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December 19, 2019
Serial: RA-19-0391

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Catawba Nuclear Station, Unit No. 2
Docket No. 50-414 / Renewed License No. NPF-52

Subject: Catawba Unit 2, Refuel 23 (C2R23) Inservice Inspection (ISI) and Steam Generator
Inspection (SG-ISI) Report

Ladies and Gentlemen:

In accordance with Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Duke Energy is providing its Inservice Inspection (ISI) Summary Report for Catawba Nuclear Station, Unit No. 2, Refuel 23 (C2R23). Also included is the Steam Generator Inservice Inspection (SG-ISI) Summary Report for Catawba Nuclear Station, Unit No. 2, Refuel 23 (C2R23).

Enclosure 1 contains the C2R23 Owner's Activity Summary Report.

Enclosure 2 contains the SG-ISI tube inspection report for C2R23.

This submittal contains no regulatory commitments. Should you have any questions concerning this letter, or require additional information, please contact Art Zaremba, Manager – Nuclear Fleet Licensing, at 980-373-2062.

Sincerely,

A handwritten signature in blue ink that reads "Mandy B. Hare". The signature is fluid and cursive, with the first name "Mandy" and last name "Hare" clearly legible, and "B." as a middle initial.

Mandy Hare
Nuclear Support Services Manager, Catawba Nuclear Station

Enclosure(s):

1. Owner's Activity Summary Report
For Refueling Outage 23
2. Steam Generator Inservice Inspection Report
For Refueling Outage 23

NDE

cc: (w/ all enclosures)

M. Mahoney, NRC Project Manager, NRR

cc: (without SG data)

L. Dudes, NRC Regional Administrator, Region II

J.D. Austin, NRC Senior Resident Inspector, Catawba Nuclear Station

Enclosure 1
RA-19-0391

Enclosure 1

Owner's Activity Summary Report for Refueling Outage 23

DUKE ENERGY

**INSERVICE INSPECTION SUMMARY REPORT UNIT 2 CATAWBA FALL 2019
REFUELING OUTAGE
C2R23 (Outage 3)**

Location: 4800 Concord Road, York, SC, 29745

NRC Docket No. 50-414

Commercial Service Date: August 19, 1986

***Owner: Duke Energy
526 South Church St.
Charlotte, NC 28201-1006***

Revision 0


Originated By:



Austin C. Keller

Date 12/2/19

Checked By:



Jennifer Smith

Date 12/2/2019

Approved By:



Mark A. Pyne

Date 12/4/2019

CASE
N-532-5

FORM OAR-1 OWNER'S ACTIVITY REPORT

Report Number _____ Owner's Activity Report for Refueling Outage C2R23

Plant _____ Catawba Nuclear Station, 4800 Concord Road, York, SC 29745

Unit No. 2 Commercial service date August 19, 1986 Refueling outage no. C2R23
(if applicable)

Current inspection interval Fourth Inspection Interval (ISI), Third Inspection Interval (Containment ISI)
(1st, 2nd, 3rd, 4th, other)

Current inspection period Second Inspection Period (ISI and Containment ISI)
(1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the inspection plans ASME Section XI 2007 Edition through 2008 Addenda

Date and revision of inspection plans See Attachment - Page 2

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans Same as above

Code Cases used for inspection and evaluation: The following Code Cases are permitted by the ISI Plan and Addenda:
4th Interval: N-513-3, N-532-5, N-586-1, N-600, N-613-1, N-639, N-643-2,
N-648-1, N-651, N-705, N-706-1, N-712, N-716-1, N-722-1, N-729-4, N-731,
N-735, N-747, N-751, N-765, N-770-2, N-771, N-776, N-786-1, N-798,
N-800, N-805, N-823, N-825, & N-845
(if applicable)


CERTIFICATE OF CONFORMANCE

I certify that (a) the statements made in this report are correct; (b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI; and (c) the repair/replacement activities and evaluations supporting the completion of C2R23 conform to the requirements of Section XI.
(refueling outage number)

Signed  Austin C. Keller, ISI Program Owner Date 12/4/19

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of South Carolina and employed by OneCIS Insurance Company Lynn, MA have inspected the items described in this Owner's Activity Report, and state that, to the best of my knowledge and belief, the Owner has performed all activities represented by this report in accordance with the requirements of Section XI.
By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the repair/replacement activities and evaluation described in this report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

 Dustin Mallet Commissions 15196 AI,IS, I, N, R
Inspector's Signature National Board, State, Province, and Endorsements

Date 12/05/2019

Attachment

Catawba Unit 2 Refueling Outage 23, Inservice Inspection Report

Date and Revision of Inservice Inspection Plans:

I. Fourth Interval Inservice Inspection Plans

1. The following documents comprise the Catawba Nuclear Station 4th Interval Inservice Inspection Plan for Unit 2 (Class 1, 2, and 3 Components):
 - a. Catawba Nuclear Station Unit 1 and Unit 2 – Fourth Interval Inservice Inspection Plan, Document #CISI-1462.10-0040-ISI PLAN, Rev. 4, dated 01/14/2019.
 - b. Fourth Interval Inservice Inspection Outage Schedule Catawba Nuclear Station Unit 2, Document #CISI-1462.10-0040-UNIT 2, Rev. 1, dated 03/14/2019.
2. The following documents comprise the Catawba Nuclear Station 4th Interval Inservice Inspection Pressure Test Plan for Unit 2:
 - a. Catawba Nuclear Station Units 1 and 2 Fourth Inspection Interval Inservice Inspection Pressure Test Plan, Document #CISI-1462.20.0040-PTPlan, Rev. 1, dated 07/13/2017, including the following addenda:
 - i. CISI-1462.20-0040-C2-PT-003

II. Fourth Interval Augmented Inservice Inspection Plan

1. The following document comprises the Catawba Nuclear Station 4th Interval Augmented Inservice Inspection Plan and Schedule for Unit 2:
 - a. Catawba Nuclear Station Units 1 and 2 - Fourth Interval Augmented Inservice Inspection Plan and Schedule, Document #CISI-1462.10.0030-AUGISI-U1&U2, Rev. 6, dated 10/21/2019.

III. Third Interval Containment Inservice Inspection Plan

1. The following document comprises the Catawba Nuclear Station 3rd Interval Containment Inservice Inspection Plan for Unit 2 (Class MC):
 - a. Catawba Nuclear Station Units 1 and 2 - Third Interval Containment Inservice Inspection Plan, Document #CN-ISIC3-1042-0001, Rev. 9, dated 10/21/2019.

**TABLE 1
ITEMS WITH FLAWS OR RELEVANT CONDITIONS THAT REQUIRED EVALUATION FOR
CONTINUED SERVICE**

Examination Category and Item Number	Item Description	Evaluation Description
N/A	Reactor Vessel Head CRDMs 63 and 74	Blended cut marks on CRDMs 63 and 74. This area was evaluated by Engineering and found to be acceptable. Reference NCR #02293548-03.
B-P / B15.10	Boric acid residue found during ISI Pressure Test Zone, 2NC-001L-A	Areas identified in NCR #02295850 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found on mechanical joint 2ND-50 MJ-1 (Class B Bolted Connection - IWA-5241(f))	Areas identified in NCR #02293967 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found on mechanical joint 2ND-21 MJ-1 and the bolted connection of 2B ND Heat Exchanger (Class B Bolted Connections - IWA-5241(f))	Areas identified in NCR #02293637 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found on mechanical joints 2ND-14 MJ-1, 2ND-14 MJ-2, 2ND-28 MJ-2, 2ND-47 MJ-1, and 2ND-51 MJ-1 (Class B Bolted Connections - IWA-5241(f))	Areas identified in NCR #02293254 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found during ISI Pressure Test Zone, 2ND-001L-B	Areas identified in NCR #02291854 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found during ISI Pressure Test Zone, 2NS-001L-B	Areas identified in NCR #02253112 were evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found during ISI Pressure Test Zone, 2NV-001L-B	Area identified in NCR #02295853 was evaluated by Engineering and found to be acceptable.
C-H / C7.10	Boric acid residue found during ISI Pressure Test Zone, 2NV-006L-B	Areas identified in NCRs #02278933, #02208956, and #02239422 were evaluated by Engineering and found to be acceptable.
D-B / D2.10	Boric acid residue found on bolted connection of valve 2KF-21 (Class C Bolted Connection - IWA-5241(f))	Area identified in NCR #02289318 was evaluated by Engineering and found to be acceptable.

