
OUT	12	33				NDD				SP09	OTE
OUT	12	34				NDD				SP09	OTE
OUT	12	35				NDD				SP09	OTE
OUT	12	36				NDD				SP09	OTE
OUT	12	37				NDD				SP09	OTE
OUT	12	38				NDD				SP09	OTE
OUT	13	1				NDD				SP09	OTE
OUT	13	2				NDD				SP09	OTE
OUT	13	3				NDD				SP09	OTE
OUT	13	4				NDD				SP09	OTE
OUT	13	5				NDD				SP09	OTE
OUT	13	6				NDD				SP09	OTE
OUT	13	7				NDD				SP09	OTE
OUT	13	8				NDD				SP09	OTE
OUT	13	9				NDD				SP09	OTE
OUT	13	10				NDD				SP09	OTE
OUT	13	11				NDD				SP09	OTE
OUT	13	12				NDD				SP09	OTE
OUT	13	13				NDD				SP09	OTE
OUT	13	14				NDD				SP09	OTE
OUT	13	15				NDD				SP09	OTE
OUT	13	16				NDD				SP09	OTE
OUT	13	17				NDD				SP09	OTE
OUT	13	18				NDD				SP09	OTE
OUT	13	19				NDD				SP09	OTE
OUT	13	20				NDD				SP09	OTE
OUT	13	21				NDD				SP09	OTE
OUT	13	22				NDD				SP09	OTE
OUT	13	23				NDD				SP09	OTE
OUT	13	24				NDD				SP09	OTE
OUT	13	25				NDD				SP09	OTE
OUT	13	26				NDD				SP09	OTE
OUT	13	27				NDD				SP09	OTE
OUT	13	28				NDD				SP09	OTE
OUT	13	29				NDD				SP09	OTE
OUT	13	30				RIC					
OUT	13	30				NDD				SP09	OTE
OUT	13	31				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	13	32				NDD				SP09	OTE
OUT	13	33				NDD				SP09	OTE
OUT	13	34				NDD				SP09	OTE
OUT	13	35				NDD				SP09	OTE
OUT	13	36				NDD				SP09	OTE
OUT	13	37				NDD				SP09	OTE
OUT	14	1				RIC					
OUT	14	1				NDD				SP09	OTE
OUT	14	2				NDD				SP09	OTE
OUT	14	3				NDD				SP09	OTE
OUT	14	4				NDD				SP09	OTE
OUT	14	5				NDD				SP09	OTE
OUT	14	6				RIC					
OUT	14	6				NDD				SP09	OTE
OUT	14	7				NDD				SP09	OTE
OUT	14	8				NDD				SP09	OTE
OUT	14	9				NDD				SP09	OTE
OUT	14	10				NDD				SP09	OTE
OUT	14	11				NDD				SP09	OTE
OUT	14	12				NDD				SP09	OTE
OUT	14	13				NDD				SP09	OTE
OUT	14	14				NDD				SP09	OTE
OUT	14	15				NDD				SP09	OTE
OUT	14	16				NDD				SP09	OTE
OUT	14	17				NDD				SP09	OTE
OUT	14	18				NDD				SP09	OTE
OUT	14	19				NDD				SP09	OTE
OUT	14	20				NDD				SP09	OTE
OUT	14	21				NDD				SP09	OTE
OUT	14	22				NDD				SP09	OTE
OUT	14	23				NDD				SP09	OTE
OUT	14	24				NDD				SP09	OTE
OUT	14	25				NDD				SP09	OTE
OUT	14	26				NDD				SP09	OTE
OUT	14	27				NDD				SP09	OTE
OUT	14	28				NDD				SP09	OTE
OUT	14	29				NDD				SP09	OTE
OUT	14	30				NDD				SP09	OTE
OUT	14	31				NDD				SP09	OTE
OUT	14	32				NDD				SP09	OTE
OUT	14	33				NDD				SP09	OTE
OUT	14	34				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	14	35				NDD				SP09	OTE
OUT	14	36				NDD				SP09	OTE
OUT	15	1				NDD				SP09	OTE
OUT	15	2				NDD				SP09	OTE
OUT	15	3				RIC					
OUT	15	3				NDD				SP09	OTE
OUT	15	4				NDD				SP09	OTE
OUT	15	5				NDD				SP09	OTE
OUT	15	6				RBD					
OUT	15	6				NDD				SP09	OTE
OUT	15	7				NDD				SP09	OTE
OUT	15	8				NDD				SP09	OTE
OUT	15	9				NDD				SP09	OTE
OUT	15	10				NDD				SP09	OTE
OUT	15	11				NDD				SP09	OTE
OUT	15	12				NDD				SP09	OTE
OUT	15	13				NDD				SP09	OTE
OUT	15	14				NDD				SP09	OTE
OUT	15	15				NDD				SP09	OTE
OUT	15	16				NDD				SP09	OTE
OUT	15	17				NDD				SP09	OTE
OUT	15	18				NDD				SP09	OTE
OUT	15	19				NDD				SP09	OTE
OUT	15	20				NDD				SP09	OTE
OUT	15	21				NDD				SP09	OTE
OUT	15	22				NDD				SP09	OTE
OUT	15	23				NDD				SP09	OTE
OUT	15	24				NDD				SP09	OTE
OUT	15	25				NDD				SP09	OTE
OUT	15	26				NDD				SP09	OTE
OUT	15	27				NDD				SP09	OTE
OUT	15	28				RIC					
OUT	15	28				NDD				SP09	OTE
OUT	15	29				NDD				SP09	OTE
OUT	15	30				NDD				SP09	OTE
OUT	15	31				NDD				SP09	OTE
OUT	15	32				NDD				SP09	OTE
OUT	15	33				NDD				SP09	OTE
OUT	16	1				NDD				SP09	OTE
OUT	16	2				NDD				SP09	OTE
OUT	16	3				NDD				SP09	OTE
OUT	16	4				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	16	5				NDD				SP09	OTE
OUT	16	6				NDD				SP09	OTE
OUT	16	7				NDD				SP09	OTE
OUT	16	8				NDD				SP09	OTE
OUT	16	9				NDD				SP09	OTE
OUT	16	10				NDD				SP09	OTE
OUT	16	11				NDD				SP09	OTE
OUT	16	12				NDD				SP09	OTE
OUT	16	13				NDD				SP09	OTE
OUT	16	14				NDD				SP09	OTE
OUT	16	15				NDD				SP09	OTE
OUT	16	16				NDD				SP09	OTE
OUT	16	17				NDD				SP09	OTE
OUT	16	18				NDD				SP09	OTE
OUT	16	19				NDD				SP09	OTE
OUT	16	20				NDD				SP09	OTE
OUT	16	21				NDD				SP09	OTE
OUT	16	22				NDD				SP09	OTE
OUT	16	23				NDD				SP09	OTE
OUT	16	24				NDD				SP09	OTE
OUT	16	25				NDD				SP09	OTE
OUT	16	26				NDD				SP09	OTE
OUT	16	27				NDD				SP09	OTE
OUT	16	28				NDD				SP09	OTE
OUT	16	29				NDD				SP09	OTE
OUT	16	30				NDD				SP09	OTE
OUT	16	31				NDD				SP09	OTE
OUT	16	32				NDD				SPO9	OTE
OUT	17	1				NDD				SP09	OTE
OUT	17	2				NDD				SP09	OTE
OUT	17	3				NDD				SP09	OTE
OUT	17	4				NDD				SP09	OTE
OUT	17	5				NDD				SP09	OTE
OUT	17	6				NDD				SP09	OTE
OUT	17	7				NDD				SP09	OTE
OUT	17	8				NDD				SP09	OTE
OUT	17	9				NDD				SP09	OTE
OUT	17	10				NDD				SP09	OTE
OUT	17	11				NDD				SP09	OTE
OUT	17	12				NDD				SP09	OTE
OUT	17	13				NDD				SP09	OTE
OUT	17	14				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	17	15				NDD				SP09	OTE
OUT	17	16				NDD				SP09	OTE
OUT	17	17				NDD				SP09	OTE
OUT	17	18				NDD				SP09	OTE
OUT	17	19				NDD				SP09	OTE
OUT	17	20				NDD				SP09	OTE
OUT	17	21				NDD				SP09	OTE
OUT	17	22				NDD				SP09	OTE
OUT	17	23				NDD				SP09	OTE
OUT	17	24				NDD				SP09	OTE
OUT	17	25				NDD				SP09	OTE
OUT	17	26				NDD				SP09	OTE
OUT	17	27				NDD				SP09	OTE
OUT	17	28				NDD				SP09	OTE
OUT	17	29				NDD				SP09	OTE
OUT	17	30				NDD				SP09	OTE
OUT	17	31				NDD				SP09	OTE
OUT	18	1				NDD				SP09	OTE
OUT	18	2				NDD				SP09	OTE
OUT	18	3				NDD				SP09	OTE
OUT	18	4				NDD				SP09	OTE
OUT	18	5				NDD				SP09	OTE
OUT	18	6				NDD				SP09	OTE
OUT	18	7				NDD				SP09	OTE
OUT	18	8				NDD				SP09	OTE
OUT	18	9				NDD				SP09	OTE
OUT	18	10				NDD				SP09	OTE
OUT	18	11				NDD				SP09	OTE
OUT	18	12				NDD				SP09	OTE
OUT	18	13				NDD				SP09	OTE
OUT	18	14				NDD				SP09	OTE
OUT	18	15				NDD				SP09	OTE
OUT	18	16				NDD				SP09	OTE
OUT	18	17				NDD				SP09	OTE
OUT	18	18				NDD				SP09	OTE
OUT	18	19				NDD				SP09	OTE
OUT	18	20				NDD				SP09	OTE
OUT	18	21				NDD				SP09	OTE
OUT	18	22				NDD				SP09	OTE
OUT	18	23				NDD				SP09	OTE
OUT	18	24				NDD				SP09	OTE
OUT	18	25				NDD				SP09	OTE

Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	18	26				NDD				SP09	OTE
OUT	18	27				NDD				SP09	OTE
OUT	18	28				NDD				SP09	OTE
OUT	19	1				NDD				SP09	OTE
OUT	19	2				NDD				SP09	OTE
OUT	19	3				NDD				SP09	OTE
OUT	19	4				NDD				SP09	OTE
OUT	19	5				NDD				SP09	OTE
OUT	19	6				NDD				SP09	OTE
OUT	19	7				NDD				SP09	OTE
OUT	19	8				NDD				SP09	OTE
OUT	19	9				NDD				SP09	OTE
OUT	19	10				NDD				SP09	OTE
OUT	19	11				NDD				SP09	OTE
OUT	19	12				NDD				SP09	OTE
OUT	19	13				NDD				SP09	OTE
OUT	19	14				NDD				SP09	OTE
OUT	19	15				NDD				SP09	OTE
OUT	19	16				NDD				SP09	OTE
OUT	19	17				NDD				SP09	OTE
OUT	19	18				NDD				SP09	OTE
OUT	19	19				NDD				SP09	OTE
OUT	19	20				NDD				SP09	OTE
OUT	19	21				NDD				SP09	OTE
OUT	19	22				NDD				SP09	OTE
OUT	19	23				NDD				SP09	OTE
OUT	19	24				NDD				SP09	OTE
OUT	19	25				NDD				SP09	OTE
OUT	19	26				NDD				SP09	OTE
OUT	20	1				NDD				SP09	OTE
OUT	20	2				NDD				SP09	OTE
OUT	20	3				NDD				SP09	OTE
OUT	20	4				NDD				SP09	OTE
OUT	20	4				RIC					
OUT	20	5				NDD				SP09	OTE
OUT	20	6				NDD				SP09	OTE
OUT	20	7				NDD				SP09	OTE
OUT	20	8				NDD				SP09	OTE
OUT	20	9				NDD				SP09	OTE
OUT	20	10				NDD				SP09	OTE
OUT	20	11				NDD				SP09	OTE
OUT	20	12				NDD				SP09	OTE

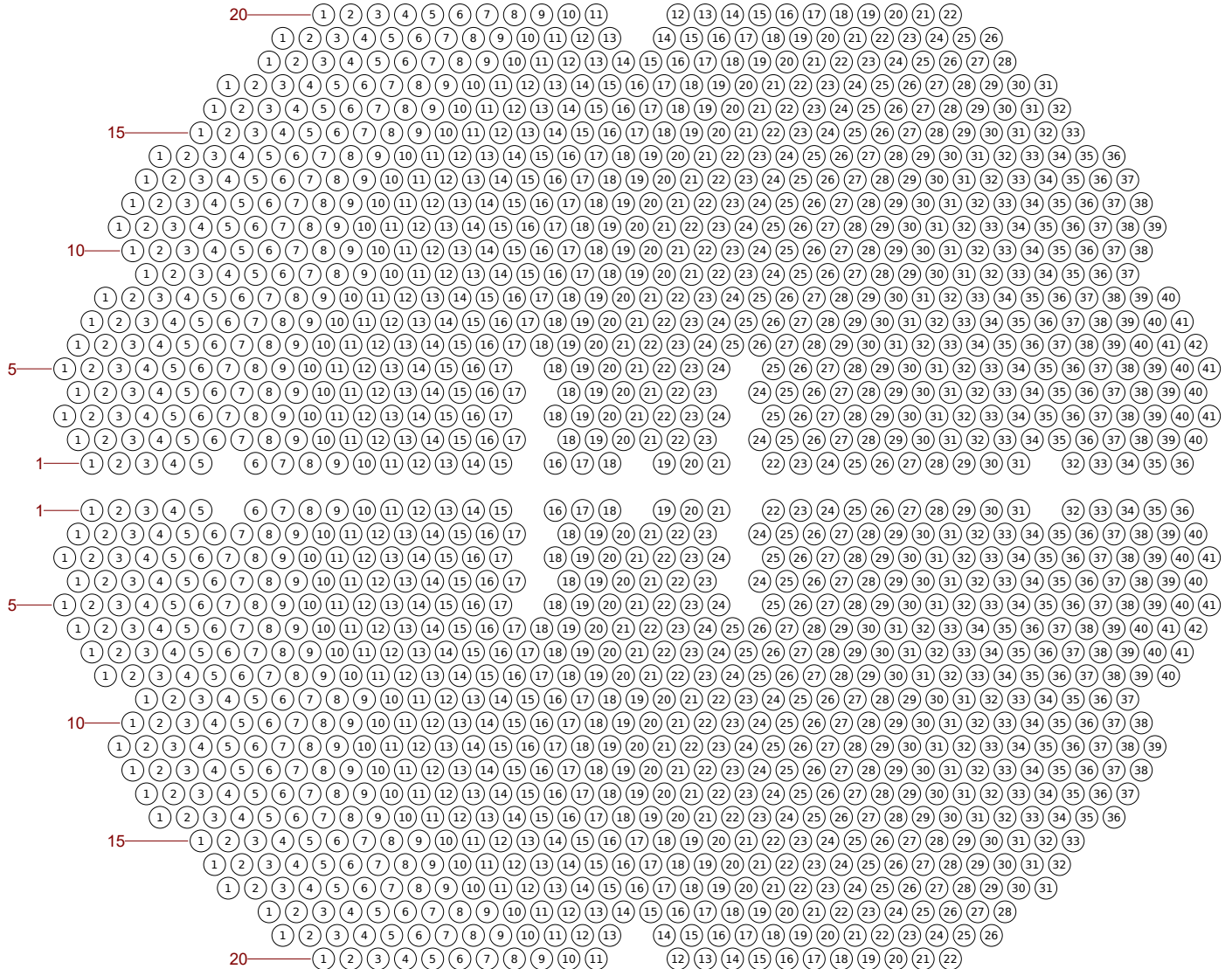
Data Report
East Kentucky Power Co-Op
Spurlock Station
Unit 2
LPFWH-1B
11-2021

