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S&L Letter Q1528E
July 31, 1992
Project 8913-67

Commonwealth Edison Company
Quad Cities Nuclear Station - Unit 1

Transmittal of Degraded Voltage
Calculation for Division I

W.O.: N/A

Mod.: N/A

System Code: N/A

Mr. M. L. Reed
Electrical/I&C Design Superintendent
Commonwealth Edison Company
Nuclear Engineering Department
1400 Opus Place, Suite 400
Downers Grove, Illinois 60515

Dear Mr. Reed:

Enclosed is a copy of Design Input Transmittal (DIT) QC-EXT-0098
which transmits the following Sargent & Lundy calculation:

Calculation 8913-67-19-1, Revision 0, dated July 31, 1992,
"Quad Cities 1/I Safety-Related Continuous Load
Running/Starting Voltage."

The locations of the calculation purpose, methodology,
assumptions, and any engineering judgements are referenced in the
enclosed DIT.

should you have any questions, please call me at (312) 269-6246.

Yours very truly,

R. M. Schiavoni

R. M. Schiavoni
Senior Electrical
Project Engineer

RMS:mco
QDQC2947.EP
In duplicate
Enclosure
Copies: See Page Two

9310040029 930923
PDR ADOCK 05000254
P PDR

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Mr. M. L. Reed
Commonwealth Edison Company

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SAFETY-RELATED	X	NON-SAFETY-RELATED	DIT No. - OC-EXT-0098
CLIENT <u>Commonwealth Edison Company</u>			Page <u>1</u> of <u>1</u>
STATION <u>Quad Cities</u> UNIT(S) <u>1</u>			To <u>M. L. Reed</u>
PROJECT NO(S) <u>8913-67</u>			
SUBJECT <u>Transmittal of Calculation 8913-67-19-1, Revision 0, dated July 31, 1992, "Quad Cities 1/I Safety-Related Continuous Load Running/Starting Voltages."</u>			
MODIFICATION OR DESIGN CHANGE NUMBER(S) <u>N/A</u>			
<u>R. M. Schiavoni</u>	<u>EPED</u>	<u>[Signature]</u>	<u>07-31-92</u>
PREPARER (PLEASE PRINT NAME)	DIVISION	PREPARER'S SIGNATURE	ISSUE DATE

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

This information is approved for use. Several assumptions used in the calculation listed below require verification.

This information is provided in accordance with the terms and conditions of the service agreement/contract between Sargent & Lundy (S&L) and its Client governing the associated services. With respect to any third party use, S&L does not assume any obligation to said third party as to the accuracy.

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE (List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

This DIT transmits to Commonwealth Edison Company (CECo) the following calculation (including Reference Item A):

Calculation 8913-67-19-1, Revision 0, dated July 31, 1992, "Quad Cities 1/I Safety-Related Continuous Load Running/Starting Voltages."

The purpose, methodology, and assumptions can be found in the following calculation sections and pages:

Purpose/Scope: Section III, Page 3

Methodology: Section VIII, Pages 11-13 (ELMS-AC Version 2.2 is used)

Assumptions and Engineering Judgements: Section VI, Pages 6 through 9

References: Section XIII, Pages 28 through 31

Comparison of Calculated Results with Acceptance Criteria: Section X, Pages 25-26

SOURCE OF INFORMATION

Calc. No. 8913-67-19-1

0 07-31-92

Report No. N/A

Rev. and/or date

Rev. and/or date

Other _____

DISTRIBUTION See S&L Letter Q1528E, dated July 31, 1992.

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Calc. For Quad Cities 1/1 Safety-related Continuous	
Load Running/Starting Voltages	
X	Safety-Related
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Proj. No. 8913-67	Equip. No.

Prepared by <i>Thang Nguyen</i>	Date 7-31-92
Reviewed by <i>Ping L. Lau</i>	Date 7-31-92
Approved by <i>At. L. L. L.</i>	Date 7/31/92

I. ISSUE SUMMARY

Revision 0, Initial Issue, Page 1 through 31, A1 through A86, B1 through B49, and C1 through C80.



Calc. For Quad Cities 1/1 Safety-related Continuous

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II. METHOD OF REVIEWQA CALCULATION REVIEW CHECKLIST
TYPE OF CALCULATION

- ☐ Hand-Prepared Design Calculation Only
- ☐ Computer-Aided Design Calculation Only
- ☒ Both hand-Prepared and Computer Aided Design Calculation

FOR HAND-PREPARED DESIGN CALC
(check the appropriate items)

- ☒ Detailed review of the original calculation.
- ☐ Review by an alternate, simplified or approximate method of calculation.
- ☐ Review of a representative sample of repetitive calculations.
- ☐ Review of the calculation against a similar calculation previously performed.

FOR COMPUTER-AIDED DESIGN CALC
(check the appropriate items)

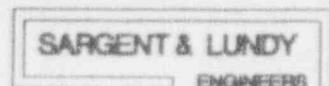
- ☒ A review to determine if the engineering design and analysis computer program(s) used have been validated and documented and that the calculation, regardless of the program used, contains all the necessary documentation for reconstruction at a later date. (MUST BE PERFORMED)
- ☒ A review to verify that the computer program is suitable to the problem being analyzed. (MUST BE PERFORMED)
- ☒ A review to determine if the input data as specified for program execution is consistent with the design input, correctly defines the problem for the computer program algorithm and is sufficiently accurate to produce results within any numerical limitation of the program. (MUST BE PERFORMED)
- ☒ A review to verify that the results obtained from the program are correct and within stated assumptions and limitations of the program and are consistent with the input. (MUST BE PERFORMED)
- ☐ Validation documentation for temporary changes to listed programs or developmental programs or unique single application programs shall be reviewed to assure that methods used adequately validate the program for the intended application. (WHERE APPLICABLE)

REVIEWER:

Ping L. Lau

DATE:

7-31-92



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III. PURPOSE/SCOPE

The purpose of this calculation is to evaluate the terminal voltage of all safety-related services at Unit 1, Division I for the following operating cases:

- Case A

With the 4.16 KV bus 13-1 voltage at 3845 V, the running voltage at terminals of continuous duty safety-related services for the four loading conditions as defined by Commonwealth Edison Company (CECo).

- Case B

With the 4.16 KV bus 13-1 voltage at 3845 V, the terminal voltage of the safety related continuous duty motors during block starting in condition 1 and 2, and single starting in condition 3, as identified in the CECO Load Table (Reference XIII.A).

Evaluation of Motor Operated Valves, control circuits, and the effects of operation at low voltage on the protective device settings is not in the scope of this calculation.

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V. INPUT DATA

1. GE Heater Resistances (Reference XIII.F):

<u>GE Catalog No.</u>	<u>Heater Resistance (Ohm)</u>
CR123C1.51B	0.0122
CR123C1.84A	0.915
CR123C2.20A	0.626
CR123C2.39A	0.518
CR123C2.68A	0.428
CR123C3.01A	0.355
CR123C3.26A	0.294
CR123C5.26A	0.065
CR123C5.92A	0.054

2. Westinghouse Overload Heater Resistance (Reference XIII.AA):

<u>Westinghouse Model No.</u>	<u>Heater Resistance (Ohm)</u>
FH28	0.144

3. Cable Impedance in Ohms per 100 feet at 90 Degree C (Reference XIII.G):

<u>Cable Size</u>	<u>R</u>	<u>X</u>
#14 AWG	.328	.00418
#10 AWG	.130	.00365
#6 AWG	.0513	.00341
#2 AWG	.0203	.00306
1/0 AWG	.0128	.00292
4/0 AWG	.00639	.00274
250 MCM	.00542	.00273
500 MCM	.00275	.00259

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VI. ASSUMPTIONS

- A. It is assumed that the values of overload heater resistance (Reference XIII.F) provided by the heater manufacturer, General Electric (G.E.), are suitable for calculating the motor starting and running voltages without requiring any adjustment for temperature. As discussed in Reference XIII.E. GE has stated that the heaters supplied to LaSalle Nuclear Station maintain essentially constant resistance for increases in heater temperature. Based on the GE response on the LaSalle GE heaters, it is reasonable to assume the GE overload heaters at Quad Cities Station also maintain essentially constant resistance for increases in heater temperature. This assumption does not require verification.
- B. As discussed in S&L Standard ESC-193, motors 200 hp and smaller normally are 460 V motors specified to comply with NEMA MG-1, which requires motors to start and run with 90% of motor rated voltage at the motor terminals. However, for most loads, these motors will start with 80% or 85% motor rated voltage at the motor terminals and ride through a dip to 75% rated voltage for 1 minute. The explanation of this capability is in NEMA Tables MG1-12.37 and MG1-12.38 which establish starting and breakdown torque requirements for these motors. Induction motors, depending on the size and speed, which can produce at rated voltage a starting torque equal to 100% to 275% of running torque, will produce at 80% of rated voltage a starting torque equal to 64% to 176% of running torque. Most mechanical loads have a break away (starting) torque less than 35% of full load torque. Therefore, NEMA MG-1 motors will start these loads with an applied terminal voltage substantially less than 90% rated voltage. This calculation is utilizing 85% of motor rated voltage as the minimum starting voltage requirement. This assumption does not require verification.
- C. Under degraded voltage conditions, the terminal voltages at electric heaters will be less than the rated value. Heaters are assumed to cycle on more often or remain on for longer period. The heat generated at reduced voltage is assumed to be sufficient for the intended purpose for all the heaters in Unit 1, Division I. This assumption needs verification by CECO.
- D. For the set of loads that are indicated 'Tripped' at certain operating condition in CECO's Load Table, these loads would be disconnected before or at the same time as another set of loads that are marked 'Start' actually start on the same operating condition. This means that both sets of loads will not be

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VI. ASSUMPTIONS (continued)

operating simultaneously during the period that the incoming motors are starting. This is confirmed by CECO (Reference XIII.X), therefore, no further verification is required.