CASE
N-532-5

TABLE 2
ABSTRACT OF REPAIR/REPLACEMENT ACTIVITIES REQUIRED FOR CONTINUED SERVICE

Code Class	Item Description	Description of Work	Date Completed	Repair / Replacement Plan Number
1	Reactor Vessel Head CRDM 67	Weld repair cut marks on CRDM 67	9/28/2019	20355145

Enclosure 2
RA-19-0391

Enclosure 2

Steam Generator Inservice Inspection Report for Refueling Outage 23

***Steam Generator
In-service Inspection Summary Report***

***Catawba Nuclear Station
Unit 2 EOC-23
September 2019***

Location: 4800 Concord Road, York South Carolina 29745

NRC Docket No. 50-414

National Board No. 173

Commercial Service Date: August 19, 1986

Owner: Duke Energy Corporation

526 South Church St.

Charlotte, N.C. 28201-1006

Revision 0

Prepared By: Dan Mayes  Date: 11/25/2019

Reviewed By: Chuck Cauthen  Date: 11/25/2019

Approved By: Etienne Fonteneau  Date: 11/25/2019

FORM OAR-1 OWNER'S ACTIVITY REPORT

Report Number Owner's Activity Report for Steam Generator Inspection Outage EOC-23

Plant Catawba Nuclear Station, 4800 Concord Road, York, SC 29745

Unit No. 2 Commercial service date 08/19/1986 Refueling outage no. EOC-23
(if applicable)

Current inspection interval Fourth Interval
(1st, 2nd, 3rd, 4th, other)

Current inspection period Second Period
(1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the inspection 2007 Edition through 2008 Addendum plans

Date and revision of inspection August 19, 2015, Revision 0 (Document #C-ISIG-0169.030.0040)
plans

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans
Same as Plan

Code Cases N-532-5
used:
(if applicable)

CERTIFICATE OF CONFORMANCE

I certify that (a) the statements made in this report are correct; (b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI; and (c) the repair/replacement activities and evaluations supporting the completion of EOC-23 conform to the requirements of Section XI.
(refueling outage number)

Signed

DB Mayes

Date 11/25/2019

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of South Carolina and employed by OneCIS Insurance Company of Lynn, MA have inspected the items described in this Owner's Activity Report, and state that, to the best of my knowledge and belief, the Owner has performed all activities represented by this report in accordance with the requirements of Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the repair/replacement activities and evaluation described in this report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Dustin Mallet
Inspector's Signature

Dustin Mallet

Commissions 15196; AI, IS, I, N, R

National Board, State, Province, and Endorsements

Date 12/03/2019

Catawba Nuclear Unit 2
Form OAR-1 Owner's Activity Report

Table 1
Items with Flaws or Relevant Conditions that Required Evaluation for Continued Service

Examination Category and Item Number	Item Description	Evaluation Description
Category B-Q B16.20	Steam Generator Tubing in U-Tube Design	No ASME Section XI Acceptance Requirement Exceeded (Reference Attached Inspection Report)

Catawba Nuclear Unit 2
Form OAR-1 Owner's Activity Report

Table 2
Abstract of Repair/Replacement Activities Required for Continued Service

Code Class	Item Description	Description of Work	Date Completed	Repair / Replacement Plan Number
1	Steam Generator 2A (2 NC HX A)	Plugged and stabilized 3 tubes via rolled plug and wire rope stabilizer	10/01/2019	20291454-07
1	Steam Generator 2B (2 NC HX B)	Plugged and stabilized 3 tubes via rolled plug and wire rope stabilizer	10/01/2019	20291453-07
1	Steam Generator 2D (2 NC HX D)	Plugged and stabilized 11 tubes via rolled plug and wire rope stabilizer	10/01/2019	20291451-07

Catawba 2 EOC23 Steam Generator Tube Inspection Report

(reference Catawba technical Specification 5.6.8)

Summary of inspections and inspection results:

a) The scope of inspections performed on each SG

The inspection scope for all four steam generators was as follows:

Bobbin Inspection

- 100% full length (except Row 1-5 U-bend region)
- Row 1-5 hot leg straight section
- Row 1-5 cold leg straight section
- Tubes surrounding plugged tubes full length

Array Inspection

- 100% TTS hot leg (TEH to TSH +3")
- TTS hot leg two tubes deep periphery, including the T-slot and open lane (TEH to 01H or 02H for the baffle cutout)
- TTS cold leg two tubes deep periphery, including the T-slot and open lane (TEC to 18C +3")
- 50% Row 1-5 U-bends (includes any tubes not examined in EOC-19 or EOC-21) 08H to 09C
- 20% Row 10 U-bends-08H to 09C
- All tubes (12) screened as high stress (Seabrook) full length
- Expanded baffles at TSP 17C and 18C with extent of $\pm 3"$ at each support plate (20% sample of expanded baffles not examined in EOC-17 - EOC-20)
- 50% of dents greater than or equal to 5 volts in the HL and u bend
- All tubes with existing tube end cracks

Array Special Interest

- All tube locations with indication calls that required Array sizing from EOC-21
- Tubes with PLP calls as well as a bounding inspection of one tube deep. For PLP indications with tube degradation bounding inspection of two tube deep
- Bounding inspection 2 tubes deep surrounding known foreign object locations
- New wear indications
- All bobbin I-codes
- New DNT calls

Visual Inspection

- Previously installed plugs
- Bowl cladding inspection
- Foreign object search and retrieval (FOSAR) of the tubesheet in all 4 steam generators.
- Photogrammetry of the area of missing stainless steel clad in SG2D hot leg

b. Degradation mechanisms found

Degradation found included wear at support structures; wear from foreign objects, crack like indication at and above the tube support plates and crack-like indications near the tube ends.

c. Non-destructive examination techniques utilized for each degradation mechanism

The bobbin probe was utilized for the detection of wear at support structures, freespan locations and crack like indication at and above the tube support plates and to size wear at support structures. The array probe was used for detection of indications within the tubesheet, U-bend regions, and the 2 sigma high stress tubes. The array probe was used to size the foreign object wear. The plus point probe was used to size crack like indication at and above the tube support plates

d. Location, orientation (if linear), and measured sizes (if available) of service induced indications.

The complete listing for service induced indications is attached.