sec	row	tube	volts	phase	pcnt	defect	chan	loc_land	loc_off	beg_test	end_test
OUT	20	13				NDD				SP09	OTE
OUT	20	14				NDD				SP09	OTE
OUT	20	15				NDD				SP09	OTE
OUT	20	16				NDD				SP09	OTE
OUT	20	17				NDD				SP09	OTE
OUT	20	18				NDD				SP09	OTE
OUT	20	19				NDD				SP09	OTE
OUT	20	20				NDD				SP09	OTE
OUT	20	21				NDD				SP09	OTE
OUT	20	22				NDD				SP09	OTE

TUBESHEET LAYOUT MAP

EAST KENTUCKY POWER CO-OP
SPURLOCK STATION
UNIT 2
LPFWH-1B

VIEW FROM:INLET/OUTLET



Model LPFWH-1B (1,436 tubes)
1,436 open tubes



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

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 1		Component ID: 1A, 1B			
Examination Scope					
Applicability: This technique is for the bobbin examination of 0.625" x .035" wall 304 SS tubes					
Instrument			Tubing		
Manufacturer/Model: CoreStar OMNI 200/100			Material Type: 304 SS		
			# Of Tubes: 718 U-Tubes		
			OD/Wall (inch): 0.625" x 0.035"		
Data Recording Equipment			Length: ~34'		
Manuf./Media: Hard drive / Network or Equiv			Calibration Standard(s)		
Software			Type/SN: ASME CSC-234		
Manufacturer: Corestar			Type/SN: Wall Thinning CSC-456		
			Type/SN: Internal Reference		
			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
500-520 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

OMNI-2001 - 035 WALL 304 SS.cfg
 File Edit View Probe Util Help

IP Address: 192.168.9.1

TEST LINK | BALANCE | REF NULL | HW NULL

Config | Options | Scope | Waveform | Freq Sweep | Status

Sample Rate: 1,600 Num Chan: 8 Trigger: Internal

		DRIVER		COIL							
TIME	SLOT	FREQUENCY	DRIVE	1	2	3	4	5	6	7	8
1	1	600.000 KHz	100.00%	1	2						
2	1	300.000 KHz	100.00%	3	4						
3	1	150.000 KHz	100.00%	5	6						
4	1	75.000 KHz	100.00%	7	8						

Config Options

☐ Continuous Mode
☐ 32-bit Mode
☐ Dynamic Gain
☐ Internal Reference
☐ Time Slew
☐ Increment Caps
☐ Auto Stop
☐ No Powerdown
☐ Synch Outputs On

Probe Options

☐ Ghent/S10
☒ High Speed RPC
☒ Array Outputs
☒ X-Probe Clock

AUX Chans

☐ Time
☐ Encoders
☐ RMS
☐ Gains
☐ Sample Index
☐ Status & IO
☐ Sample Flags

SLOT	DELAY (μs)	INTEG (wave)	TIME (μs)	ENCODER
1	40	68	154	
2	40	34	154	
3	40	18	161	
4	40	8	147	

SLOT	COIL INPUT GAIN (dB)							
	1	2	3	4	5	6	7	8
1	14	8						
2	14	8						
3	14	8						
4	14	8						

COIL	DR1	DR3	BC	HN	RFT	CAP	NAME
1	DIP					A	0
2	ABS					A	0
3							
4							
5							
6							
7							
8							

618 of 625 μs

OK Cancel

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 520 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

Page 3 of 4

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 $\pm$ 3	100% TWH 40 degrees $\pm$ 3	100% TWH 40 degrees $\pm$ 3	100% TWH 40 degrees $\pm$ 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 $\pm$ 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						
- Calibration curves shall be constructed using the "As-Built" dimensions from the calibration standard drawings. - Normalize to 4 volts on the 4 X 20% flat bottom holes using channel #1 differential and store to all channels. - All Quantifiable indications of tube wall degradation $\geq$ 20% TW and 1 Volt shall be reported (however, not to exceed 6 reportable ID defects). - Locate all defect indications in inches measured from the test end. - 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". - 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						

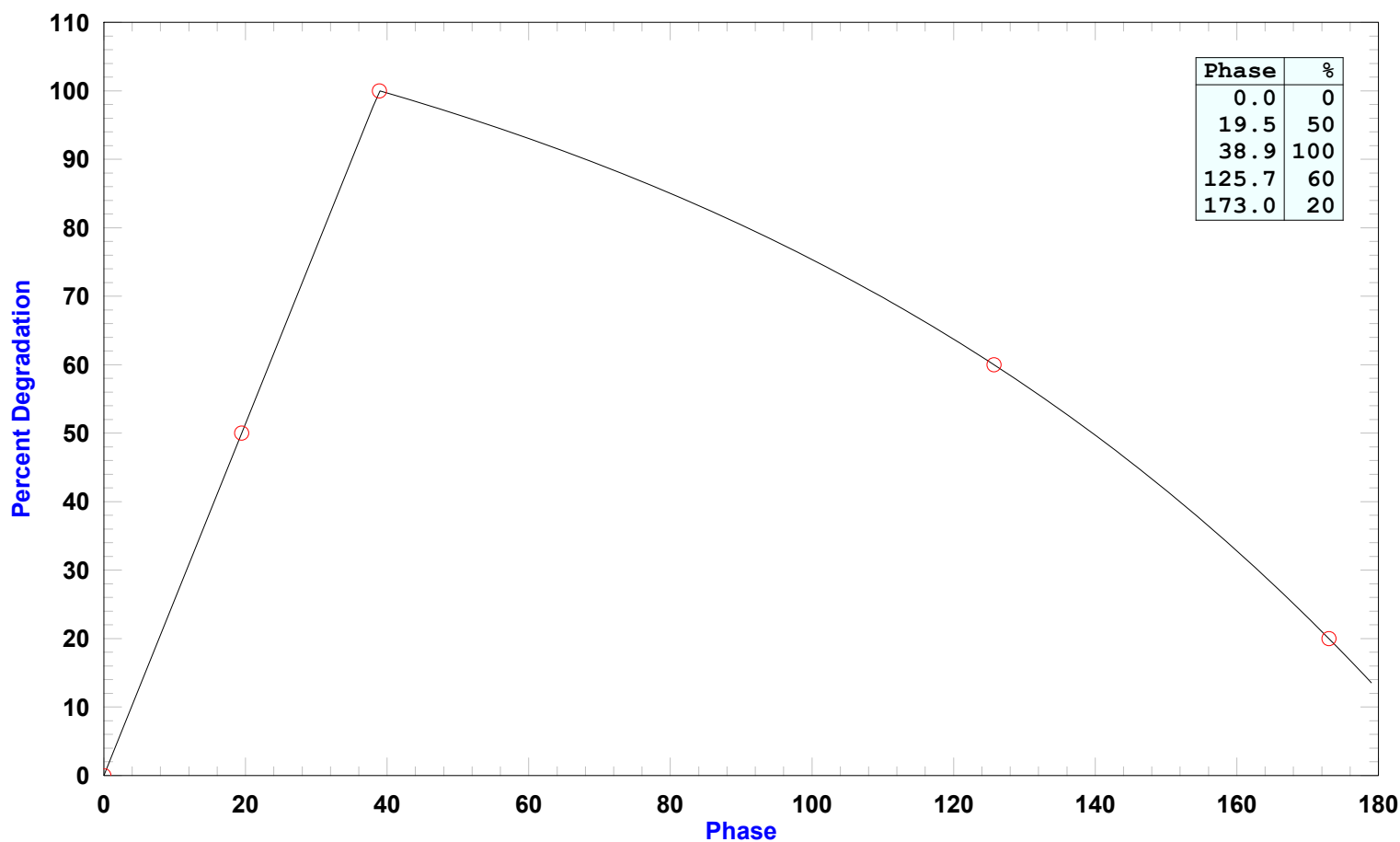
Examination Technique Specification Sheet