- E. The AC input current to a rectifier, such as a battery charger is directly proportional to the output current, and since the DC system is operated in the steady state, the battery charger will be a constant current load. At high AC input voltage, the DC output is limited by delaying firing of the rectifiers or similar means. Under this condition, the AC power factor is low. However, with low input voltage, the firing of the rectifiers is not delayed in order to maintain a high DC output voltage. This results in a high power factor. Since the AC input voltage to the battery chargers will be low (MCC voltages), a high battery charger power factor (0.95) may be assumed. This assumption does not require verification. (References XIII.N & XIII.P).
- F. The DGCWP 1/2 COOLER FAN A & B have Westinghouse overload heater model FH28. It is assumed the resistance value for this heater as shown in the manufacturer's data sheet (Reference XIII.F) is suitable for this calculation without adjustment for temperature and manufacturing tolerance. This assumption is based on the similar engineering judgement used in Assumption VI.A for GE overload heaters. No verification is required for the purpose of this calculation.
- G. Typical performance data have been assumed for the following non-safety related valve loads (added to the ELMS-AC data file):
- . Main Streamline comb. Drn. Valve, 1-220-4 (MCC 18-1A)
 - . Main Streamline Drn Valve 1A, 1-220-90A (MCC 18-1A)
 - . Main Streamline Drn Valve 1B, 1-220-90B (MCC 18-1A)
 - . Main Streamline Drn Valve 1C, 1-220-90C (MCC 18-1A)
 - . Main Streamline Drn Valve 1D, 1-220-90D (MCC 18-1A)
 - . CRD Hydr. Sys. Press Cont. Valve, 1-302-8 (MCC 18-1A)
 - . Main Streamline Drain Cond. 1C, 1-220-3 (MCC 18-1A)
 - . Rx Wtr Clnup Sys Flr Bypass Vlv, 1201-33 (MCC 18-3)
 - . Rx Wtr Clnup Sys Restricting Orifice Bypass Vlv, 1201-76 (MCC 18-3)
 - . Rx Wtr Clnup Sys Mn Cond Dump Vlv, 1201-78 (MCC 18-3)
 - . Rx Wtr Clnup Sys Red-waste Drain & Waste Col Vlv, 1201-77 (MCC 18-3)
 - . Refuel Platform 480 V Receptacle (MCC 18-3)

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VI. ASSUMPTIONS

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- B. As discussed in S&L Standard ESC-193, motors 200 hp and smaller normally are 460 V motors specified to comply with NEMA MG-1, which requires motors to start and run with 90% of motor rated voltage at the motor terminals. However, for most loads, these motors will start with 80% or 85% motor rated voltage at the motor terminals and ride through a dip to 75% rated voltage for 1 minute. The explanation of this capability is in NEMA Tables MG1-12.37 and MG1-12.38 which establish starting and breakdown torque requirements for these motors. Induction motors, depending on the size and speed, which can produce at rated voltage a starting torque equal to 100% to 275% of running torque, will produce at 80% of rated voltage a starting torque equal to 64% to 176% of running torque. Most mechanical loads have a break away (starting) torque less than 35% of full load torque. Therefore, NEMA MG-1 motors will start these loads with an applied terminal voltage substantially less than 90% rated voltage. This calculation is utilizing 85% of motor rated voltage as the minimum starting voltage requirement. This assumption does not require verification.
- C. Under degraded voltage conditions, the terminal voltages at electric heaters will be less than the rated value. Heaters are assumed to cycle on more often or remain on for longer period. The heat generated at reduced voltage is assumed to be sufficient for the intended purpose for all the heaters in Unit 1, Division I. This assumption needs verification by CECO.
- D. For the set of loads that are indicated 'Tripped' at certain operating condition in CECO's Load Table, these loads would be disconnected before or at the same time as another set of loads that are marked 'Start' actually start on the same operating condition. This means that both sets of loads will not be

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VI. ASSUMPTIONS (continued)

- operating simultaneously during the period that the incoming motors are starting. This is confirmed by CECO (Reference XIII.X), therefore, no further verification is required.
- E. The AC input current to a rectifier, such as a battery charger is directly proportional to the output current, and since the DC system is operated in the steady state, the battery charger will be a constant current load. At high AC input voltage, the DC output is limited by delaying firing of the rectifiers or similar means. Under this condition, the AC power factor is low. However, with low input voltage, the firing of the rectifiers is not delayed in order to maintain a high DC output voltage. This results in a high power factor. Since the AC input voltage to the battery chargers will be low (MCC voltages), a high battery charger power factor (0.95) may be assumed. This assumption does not require verification. (References XIII.N & XIII.P).
- F. The DGCWP 1/2 COOLER FAN A & B have Westinghouse overload heater model FH28. It is assumed the resistance value for this heater as shown in the manufacturer's data sheet (Reference XIII.F) is suitable for this calculation without adjustment for temperature and manufacturing tolerance. This assumption is based on the similar engineering judgement used in Assumption VI.A for GE overload heaters. No verification is required for the purpose of this calculation.
- G. Typical performance data have been assumed for the following non-safety related valve loads (added to the ELMS-AC data file):
- . Main Streamline comb. Drn. Valve, 1-220-4 (MCC 18-1A)
 - . Main Streamline Drn Valve 1A, 1-220-90A (MCC 18-1A)
 - . Main Streamline Drn Valve 1B, 1-220-90B (MCC 18-1A)
 - . Main Streamline Drn Valve 1C, 1-220-90C (MCC 18-1A)
 - . Main Streamline Drn Valve 1D, 1-220-90D (MCC 18-1A)
 - . CRD Hydr. Sys. Press Cont. Valve, 1-302-8 (MCC 18-1A)
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 - . Rx Wtr Clnup Sys Flr Bypass Vlv, 1201-33 (MCC 18-3)
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 - . Rx Wtr Clnup Sys Red-waste Drain & Waste Col Vlv, 1201-77 (MCC 18-3)
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VI. ASSUMPTIONS (continued)

The typical data for these loads are:

Rated Voltage: 460V, (480V for Refuel Platform Recept., R type)
Locked Rotor Current: 625%
Starting P.F.: 20%

Based on CECO Load Table, these loads are 'OFF' at any of the four conditions, therefore, the assumed values have no impact on the calculation, and no verification is required.

- H. The two Diesel Generator Lubrication Pumps, rated 1 hp and 0.75 hp respectively, are modeled as a single induction motor load. The combined motor load, rated at 1.75 hp, has the following parameters based on Reference XIII.Y:

Speed: 1155 RPM
Rated Efficiency: 80%
Rated Power Factor: 75%
Locked Rotor Current: 625%
Starting Power Factor: 20%

Because of the small size of this motor, these assumptions will not affect the results of this calculation, therefore, no verification is required.

- I. The feed cable from Switchgear 18 to MCC 18-2 is assumed to be 2 parallel 250 MCM per phase. This assumption requires verification.
- J. The power factor for the 480-120/240V single phase distribution transformers is assumed to be 0.95. Since most of the loads on the panels fed from these transformers are of resistive nature with power factor between 0.9 and 1.0, the assumed power factor is a representative value based on engineering judgement. No verification is required.
- K. It is assumed that the field measured current/voltage values as in References XIII.AB and XIII.AF of the subject single phase transformers do not change considerably under various LOCA conditions associated with this calculation. This assumption requires verification.
- L. It is assumed that under CONTROL ROOM (CM) HVAC INITIATION condition, loads marked 'Start' as listed in the CECO load table will be manually started one by one in the following order:

1. CONTROL ROOM STANDBY AHU (50 HP @ MCC 18-4)

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VI. ASSUMPTIONS (continued)

2. CONTROL ROOM STANDBY A/C (150 HP @ MCC 18-4)
3. CONTROL ROOM AHU BOOSTER FAN A (7.5 HP @ MCC 18-4)

This assumption requires verification.

- M. It is assumed that the power feed cables from MCC 18-1A to the following two services are AWG #10 per phase:

1. RHRS EMERGENCY AHU 1A
2. CORE SPRAY EMERGENCY AHU 1A

This assumption requires verification.

- N. The CONTROL ROOM AFU BOOSTER FAN B is assumed to be OFF for all loading conditions. Verification is required.
- O. The CONTROL ROOM AFU HEATER has been field modified from 9KW to 12 KW (Reference XIII.AD). It is assumed that with the enlarged heater capacity, enough heat could be generated for the intended purpose under the voltage conditions calculated in this Calculation. Verification is required.
- P. It is assumed that the CONTROL ROOM STANDBY A/C motor will start at the calculated terminal voltage. This assumption requires verification.

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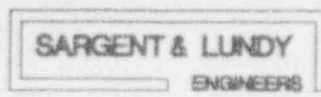
VII. ACCEPTANCE CRITERIA

The minimum running voltage of the continuous duty motor is 90% of the motor rated voltage. This requirement is in accordance with industrial standard outlined in NEMA MG-1, Part 12, Section 12.44.1 (Reference XIII.K).

The minimum motor starting voltage for continuous duty motors is generally 85% of the motor rated voltage except as noted below, and the justification for this criterion is stated in Assumption VI.B. The following motors have the indicated minimum starting voltage:

1. DGCWP 1/2 - 70% of 460 V (Reference XIII.W)
2. DGCWP 1/2 COOLER (Reference XIII.T, note)
FAN A & B - 75% of 460 V
3. CM STANDBY A/C - Calculated Terminal Voltage (Assumption VI.P)

note: Reference XIII.T establishes the minimum starting voltage for Unit 2 DGCWP cooler fans. However, by comparing the field walk-down data for these cooler fans in Reference XIII.R with the Unit 2 DGCWP cooler fan walk-down data in Reference XIII.T, it is found that the cooler fan motors in both cases are identical. Therefore, the 75% minimum starting voltage also applies to DGCWP 1/2 Cooler Fan motors.



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VIII. METHODOLOGY

Feed cable impedances are modeled for the safety-related services. If the service is a motor and rated no more than 3 hp, per S&L standard ESC-193, the overload heater resistance is also included in the feeder impedance. The calculation is performed by using Program ELMS-AC, Version 2.2. The Existing ELMS-AC Data File Q1A4.M05 is modified for use in this calculation. The two cases as mentioned in Section III will be run on the modified data file. Modifications to the File Q1A4.M05 include:

- Model the 480 V safety related service feeder impedances by adding a terminal bus and using the feeder impedance as the connection data between the MCC and the terminal bus.
- Disable the existing two sources in the file for all operating conditions. Add dummy source 3 connected to 4.16 KV switchgear 13-1 valid for all four conditions in the file. Adjust the source 3 voltage such that the voltage at 4.16 KV Switchgear 13-1 is kept at 3845 V for all runs.
- Change the existing four operating conditions in the ELMS-AC file to the following four LOCA operating conditions as defined in the Load Table supplied by Commonwealth Edison Company (CECo)(Reference XIII.A):

- Condition 1: LOCA Time Zero
- Condition 2: RHR SW Initiation
- Condition 3: CM STANDBY HVAC Initiation
- Condition 4: Post LOCA Steady State

It should be noted that these new operating conditions only apply to Division I loads that are listed in CECO's Load Table. Although loads outside this division still remain in the data file, their values are not adjusted to the defined operating conditions. However, their values are irrelevant to this calculation.

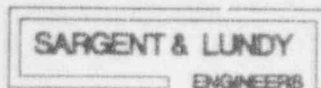
- Adjust loadings at different operating conditions to those defined in the CECO Load Table and Load Shedding List (Reference XIII.A), with the brake horsepower determined in the following order of preference:

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VIII. METHODOLOGY (Continued)

1. Specified in CECO Load Table Assumptions, or any other documents.
 2. Existing file, condition 3.
 3. Existing file, other conditions.
 4. 90% of the nameplate rated brake horse power.
- Change Diesel Generator Cooling Water Pump Data as indicated in References XIII.S, U, V.
 - Change 125 V and 250 V Battery Charger KVA rating to the calculated value based on the nameplate data given in Reference XIII.M, and Power Factor as in Assumption VI.E.
 - Manually reduce resistive type loads (Type 'R') KVA or KW value according to the bus operating voltage such that they are being treated as constant impedance type loads in the current version of ELMS-AC (The program treats all loads as constant KVA). An exemption to this is the battery chargers. The battery chargers are marked as 'R' type loads but are being treated as constant current loads.
 - Reenter the feed cable impedance from switchgear 18 to each down-stream MCC.
 - Change the parameters of DG 1/2 Cooling Water Pump Cooler Fan A & B to the field walk-down data and assumptions (Reference XIII.R)
 - Add the following loads to the ELMS-AC data file (Reference XIII.O).