Tubes with anti-vibration bar wear indications

SG 2A – 84 tubes/158 indications

SG 2B – 24 tubes/36 indications

SG 2C – 50 tubes/75 indications

SG 2D – 78 tubes/113 indications

Total – 236 tubes/382 indications

Tubes with tube support plate wear indications

SG 2A – 4 tubes/4 indications

SG 2B – 10 tubes/10 indications

SG 2C – 3 tubes/3 indications

SG 2D – 1 tubes/1 indications

Total– 18 tubes/18 indications

16 broached TSP wear-2 baffle plate wear

Tubes with tube presumed foreign object wear indications

SG 2A – 9 tubes/9 indications

SG 2B – 19 tubes/21 indications

SG 2C – 4 tubes/4 indications

SG 2D – 6 tubes/6 indications

Total– 38 tubes/40 indications

Crack like indications at and above the tube support plates

SG 2A – 1 tube/1 indication

SG 2B – 1 tube/2 indications

SG 2C – 0 tubes/0 indications

SG 2D – 0 tubes/0 indications

Total – 2 tubes/3 indications

Tubes with crack like indications within the tubesheet at the tube end

SG 2A – 18 tubes/19 indications

SG 2B – 213 tubes/219 indications

SG 2C – 24 tubes/24 indications

SG 2D – 42 tubes/47 indications

Total – 297 tubes/309 indications

- e. Number of tubes plugged during the inspection outage for each degradation mechanism

Steam Generator 2A:

There were three (3) tubes plugged. Two (2) tubes were plugged due to a wear with a foreign object present. One (1) tube was plugged for crack like indication at the 3H tube support plate. The tubes plugged were as follows:

SG 2A			
Count	Row	Tube	Reason
1	1	8	FO wear at 4H
2	32	32	FO wear at 3H
3	31	33	Crack like at 3H

Steam Generator 2B:

There were three (3) tubes plugged. One (1) was for a high stress tube or two sigma tube. One (1) tube was plugged due to a wear with a foreign object present. One (1) tube was plugged for crack like indication at the 5H tube support plate. The tubes plugged were as follows:

SG 2B			
Count	Row	Tube	Reason
1	22	92	High Stress Tube
2	20	68	FO wear at 3H
3	26	28	Crack like at 5H

Steam Generator 2C:

There were no tubes to plug.

Steam Generator 2D:

There were eleven (11) tubes plugged. All were high stress tubes or two sigma tubes. The tubes plugged were as follows:

SG 2D			
Count	Row	Tube	Reason
1	11	14	High Stress Tube
2	11	59	High Stress Tube
3	15	47	High Stress Tube
4	16	25	High Stress Tube
5	17	24	High Stress Tube
6	17	15	High Stress Tube
7	18	4	High Stress Tube

8	20	107	High Stress Tube
9	21	19	High Stress Tube
10	21	7	High Stress Tube
11	21	8	High Stress Tube

- f. The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator.

Steam Generator ¹	2A	2B	2C	2D	Total
Prior to EOC-23	85	131	77	97	390
EOC-23	3	3	0	11	17
Total	88	133	77	108	407
% Plugged	1.92	2.91	1.68	2.36	2.22

1= There are 4578 tubes per steam generator

- g. The results of condition monitoring, including the results of tube pulls and in-situ testing.

The cumulative EFPY for EOC-20 was 24.24, EOC-21 was 25.67 and EOC-22 was 27.10 and EOC-23 was 28.50.

Condition monitoring was met for all degradation. All structural performance criteria were met for wear with more than adequate margin. Axial outside diameter crack like indications were demonstrated to meet condition monitoring by the length of the flaws being less than the structural length for a limiting through-wall crack. For the two axial outside diameter crack like indications at the same location, the flaws were combined by applying a conservative depth to the intact ligament between the flaws. This combined flaw also met condition monitoring based on a burst pressure calculation. All axial outside diameter crack like indications met condition monitoring for leakage because the voltages were less than the threshold voltage for leakage

Foreign Object Search and Retrieval (FOSAR) was performed in areas of known foreign object accumulation or where indicated by eddy current examination. FOSAR was performed at the top of tube sheet and the waterbox/preheater section. All historical foreign objects that were not removed have a technical evaluation demonstrating that tube integrity will be met through the next scheduled inspection of this region at EOC-25.

An upper bundle visual inspection was performed in the steam generator 2A, no degradation was detected.

No degradation was detected in the plug visual.

Bowl cladding inspections at EOC-21 did identify an area of missing stainless-steel cladding in the Catawba Unit 2 SG D hot leg channel head. The area of missing stainless-steel cladding was inspected at EOC-23 no changes were noted.

There was no degradation detected in any of the other bowl cladding inspections.

No in-situ tests or tube pulls were performed.

- h. For Unit 2, the primary to secondary LEAKAGE rate observed in each SG (if it is not practical to assign leakage to an individual SG, the entire primary to secondary LEAKAGE should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report.

There was no primary to secondary leakage above detection limits during the preceding cycle 23 operation.

- i. For Unit 2, the calculated leakage rate from the portion of the tubes below 14.01 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident leakage rate from the most limiting accident is less than 3.27 times the maximum primary to secondary LEAKAGE rate, the report shall describe how it was determined.

There was no calculated leakage from the portion of the tubes more than 14.01 inches from the top of the tubesheet, for the most limiting accident in the most limiting SG.

- j. For Unit 2, the results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.

No indications of slippage were detected.

List of Service Induced Indications

Catawba 2, EOC-23

The complete listings of service induced indications are on the following pages. The codes and their descriptions used in the inspection data base are provided here to assist in review of these lists.

<u>Indication Code</u>	<u>Description</u>
MAI	Multiple Axial Indication
MCI	Multiple Circumferential Indication
PCT	Percent Indication
SAI	Single Axial Indication
SCI	Single Circumferential Indication
SVI	Single Volumetric Indication
WAR	Wear

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
1	8	1.07	121	PCT	29	122	04H	.58	.83			.25	58	.38	04H	TEH	.610	ZYAXP	46	H	299
1	8	1.07	121	SVI		122	04H	.72							04H	TEH	.610	ZYAXP	46	H	299
32	12	.30	51	PCT	12	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAUC	26	H	140
30	13	.51	126	PCT	12	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAUC	31	H	124
32	15	.21	52	PCT	7	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	165
33	15	.24	164	PCT	8	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	168
32	16	.24	157	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	166
35	16	.38	74	PCT	12	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	161
35	16	1.02	129	PCT	22	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	161
36	17	.21	166	PCT	9	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	129
36	17	.39	99	PCT	14	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	129
36	17	.55	20	PCT	18	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	129
37	17	.20	121	PCT	9	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUC	26	H	132
37	17	.65	79	PCT	20	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	26	H	132
38	17	.44	85	PCT	16	P4	AV1	-.05		WAR					TEC	TEH	.610	ZBAUC	26	H	134
38	17	.84	79	PCT	23	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	134
38	17	.38	35	PCT	14	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	134
36	18	.23	147	PCT	8	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	145
40	18	.30	34	PCT	10	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	154
40	18	.28	123	PCT	9	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	154
40	18	1.51	105	PCT	27	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	154
38	19	.32	141	PCT	10	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	150
37	21	.28	159	PCT	9	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	149
38	21	.68	69	PCT	20	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAUC	26	H	131
38	21	.22	109	PCT	9	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAUC	26	H	131
39	21	.52	144	PCT	17	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	133
39	21	.53	131	PCT	18	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	133
39	21	.29	132	PCT	11	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	26	H	133
38	22	.57	86	PCT	18	P4	AV2	-.12		WAR					TEC	TEH	.610	ZBAUC	26	H	108
38	22	.44	52	PCT	16	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	108
30	23	.40	0	PCT	11	P4	AV2	.03		WAR					TEC	TEH	.610	ZBAUC	34	H	61
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