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.

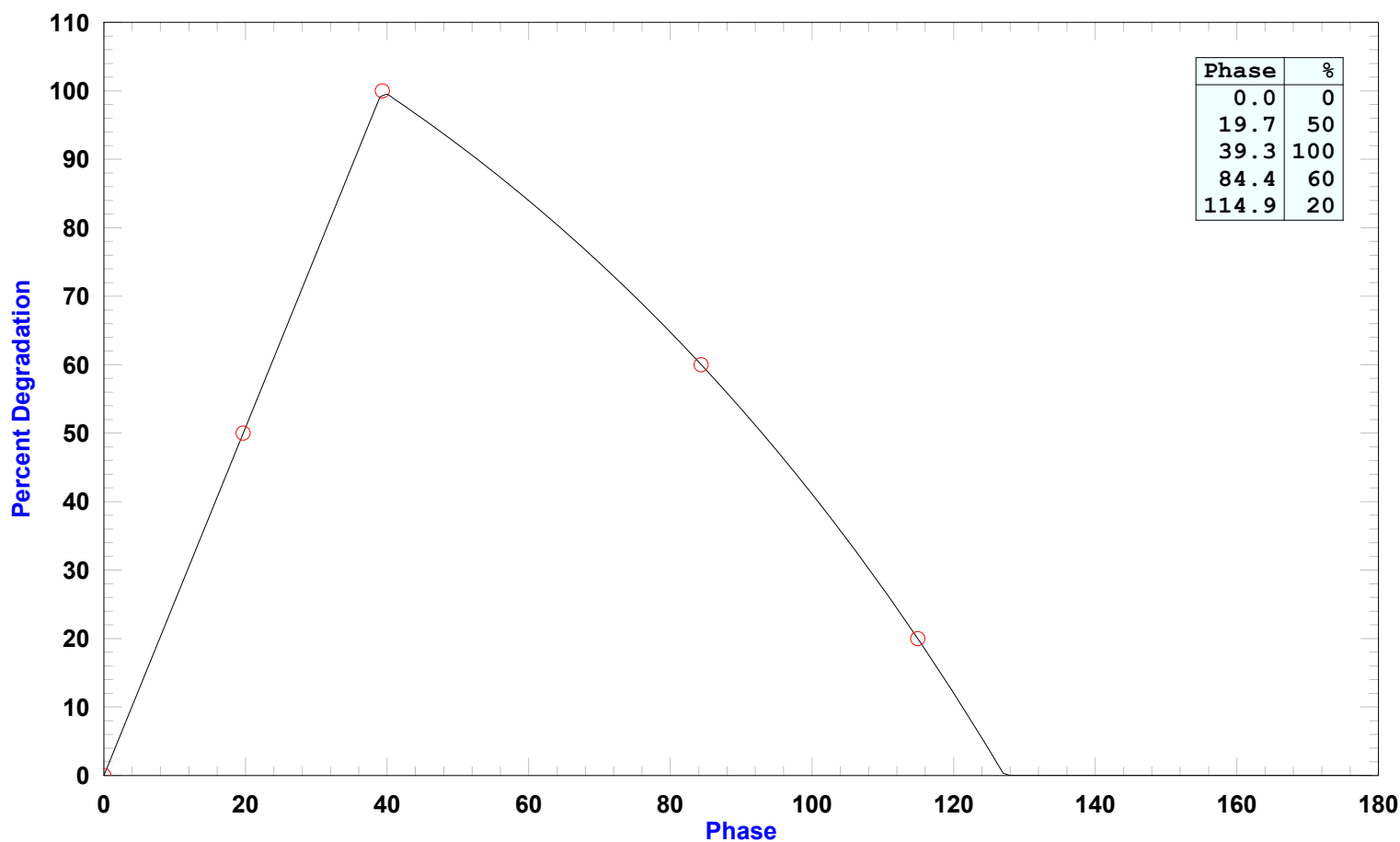
Site				Tester Config									
Owner	EKPC			Idx	TYPE	CHAN	FREQ	SPAN	Y/X	ROT	COIL	CTX	
Site Code	SPURLOCK			Unit	2								
Comp	LPFWH-1B			Model	LPFWH-1B								
Outage	11-2021			Date	11/05/2021								
Cal													
Cal Num	6			Disk	Leg			INLET					
Material	304 SS			ID	0.555			OD	0.625				
Operators													
Operator ID	S5349			Level	II								
Operator ID	S8014			Level	I								
Standards													
Type	ASME			SN	CSC-234								
Type	WT			SN	CSC-456								
Type				SN									
Probe													
Model	520 ESH/HF			Vendor	CORESTAR								
Ext Type	4 PIN			Vendor	CORESTAR								
Head Size	520			Head SN									
Shaft Length	0			Shaft SN									
Ext Length	50			Ref Head SN									
Slip SN				Ref Shaft SN									
Config				035 WALL 304 SS									
Auto Mode				Manual									
Sample Rate				1,600		Num Chan		8		Offset		1,772	
Acq Speed				35.00		RPC RPM				Acq Dir		PULL	
File													
Source				CoreStar		Samples		17,160					
Procedure													
Software				CoreStar EddyVision 8.1									
Equipment													
Tester				OMNI-200		SN		0017-0806					
Pusher				TrackDrive-100		SN		N/A					
Fixture						SN							