. Main Streamline comb. Drn. Valve,	1-220-4	(MCC 18-1A)
. Main Streamline Drn Valve 1A,	1-220-90A	(MCC 18-1A)
. Main Streamline Drn Valve 1B,	1-220-90B	(MCC 18-1A)
. Main Streamline Drn Valve 1C,	1-220-90C	(MCC 18-1A)
. Main Streamline Drn Valve 1D,	1-220-90D	(MCC 18-1A)
. CRD Hydr. Sys. Press Cont. Valve,	1-302-8	(MCC 18-1A)
. Main Streamline Drain Cond. 1C,	1-220-3	(MCC 18-1A)
. Rx Wtr Clnup Sys Flr Bypass Vlv,	1201-33	(MCC 18-3)
. Rx Wtr Clnup Sys Restricting		
Orifice Bypass Vlv,	1201-76	(MCC 18-3)
. Rx Wtr Clnup Sys Mn Cond Dump Vlv,	1201-78	(MCC 18-3)
. Rx Wtr Clnup Sys Red-waste Drain		
& Waste Col Vlv,	1201-77	(MCC 18-3)
. Refuel Platform 480 V Receptacle		(MCC 18-3)



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VIII. METHODOLOGY (Continued)

- Add load '120/240V Instrument Transformer' to MCC 18-2, load #905, (Reference XIII.AB).
- Split the load record 565, Diesel Engine Cooling Water Heater 1/2 into two load records such that the different ON/OFF states of the two loads can be modeled. Load number 564 is the DG Cooling Water Heater (OFF for all conditions) and load number 904 is the DG Lubrication Pumps (ON for all conditions).
- Change the KW rating of the Control Room AFU Heater from 9 to 12KW to reflect field modification (Reference XIII.AD).

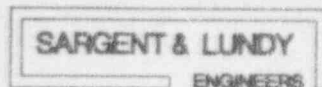
The calculations are performed at cable conductor temperature of 90 degrees Celsius for both running and starting cases.

Safety related electric heaters, except the Control Room AFU Heater, will not be evaluated for the running terminal voltages. This is based on the assumption that heaters will generate sufficient heat at the degraded voltage condition (Assumption VI.C). The Control Room AFU Heater will perform its intended safety-related function (Assumption VI.O).

Single phase distribution transformers connected between line to line in the 480V system are modeled as three phase transformers with a square root of three multiplier on KVA rating. This is a conservative representation regarding to voltage drop calculations in the ELMS-AC analysis (Reference XIII.AH). The Power Factor of single phase transformer loads is assumed to be 95% (Assumption VI.J). The running power of the single phase loads are based on the field measured voltage and current (the largest among three phases) values multiplied by square root of three (References XIII.AC & AF), and these values are input to the program without further adjustment.

Voltages at motor terminals of all four conditions are compared for the running case, and the worst case voltage is to be used as the result for Case A.

For the block motor starting case study, the 4.16 KV Switchgear 13-1 voltage is set at 3845 V. The block motor starting feature in the ELMS-AC is used to simultaneously start single or multiple motors as marked 'Start' in CECO Load Table under the different conditions respectively.



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IX. CALCULATIONS AND RESULTS

1. Battery Charger Data.

Battery Charger AC Input Rating (Reference XIII.M)

Voltage: 480V, Current: 113A (250 V Charger 1/2); 48A(125 V Charger 2A), Frequency: 60 Hz, 3 Phase.

Input KVA = $1.732 \cdot 480 \cdot 113 = 93.9$ KVA (250V Charger)

Input KVA = $1.732 \cdot 480 \cdot 48 = 39.9$ KVA (125V Charger)

Since the input KVA is used in the ELMS-AC file,
Efficiency is entered 100%.

Running Power Factor: 95 % (Assumption VI.E)

2. Data for Diesel Generator Cooling Water Pump (DGCWP) 1/2.

From the field walk-down data (Reference XIII.S):

Rated Voltage: 460 V
Rated Speed: 3525 rpm
Rated Horsepower: 100 hp
NEMA Design Code: E

From the purchase specification of DGCWP 1/2 (Reference XIII.U):

Brake Power = 90 HP

From Reference XIII.V:

Full Load Current = 116 A
Rated Efficiency = 88.5%
Rated Power Factor = 91.2%

From Reference XIII.H, the typical starting power factor for 100 HP induction motor is 37%

From NEMA MG-1 (Reference XIII.K), for a NEMA design E motor, the upper limit of locked rotor KVA per HP is 4.999, therefore,

$$LRC(\%) = \frac{4.999 \cdot 100 \cdot 100}{\sqrt{3} \cdot 116 \cdot 0.46} = 541$$

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IX. CALCULATIONS AND RESULTS (Continued)

3. Calculation of MCC Feed Cable Impedances.

Based on Reference XIII.L and Assumption VI.I, the feed cable impedance from Switchgear 18 to down-stream MCC's are calculated in the Table 1:

Table 1. Feeder Cable Impedances From Switchgear to MCC's

From Bus	To Bus	Cable Size	Cable Length (ft)	Total Resistance (ohm)	Total Reactance (ohm)
SWGR 18	MCC 18-1A	250 MCM	308	0.0166936	0.0084024
SWGR 18	MCC 18-1B	250 MCM	308	0.0166936	0.0084084
SWGR 18	MCC 18-2	2//250 MCM	314	0.0085094	0.0042861
SWGR 18	MCC 18-3	500 MCM	450	0.012375	0.011655
SWGR 18	MCC 18-4	500 MCM	750	0.020625	0.019425
SWGR 18	MCC 18/19-5	250 MCM	278.5	0.0150947	0.0076031

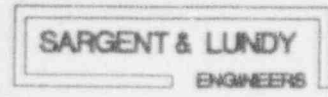
The connection from Switchgear 19 to MCC 18/19-5 in the existing ELMS-AC file is replaced by the connection from Switchgear 18 to MCC 18/19-5 as shown.

4. Calculation of single phase transformer load running KVA

Per Reference XIII.AC & AF, the running KVA for the single phase transformer as modeled in the ELMS-AC file is calculated in Table 2.

Table 2. Single Phase Transformer Running KVA

Service	MCC	Rating	Measured I	Measured V	KVA	KVA for 3 phase Load
18-2-1	18-2	10 KVA	1.9 A	476 V	0.8	1.6
Instrument	18-2	37.5 KVA	45.8 A	472 V	21.6	37.5
18-3-1	18-3	10 KVA	6.9 A	476 V	3.3	5.7



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IX. CALCULATIONS AND RESULTS (Continued)

4. DGCWP 1/2 Cooler Fan A & B Motors

The data to be entered in the ELMS-AC file are as follows:

From Reference XIII.R, Rated Voltage: 460V,
Full Load Current: 2.5A, Rated HP: 1.5, Speed: 1740 RPM.
From the existing data in the ELMS-AC file (Reference XIII.I),
Efficiency is 75 %.

$$PF_{rated} = \frac{0.746 \cdot 1.5}{\sqrt{3} \cdot 0.46 \cdot 2.5 \cdot 0.75} = 0.75$$

For NEMA design L motor, the locked rotor KVA per hp (Reference XIII.K) is 9.0 - 9.99, and by using the upper limit of 9.99:

$$LRC(\%) = \frac{9.99 \cdot 1.5 \cdot 100}{\sqrt{3} \cdot 2.5 \cdot 0.46} = 752$$

From S&L Standard ESC-193 (Reference XIII.H), the starting power factor for 1.5 hp motor is 77%.

5. RHR SW Pump Cooler Fans

The data to be entered in the ELMS-AC file are as follows:

From Reference XIII.AG, Rated Voltage: 460V, NEMA Code K
Full Load Current: 4.65A, Rated HP: 3, Speed: 1730 RPM.
From the existing data in the ELMS-AC file (Reference XIII.I),
Efficiency is 80 %.

$$PF_{rated} = \frac{0.746 \cdot 3}{\sqrt{3} \cdot 0.46 \cdot 4.65 \cdot 0.8} = 0.755$$

For NEMA design K motor, the locked rotor KVA per hp (Reference XIII.K) is 8.0 - 8.99, and by using the upper limit of 8.99:

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IX. CALCULATIONS AND RESULTS (Continued)

$$LRC(\%) = \frac{8.99 \cdot 3 \cdot 100}{\sqrt{3} \cdot 4.65 \cdot 0.46} = 728$$

From S&L Standard ESC-193 (Reference XIII.H), the starting power factor for 3 hp motor is 68%.

The running horsepower of these motors is based on the field voltage/current measurements. The largest line current in the measurement among three phases is conservatively used as the line current of the balanced three phase load. Therefore, the running horsepower is calculated based on 473V voltage and 4.6A current (Reference XIII.AI) as follows:

$$HP_{\text{running}} = \frac{\sqrt{3} \cdot 0.473 \cdot 4.6 \cdot 0.755 \cdot 0.8}{0.746} = 3.1$$

6. Calculation of feeder impedance to Panel 2251-100

The feeder cable from Switchgear 18 to Panel 2251-100 is 3/C #4/0, 855 feet long (Reference XIII.Q), therefore, the cable impedance is:

$$8.55 \cdot (0.00639 + j0.00274) = 0.0546345 + j0.023427$$

7. Calculation of Safety-related Service Feeder Impedance

For the loads given in References XIII.B and XIII.Z as the safety-related services in Division 1, Unit 1, the load name, equipment number, rated horsepower from References XIII.I and XIII.R, overload heater catalog number from References XIII.D and XIII.Q, and cable data from References XIII.B, XIII.Q and assumption VI.M are tabulated in Table 3, with total feeder impedance calculated.

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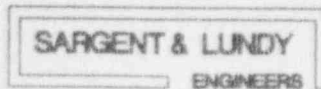
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IX. CALCULATION (Continued)

Table 3. Safety related load feeder impedances.

SERVICE	Load No	RATED HP	CABLE SIZE	CABLE LENGTH (FT)	HEATER MODEL	TOTAL RESIS-TANCE	TOTAL REAC-TANCE
DG 1/2 CLG WATER PUMP	462	100	4/O	89	*	0.0057	0.0024
STNBY LQD CONT TANK HTR	497	60KW	AWG 2	455	*	0.0924	0.0139
ESS FILL SYS JOCKEY PUMP	494	3	AWG 10	384	C151B	0.5114	0.0140
SBLC PUMP 1A	472	50	AWG 2	453	*	0.0920	0.0139
POST LOCA H2/O2 MTR PMP 1B	479	1	AWG 10	284	C220A	0.9952	0.0104
RHRS EMERG AHU 1A	473	7.5	AWG 10	289	*	0.3757	0.0105
DG 1/2 RM HVAC SPLY FAN	474	30	AWG 6	236	*	0.1211	0.0080
DG OIL XFER PUMP 1/2	481	3	AWG 14	279	C419A	1.0131	0.0117
CORE SPRAY EMERG AHU 1A	475	5	AWG 10	406	*	0.5278	0.0148
AF RHRS EMERG AHU 2A	480	7.5	AWG 10	462	*	0.6006	0.0169
DG STG AIR COMP 1/2B	492	5	AWG 14	260	*	0.8528	0.0109
RHRS PMP 1A CLR FAN A	520	3	AWG 10	548	C526A	0.7774	0.0200
RHRS PMP 1A CLR FAN B	521	3	AWG 10	545	C526A	0.7735	0.0199
RHRS PMP 1A CLR FAN C	522	3	AWG 10	541	C526A	0.7683	0.0197
RHRS PMP 1A CLR FAN D	523	3	AWG 10	541	C526A	0.7683	0.0197
DG 1/2 CLG WTR PMP FAN A	524	1.5	AWG 10	80	FH28	0.2480	0.0029
DG 1/2 CLG WTR PMP FAN B	525	1.5	AWG 10	80	FH28	0.2480	0.0029
RHRS PMP 1B CLR FAN A	526	3	AWG 10	564	C526A	0.7982	0.0206
RHRS PMP 1B CLR FAN B	527	3	AWG 10	561	C526A	0.7943	0.0205
RHRS PMP 1B CLR FAN C	528	3	AWG 10	561	C526A	0.7943	0.0205
RHRS PMP 1B CLR FAN D	529	3	AWG 10	564	C526A	0.7982	0.0206
CONT RM STDBY AHU	575	50	AWG 6	56	*	0.0287	0.0019
CONT RM AFU HEATER	577	12 KW	AWG 10	102	*	0.1326	0.0037
CONT RM STDBY A/C	574	150	4/O	47	*	0.0030	0.0013
CONT RM AFU BSTR FAN A	572	7.5	AWG 10	76	*	0.0988	0.0028
CONT RM AFU BSTR FAN B	573	7.5	AWG 10	69	*	0.0897	0.0025
125V BATTERY CHARGER	516	39.9KVA	AWG 2	154	*	0.0313	0.0047
250V BATTERY CHARGER	518	93.9KVA	4/O	158	*	0.0101	0.0043



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7. Computer Runs for Case A

The purpose of Case A is to determine the running voltage at the terminals of the safety related 480 V system loads in Division I under the worst operating condition among the four defined in the CECO Load Table.