Catawba Nuclear Station 2 2EOC23

DDP 20190901

11/21/2019 11:11:12

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
33	23	.38	148	PCT	14	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUC	26	H	116
33	23	.20	134	PCT	9	P4	AV3	-.15		WAR					TEC	TEH	.610	ZBAUC	26	H	116
38	23	.63	155	PCT	20	P4	AV2	-.13		WAR					TEC	TEH	.610	ZBAUC	26	H	109
43	23	.19	167	PCT	8	P4	AV1	-.24		WAR					TEC	TEH	.610	ZBAUC	26	H	97
43	23	.70	145	PCT	21	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUC	26	H	97
43	23	.34	23	PCT	13	P4	AV3	.13		WAR					TEC	TEH	.610	ZBAUC	26	H	97
44	23	.54	164	PCT	18	P4	AV1	-.03		WAR					TEC	TEH	.610	ZBAUC	26	H	98
44	23	1.58	114	PCT	30	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	98
44	23	3.85	97	PCT	38	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	98
44	23	1.09	125	PCT	26	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	26	H	98
42	24	.66	65	PCT	17	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	107
42	24	.58	62	PCT	16	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	107
31	25	.56	146	PCT	8	P3	02H	-.61		WAR					TEC	TEH	.610	ZBAHS	58	H	6
38	25	.32	69	PCT	10	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	122
44	25	.29	167	PCT	9	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	111
44	25	.81	118	PCT	20	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	111
44	25	.46	118	PCT	14	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	111
17	26	.50	117	PCT	19	134	05H	1.45	1.70	EOC21	17902.3	.25	46	.30	07H	TEH	.610	ZYAXP	71	H	6
45	26	.68	141	PCT	14	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	22	H	73
45	26	1.70	95	PCT	26	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	22	H	73
37	27	.69	121	PCT	21	P4	AV2	-.15		WAR					TEC	TEH	.610	ZBAUC	26	H	65
43	27	.59	133	PCT	10	P2	15C	.46		WAR					TEH	TEC	.610	ZBAHS	8	C	12
47	27	1.11	141	PCT	26	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUC	26	H	87
47	27	2.87	103	PCT	36	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAUC	26	H	87
47	27	.30	79	PCT	12	P4	AV4	.13		WAR					TEC	TEH	.610	ZBAUC	26	H	87
35	28	.36	160	PCT	14	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAUC	26	H	61
35	28	1.24	119	PCT	27	P4	AV3	-.93		WAR					TEC	TEH	.610	ZBAUC	26	H	61
41	30	.41	122	PCT	12	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	81
44	31	.36	43	PCT	11	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	25	H	89
32	32	.85	91	PCT	26	2	03H	1.38	1.68	17902.3	16%	.30	70	.46	09C	TEH	.610	ZYAXP	54	H	29
32	32	.85	91	SVI		2	03H	1.45							09C	TEH	.610	ZYAXP	54	H	29
31	33	2.28	110	SAI		82	03H	.60							03H	03H	.610	ZYAXP	72	H	15
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
31	33	2.05	86	PCT	94	P4	03H	.36	.62												
31	33	2.09	89	SAI		P4	03H	.52		LAR											
36	33	.14	140	PCT	6	P4	AV4	.21		WAR											
41	36	.60	98	PCT	16	P4	AV3	.00		WAR											
41	36	.28	151	PCT	9	P4	AV4	.00		WAR											
42	38	.81	109	PCT	25	50	05H	.76	.86												
37	39	.59	132	PCT	15	P4	AV2	.08		WAR											
41	44	1.32	105	PCT	24	P4	AV1	-.25		WAR											
41	44	1.21	65	PCT	23	P4	AV2	.03		WAR											
41	44	1.19	150	PCT	23	P4	AV3	.03		WAR											
28	48	.62	91	PCT	22	182	18C	.50	.73	17902.3	28%	.23	70	.46	17C	TEC	.610	ZYAXP	4	C	348
26	60	.64	94	PCT	22	2	04H	.68	.83	E0C21	17902.3	.15	46	.30	04H	TEH	.610	ZYAXP	65	H	18
35	64	.58	13	PCT	8	P3	02H	.13		WAR											
38	68	.38	0	PCT	12	162	18C	.47	.65	17902.1		.18	35	.23	17C	TEC	.610	ZYAXP	4	C	290
23	70	.36	113	PCT	12	58	05H	.84	1.10	17902.1	14%	.26	35	.23	05H	05H	.610	ZYAXP	65	H	17
40	70	.36	149	PCT	8	P4	AV2	-.08		WAR											
49	70	.22	0	PCT	10	P4	AV1	.03		WAR											
49	70	.37	163	PCT	15	P4	AV3	-.03		WAR											
4	72	.73	116	PCT	24	50	04H	-.74	-.49	17902.3	25	.25	70	.46	04H	TEH	.610	ZYAXP	50	H	40
48	72	.33	110	PCT	8	P4	AV2	.00		WAR											
49	73	.25	145	PCT	6	P4	AV3	.00		WAR											
24	74	.35	94	PCT	6	P3	10C	-.69		WAR											
41	75	.38	123	PCT	15	P4	AV2	.05		WAR											
37	77	.36	53	PCT	14	P4	AV2	-.05		WAR											
37	77	.54	124	PCT	19	P4	AV3	-.03		WAR											
37	77	.28	130	PCT	12	P4	AV4	.05		WAR											
41	77	.26	128	PCT	6	P4	AV2	.13		WAR											
41	81	2.09	94	PCT	28	P4	AV2	.03		WAR											
41	81	.93	58	PCT	17	P4	AV3	.05		WAR											
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
41	81	.29	51	PCT	7	P4	AV4	-.03		WAR					TEC	TEH	.610	ZBAUC	18	H	149
42	81	.59	117	PCT	12	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	190
42	81	.10	67	PCT	3	P4	AV3	.13		WAR					TEC	TEH	.610	ZBAUC	18	H	190
42	81	.28	150	PCT	7	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	190
41	83	.58	90	PCT	19	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAUC	17	H	150
41	83	.69	136	PCT	21	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	17	H	150
41	83	.30	139	PCT	13	P4	AV4	.13		WAR					TEC	TEH	.610	ZBAUC	17	H	150
49	83	.18	153	PCT	6	P4	AV1	-.03		WAR					TEC	TEH	.610	ZBAHS	4	H	34
41	85	.34	148	PCT	8	P4	AV2	.10		WAR					TEC	TEH	.610	ZBAUC	18	H	151
41	85	1.29	129	PCT	22	P4	AV3	.38		WAR					TEC	TEH	.610	ZBAUC	18	H	151
41	85	.30	102	PCT	7	P4	AV4	-.20		WAR					TEC	TEH	.610	ZBAUC	18	H	151
42	85	1.64	118	PCT	31	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUC	17	H	192
42	85	.58	147	PCT	19	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	192
48	85	.23	157	PCT	7	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	4	H	13
48	85	.27	145	PCT	8	P4	AV4	.21		WAR					TEC	TEH	.610	ZBAHS	4	H	13
39	86	.25	157	PCT	6	P4	AV3	-.05		WAR					TEC	TEH	.610	ZBAUC	18	H	156
39	86	.33	42	PCT	8	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAUC	18	H	156
48	86	.27	58	PCT	8	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	4	H	12
48	86	.34	148	PCT	10	P4	AV4	.05		WAR					TEC	TEH	.610	ZBAHS	4	H	12
46	88	.24	58	PCT	7	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAHS	4	H	9
46	88	.27	106	PCT	8	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	4	H	9
38	89	.45	139	PCT	17	P4	AV2	.08		WAR					TEC	TEH	.610	ZBAUC	17	H	165
38	89	.26	19	PCT	11	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	165
31	90	.25	66	PCT	7	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	2	H	69
41	90	.26	137	PCT	11	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	173
41	90	.53	132	PCT	18	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	173
42	90	.30	147	PCT	13	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	185
44	90	.27	118	PCT	7	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	183
45	90	.27	146	PCT	7	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	175
45	90	.79	107	PCT	17	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	175
38	91	.49	145	PCT	11	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	165
38	91	.34	161	PCT	8	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	18	H	165
38	91	.42	124	PCT	9	P4	AV4	.05		WAR					TEC	TEH	.610	ZBAUC	18	H	165
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
42	91	.67	106	PCT	14	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	180
42	91	.23	78	PCT	6	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	180