CH 1 600 KHz DEG Curve



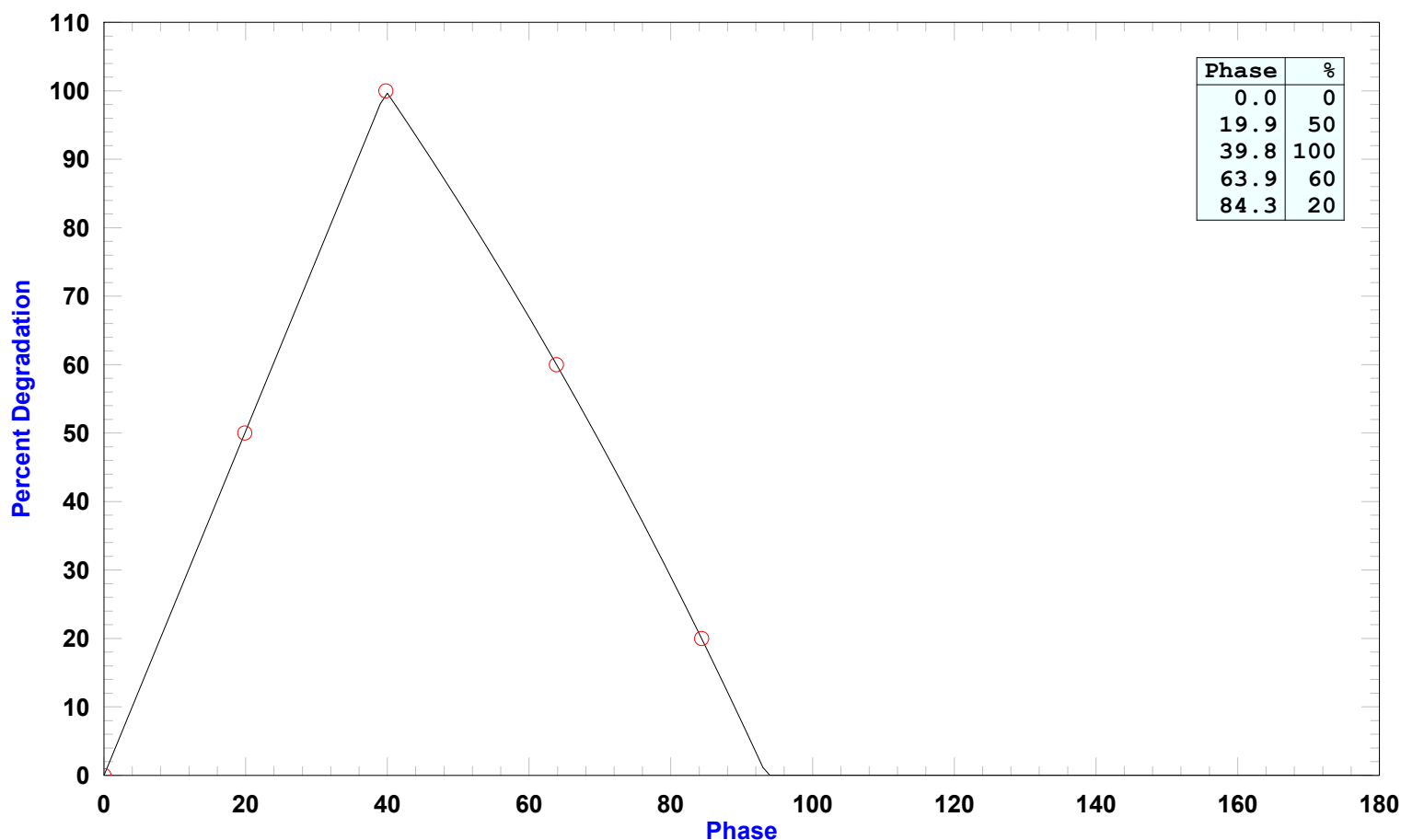
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	85	66.0	91	99.0	76	132.0	56	165.0	28
1.0	3	34.0	87	67.0	90	100.0	75	133.0	55	166.0	27
2.0	5	35.0	90	68.0	90	101.0	75	134.0	54	167.0	26
3.0	8	36.0	93	69.0	90	102.0	74	135.0	53	168.0	25
4.0	10	37.0	95	70.0	89	103.0	74	136.0	53	169.0	24
5.0	13	38.0	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		

CH 3 300 KHz DEG Curve



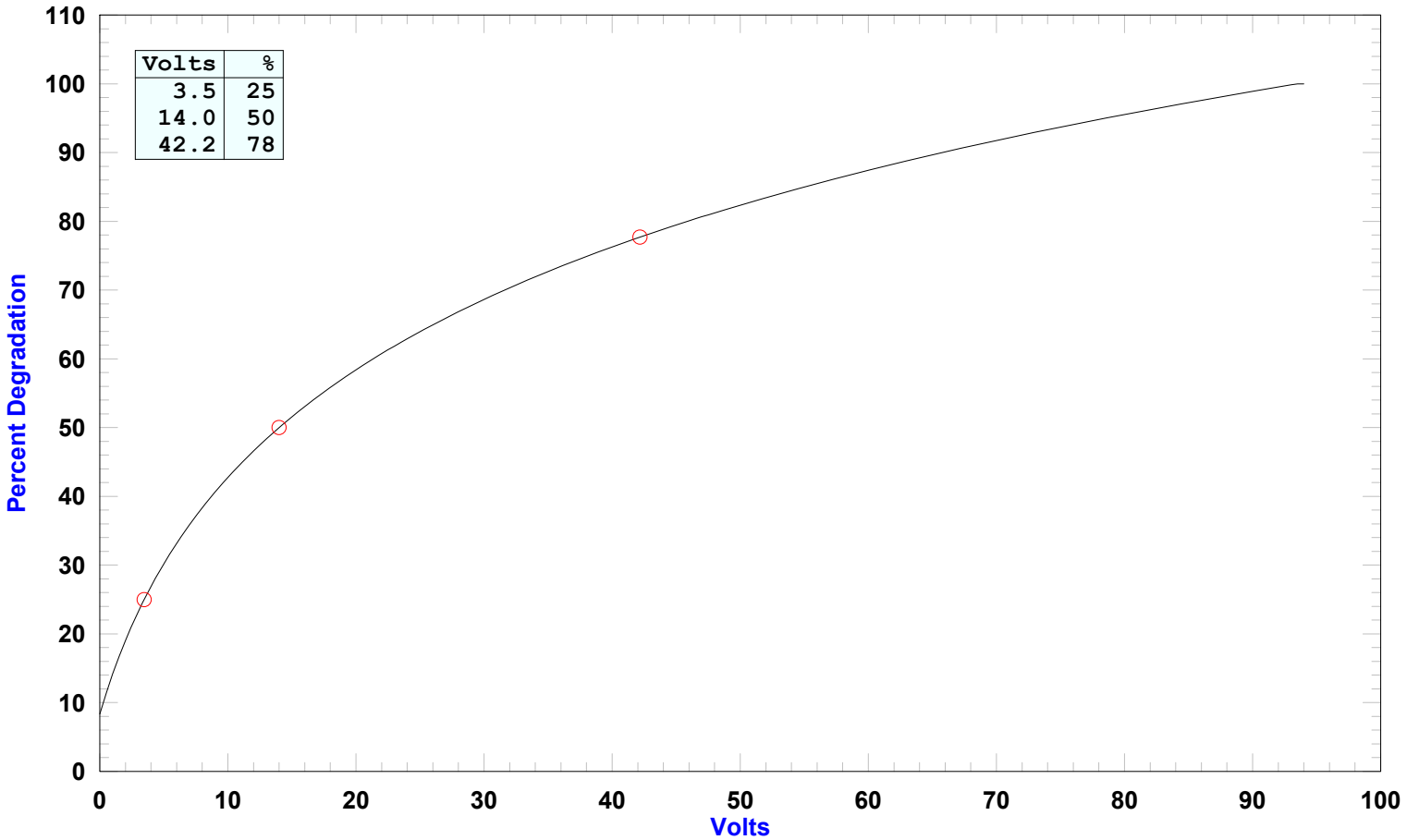
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	84	66.0	79	99.0	42	132.0	0	165.0	0
1.0	3	34.0	86	67.0	78	100.0	41	133.0	0	166.0	0
2.0	5	35.0	89	68.0	77	101.0	40	134.0	0	167.0	0
3.0	8	36.0	91	69.0	76	102.0	38	135.0	0	168.0	0
4.0	10	37.0	94	70.0	75	103.0	37	136.0	0	169.0	0
5.0	13	38.0	97	71.0	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		