Computer Runs for Case A include the following considerations.

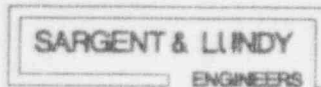
- From the ELM-AC running voltage summary, it is found that condition 4 is the worst loading scenario that requires the highest 4.16 KV bus voltage. Therefore, condition 4 is being considered in Case A.
- The existing (Version 2.1 and 2.2) ELMS-AC program performs starting and voltage drop calculations assuming that all loads are constant KVA loads. Since the majority of the loads in a power plant are motors which have a constant KVA characteristic, this is a reasonable assumption. However, this approach is conservative for those loads which have a constant current or constant impedance characteristic running at below the load rated voltage.

In order to eliminate this conservatism, the resistive 'R' type loads are manually reduced in KVA or KW rating for use in Version 2.2 of ELMS-AC, where they are being treated as constant KVA loads.

The 125 V and 250 V battery chargers as well as UPS panel 902-63 are manually adjusted in KVA value in order to represent their constant current characteristics. The adjustments use the following formula:

$$KVA_{\text{new}} = KVA_{\text{running}} \cdot \left(\frac{V_{\text{MCC}}}{V_{\text{rated}}} \right)$$

where V_{MCC} is the actual MCC running voltage.
 KVA_{running} is the brake KVA before adjustment.



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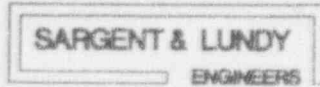
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The rest of the 'R' type loads are manually adjusted in KVA or KW value to represent their constant impedance characteristics. The adjustments use the following formula:

$$KVA_{new} = KVA_{running} \cdot \left(\frac{V_{MCC}}{V_{rated}} \right)^2$$

The running KVA before adjustment is determined by using the value in the base file for these 'R' type loads. The adjusted 'R' type load values are tabulated in Table 4. It should be noted that feed cable impedance to all the 'R' type loads are neglected in the KVA adjustments, which is being conservative. The adjustment is based on Condition 4 running voltages and the adjusted values are entered into all conditions where the 'R' type loads are ON. However, the adjusted value should only be considered valid for condition 4 voltages.

- c. The output voltage of the battery chargers will drop when less than 90 % of rated input voltage is available. This will result in a "Battery Low Voltage" alarm before the battery discharges to a point where there is insufficient energy available from the battery to supply the load profile. Therefore, the terminal voltages at the battery chargers are not to be evaluated by the running voltage criteria (Reference XIII.A).



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Table 4. Adjustments of 'R' Type Loads for Case A

Load Name	ELMS-Load No.	Run-ning KVA/KW	Load Rated Volts	SWGR /MCC No	MCC Volt.	New KVA
UPS PANEL 901-63	469	40	480	18	430.2	35.9
TURB & RX BLDGS LTG #1	470	47	480	18	430.2	37.7
XFMR TO FD 18-1A-1	477	15	480	18-1A	427.1	11.9
STNDBY LOD CONTL TK HTR	497	60	480	18-1B	428.3	47.8
125 V BATTERY CHGR 1A	516	39.9	480	18-2	423.8	35.2
250 V BATTERY CHGR 1/2	518	93.9	480	18-2	423.8	82.9
345 KV SWYD RLY HSE XFMR	519	75	480	18-2	423.8	58.5
120/208 XFMR	576	15	480	18-4	416.7	11.3
CONTL RM AFU HTR	577	12	480	18-4	416.7	9.0

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8. Computer Runs for Case B

The purpose of this case is to determine whether the starting continuous duty motors have adequate terminal voltage when block starting a single or a group of motors that are marked 'Start' at LOCA Time Zero, RHRS SW Initiation or Control Room HVAC Initiation conditions given in CECO's Load Table. The bus voltage at 13-1 is to be kept at 3845 V.

The computer runs for Case B include the following considerations.

a. At LOCA Time Zero condition (Condition 1), the block starting motors include:

1. DG COOLING WATER PUMP 1/2 (@ SWGR 18)
2. RX WTR CLNUP SYS RECIRC. (@ MCC 18-1A)
3. DG1/2 CLG WTR PMP COOLER FAN A (@ SWGR 18)
4. DG1/2 CLG WTR PMP COOLER FAN B (@ SWGR 18)
5. RHRS INBOARD SHUTOFF VLV 1A (@ MCC 18/19-5)
6. RX WTR RECIRC LOOP EQUAL VLV 1B (@ MCC 18/19-5) *
7. RX WTR RECIRC PMP DISCH VLV 1B (@ MCC 18/19-5)

b. At RHR SW Initiation condition (Condition 2), the block starting motors include:

1. RHR SW Pump 1A Cooler Fan A (@ MCC 18-2)
2. RHR SW Pump 1A Cooler Fan B (@ MCC 18-2)
3. RHR SW Pump 1A Cooler Fan C (@ MCC 18-2)
4. RHR SW Pump 1A Cooler Fan D (@ MCC 18-2)
5. RHR SW Pump 1B Cooler Fan A (@ MCC 18-2)
6. RHR SW Pump 1B Cooler Fan B (@ MCC 18-2)
7. RHR SW Pump 1B Cooler Fan C (@ MCC 18-2)
8. RHR SW Pump 1B Cooler Fan D (@ MCC 18-2)
9. RHRS CONT SPRY SHTOF ISOL VLV (@ MCC 18-1B)
10. RHRS BACKUP CONT SPRY VLV (@ MCC 18-1B)
11. RHRS SUPP CHAMBER DMPLN VLV (@ MCC 18-1B)
12. RHR MN SHUTOFF SUPP. VLV 1B (@ MCC 18-1B)

* Equipment Number 1-202-6B, the load name for Load #669 as appears in the base ELMS-AC file should be RX WTR RECIRC LOOP EQUAL VLV 1B

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IX. CALCULATIONS AND RESULTS (Continued)

- c. At Control Room HVAC Initiation condition (Condition 3), the starting motors will be manually started one by one (Assumption VI.L). Two single motor starting cases are performed, which are:

- A. Start CM STANDBY AHU, with CM STANDBY A/C not running.
- B. Start CM STANDBY A/C, with CM STANDBY AHU running.

In both A and B runs, AHU Booster Fans will be OFF. AHU Booster Fan A has a relatively small capacity (7.5 HP), and by engineering judgement, it should be able to start after both AHU and A/C units get started.

- d The 'R' type loads are adjusted in the same way as in Case A, and the adjusted load values for Case B are tabulated in Table 5.

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IX. CALCULATIONS AND RESULTS (Continued)

Table 5 Adjustment of 'R' type Loads for Case B

Load Name	ELMS-Load No.	Run-ning KVA	SWGR /MCC No	Condition 1		Condition 2		Cond.3 A/B	
				MCC V	KVA	MCC V	KVA	MCC V	KVA
UPS PANEL 901-63	469	40	18	412.7	34.4	429.5	35.8	425.5/ 405.8	35.5/ 33.8
TURB & RX BLDGS LTG # 1	470	47	18	412.7	34.7	429.5	37.6	425.5/ 405.8	36.9/ 33.6
XFMR TO FD 18-1A-1	477	15	18-1A	411.7	11.0	426.5	11.8	422.4/ 402.7	11.6/ 10.6
STNDRY LQD CONTL TK HTR	497	60	18-1B	410.9	44.0	425.7	47.2	423.6/ 404.0	46.7/ 42.5
125V BATTERY CHGR 1A	516	39.9	18-2	406.9	33.8	420.0	34.9	419.0/ 399.3	34.8/ 33.2
250V BATTERY CHGR 1/2	518	93.9	18-2	406.9	79.6	420.0	82.2	419.0/ 399.3	82.0/ 78.1
345 KV SWYD RLY HSE XFMR	519	75	18-2	406.9	53.9	420.0	57.4	419.0/ 399.3	57.1/ 51.9
120/208 XFMR	576	15	18-4	411.9	11.1	428.7	12.0	409.1/ 361.8	10.9/ 8.5
CONT RM AFU HTR	577	12	18-4	411.9	0.0	428.7	0.0	409.1/ 361.8	8.7/ 6.8

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X. COMPARISON OF CALCULATED RESULTS WITH ACCEPTANCE CRITERIA

1. Case A computer printouts are included in Appendix A. The results are summarized in Table 6.

Table 6. Summary of Running Voltage Run - Case A

Load/Bus Name	Rated Voltage (V)	Motor/Bus Running (V)	Minimum Acceptable Voltage (V)	Feed MCC	MCC Voltage (V)
Bus 13-1	4160	3845.0	--	--	--
CONT RM STANDBY AHU	460	414.0	414.0	18-4	416.7
CONT RM BOOSTER FAN A	460	415.0	414.0	18-4	416.7
CONT RM STANDBY A/C	460	415.0	414.0	18-4	416.7
DGCWP 1/2	460	416.6	414.0	18	430.2
DGCWP 1/2 COOLER FAN A & B	460	417.0	414.0	18	430.2

It is noted that all safety related loads have running voltage above the acceptance criteria of 90% of 460 V.

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X COMPARISON OF CALCULATED RESULTS WITH ACCEPTANCE CRITERIA (continued)

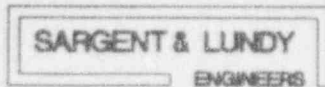
2. Case B computer printouts are included in Appendix B. The results are summarized in Table 7.

Table 7. Summary of Starting Voltage Runs - Case B
(3845.0 V at Switchgear 13-1)

Limiting Motor Load Name	Starting Condition	MCC Voltage (MCC No)	Starting Voltage	
			Terminal	Accept. V
DG Cooling Water Pump 1/2	LOCA Time Zero	412.7 (18)	367.4 V (79.9%)	322 (70%)
DGCWP 1/2 COOLER FAN A & B	LOCA Time Zero	412.7 (18)	366.2 V (79.6%)	345 (75%)
RHRS SW Pump 18 Fan A	RHR SW Initiation	420.0 (18-2)	391.2 V (85.0%)	391 (85%)
CM STANDBY AHU	CM HVAC Initiation (Case 3A)	409.1 (18-4)	401.5 V (87.3%)	391 (85%)
CM STANDBY A/C	CM HVAC Initiation (Case 3B)	361.8 (18-4)	358.4 V (77.9%)	358.4 * (77.9%)

* Based on Assumption VI.P, this motor will be able to start at the calculated terminal voltage.