43	91	.27	78	PCT	6	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	181
43	91	.69	106	PCT	14	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	181
43	91	.61	116	PCT	13	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	181
43	91	.96	121	PCT	18	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	181
45	91	.23	157	PCT	6	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	176
45	91	.89	133	PCT	19	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	176
45	91	.65	125	PCT	15	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	176
45	91	1.37	115	PCT	24	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	176
41	92	.90	128	PCT	17	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAUC	18	H	173
41	92	.40	69	PCT	9	P4	AV4	.08		WAR					TEC	TEH	.610	ZBAUC	18	H	173
44	92	.66	93	PCT	15	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	6	H	7
44	92	.53	129	PCT	13	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	6	H	7
33	93	.53	136	PCT	13	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUC	15	H	232
37	93	.33	112	PCT	14	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	164
38	93	.48	130	PCT	17	P4	AV2	-.16		WAR					TEC	TEH	.610	ZBAUC	17	H	168
38	93	.15	152	PCT	7	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAUC	17	H	168
41	93	.48	107	PCT	11	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	174
41	93	.21	142	PCT	5	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	174
43	93	.38	132	PCT	15	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAUC	17	H	184
43	93	.21	34	PCT	9	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	17	H	184
38	94	.18	103	PCT	8	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUC	17	H	177
40	94	1.32	111	PCT	29	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUC	17	H	178
40	94	.23	127	PCT	10	P4	AV4	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	178
41	94	.84	110	PCT	24	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUC	17	H	183
41	94	1.87	109	PCT	32	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	183
41	94	.26	98	PCT	11	P4	AV4	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	183
40	95	1.11	117	PCT	27	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUC	17	H	182
40	95	.64	120	PCT	21	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	182
38	96	2.45	104	PCT	31	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	177
38	96	.49	65	PCT	11	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	177
38	96	.33	115	PCT	8	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	177
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
39	96	.23	104	PCT	6	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	18	H	175
38	97	2.58	100	PCT	35	P4	AV2	-.16		WAR					TEC	TEH	.610	ZBAUC	17	H	180
38	97	.91	122	PCT	25	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAUC	17	H	180
38	97	.55	116	PCT	19	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	180
33	98	.39	127	PCT	10	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUC	15	H	225
36	98	.18	127	PCT	5	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	15	H	213
38	98	.60	115	PCT	20	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUC	17	H	181
38	98	.43	119	PCT	16	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUC	17	H	181
38	98	.24	128	PCT	11	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUC	17	H	181
33	99	.25	146	PCT	7	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUC	15	H	206
34	99	.19	127	PCT	6	P4	AV3	-.13		WAR					TEC	TEH	.610	ZBAUC	15	H	208
34	99	.18	129	PCT	5	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAUC	15	H	208
33	100	.57	141	PCT	14	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUC	15	H	207
31	102	.54	143	PCT	13	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	2	H	17
31	102	.21	73	PCT	6	P4	AV4	.16		WAR					TEC	TEH	.610	ZBAHS	2	H	17
31	103	1.02	102	PCT	20	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	1	H	29
31	103	.34	34	PCT	9	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAHS	1	H	29
26	106	.40	118	PCT	10	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	6	H	11
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
11	2	.32	25	PCT	3	P3	05H	-.53		WAR					TEC	TEH	.610	ZBAUL	71	H	8
37	16	.27	32	PCT	3	P3	05H	-.62		WAR					TEH	TEC	.610	ZBAUL	8	C	15
12	19	.36	122	PCT	16	2	05H	1.22		17902.3	12%				06H	TEH	.610	ZYAXP	76	H	37
45	24	.28	126	PCT	8	P4	AV4	.11		WAR					TEC	TEH	.610	ZBAHS	4	H	6
47	27	.39	132	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	83	H	13
47	27	.89	112	PCT	15	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	83	H	13
47	27	.66	135	PCT	12	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	83	H	13
26	28	3.15	84	SAI		42	05H	1.17							05H	05H	.610	ZYAXP	80	H	10
26	28	.37	78	SAI	72	3	05H	.61	.77	LAR		.16	55	.36	05H	05H	.610	ZRSP	91	H	10
26	28	1.20	64	SAI	82	3	05H	.78	.99			.21	70	.46	05H	05H	.610	ZRSP	91	H	10
35	34	.25	102	PCT	13	170	04H	1.61	1.82	17902.3	15%	.21	46	.30	04H	TEH	.610	ZYAXP	76	H	35
9	42	.18	101	PCT	3	P3	11C	-.56		WAR					TEC	TEH	.610	ZBAHS	84	H	7
6	45	1.26	95	PCT	32	74	05H	-.85	-.64	17902.3	29%	.21	70	.46	06H	TEH	.610	ZYAXP	76	H	40
41	45	.64	140	PCT	7	P3	03H	-.05		WAR					TEC	TEH	.610	ZBAUL	71	H	7
1	46	.48	101	PCT	19	26	05H	-.84	-.66	17902.3		.18	58	.38	05H	TEH	.610	ZYAXP	92	H	8
20	47	.43	54	PCT	17	14	18C	.40	.49	17902.3	22%LAR	.09	58	.38	18C	TEC	.610	ZYAXP	11	C	75
21	48	.45	113	PCT	18	2	18C	.54	.68	17902.3		.14	46	.30	18C	TEC	.610	ZYAXP	11	C	76
45	50	.39	155	PCT	7	P2	18C	-.21		WAR					TEC	TEH	.610	ZBAHS	85	H	11
25	53	.22	74	PCT	2	P3	10C	-.76		WAR					TEC	TEH	.610	ZBAUL	71	H	6
5	55	.45	77	PCT	13	70	04H	-.78	-.53	17902.1		.25	35	.23	05H	TEH	.610	ZYAXP	76	H	46
14	55	.29	80	PCT	11	94	04H	-.80	-.64	17902.1		.16	23	.15	04H	TEH	.610	ZYAXP	76	H	44
15	56	.54	62	PCT	11	P4	AV4	.46		WAR					TEC	TEH	.610	ZBAUC	22	H	255
35	56	.35	160	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	5	H	55
45	56	1.35	75	PCT	33	134	06H	-.21	.06	17902.3		.28	46	.30	06H	TEH	.610	ZYAXP	80	H	19
11	58	.34	52	PCT	5	P3	04H	-.57		WAR					TEC	TEH	.610	ZBAHS	84	H	8
21	58	1.27	104	PCT	32	14	05H	-.67	-.46	17902.3	25%	.21	46	.30	05H	TEH	.610	ZYAXP	43	H	7
21	59	.49	94	PCT	19	50	05H	-.82	-.66	17902.3	20%	.16	81	.53	05H	TEH	.610	ZYAXP	42	H	7
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
21	59	.62	107	PCT	22	134	05H	-.61	-.43	17902.3	24%	.18	70	.46	05H	TEH	.610	ZYAXP	42	H	7
36	59	.46	115	PCT	7	P3	06H	-.51		WAR					TEC	TEH	.610	ZBAHS	84	H	9
39	59	.30	147	PCT	5	P4	AV4	.05		WAR					TEC	TEH	.610	ZBAHS	33	H	122
27	60	.66	97	PCT	15	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAUC	23	H	204
49	63	.30	147	PCT	6	P4	AV1	.05		WAR					TEC	TEH	.610	ZBAHS	32	H	120
20	68	.88	130	PCT	19	94	03H	-.35	-.17			.17	35	.23	03H	TEH	.610	ZYAXP	80	H	24
20	68	.88	130	SVI		94	03H	-.28		17902.1					03H	TEH	.610	ZYAXP	80	H	24
20	68	.85	94	PCT	18	90	03H	-.20	.00	17902.1		.20	35	.23	03H	TEH	.610	ZYAXP	80	H	24
20	68	.79	107	SVI		90	03H	-.11							03H	TEH	.610	ZYAXP	80	H	24
40	69	.22	119	PCT	3	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAHS	35	H	7