CH 5 150 KHz DEG Curve



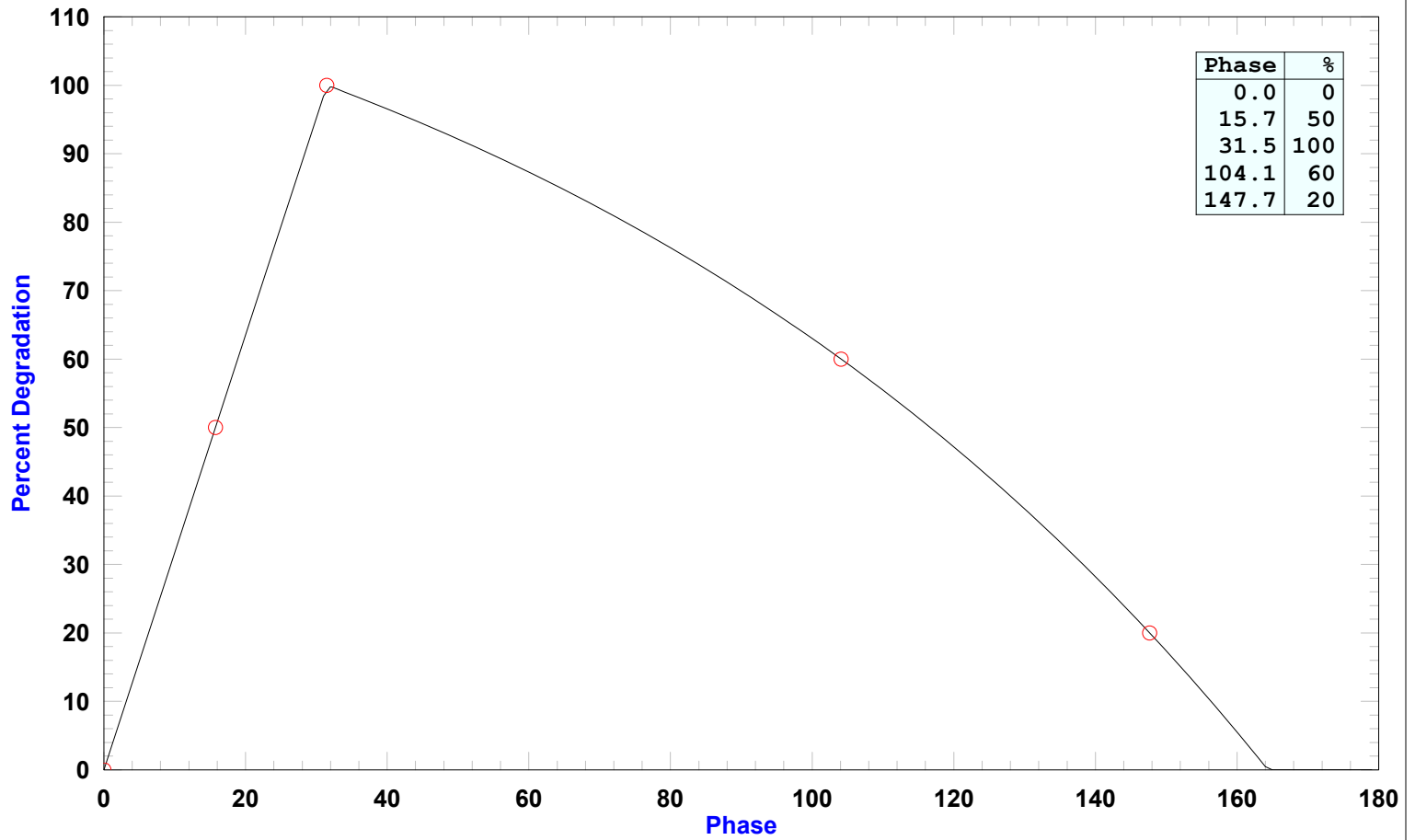
Phase	%	Phase	%	Phase	%	Phase	%	Phase	%	Phase	%
0.0	0	33.0	83	66.0	56	99.0	0	132.0	0	165.0	0
1.0	3	34.0	86	67.0	54	100.0	0	133.0	0	166.0	0
2.0	5	35.0	88	68.0	52	101.0	0	134.0	0	167.0	0
3.0	8	36.0	91	69.0	51	102.0	0	135.0	0	168.0	0
4.0	10	37.0	93	70.0	49	103.0	0	136.0	0	169.0	0
5.0	13	38.0	96	71.0	47	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		