It should be noted that at all conditions, all starting continuous duty motors meet their respective acceptance criteria.



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XI. CONCLUSIONS

This calculation evaluates the motor terminal voltage during starting and running, with 3845 Volts at the 4.16 KV Switchgear 13-1, for the safety related 480 V system loads at Quad Cities Unit 1, Division I for the LOCA loading conditions defined by CECO.

The calculation indicates that, with the identified assumptions in this calculation, all starting motors as identified in the CECO Load Table for Condition 1, 2 and 3 meet their respective acceptance criteria, and all of the safety-related loads meet the 90% running voltage criteria.

XII. RECOMMENDATIONS

Not applicable due to the scope of this calculation.

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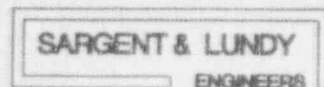
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XIII. REFERENCES

- A. Sargent & Lundy (S&L) Design Information Transmittal (DIT) No. QC-EPED-0497-01, dated 4-1-92.
 - . Load Tables and Assumptions and Load Shedding List for Division I, Unit 1.
- B. S&L DIT No. QC-EPED-0469-00, dated 1-22-92.
 - * Safety Related Service Feed Cable Data
- C. S&L DIT No. QC-EPED-0489-01, dated 4-1-92.
 - * MCC 18/19-5 Load Table
- D. S&L DIT No. QC-EPED-0539-00, dated 4-3-92.
 - * Thermal overload heater catalog numbers
- E. S&L Calculation 4266/19AZ13, Revision 1, dated 10-31-91.
 - . Thermal overload heater temperature compensation and 85% of motor rated start-up voltage requirement.
- F. Panafax Message from Scott Jacobs (GE) to G. J. Hinshaw (S&L), Dated January 28, 1988
 - . GE Overload Heater Resistances
- G. S&L Standard ESA-102 (June 28, 1991)
 - * Low Voltage Cable Impedances Ohms/100 Feet (90°C)
- H. S&L Standard ESC-193 (November 28, 1989)
 - * Consideration of Overload Heater Resistance
- I. S&L DIT No. QC-EPED-0522-00, dated 3-6-92.
 - . Latest computer data file 'Q1A4.M05' for QUAD CITIES Unit 1 ELMS-AC analysis to be used as base file for this calculation.
- J. S&L Program ELMS-AC, Version 2.2, Computer Program No. 03.7-043-2.2



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XIII. REFERENCES (Continued)

- K. NEMA Standard MG 1-1987, Part 10, "Ratings-AC Small and Medium Motors", and Part 12, "Tests and Performance - AC Small and Medium Motors"
- * Running Voltage and Locked Rotor Torque Requirements for Motors
- L. S&L DIT No. QC-EPED-0560-00, dated 4-21-92
- . Cable Length and Size of Feeders from Switchgear 18 to downstream MCCs.
- M. S&L DIT No. QC-EPED-0534-00, dated 3-27-92
- . Battery Charger Data
- N. Direct Current Transmission, by Edward W. Kimbark, Vol. 1 Wiley-Interscience, 1971
- . Rectifier Performance
- O. S&L DIT No. QC-EPED-0564-00, dated 4-23-92.
- . Non-safety related valves to be added in the future revision of the ELMS-AC file
- P. Telephone Memorandum, between J. Mitchell (Power Conversion) and J. B. Wisniewski (S&L), dated 1-7-92.
- . Battery Charger Power Factor.
- Q. S&L DIT No. QC-EPED-0568-00, dated 4-28-92.
- . Feed Cable Arrangements for DGCWP 1/2 and Cooler Fans.
- R. S&L DIT No. QC-EPED-0551-00, dated 4-14-92
- . Field Walk-down Data for DG 1/2 Cooling Water Pump Cooler Fans.
- S. S&L DIT No. QC-EPED-0555-00, dated 4-16-92
- . DGCWP 1/2 Field Walk-down Data.

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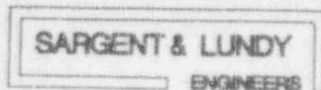
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XIII. REFERENCES (Continued)

- T. S&L Calculation 8913-73-19-2, Rev. 0, "Evaluation of DG 2 Cooling Water Pump Cooler Fan A & B Minimum Starting Voltage", dated 4-3-92
- U. S&L Specification R-2317, Revised date 4-13-67
 - . Quad Cities Units 1 & 2 Specification for Miscellaneous Pumps.
- V. Telecopy (FAX) from Dave Barton (Moline District Office) to J.B.Wisniewski (S&L), dated 3-20-92.
 - . Performance Data of Lincoln Electric DGCWP motor.
- W. S&L Calculation 8913-67-19-2, Rev. 0, dated 4-15-92
 - . Minimum Starting Voltage for Quad Cities DGCWP 1/2
- X. S&L Calculation 8913-73-19-1, Rev. 0, dated 4-15-92
 - . Degraded Voltage Calculation for Quad Cities 2/II
- Y. S&L DIT No. QC-EPED-0578-00, dated 5-13-92
 - . Field Walk-down for DG Lube Oil Circulating Pump Motors
- Z. S&L DIT No. QC-EPED-0469-01, dated 5-8-92
 - . Revision on Service Name on MCC 18-1A, Cubic C1
- AA. Telecopy (FAX) from G. M. Fiest (Westinghouse) to J. Ouyang (S&L), dated 5-11-92
 - . Westinghouse overload heater resistances.
- AB. S&L DIT No. QC-EPED-0590-00, dated 6-18-92
 - . 37.5 KVA single phase instrument transformer info.
- AC. S&L DIT No. QC-EPED-0592-00, dated 6-26-92
 - . Field measured single phase transformer loadings.
- AD. S&L DIT No. QC-EPED-0599-00, dated 7-14-92
 - . Capacity upgrade of CM Air Filter Unit Heater.



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XIII. REFERENCES (Continued)

- AE. S&L DIT No. QC-EPED-0601-00, dated 7-22-92
 - . Revised data for Valve 1-1201-2
- AF. S&L DIT No. QC-EPED-0602-00, dated 7-23-92
 - . Field measurements of single phase distribution transformer loadings.
- AG. S&L DIT No. QC-EPED-0605-00, dated 7-24-92
 - . Revised data for RHRS Pump Room Cooler Fans.
- AH. S&L Calculation 8913-67-19-5, Rev.0, dated 7-31-92
 - . Single Phase Transformer Modelling.
- AI. S&L DIT No. QC-EPED-0606-00, dated 7-27-92
 - . Field Measurements of RHR SW PUMP COOLER FANS.

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APPENDIX A

CASE A COMPUTER PRINTOUTS

(RUNNING VOLTAGE EVALUATION)

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Listed in the following order:

File: Q1145.DAT

Bus Data,
Connection Data,
Load Data;
Running Voltage Summary;
Load Summary by Bus.

Date : _____

Utility : Sargent & Lundy Internal Use
Station : GUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

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*** Bus Data ***
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Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

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Unit : 1

*** Bus Data ***

Rec #	Bus Name	Bus Voltage	Class IE	SC Amps	Valid Sources	Segr MVA	Maximum Volts	K Fact	Inter. Trip Cycles Del	Source Data		
										Min Run Volts	Max SC MVA	SC Prefit X/R V (PU)
45	480V MCC 16/26-4	480.0	N	14000.	1 2							
46	480V MCC 16/26-5	480.0	N	14000.	1 2							
47	480V MCC 16/26-6	480.0	N	14000.	1 2							
48	480V MCC 16-7	480.0	N	14000.	1 2							
49	480V MCC 16-8	480.0	N	14000.	1 2							
50	480V MCC 17-1	480.0	N	14000.	1 2							
51	480V MCC 17-2	480.0	N	14000.	1 2							
52	480V MCC 17/27-3	480.0	N	14000.	1 2							
53	480V MCC 17/27-4	480.0	N	14000.	1 2							
54	MCC 17-5	480.0	N	14000.	1 2							
55	480V MCC 17-6	480.0	N	14000.	1 2							
56	480V MCC 18-1A	480.0	Y	14000.	3							
57	480V MCC 18-1B	480.0	Y	14000.	3							
58	480V MCC 18-2	480.0	Y	14000.	3							
59	480V MCC 18-3	480.0	N	14000.	3							
60	480V MCC 18-4	480.0	N	14000.	3							
61	DGCM 1/2 TERM	480.0	Y	14000.	3							
62	STNDY TANK HTR TERM	480.0	Y	14000.	3							
63	ESS SYS JD PMP TERM	480.0	Y	14000.	3							
64	SBLC PMP 1A TERM	480.0	Y	14000.	3							
65	H2/O2 PMP TERM	480.0	Y	14000.	3							
66	RHRS AHU 1A TERM	480.0	Y	14000.	3							

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*** Bus Data ***

Rec #	Bus Name	Bus Voltage	Class IE	SC Amps	Valid Sources	Swgr MVA	Maximum Volts	K Fact	Inter. Trip Cycles	Trip Del	Source Data		
											Min Run Volts	Max SC MVA	SC Preflt X/R V (PU)
67	HVAC FAN 1/2 TERM	480.0	Y	14000.	3								
68	DG OIL XFER PMP TERM	480.0	Y	14000.	3								
69	CORE SPRY AHU 1A TER	480.0	Y	14000.	3								
70	AF RHRS AHU TERM	480.0	Y	14000.	3								
71	DG AIR COMP 1/2B TER	480.0	Y	14000.	3								
72	RHR PMP 1A FAN A TER	480.0	Y	14000.	3								
73	RHR PMP 1A FAN B TER	480.0	Y	14000.	3								
74	RHR PMP 1A FAN C TER	480.0	Y	14000.	3								
75	RHR PMP 1A FAN D TER	480.0	Y	14000.	3								
76	125V BTRY CHGR TERM	480.0	Y	14000.	3								
77	250V BTRY CHGR TERM	480.0	Y	14000.	3								
78	DGCOMP 1/2 FAN A TERM	480.0	Y	14000.	3								
79	DGCOMP 1/2 FAN B TERM	480.0	Y	14000.	3								
80	RHR PMP 1B FAN A TER	480.0	Y	14000.	3								
81	RHR PMP 1B FAN B TER	480.0	Y	14000.	3								
82	RHR PMP 1B FAN C TER	480.0	Y	14000.	3								
83	RHR PMP 1B FAN D TER	480.0	Y	14000.	3								
84	CONT RM AHU TERM	480.0	Y	14000.	3								
85	CONT RM AFU HTR TERM	480.0	Y	14000.	3								
86	CONT RM STDBY A/C TE	480.0	Y	14000.	3								
87	CONT RM BSTR FAN A T	480.0	Y	14000.	3								
88	CONT RM BSTR FAN B T	480.0	Y	14000.	3								