36	71	.34	102	PCT	15	50	05H	1.62	1.80	17902.3	18%	.19	58	.38	10C	TEH	.610	ZYAXP	51	H	70
7	74	1.02	91	PCT	29	158	03H	-.62	-.41	17902.3	21%	.21	46	.30	03H	TEH	.610	ZYAXP	46	H	56
38	75	.38	125	PCT	8	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	34	H	91
49	76	.22	146	PCT	5	P4	AV1	.03		WAR					TEC	TEH	.610	ZBAHS	34	H	124
40	84	.23	138	PCT	6	P4	AV2	-.12		WAR					TEC	TEH	.610	ZBAUL	63	H	35
12	85	.72	60	PCT	23	98	03H	-.60	-.48	17902.3		.11	46	.30	03H	03H	.610	ZYAXP	92	H	9
33	85	.28	79	PCT	4	P3	09C	-.64		WAR					TEC	TEH	.610	ZBAHS	84	H	10
38	85	.48	47	PCT	10	P4	AV3	.15		WAR					TEC	TEH	.610	ZBAUL	64	H	39
48	85	.85	80	PCT	26	2	05H	-.60	-.44	17902.3	18%	.16	46	.30	10C	TEH	.610	ZYAXP	51	H	40
47	88	.30	172	PCT	6	P4	AV2	-.15		WAR					TEC	TEH	.610	ZBAUL	64	H	13
47	88	.28	165	PCT	6	P4	AV4	-.08		WAR					TEC	TEH	.610	ZBAUL	64	H	13
33	90	.63	90	PCT	22	110	05H	.94	1.15	17902.3		.21	46	.30	05H	05H	.610	ZYAXP	92	H	10
44	91	.76	99	PCT	14	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAUL	64	H	28
44	91	.20	24	PCT	5	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	64	H	28
44	91	.30	140	PCT	6	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAUL	64	H	28
37	95	.29	48	PCT	6	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUL	64	H	59
35	96	.32	117	PCT	7	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUL	64	H	54
35	96	.38	56	PCT	8	P4	AV3	-.05		WAR					TEC	TEH	.610	ZBAUL	64	H	54
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
38	96	.30	112	PCT	5	P3	05H	-.63		WAR					TEC	TEH	.610	ZBAHS	84	H	11
40	96	.19	131	PCT	4	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUL	64	H	14
36	98	.56	112	PCT	13	P4	AV4	-.08		WAR					TEC	TEH	.610	ZBAUL	63	H	52
37	98	.56	161	PCT	13	P4	AV2	-.21		WAR					TEC	TEH	.610	ZBAUL	63	H	70
37	98	.45	130	PCT	11	P4	AV3	-.05		WAR					TEC	TEH	.610	ZBAUL	63	H	70
36	99	.47	103	PCT	10	P4	AV4	-.10		WAR					TEC	TEH	.610	ZBAUL	64	H	44
37	99	.72	146	PCT	14	P4	AV4	-.13		WAR					TEC	TEH	.610	ZBAUL	64	H	46
3	102	.24	105	PCT	13	158	05H	1.21	1.50	17902.3	12%	.29	70	.46	05H	05H	.610	ZYAXP	46	H	19
32	102	.20	165	PCT	6	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUL	63	H	57
32	103	.61	137	PCT	14	P4	AV2	.03		WAR					TEC	TEH	.610	ZBAUL	63	H	62
32	103	.39	47	PCT	10	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAUL	63	H	62
32	103	.48	112	PCT	12	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAUL	63	H	62
30	104	.38	130	PCT	12	P4	AV1	-.08		WAR					TEC	TEH	.610	ZBAUL	65	H	96
30	104	.22	166	PCT	8	P4	AV2	.08		WAR					TEC	TEH	.610	ZBAUL	65	H	96
30	104	.34	119	PCT	11	P4	AV3	-.05		WAR					TEC	TEH	.610	ZBAUL	65	H	96
30	104	.28	163	PCT	10	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAUL	65	H	96
9	113	1.79	85	PCT	26	30	07H	41.43	41.65	17902.1	26%	.22	58	.38	08H	TEH	.610	ZYAXP	46	H	12
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
27	9	1.79	126	PCT	28	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	183
28	10	.64	65	PCT	15	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUL	58	H	161
29	10	.26	78	PCT	7	P4	AV2	-.15		WAR					TEC	TEH	.610	ZBAUL	58	H	164
29	10	.50	107	PCT	12	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAUL	58	H	164
28	11	.29	126	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	58	H	162
29	12	.42	144	PCT	11	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	176
29	12	.30	157	PCT	8	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	176
31	12	.91	88	PCT	19	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	58	H	169
33	12	.63	165	PCT	15	P4	AV1	-.10		WAR					TEC	TEH	.610	ZBAUL	58	H	103
33	12	.57	35	PCT	13	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUL	58	H	103
29	14	.23	143	PCT	6	P4	AV3	.31		WAR					TEC	TEH	.610	ZBAUL	58	H	153
33	14	.81	131	PCT	17	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	110
33	14	.48	124	PCT	12	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	110
30	15	.48	134	PCT	12	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAUL	58	H	154
31	15	.38	162	PCT	10	P4	AV2	-.15		WAR					TEC	TEH	.610	ZBAUL	58	H	156
38	17	.18	12	PCT	5	P4	AV1	-.10		WAR					TEC	TEH	.610	ZBAUL	58	H	85
38	17	.93	127	PCT	19	P4	AV2	-.18		WAR					TEC	TEH	.610	ZBAUL	58	H	85
38	17	.28	164	PCT	8	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAUL	58	H	85
39	17	.24	149	PCT	7	P4	AV1	-.05		WAR					TEC	TEH	.610	ZBAUL	58	H	88
38	18	.29	31	PCT	8	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUL	58	H	86
38	18	.38	21	PCT	10	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAUL	58	H	86
39	18	.14	157	PCT	4	P4	AV1	-.08		WAR					TEC	TEH	.610	ZBAUL	57	H	95
39	18	.34	149	PCT	9	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	95
40	20	.74	104	PCT	16	P4	AV2	-.12		WAR					TEC	TEH	.610	ZBAUL	55	H	102
41	20	.28	164	PCT	7	P4	AV1	-.13		WAR					TEC	TEH	.610	ZBAUL	56	H	88
41	20	.25	162	PCT	6	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAUL	56	H	88
41	20	.22	158	PCT	5	P4	AV3	-.28		WAR					TEC	TEH	.610	ZBAUL	56	H	88
35	21	.23	41	PCT	6	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	58	H	94
35	21	.20	135	PCT	6	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAUL	58	H	94
40	22	.48	58	PCT	10	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAUL	56	H	91
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
43	22	.33	170	PCT	8	P4	AV1	-.05		WAR					TEC	TEH	.610	ZBAUL	56	H	99
38	23	.38	142	PCT	10	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUL	58	H	79
38	23	.28	148	PCT	8	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAUL	58	H	79
44	23	.29	170	PCT	7	P4	AV3	-.08		WAR					TEC	TEH	.610	ZBAUL	56	H	101
44	23	.28	167	PCT	7	P4	AV4	.13		WAR					TEC	TEH	.610	ZBAUL	56	H	101
13	25	.72	111	PCT	23	170	14C	.42	.54	17902.3		.12	58	.38	14C	TEC	.610	ZYAXP	12	C	13
36	25	.28	160	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	79
2	26	.71	49	PCT	9	P3	11C	-.08		WAR					09C	TEC	.610	ZBAHS	17	C	6
31	27	.66	135	PCT	15	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	144
39	27	.29	167	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	54
39	27	.56	137	PCT	13	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	54
40	27	.38	100	PCT	9	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAUL	56	H	102
36	33	.34	164	PCT	9	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	38
38	34	.60	107	PCT	14	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAUL	58	H	39
43	35	.47	78	PCT	19	146	09C	-.73	-.57	17902.3		.16	46	.30	09C	TEC	.610	ZYAXP	13	C	12
36	37	.20	155	PCT	6	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAUL	57	H	24
25	40	.62	111	PCT	22	2	02H	-.74	-.55	17902.3		.18	70	.46	03H	TEH	.610	ZYAXP	28	H	14
40	47	.35	24	PCT	9	P4	AV2	-.15		WAR					TEC	TEH	.610	ZBAUL	55	H	205
33	49	2.21	95	PCT	29	94	01H	14.63	16.56	17902.1		1.93	58	.38	02H	TEH	.610	ZYAXP	33	H	75
33	55	.53	151	PCT	11	P4	AV3	-.20		WAR					TEC	TEH	.610	ZBAUL	56	H	141
49	60	2.93	91	PCT	32	P3	13C	-.03		WAR					TEC	TEH	.610	ZBAUL	69	H	7
40	62	.47	45	PCT	10	P4	AV2	.20		WAR					TEC	TEH	.610	ZBAHS	8	H	124
35	65	1.02	0	PCT	20	190	TSH	.82	1.79	17902.1		.98	70	.46	01H	TEH	.610	ZYAXP	37	H	40
49	76	.77	38	PCT	16	P4	AV1	-.75		WAR					TEC	TEH	.610	ZBAUL	51	H	94