CH 6 150 KHz VOLT Curve



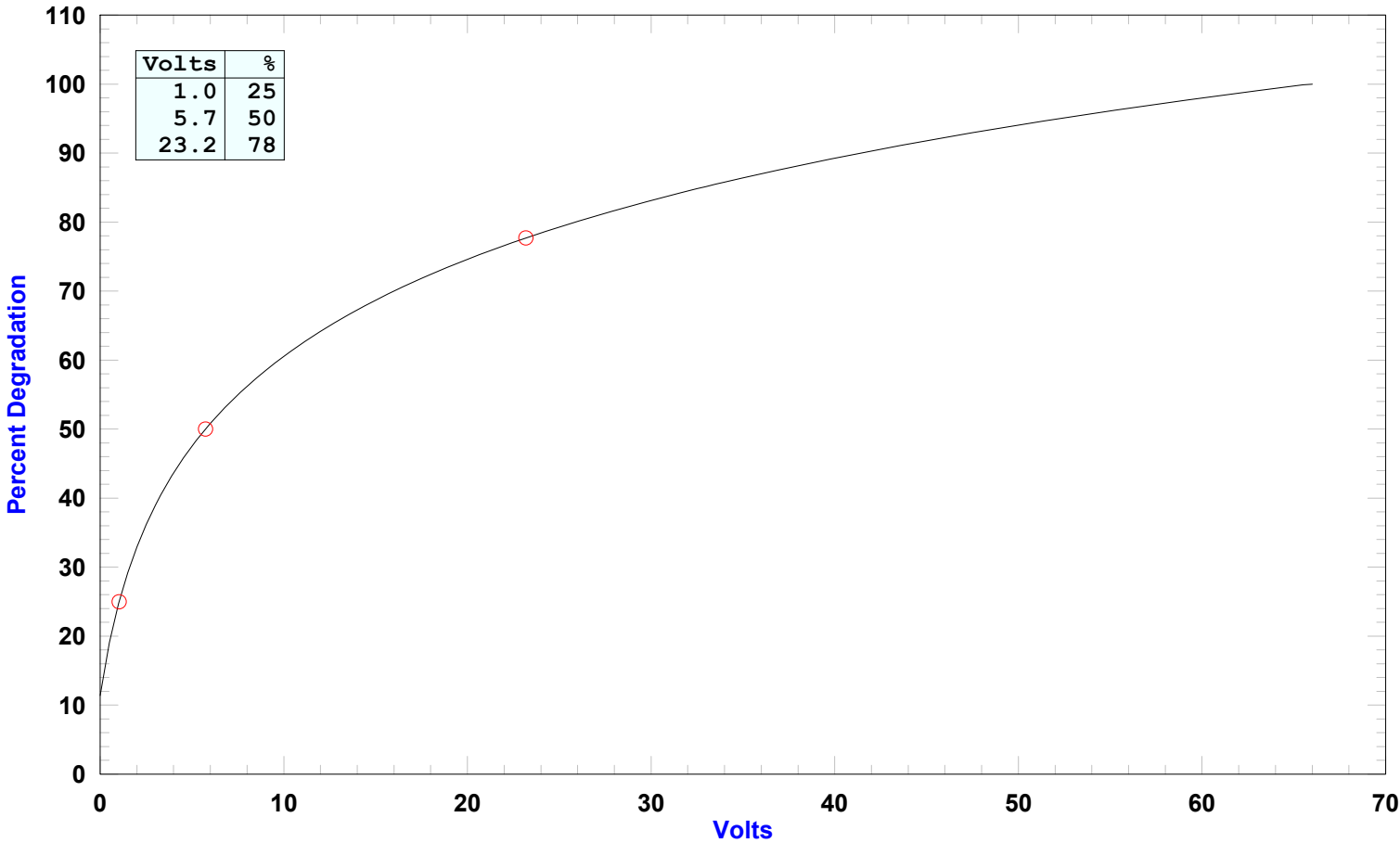
Volts	%	Volts	%	Volts	%	Volts	%	Volts	%	Volts	%
0.0	8	16.5	54	33.0	71	49.5	82	66.0	90	82.5	96
0.5	11	17.0	54	33.5	72	50.0	82	66.5	90	83.0	97
1.0	14	17.5	55	34.0	72	50.5	83	67.0	91	83.5	97
1.5	17	18.0	56	34.5	72	51.0	83	67.5	91	84.0	97
2.0	19	18.5	57	35.0	73	51.5	83	68.0	91	84.5	97
2.5	21	19.0	57	35.5	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		

MIX 1 1:5 DEG Curve



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		

MIX 2 4:6 VOLT Curve



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		



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

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.



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- 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 of 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



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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.



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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).



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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.



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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



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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).



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- 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.



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Attachment 2.1 Sample ETSS



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Form No	1085
Title	Examination Technique Specification Sheet OMNI
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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		
Manufacturer: Corestar		Type/SN: Wall Thinning		
		Type/SN: Reference		
Examination Procedure		Analog Signal Path		
Version/Revision: 8.0		Probe Shaft /Length:		
		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:	N/A	Circ. Direction
		Pull		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



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Configuration Board Settings

OMNI-200 1 - Titanium x .020.cfp

File Edit View Probe Util Help

TEST LINK BALANCE REF NULL MW NULL

Config Options Scope Waveform Freq Sweep Status

Sample Rate 1,500 Run Chan 8 Trigger Internal

Config Options

Continuous Mode ☐ Open/Close

32-bit Mode ☒ High-Speed RPC

Dynamic Gain ☒ Array Outputs

Internal Reference ☐ X-Probe Clock

Time Slew ☒

Increment Caps ☐

Auto Stop ☐

No Powerdown ☐

Synch Outputs On ☐

Probe Options

Time ☐

Encoders ☐

RMS ☐

Gains ☐

Sample Index ☐

Status & IO ☐

Sample Pairs ☐

		DRIVER		COIL							
	TIME	FREQUENCY	DRIVE	1	2	3	4	5	6	7	8
1	800.000 kHz	75.004	1	5							
2	400.000 kHz	75.004	1	4							
3	200.000 kHz	75.004	1	6							
4	100.000 kHz	75.004	1	8							

SLOT	DELAY (µs)	INTG (waves)	TIME (µs)	ENCODER
1	10	144	191	
2	10	61	163	
3	10	36	191	
4	10	10	111	

SLOT	1	2	3	4	5	6	7	8
1	14	0						
2	14	8						
3	14	8						
4	14	8						

COIL	DRI	DRI	DR	IR	RFT	CAP	RANGE
1	999					A	0
2	999					A	0
3							
4							
5							
6							
7							
8							

657 of 667 µs

Special Instructions for Data Acquisition

- Probes should be pulled @ 40 inches/second or less.
- 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.
- 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.
- Follow the Conco NDE procedure CSC-NDE-11.0 Rev 3.
- Encode the tube ID's as per map for respective sections.
- The initial exam attempt shall be performed with the XXX ESH/HF probe.
- Tubes that will not allow the probe to enter report as "Obstructed".
- Tubes that are unable to examine the desired extent report as "Restricted".
- Write a message for all tubes that are unable to be examined full length explaining the reason.
- Encode the ASME Std. as "999", Thinning Std as "999" with a message.
- Perform "System Null" only if "Display Null" is ineffective in balancing the signal.



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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 $\geq 20\%$ 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						



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

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

Examination Technique Specification Sheet

Page 4 of 4

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.



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-234
Wall Thinning	CSC-456

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 %					

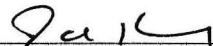
LIMITATIONS / REMARKS:

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

☒ Initial Certification

☐ Re-Certification



NDE CERTIFICATION

Name: Shaner, DarwinSSN: XXX-XX-5349Method / 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

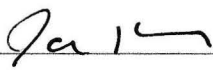
General: 96%	Date: 9-6-20	Basic: N/A	Date:	Specific: 92%	Date: 9-6-20
Method: N/A	Date:	Practical: 92.7%	Date: 9-7-20	LI/II Practical: N/A	Date:
Demonstration: N/A	Date:	ASNT: N/A	Date:	ASNT No.	
Composite Grade: 93.5%					

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-III APrinted Name: James A. Kocher☒ Initial Certification☐ Re-Certification

Form No	1049
Title	NDE Certification
Revision:	4
Date:	8/11/2015
Page 1 of 1	



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	LIH 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: James A. Kocher Title: ET Level III-A

Printed Name: James A. Kocher

☒ Initial Certification

☐ Re-Certification

CORESTAR INTERNATIONAL CORPORATION

AS FOUND EQUIPMENT CALIBRATION CERTIFICATE

INSTRUMENT

LAB TEMP: 75.2 °F

Certificate Number: CB-210151
Instrument: OMNI-200™ AM201R1-10
Customer: Conco
Instruction Number: CIC-HI002, Rev. 5

Instrument S/N: 0017-0806
Date: 24-Jun-2021

VOLTAGE SPECIFICATION

Instrument: Agilent Model 34401A
 Digital Multimeter
Calibration Interval: 1 year

Instrument S/N: US36141491
Calibration Date: 05-Feb-2021
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
Calibration Interval: 1 year

Instrument S/N: MY40003653
Calibration Date: 05-Feb-2021
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
Test Parameters: See instructions