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Source Data

Rec #	Bus Name	Voltage	Class	IE	SC Amps	Valid Sources	Segr MVA	Maximum Volts	K	Inter. Trip	Min Run	Max SC MVA	SC Preflt
													X/R V (PU)
89	480V MCC 19-1	480.0	Y		14000.	1 2							
90	480V MCC 19-2	480.0	Y		14000.	1 2							
91	480V MCC 19-3	480.0	N		14000.	1 2							
92	480V MCC 19-4	480.0	Y		14000.	1 2							
93	480V MCC 18/19-5	480.0	Y		14000.	3							
94	480V MCC 19-6	480.0	N		14000.	1 2							
95	4KV SWGR 24-1	4160.0	Y		29000.	1	250.	4760.0	1.24	5 Sys	.0		
96	4KV SWGR 24	4160.0	Y		29000.	1	250.	4760.0	1.24	5 Sys	.0		
97	DIESEL GENERATOR 2	4160.0	Y		29000.	1	250.	4760.0	1.24	5 Sys	.0		
98	HIGH SIDE OF XFMR 29	4160.0	Y		29000.	1	250.	4760.0	1.24	5 Sys	.0		
99	480V SWGR 29	480.0	Y		22000.	1							
100	480V MCC 29-1	480.0	Y		14000.	1							
101	480V MCC 29-2	480.0	Y		14000.	1							
102	480V MCC 29-3	480.0	N		14000.	1							
103	480V MCC 29-4	480.0	Y		14000.	1							
104	480V MCC 28/29-5	480.0	Y		14000.	1							
105	480V MCC 29-6	480.0	N		14000.	1							
106	HIGH SIDE BATHHOUSE	4160.0	N		30500.	1 2	250.	4760.0	1.23	5 T C	.0		
107	480V BATHHOUSE MCC	480.0	N		42000.	1 2							
108	480V DIESEL BLDG MCC	480.0			30000.	1 2							
109	18 DSCWP DUMMY BUS	480.0			30000.	3							

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*** Connection Data ***

From	To	Rating	Cable R (ohms)	X (ohms)	% Imp OA Base	% Imp Tol	OA kVA	X/R Ratio	Tap Ratio
GENERATOR 1	UAT 11 INTERNAL BUS	1553.0 Amps	.0026369	.0407380					
UAT 11 INTERNAL BUS	X WINDG IMAGINRY BUS	19000.0 kVA			16.336	00.0	27600.0	20.0	.950
UAT 11 INTERNAL BUS	Y WINDG IMAGINRY BUS	27000.0 kVA			12.352	00.0	27600.0	20.0	.950
Y WINDG IMAGINRY BUS	4KV SWGR 12	4000.0 Amps	.0010000	.0000000					
Y WINDG IMAGINRY BUS	4KV SWGR 11	4000.0 Amps	.0010000	.0005220					
X WINDG IMAGINRY BUS	4KV SWGR 13	3000.0 Amps	.0010000	.0007938					
X WINDG IMAGINRY BUS	4KV SWGR 14	3000.0 Amps	.0010000	.0000000					
345KV SWITCH YARD	100KV DUMMY BUS	46000.0 kVA			-1.250	00.0	27600.0	25.0	.975
100KV DUMMY BUS	X WINDING BUS 6	19000.0 kVA			16.750	00.0	27600.0	25.0	.975
100KV DUMMY BUS	Y WINDING BUS 8	27000.0 kVA			13.650	00.0	27600.0	25.0	.975
X WINDING BUS 6	4KV SWGR 13	3000.0 Amps	.0010000	.0007938					
X WINDING BUS 6	4KV SWGR 14	3000.0 Amps	.0010000	.0000000					
Y WINDING BUS 8	4KV SWGR 11	4000.0 Amps	.0010000	.0005220					
Y WINDING BUS 8	4KV SWGR 12	4000.0 Amps	.0010000	.0000000					
4.16KV SOURCE 3	4KV SWGR 13-1	600.0 Amps	.0000000	.0010000					
4KV SWGR 13-1	DIESEL GENERATOR 1/2	600.0 Amps	.0007500	.0155000					

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Unit : 1

*** Connection Data ***

From	To	Rating	Cable R (ohms)	X (ohms)	% Imp OA Base	% Imp Tol	OA kVA	X/R Ratio	Tap Ratio
4KV SWGR 14	4KV SWGR 14-1	600.0 Amps	.0044496	.0093936					
4KV SWGR 14-1	DIESEL GENERATOR 1	600.0 Amps	.0185750	.0151900					
4KV SWGR 14-1	4KV SWGR 31	115.0 Amps	.0760000	.0230400					
4KV SWGR 31	HIGH SIDE OF XFMR 31	83.0 Amps	.0081200	.0016960					
4KV SWGR 14-1	HIGH SIDE OF XFMR 19	390.0 Amps	.0064625	.0075435					
4KV SWGR 13-1	HIGH SIDE OF XFMR 18	390.0 Amps	.0020600	.0033384					
4KV SWGR 13	HIGH SIDE OF XFMR 15	390.0 Amps	.0045925	.0053607					
4KV SWGR 13-1	HIGH SIDE OF XFMR 10	220.0 Amps	.0624303	.0349766					
4KV SWGR 14	HIGH SIDE OF XFMR 16	390.0 Amps	.0044825	.0052323					
4KV SWGR 14	HIGH SIDE OF XFMR 17	390.0 Amps	.0151000	.0177192					
4KV SWGR 13	HIGH SIDE OF XFMR 1A	230.0 Amps	.0479250	.0268500					
HIGH SIDE OF XFMR 31 480V MCC 30		225.0 kVA			4.000	00.0	225.0	1.6	.975
HIGH SIDE OF XFMR 18 480V SWGR 18		1600.0 kVA			12.020	00.0	1500.0	8.9	.975
HIGH SIDE OF XFMR 19 480V SWGR 19		1600.0 kVA			11.430	00.0	1500.0	8.5	.975
HIGH SIDE OF XFMR 10 480V MCC 10-1		500.0 kVA			4.700	00.0	500.0	3.0	.975
HIGH SIDE OF XFMR 1A 480V MCC 1A-1		750.0 kVA			5.560	00.0	750.0	3.3	.975

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*** Connection Data ***

From	To	Rating	Cable R (ohms) X (ohms)	% Imp % Imp OA Base Tol	OA kVA	X/R Ratio	Tap Ratio
HIGH SIDE OF XFMR 17	480V SWGR 17	1688.0 kVA		11.110 00.0	1500.0	8.2	.975
HIGH SIDE OF XFMR 16	480V SWGR 16	1688.0 kVA		11.340 00.0	1500.0	8.4	.975
HIGH SIDE OF XFMR 15	480V SWGR 15	1688.0 kVA		11.300 00.0	1500.0	8.4	.975
480V SWGR 15	480V MCC 15-1	198.0 Amps	.0060784	.0031668			
480V SWGR 15	480V MCC 15-2	220.0 Amps	.0124188	.0064701			
480V SWGR 15	480V MCC 15-3	280.0 Amps	.0136928	.0093632			
480V SWGR 15	480V MCC 15-4	280.0 Amps	.0136928	.0093632			
480V SWGR 15	480V MCC 15-5	220.0 Amps	.0108700	.0094185			
480V SWGR 15	480V HRSS BLDG MCC	190.0 Amps	.0351450	.0150700			
480V SWGR 15	480V WAREHOUSE DISTR	220.0 Amps	.0063404	.0033033			
480V SWGR 16	480V MCC 16/26-1	220.0 Amps	.0133096	.0061342			
480V SWGR 16	480V MCC 16-2	220.0 Amps	.0399812	.0208299			
480V SWGR 16	480V MCC 16-3	220.0 Amps	.0092224	.0049048			
480V SWGR 16	480V MCC 16/26-4	220.0 Amps	.0233704	.0121758			
480V SWGR 16	480V MCC 16/26-5	220.0 Amps	.0215088	.0112476			
480V SWGR 16	480V MCC 16/26-6	220.0 Amps	.0178684	.0093093			

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Date :

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Proj. No. : 8913-67
Unit : 1

*** Connection Data ***

From	To	Rating	R (ohms)	X (ohms)	% Imp DR Base	% Imp Tol	X/R Ratio	Tap Ratio
480V SWGR 16	480V MCC 16-7	280.0 Amps	.0145875	.0099750				
480V SWGR 16	480V MCC 16-8	280.0 Amps	.0145875	.0099750				
480V SWGR 17	480V MCC 17-1	220.0 Amps	.0138336	.0072872				
480V SWGR 17	480V MCC 17-2	220.0 Amps	.0186828	.0096915				
480V SWGR 17	480V MCC 17/27-3	220.0 Amps	.0168668	.0083811				
480V SWGR 17	480V MCC 17/27-4	220.0 Amps	.0169776	.0088452				
480V SWGR 17	480V MCC 17-5	280.0 Amps	.0292139	.0199766				
480V SWGR 17	480V MCC 17-6	220.0 Amps	.0168868	.0083811				
480V SWGR 18	480V MCC 18-1A	220.0 Amps	.0166936	.0084884				
480V SWGR 18	480V MCC 18-1B	220.0 Amps	.0166936	.0084884				
480V SWGR 18	480V MCC 18-2	220.0 Amps	.0085894	.0042861				
480V SWGR 18	480V MCC 18-3	400.0 Amps	.0123750	.0116538				
480V SWGR 18	480V MCC 18-4	400.0 Amps	.0206250	.0194258				
480V SWGR 19	480V MCC 19-1	220.0 Amps	.0181828	.0094731				
480V SWGR 19	480V MCC 19-2	220.0 Amps	.0081744	.0042588				
480V SWGR 19	480V MCC 19-3	220.0 Amps	.0285488	.0187816				

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Unit : 1

*** Connection Data ***

From	To	Rating	R (ohms)	X (ohms)	% Imp On Base	% Imp Tot	DR kVA	X/R Ratio	Tap Ratio
480V SMGR 19	480V MCC 19-4	220.0 Amps	.0172920	.0090090					
480V SMGR 18	480V MCC 18/19-5	220.0 Amps	.0150947	.0076031					
480V SMGR 19	480V MCC 19-6	280.0 Amps	.0136150	.0093100					
4KV SMGR 14-1	4KV SMGR 24-1	800.0 Amps	.0014626	.0090974					
4KV SMGR 24-1	4KV SMGR 24	600.0 Amps	.0005600	.0100000					
4KV SMGR 24-1	DIESEL GENERATOR 2	600.0 Amps	.0103250	.0182900					
4KV SMGR 24-1	HIGH SIDE OF XFMR 29	390.0 Amps	.0021450	.0025030					
HIGH SIDE OF XFMR 29	480V SMGR 29	1600.0 kVA			11.300	00.0	1500.0	8.4	.975
480V SMGR 29	480V MCC 29-1	220.0 Amps	.0136764	.0071253					
480V SMGR 29	480V MCC 29-2	220.0 Amps	.0151436	.0070097					
480V SMGR 29	480V MCC 29-3	220.0 Amps	.0150300	.0070351					
480V SMGR 29	480V MCC 29-4	220.0 Amps	.0131000	.0060250					
480V SMGR 29	480V MCC 28/29-5	220.0 Amps	.0149064	.0070070					
480V SMGR 29	480V MCC 29-6	280.0 Amps	.0126425	.0006450					
HIGH SIDE GATEHOUSE	480V GATEHOUSE MCC	1000.0 kVA			5.440	00.0	750.0	5.0	.975
4KV SMGR 14-1	HIGH SIDE GATEHOUSE	220.0 Amps	.0345699	.0193670					