3	78	.29	54	PCT	4	P3	13C	.63		WAR					09C	TEC	.610	ZBAHS	16	C	9
49	79	.39	172	PCT	10	P4	AV1	-.08		WAR					TEC	TEH	.610	ZBAUL	52	H	83
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
44	81	2.41	121	PCT	31	P4	AV2	.15		WAR					TEC	TEH	.610	ZBAHS	9	H	62
44	81	1.01	116	PCT	20	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	9	H	62
44	81	.28	146	PCT	8	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	9	H	62
49	82	.27	148	PCT	6	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAHS	10	H	42
46	88	.25	147	PCT	6	P4	AV2	-.12		WAR					TEC	TEH	.610	ZBAHS	10	H	33
42	91	.74	135	PCT	24	158	18C	.48	.62	17902.3		.14	46	.30	18C	TEC	.610	ZYAXP	9	C	161
44	92	.30	137	PCT	7	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAHS	8	H	182
44	92	.31	125	PCT	7	P4	AV4	.08		WAR					TEC	TEH	.610	ZBAHS	8	H	182
43	93	.27	56	PCT	6	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	8	H	177
43	93	.51	166	PCT	11	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	8	H	177
43	93	.29	161	PCT	6	P4	AV4	-.13		WAR					TEC	TEH	.610	ZBAHS	8	H	177
38	94	.27	23	PCT	6	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAHS	7	H	168
39	94	.78	144	PCT	15	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	8	H	197
38	97	.98	100	PCT	18	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	8	H	158
38	97	.32	163	PCT	7	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAHS	8	H	158
39	97	.35	87	PCT	8	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	8	H	160
39	97	.27	148	PCT	6	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	8	H	160
39	97	.62	121	PCT	12	P4	AV4	-.05		WAR					TEC	TEH	.610	ZBAHS	8	H	160
38	99	.86	153	PCT	16	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAHS	8	H	166
38	99	2.50	127	PCT	30	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	8	H	166
33	100	.39	147	PCT	8	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	7	H	10
33	101	.23	122	PCT	5	P4	AV2	-.13		WAR					TEC	TEH	.610	ZBAHS	8	H	9
33	101	.19	163	PCT	5	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	8	H	9
33	101	.36	84	PCT	8	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAHS	8	H	9
33	102	.37	62	PCT	8	P4	AV2	.03		WAR					TEC	TEH	.610	ZBAHS	8	H	10
28	103	.34	71	PCT	7	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAHS	2	H	10
28	105	.76	0	PCT	17	P4	AV3	.03		WAR					TEC	TEH	.610	ZBAHS	1	H	11
26	107	.30	70	PCT	8	P4	AV3	-.13		WAR					TEC	TEH	.610	ZBAUL	64	H	104
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
26	8	.32	74	PCT	8	P4	AV3	-.15		WAR					TEC	TEH	.610	ZBAHS	6	H	134
28	10	.30	158	PCT	8	P4	AV3	-.20		WAR					TEC	TEH	.610	ZBAHS	21	H	58
28	10	.28	69	PCT	7	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAHS	21	H	58
32	12	.48	164	PCT	11	P4	AV2	-.13		WAR					TEC	TEH	.610	ZBAHS	2	H	17
33	13	1.40	130	PCT	24	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	21
33	13	.73	143	PCT	16	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	21
33	13	.36	56	PCT	9	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAHS	2	H	21
35	14	2.99	111	PCT	34	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	22	H	49
35	14	.37	107	PCT	8	P4	AV4	.08		WAR					TEC	TEH	.610	ZBAHS	22	H	49
33	15	.33	102	PCT	8	P4	AV4	-.03		WAR					TEC	TEH	.610	ZBAHS	1	H	19
36	16	.43	58	PCT	10	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	28
36	16	2.87	125	PCT	34	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	28
36	16	.64	126	PCT	14	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	28
36	16	.33	29	PCT	8	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAHS	2	H	28
37	17	.72	135	PCT	15	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAHS	2	H	31
37	17	.73	126	PCT	15	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	31
38	18	1.11	125	PCT	21	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	34
38	18	.82	82	PCT	17	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAHS	2	H	34
38	19	.30	135	PCT	8	P4	AV2	-.16		WAR					TEC	TEH	.610	ZBAHS	2	H	35
38	20	.58	123	PCT	13	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAHS	10	H	106
38	20	.32	25	PCT	8	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAHS	10	H	106
41	20	.34	161	PCT	8	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	40
38	21	.34	38	PCT	8	P4	AV2	.08		WAR					TEC	TEH	.610	ZBAHS	1	H	33
43	22	.31	151	PCT	8	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	79
43	22	.47	108	PCT	11	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	79
43	22	1.68	128	PCT	26	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	79
43	22	.94	112	PCT	19	P4	AV4	.00		WAR					TEC	TEH	.610	ZBAHS	2	H	79
42	23	1.05	139	PCT	19	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	1	H	28
42	23	.31	114	PCT	8	P4	AV4	.10		WAR					TEC	TEH	.610	ZBAHS	1	H	28
44	24	.39	77	PCT	9	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	1	H	83
38	26	.32	125	PCT	8	P4	AV2	.03		WAR					TEC	TEH	.610	ZBAHS	1	H	71
33	28	.22	132	PCT	6	P4	AV2	.08		WAR					TEC	TEH	.610	ZBAHS	1	H	57
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
43	29	.36	97	PCT	9	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAHS	2	H	94
42	30	.50	143	PCT	14	P4	AV2	-.05		WAR					TEC	TEH	.610	ZBAHS	9	H	117
42	32	.53	128	PCT	12	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	2	H	93
44	34	.25	146	PCT	6	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	4	H	13
49	37	.23	149	PCT	5	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	4	H	24
29	40	.50	110	PCT	19	122	05H	.98	1.20			.21	58	.38	09C	TEH	.610	ZYAXP	49	H	24
44	46	1.34	110	PCT	22	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	4	H	96
17	55	.69	94	PCT	23	26	01H	-.13	.06	17902.3	18%	.19	46	.30	01H	TEH	.610	ZYAXP	39	H	70
46	56	.36	70	PCT	8	P4	AV4	.48		WAR					TEC	TEH	.610	ZBAHS	4	H	172
48	61	2.96	115	PCT	30	P3	13C	.00		WAR					TEH	TEC	.610	ZBAUC	11	C	6
38	64	.94	120	PCT	19	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	20	H	153
36	65	.89	69	PCT	19	P4	AV3	.74		WAR					TEC	TEH	.610	ZBAHS	20	H	123
45	65	.43	106	PCT	9	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAHS	22	H	20
49	66	.39	147	PCT	11	P4	AV4	.03		WAR					TEC	TEH	.610	ZBAHS	21	H	54
28	69	1.08	89	PCT	30	134	10C	-1.16	-.91	17902.3	28%	.25	58	.38	10C	TEC	.610	ZYAXP	23	C	39
21	70	.82	89	PCT	18	18	06H	1.36	1.68		17902.1	.33	46	.30	07H	TEH	.610	ZYAXP	70	H	24
12	72	.80	75	PCT	25	74	01H	.34	.52	17902.3	23%	.18	46	.30	01H	TEH	.610	ZYAXP	55	H	38
48	72	.78	118	PCT	25	74	18C	1.02	1.23	17902.3	28%	.21	58	.38	17C	TEC	.610	ZYAXP	18	C	105
49	74	.22	129	PCT	6	P4	AV4	-.10		WAR					TEC	TEH	.610	ZBAHS	19	H	108
41	77	.90	112	PCT	18	P4	AV2	.13		WAR					TEC	TEH	.610	ZBAHS	19	H	118
41	77	.38	139	PCT	9	P4	AV3	-.08		WAR					TEC	TEH	.610	ZBAHS	19	H	118
38	78	.22	104	PCT	6	P4	AV2	.18		WAR					TEC	TEH	.610	ZBAHS	20	H	45
38	78	1.46	95	PCT	25	P4	AV3	.15		WAR					TEC	TEH	.610	ZBAHS	20	H	45
43	78	2.12	112	PCT	30	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	20	H	100
43	78	3.96	118	PCT	38	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	20	H	100
33	79	.30	147	PCT	7	P4	AV1	.08		WAR					TEC	TEH	.610	ZBAHS	18	H	138
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