Calibration Module SN: 0269-0307

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

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 $\pm$.039 V/V	1.313
8 db	2.655	2.652 $\pm$.079 V/V	2.655
14 db	5.142	5.141 $\pm$.154 V/V	5.142
20 db	10.000	10.000 V/V Reference	10.000

COIL FUNCTIONAL CHECK

Test Frequency: 400 kHz
Test Parameters: See instructions

Probe SN: 0045-0806
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	$\pm$.45 V	21°	21	21	$\pm$ 2.0°
2	4.58 V	4.89	4.81	$\pm$.45 V	21°	21	21	$\pm$ 2.0°
3	4.58 V	4.85	4.83	$\pm$.45 V	21°	22	21	$\pm$ 2.0°
4	4.58 V	4.88	4.84	$\pm$.45 V	21°	21	20	$\pm$ 2.0°
5	4.80 V	5.01	5.01	$\pm$.48 V	23°	23	23	$\pm$ 2.0°
6	4.80 V	4.99	4.98	$\pm$.48 V	23°	22	23	$\pm$ 2.0°
7	4.80 V	5.01	5.00	$\pm$.48 V	23°	24	23	$\pm$ 2.0°
8	4.80 V	5.04	5.04	$\pm$.48 V	23°	23	23	$\pm$ 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 Casano

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 Interval:	1 year	Calibration Date:	05-Feb-2021
		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 Interval:	1 year	Calibration Date:	05-Feb-2021
		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	

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 $\pm$.039 V/V	X	
8 db	2.655	2.652 $\pm$.079 V/V	X	
14 db	5.142	5.141 $\pm$.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	$\pm$.45 V	21°	21	$\pm$ 2.0°
2	4.58 V	4.81	$\pm$.45 V	21°	21	$\pm$ 2.0°
3	4.58 V	4.83	$\pm$.45 V	21°	21	$\pm$ 2.0°
4	4.58 V	4.84	$\pm$.45 V	21°	20	$\pm$ 2.0°
5	4.80 V	5.01	$\pm$.48 V	23°	23	$\pm$ 2.0°
6	4.80 V	4.98	$\pm$.48 V	23°	23	$\pm$ 2.0°
7	4.80 V	5.00	$\pm$.48 V	23°	23	$\pm$ 2.0°
8	4.80 V	5.04	$\pm$.48 V	23°	23	$\pm$ 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 Date: 6-24-2021

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

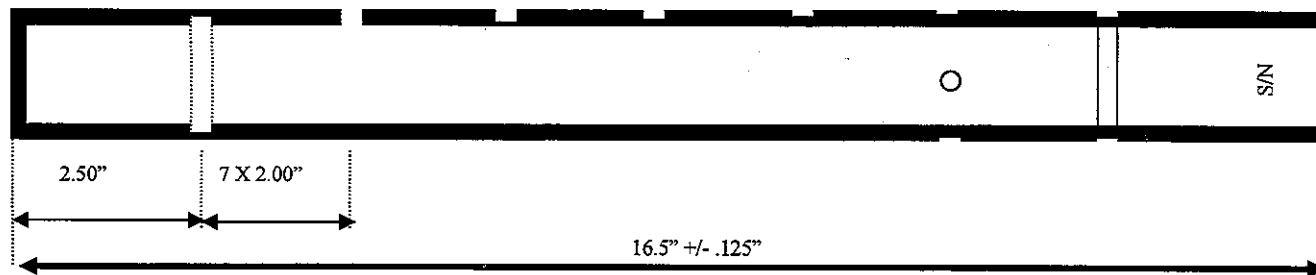
CSC-234

ECUTEC

CALIBRATION STANDARD CERTIFICATION

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

LOCATION	A	B	C	D	E	F	G	H	I	J
ACTUAL DEPTH	.0065"	THRU	.028"	.021"	.015"	.0074"	.0045"			
% OF WALL LOSS	18.6%	100%	80%	60%	42.8%	21.15	12.8%			
DIA OF DEFECT +/- .005	.062"	.052" THRU .750" TUBE DIA. .067" ABOVE .750 TUBE DIA.	.078"	.109"	.187"	.187"	.125"			



SIDE VIEW

END VIEWS



LOC B



LOC C, D, & E



LOC F

MATERIAL 304 STAINLESS STEEL
 O D CONFIGURATION PRIME
 I D CONFIGURATION PRIME
 O D DIAMETER .625"
 NOMINAL WALL .035"
 F P I N/A
 MEASUREMENT INCH
 DATE MACHINED 08/22/06
 Q A APPROVAL T MC

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: DUE TO TUBE GEOMETRY I D PIT DIAMETERS ARE SOMETIMES LESS THAN SPECIFIED AND ARE AS MACHINED

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

LOCATION A SHOWS AN I D GROOVE .062" WIDE X 360 DEGREES
 LOCATION B SHOWS A THRU WALL HOLE
 LOCATION C, D, & E SHOWS O D FLAT BOTTOM HOLES
 LOCATION F SHOWS 4 FLAT BOTTOM HOLES X 90 DEGREES APART
 LOCATION G SHOWS AN O D GROOVE .125" WIDE X 360 DEGREES

UNLESS OTHERWISE SPECIFIED
 DIM. ARE AS FOLLOWS:

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:

S/N EU04540
 ALL MEASURING DEVICES ARE
 NIST CERTIFIED

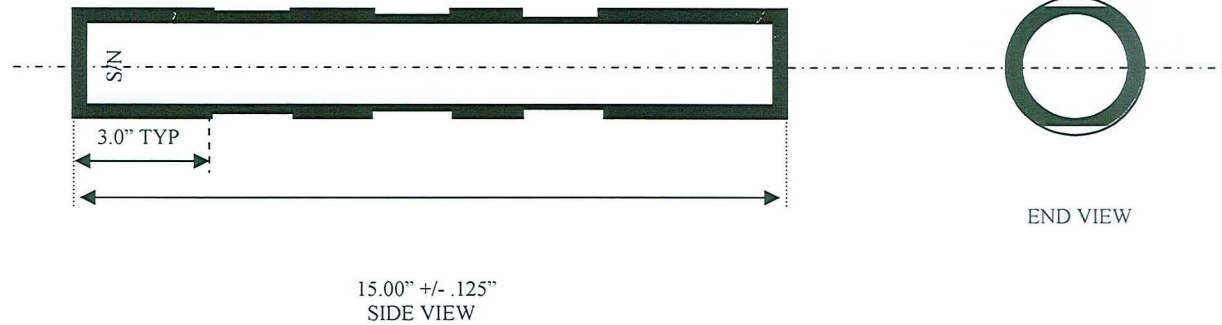
CSC-456

ECUTEC

CALIBRATION STANDARD CERTIFICATION

SPECIFIED DEPTH 25% 50% 75%

LOCATION	A	B	C	D	E	F	G	H	I	J
ACTUAL DEPTH	.008"	.0175"	.0265"							
% OF WALL LOSS	22.8%	50%	75.7%							
FLAW WIDTH/DIA. +/- .005"	1.0"	1.0"	1.0"							



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	.625"
NOMINAL WALL	.035"
F P I	N/A
MEASUREMENT	INCH
DATE MACHINED	03/21/11
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 FOLLOWS:
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.

DRAWN FOR:
CONCO

S/N EU012276
ALL MEASURING DEVICES ARE
NIST CERTIFIED