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Unit : 1

*** Connection Data ***

From	To	Rating	Cable R (ohms)	X (ohms)	% Imp OA Base	% Imp Tol	X/R	Tap Ratio
480V GATEHOUSE MCC	480V DIESEL BLDG MCC	400.0 Amps	.0027500	.0051800				
480V SWGR 1B	1B DGCWP DUMMY BUS	400.0 Amps	.0546345	.0234270				
1B DGCWP DUMMY BUS	DGCWP 1/2 TERM	400.0 Amps	.0056871	.0024386				
480V MCC 1B-1B	STNDY TANK WTR TERM	400.0 Amps	.0924000	.0139000				
480V MCC 1B-1A	ESS SYS JO PMP TERM	400.0 Amps	.5114000	.0140000				
480V MCC 1B-1A	SBLC PMP 1A TERM	400.0 Amps	.0920000	.0139000				
480V MCC 1B-1A	RHRS AHU 1A TERM	400.0 Amps	.3757000	.0105485				
480V MCC 1B-1A	H2/O2 PMP TERM	400.0 Amps	.9952000	.0104000				
480V MCC 1B-1A	HVAC FAN 1/2 TERM	400.0 Amps	.1211000	.0090000				
480V MCC 1B-1A	DG OIL XFER PMP TERM	400.0 Amps	1.0131000	.0117000				
480V MCC 1B-1A	CORE SPRY AHU 1A TER	400.0 Amps	.5278000	.0148190				
480V MCC 1B-1A	AF RHRS AHU TERM	400.0 Amps	.6006000	.0169000				
480V MCC 1B-1A	DG AIR COMP 1/2B TER	400.0 Amps	.8528000	.0109000				
480V MCC 1B-2	RHR PMP 1A FAN A TER	400.0 Amps	.7774000	.0200000				
480V MCC 1B-2	RHR PMP 1A FAN B TER	400.0 Amps	.7735000	.0199000				
480V MCC 1B-2	RHR PMP 1A FAN C TER	400.0 Amps	.7683000	.0197000				

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*** Connection Data ***

From	To	Rating	Cable R (ohms)	X (ohms)	% Imp OA Base	% Imp Tol	OA kVA	X/R Ratio	Tap Ratio
480V MCC 1B-2	RHR PMP 1A FAN D TER	400.0 Amps	.7683000	.0197000					
480V MCC 1B-2	125V BTRY CHGR TERM	400.0 Amps	.0313000	.0047000					
480V MCC 1B-2	250V BTRY CHGR TERM	400.0 Amps	.0101000	.0043000					
1B DGCWP DUMMY BUS	DGCWP 1/2 FAN A TERM	400.0 Amps	.2480000	.0029000					
1B DGCWP DUMMY BUS	DGCWP 1/2 FAN B TERM	400.0 Amps	.2480000	.0029000					
480V MCC 1B-2	RHR PMP 1B FAN A TER	400.0 Amps	.7982000	.0206000					
480V MCC 1B-2	RHR PMP 1B FAN B TER	400.0 Amps	.7943000	.0205000					
480V MCC 1B-2	RHR PMP 1B FAN C TER	400.0 Amps	.7943000	.0205000					
480V MCC 1B-2	RHR PMP 1B FAN D TER	400.0 Amps	.7982000	.0206000					
480V MCC 1B-4	CONT RM AHU TERM	400.0 Amps	.0287000	.0019000					
480V MCC 1B-4	CONT RM AFU HTR TERM	400.0 Amps	.1326000	.0037000					
480V MCC 1B-4	CONT RM STDBY A/C TE	400.0 Amps	.0030000	.0013000					
480V MCC 1B-4	CONT RM BSTR FAN A T	400.0 Amps	.0988000	.0028000					
480V MCC 1B-4	CONT RM BSTR FAN B T	400.0 Amps	.0097000	.0025000					

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Proj. No. : 8913-67
Unit : 1

*** Load Data ***

Rec # 456

CLN CONDST TK 1/2 HTR 1B

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-5	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 4:		.0 KW	2:		36.0 KW	3:		.0 KW	4:		.0 KW

Rec # 457

CLN CONDST TK 1/2 HTR 2C

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-5	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1:		.0 KW	2:		36.0 KW	3:		.0 KW	4:		.0 KW

Rec # 458

WTR SURGE TK 1/2 HTG 1A

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-6	480.	54.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1:		.0 KW	2:		54.0 KW	3:		.0 KW	4:		.0 KW

Rec # 459

WTR SURGE TK 1/2 HTG 2B

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1:		.0 KW	2:		36.0 KW	3:		.0 KW	4:		.0 KW

Rec # 460

WTR SURGE TK 1/2 HTG 1B

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1:		.0 KW	2:		36.0 KW	3:		.0 KW	4:		.0 KW

Rec # 461

WTR SURGE TK 1/2 HTG 2A

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1:		.0 KW	2:		36.0 KW	3:		.0 KW	4:		.0 KW

Rec # 462 1/2-3900

DG CLG WTR PMP 1/2

Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	Sys
DG WTR 1/2 TERM	460.	100.0 HP	I	88.5	91.2	54.	37.0	3525	.0000		
Running Load : Condition 1:		90.0 HP	2:		90.0 HP	3:		90.0 HP	4:		90.0 HP

*** Safety - Related ***

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*** Load Data ***

Rec # 456 CLN CONDST TK 1/2 HTR 1B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-5	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 36.0 KW 3: .0 KW 4: .0 KW											

Rec # 457 CLN CONDST TK 1/2 HTR 2C Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-5	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 36.0 KW 3: .0 KW 4: .0 KW											

Rec # 458 WTR SURGE TK 1/2 HTG 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-6	480.	54.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 54.0 KW 3: .0 KW 4: .0 KW											

Rec # 459 WTR SURGE TK 1/2 HTG 2B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 36.0 KW 3: .0 KW 4: .0 KW											

Rec # 460 WTR SURGE TK 1/2 HTG 1B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 36.0 KW 3: .0 KW 4: .0 KW											

Rec # 461 WTR SURGE TK 1/2 HTG 2A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 17-6	480.	36.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: 36.0 KW 3: .0 KW 4: .0 KW											

Rec # 462 1/2-3908 DG CLB WTR PMP 1/2 Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
DGCWP 1/2 TERM	460.	100.0 HP	I	88.5	91.2	54.1	37.0	3525	.0000		
Running Load : Condition 1: 90.0 HP 2: 90.0 HP 3: 90.0 HP 4: 90.0 HP											

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*** Load Data ***

Rec # 463 1-1902A FUEL POOL CLG WTR PMP 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	100.0 HP	I	90.0	85.0	625.	37.0	1765	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 464 1-5704A RX BLDG EXH FAN 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	100.0 HP	I	90.0	85.0	625.	37.0	1775	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 465 1-5703B RX BLDG SPLY FAN 1B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	100.0 HP	I	90.0	85.0	625.	37.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 466 1-5703C RX BLDG SPLY FAN 1C Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	100.0 HP	I	90.0	85.0	625.	37.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 467 1-5702A E. TURB BLDG SPLY FAN 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	100.0 HP	I	90.0	85.0	625.	37.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 468 1-3701A RX BLDG CLG WTR PMP 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	460.	125.0 HP	I	90.0	85.0	625.	35.0	1780	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 469 ESS SERV UPS PANEL 901-63 Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SWGR 1B	480.	40.0KVA	R	100.0	95.0	0.	20.0	0	.0000		
Running Load : Condition 1: 35.9 KVA 2: 35.9 KVA 3: 35.9 KVA 4: 35.9 KVA											

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*** Load Data ***

Rec # 470 TURB & RX BLDGS LTG #1 Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V SWGR 18 480. 47.0 KW R 100.0 90.0 0. 20.0 0 .0000
Running Load : Condition 1: 37.7 KW 2: 37.7 KW 3: 37.7 KW 4: 37.7 KW

Rec # 471 1/2-4709 INST AIR COMP 1/2 Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V SWGR 18 480. 150.0 HP 1 90.0 85.0 625. 33.0 1770 .0000
Running Load : Condition 1: 135.0 HP 2: 135.0 HP 3: 135.0 HP 4: 135.0 HP

Rec # 472 1-1102A STANDBY LIQUID CONT PMP 1A Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
SBLD PMP 1A TERM 480. 50.0 HP 1 90.0 85.0 625. 38.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 473 1-5746A RHRS EMERG AHU 1A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
RHRS AHU 1A TERM 480. 7.5 HP 1 80.0 85.0 625. 56.0 1800 .0000
Running Load : Condition 1: .0 HP 2: 7.5 HP 3: 7.5 HP 4: 7.5 HP

Rec # 474 1/2-5727 DG RM HVAC 6PLY FAN 1/2 Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
HVAC FAN 1/2 TERM 480. 30.0 HP 1 85.0 85.0 625. 42.0 885 .0000
Running Load : Condition 1: .0 HP 2: 30.0 HP 3: 30.0 HP 4: 30.0 HP

Rec # 475 1-5748A CORESPRAY EMERG AHU 1A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
CORE SPRY AHU 1A TER 480. 5.0 HP 1 80.0 85.0 625. 58.0 1740 .0000
Running Load : Condition 1: .0 HP 2: 5.0 HP 3: 5.0 HP 4: 5.0 HP

Rec # 476 RX BLDG EMERG LGTNG Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-1A 480. 35.0 KW R 100.0 90.0 0. 20.0 0 .0000
Running Load : Condition 1: .0 KW 2: .0 KW 3: .0 KW 4: .0 KW

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

189981

*** Load Data ***

Rec # 477 XFMR TO FD 1B-1A-1 Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 480. 15.0KVA R 100.0 75.0 0. 20.0 0 .0000
Running Load : Condition 1: 11.9 KVA 2: 11.9 KVA 3: 11.9 KVA 4: 11.9 KVA

Rec # 478 1-5788A DYWL CLG BLOWERS 1A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 460. 84.0 HP I 90.0 85.0 625. 37.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 479 POST LOCA H2 & O2 MON PMP Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
H2/O2 PMP TERM 460. 1.0 HP I 75.0 80.0 625. 79.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .9 HP 3: .9 HP 4: .9 HP

Rec # 480 2-5746A ALT FD RHRS EMERG AHU 2A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
AF RHRS AHU TERM 460. 7.5 HP I 80.0 85.0 625. 56.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 481 1/2-5203 DIESEL OIL XFER PMP 1/2 Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
DG OIL XFER PMP TERM 460. 3.0 HP I 80.0 85.0 625. 68.0 1755 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: 3.0 HP

Rec # 482 1-1402-3A CORESPRAY PMP 1A SUCT VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 460. 1.7 HP I 75.0 80.0 225. 75.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 483 1-4202-25A CORE SPRAY INBOARD ISOL VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 460. 4.0 HP I 80.0 85.0 627. 58.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

*** Load Data ***

Rec # 484 1-1482-24A CORE SPRAY OUTBOARD ISO VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 4.0 HP I 88.0 85.0 827. 58.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 485 1-1001-4A RHRS HEAT EXCH NORM INL VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.0 HP I 75.0 80.0 410. 79.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 486 1-1001-186A RHRS HEAT EXCH REV INL VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.7 HP I 75.0 80.0 263. 75.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 487 1-1482-4A CORE SPRAY TEST BYPASS VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.6 HP I 75.0 80.0 637. 75.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 488 1-1001-185A RHRS HEAT EXCH NORM OUT VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.7 HP I 75.0 80.0 500. 75.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 489 1-1001-187A RHRS HEAT EXCH REV OUTLET Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.7 HP I 75.0 80.0 500. 75.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 490 1-1201-2 RX WTR CLEANUP SYS RECIRC Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-1A 460. 1.6 HP I 70.0 83.0 520. 75.0 1800 .0000
 Running Load : Condition 1: 1.4 HP 2: 1.4 HP 3: 1.4 HP 4: 1.4 HP

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

*** Load Data ***

Rec # 491 1-5708A DRYWELL&TORUS PURG EXH FAN Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 460. 30.0 HP I 85.0 85.0 625. 42.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 492 1/2-5209B DIESEL START AIR COMP 1/2B Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
DG AIR COMP 1/2B TER 460. 5.0 HP I 80.0 85.0 625. 58.0 1735 .0000
Running Load : Condition 1: .0 HP 2: 5.0 HP 3: 5.0 HP 4: 5.0 HP