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ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
33	79	.51	119	PCT	11	P4	AV2	-.28		WAR					TEC	TEH	.610	ZBAHS	18	H	138
36	79	.29	38	PCT	7	P4	AV1	.10		WAR					TEC	TEH	.610	ZBAHS	18	H	145
36	79	.50	33	PCT	11	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	18	H	145
33	81	.29	83	PCT	6	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	151
39	81	.37	123	PCT	9	P4	AV2	.15		WAR					TEC	TEH	.610	ZBAHS	19	H	7
48	82	.36	141	PCT	8	P4	AV1	-.12		WAR					TEC	TEH	.610	ZBAHS	18	H	96
49	82	.63	159	PCT	13	P4	AV1	-.10		WAR					TEC	TEH	.610	ZBAHS	18	H	98
48	83	.46	136	PCT	10	P4	AV1	-.26		WAR					TEC	TEH	.610	ZBAHS	18	H	97
49	84	.36	160	PCT	7	P4	AV1	-.18		WAR					TEC	TEH	.610	ZBAHS	17	H	107
42	85	.81	135	PCT	14	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	110
42	85	.40	49	PCT	8	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	17	H	110
33	87	.38	143	PCT	8	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAHS	18	H	127
46	87	.35	139	PCT	8	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	18	H	93
47	87	.30	45	PCT	7	P4	AV4	.13		WAR					TEC	TEH	.610	ZBAHS	18	H	95
46	89	.36	172	PCT	7	P4	AV1	-.08		WAR					TEC	TEH	.610	ZBAHS	17	H	99
46	89	.22	161	PCT	5	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	99
38	90	.48	113	PCT	10	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	18	H	78
39	90	.89	148	PCT	17	P4	AV2	-.13		WAR					TEC	TEH	.610	ZBAHS	18	H	81
44	90	.37	148	PCT	8	P4	AV1	.00		WAR					TEC	TEH	.610	ZBAHS	18	H	87
44	91	.52	117	PCT	11	P4	AV2	.05		WAR					TEC	TEH	.610	ZBAHS	18	H	90
44	91	.54	164	PCT	11	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	18	H	90
44	91	.41	163	PCT	9	P4	AV4	-.15		WAR					TEC	TEH	.610	ZBAHS	18	H	90
45	91	.62	165	PCT	13	P4	AV2	.08		WAR					TEC	TEH	.610	ZBAHS	18	H	91
45	91	.62	137	PCT	13	P4	AV4	-.10		WAR					TEC	TEH	.610	ZBAHS	18	H	91
42	92	.35	107	PCT	8	P4	AV4	-.03		WAR					TEC	TEH	.610	ZBAHS	18	H	39
36	93	1.18	120	PCT	18	P4	AV2	.03		WAR					TEC	TEH	.610	ZBAHS	18	H	62
36	93	.39	120	PCT	7	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	18	H	62
38	93	1.34	133	PCT	21	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	81
38	93	.43	132	PCT	9	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	81
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
40	93	.30	127	PCT	6	P4	AV1	-.05		WAR					TEC	TEH	.610	ZBAHS	18	H	79
40	93	.58	92	PCT	12	P4	AV2	-.03		WAR					TEC	TEH	.610	ZBAHS	18	H	79
36	94	.38	91	PCT	8	P4	AV1	-.28		WAR					TEC	TEH	.610	ZBAHS	17	H	61
36	94	.48	146	PCT	9	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	61
38	94	.40	154	PCT	8	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	43
40	94	.21	161	PCT	5	P4	AV1	-.31		WAR					TEC	TEH	.610	ZBAHS	17	H	48
40	94	.95	145	PCT	16	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	48
40	94	1.01	148	PCT	17	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	48
32	96	.50	159	PCT	9	P4	AV2	.23		WAR					TEC	TEH	.610	ZBAHS	18	H	52
35	96	.19	51	PCT	5	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	18	H	59
36	96	1.12	130	PCT	17	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	18	H	61
36	96	.49	128	PCT	9	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAHS	18	H	61
39	96	.95	116	PCT	17	P4	AV3	.10		WAR					TEC	TEH	.610	ZBAHS	18	H	46
40	96	.49	59	PCT	9	P4	AV1	.05		WAR					TEC	TEH	.610	ZBAHS	18	H	48
36	97	.90	112	PCT	16	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	34
34	98	1.55	126	PCT	21	P4	AV2	-.20		WAR					TEC	TEH	.610	ZBAHS	18	H	55
36	98	.77	115	PCT	14	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	45
39	98	.36	158	PCT	8	P4	AV1	.10		WAR					TEC	TEH	.610	ZBAHS	18	H	42
29	99	.30	98	PCT	8	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	16	H	147
34	99	.71	142	PCT	13	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	30
34	100	.68	148	PCT	13	P4	AV3	.00		WAR					TEC	TEH	.610	ZBAHS	17	H	31
36	100	1.50	112	PCT	23	P4	AV3	-.74		WAR					TEC	TEH	.610	ZBAHS	17	H	35
36	100	4.20	85	PCT	38	P4	AV3	-.28		WAR					TEC	TEH	.610	ZBAHS	17	H	35
36	100	.91	29	PCT	16	P4	AV3	.44		WAR					TEC	TEH	.610	ZBAHS	17	H	35
32	101	.58	142	PCT	12	P4	AV3	.08		WAR					TEC	TEH	.610	ZBAHS	18	H	30
30	102	1.02	131	PCT	18	P4	AV3	-.03		WAR					TEC	TEH	.610	ZBAHS	15	H	164
27	104	.39	101	PCT	10	P4	AV2	-.08		WAR					TEC	TEH	.610	ZBAHS	16	H	154
29	104	.63	135	PCT	15	P4	AV2	.00		WAR					TEC	TEH	.610	ZBAHS	16	H	160
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX
28	105	1.29	139	PCT	24	P4	AV2	.10		WAR					TEC	TEH	.610	ZBAHS	16	H	158
28	105	.65	136	PCT	15	P4	AV3	.05		WAR					TEC	TEH	.610	ZBAHS	16	H	158
25	107	1.26	127	PCT	18	P4	AV2	-.10		WAR					TEC	TEH	.610	ZBAHS	18	H	28
25	107	.68	96	PCT	11	P4	AV3	.28		WAR					TEC	TEH	.610	ZBAHS	18	H	28
27	107	1.22	149	PCT	23	P4	AV2	.13		WAR					TEC	TEH	.610	ZBAHS	16	H	155
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	UTIL1	UTIL2	CRLEN	CEG	CRWID	BEGT	ENDT	PDIA	PTYPE	CAL	L	IDX