Rec # 493 1-220-1 MAIN STEAM LINE DRN VLV 1A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1A 460. .7 HP I 75.0 80.0 733. 83.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 494 ESSENTIAL FILL SYS JOCK PMP Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
ESS SYS JO PMP TERM 460. 3.0 HP I 80.0 85.0 625. 68.0 1800 .0000
Running Load : Condition 1: 2.7 HP 2: 2.7 HP 3: 2.7 HP 4: 2.7 HP

Rec # 495 1-5788B DRYWELL CL6 BLOWER 1B Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 84.0 HP I 90.0 85.0 625. 37.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 496 1A DRYWELL/TORUS DIFF PR COMP Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 50.0 HP I 90.0 85.0 625. 38.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 497 1-1103 STNDBY LIQD CONTRL TK HTR Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
STNDBY TANK HTR TERM 480. 60.0 KW R 100.0 100.0 0. 20.0 0 .0000
Running Load : Condition 1: 47.8 KW 2: 47.8 KW 3: 47.8 KW 4: 47.8 KW

AC Electrical Load Monitoring System Ver 2.20
Sargent & Lundy Engineers
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Calc. No. 8913-67-19-1
Rev. 0 Date 189981
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Proj. No. 8913-67

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

*** Load Data ***

Rec # 498 1-5788F DRYWELL CLG BLOWER 1F Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 84.0 HP 1 90.0 85.0 625. 37.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 499 1-1001-26A RHRS CONTAIN SPRAY SHUTOFF Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 1.6 HP 1 75.0 80.0 637. 75.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 500 1-1001-23A RHRS BACKUP CONTAIN SPRAY Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 1.6 HP 1 75.0 80.0 637. 75.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 501 1-1001-34A RHRS MAIN SHUTOFF SUPPRESS Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 4.0 HP 1 80.0 85.0 543. 58.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 502 1-1001-36A RHRS SUPP CHAMBER DUMPLINE Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. .6 HP 1 75.0 80.0 455. 83.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 503 1-1001-37A RHRS SUPP CHAMBER SPRAY HDR Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. .7 HP 1 75.0 80.0 464. 83.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 504 1-1001-50 RHRS SHUTOFF IMBD VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-1B 460. 14.0 HP 1 85.0 85.0 777. 49.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

*** Load Data ***

Rec # 505 1-1001-19A RHRS COOLANT PMP CROSS HDR Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	2.6 HP	1	80.0	85.0	333.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 506 1-1001-16A RHRS HEAT EXCH R100 3A BYP Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	5.3 HP	1	80.0	85.0	298.	56.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 507 1-1001-7A RHRS COOLANT 1002A PMP SUCT Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	1.0 HP	1	75.0	80.0	357.	79.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 508 1-1001-7B RHRS COOLANT 1002B PMP SUCT Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	1.0 HP	1	75.0	80.0	357.	79.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 509 1-1001-43A RHRS SHUTDOWN COOLANT VLV 1A Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	1.0 HP	1	75.0	80.0	250.	79.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 510 1-1001-43B RHRS SHUTDOWN COOLANT VLV 1B Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	1.0 HP	1	75.0	80.0	285.	79.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 511 1-1001-5A RHRS CNMT CLNT HX DISCH VLV Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed (sec)	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-1B	460.	.6 HP	1	75.0	80.0	571.	83.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Date :

Sargent & Lundy Engineers

Rev. 0 Date

Chicago, Ill.

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Proj. No. 8913-67

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
 Unit : 1

*** Load Data ***

Rec # 512 1-5701B RECIRC MG SET VENT FAN 1B Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-2 460. 60.0 HP 1 90.0 85.0 625. 38.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 513 MAIN F2 SEAL OIL PMP Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-2 460. 15.0 HP 1 85.0 85.0 625. 49.0 585 .0000
 Running Load : Condition 1: 13.5 HP 2: 13.5 HP 3: 13.5 HP 4: 13.5 HP

Rec # 514 RX PROT SYS MG SET 1A Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-2 460. 25.0 HP 1 85.0 85.0 625. 43.0 1800 .0000
 Running Load : Condition 1: 16.5 HP 2: 16.5 HP 3: 16.5 HP 4: 16.5 HP

Rec # 515 1-5616 H2 SEAL OIL VACUUM PMP Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-2 460. 2.0 HP 1 80.0 85.0 625. 75.0 1725 .0000
 Running Load : Condition 1: 1.8 HP 2: 1.8 HP 3: 1.8 HP 4: 1.8 HP

Rec # 516 125V BATTERY CHGR#1A Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 125V BTRY CHGR TERM 480. 39.9KVA R 100.0 95.0 0. 20.0 0 .0000
 Running Load : Condition 1: 35.2 KVA 2: 35.2 KVA 3: 35.2 KVA 4: 35.2 KVA

Rec # 517 120/240VAC XFMR FD Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 1B-2 480. 17.3KVA R 100.0 95.0 0. 20.0 0 .0000
 Running Load : Condition 1: 1.6 KVA 2: 1.6 KVA 3: 1.6 KVA 4: 1.6 KVA

Rec # 518 250V BATTERY CHARGER 1/2 Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 250V BTRY CHGR TERM 480. 93.9KVA R 100.0 95.0 0. 20.0 0 .0000
 Running Load : Condition 1: 82.9 KVA 2: 82.9 KVA 3: 82.9 KVA 4: 82.9 KVA

Date :

Utility : Sargent & Lundy Internal Use

Station : QUAD CITIES-FILE:D1145.DAT

Proj. No. : 8913-67

Unit : 1

*** Load Data ***

Rec # 519 345KV SWYD RLY HSE XFMR Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-2	480.	75.0KVA	R	100.0	75.0	0.	20.0	0	.0000		
Running Load : Condition 1: 58.5 KVA 2: 58.5 KVA 3: 58.5 KVA 4: 58.5 KVA											

Rec # 520 1-5745A RHR SW PMP 1A CLR FAN A Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
RHR PMP 1A FAN A TER	460.	3.0 HP	I	80.0	75.5	728.	68.0	1730	.0000		
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP											

Rec # 521 1-5745A RHR SW PMP 1A CLR FAN B Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
RHR PMP 1A FAN B TER	460.	3.0 HP	I	80.0	75.5	728.	68.0	1730	.0000		
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP											

Rec # 522 1-5745A RHR SW PMP 1A CLR FAN C Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
RHR PMP 1A FAN C TER	460.	3.0 HP	I	80.0	75.5	728.	68.0	1730	.0000		
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP											

Rec # 523 1-5745A RHR SW PMP 1A CLR FAN D Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
RHR PMP 1A FAN D TER	460.	3.0 HP	I	80.0	75.5	728.	68.0	1730	.0000		
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP											

Rec # 524 1/2-5749A DG 1/2 CLB WTR PMP CLB FANA Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
DGWP 1/2 FAN A TERM	460.	1.5 HP	I	75.0	75.0	752.	77.0	1740	.0000		
Running Load : Condition 1: 1.4 HP 2: 1.4 HP 3: 1.4 HP 4: 1.4 HP											

Rec # 525 1/2-5749B DG 1/2 CLB WTR PMP CLB FANB Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
DGWP 1/2 FAN B TERM	460.	1.5 HP	I	75.0	75.0	752.	77.0	1740	.0000		
Running Load : Condition 1: 1.4 HP 2: 1.4 HP 3: 1.4 HP 4: 1.4 HP											

Date :

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

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*** Load Data ***

Rec # 526 1-5745B RHR SW PMP 1B CLR FAN A Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
RHR PMP 1B FAN A TER 460. 3.0 HP 1 80.0 75.5 728. 68.0 1730 .0000
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP

Rec # 527 1-5745B RHR SW PMP 1B CLR FAN B Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
RHR PMP 1B FAN B TER 460. 3.0 HP 1 80.0 75.5 728. 68.0 1730 .0000
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP

Rec # 528 1-5745B RHR SW PMP 1B CLR FAN C Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
RHR PMP 1B FAN C TER 460. 3.0 HP 1 80.0 75.5 728. 68.0 1730 .0000
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP

Rec # 529 1-5745B RHR SW PMP 1B CLR FAN D Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
RHR PMP 1B FAN D TER 460. 3.0 HP 1 80.0 75.5 728. 68.0 1730 .0000
Running Load : Condition 1: .0 HP 2: 3.1 HP 3: 3.1 HP 4: 3.1 HP

Rec # 530 1-3806 A-F MAIN STM ISOL VLV UNIT CLR Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-2 460. 5.0 HP 1 80.0 85.0 625. 58.0 1800 .0000
Running Load : Condition 1: 5.0 HP 2: 5.0 HP 3: 5.0 HP 4: 5.0 HP

Rec # 531 COMPUTER RM A/C UNIT B Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-2 460. 6.0 HP 1 80.0 85.0 625. 56.0 1800 .0000
Running Load : Condition 1: 6.0 HP 2: 6.0 HP 3: 6.0 HP 4: 6.0 HP

Rec # 532 1-5714 RX BLDG VENT SYS EVAP CLR Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 1B-3 460. 20.0 HP 1 85.0 85.0 625. 44.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

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Rec # 533 DRYWELL PNEUMATIC COMPR WTR Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	25.0 HP	1	85.0	85.0	625.	43.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 534 1-1205A RX WTR CLN UP SYS REC PMP1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	50.0 HP	1	90.0	85.0	625.	38.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 535 1-8841-9 PRI CONTMT PARTCTL SMPL PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	7.5 HP	1	80.0	85.0	625.	56.0	1750	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 536 1-2001-245A RX DRYWELL EQUIP DRN SMP PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	3.0 HP	1	80.0	85.0	625.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 537 1-2001-245B RX DRYWELL EQUIP DRN SMP PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	3.0 HP	1	80.0	85.0	625.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 538 1-2001-241A RX DRYWELL FLR DRN SMP PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	3.0 HP	1	80.0	85.0	625.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 539 1-2001-241B RX DRYWELL FLR DRN SMP PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	3.0 HP	1	80.0	85.0	625.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

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Rec # 540 1-1279-7 RX WTR CLNUP SYS PCT PMP Status : L

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	7.5 HP	1	80.0	85.0	625.	56.0	1750	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 541 1-2001-265 HPCI RM DRN PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	3.0 HP	1	80.0	85.0	625.	68.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 542 1-1279-2A RX WTR CLNUP FLTR HLD PMP1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	2.0 HP	1	80.0	85.0	625.	75.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: 1.0 HP 4: 1.0 HP											

Rec # 543 1-1279-B RX WTR CLNUP SYS PCT TK AGT Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	.8 HP	1	75.0	80.0	625.	83.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 544 1-5707A RX FD PMP VENT FAN 1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	50.0 HP	1	90.0	85.0	625.	38.0	1750	.0000		
Running Load : Condition 1: 50.0 HP 2: 50.0 HP 3: 50.0 HP 4: 50.0 HP											

Rec # 545 1-2001-246 RX BLDG EQUIP DRN TMR PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	7.5 HP	1	80.0	85.0	625.	56.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 546 1-5782A RX BLDG CONDST RTN TO DTR1A Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-3	460.	.5 HP	1	75.0	80.0	625.	85.0	1800	.0000		
Running Load : Condition 1: .5 HP 2: .5 HP 3: .5 HP 4: .5 HP											

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Rec # 547 1-5782B RX BLDG CONDST RTN TO DTR1B Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. .5 HP 1 75.0 80.0 625. 25.0 1800 .0000
Running Load : Condition 1: .5 HP 2: .5 HP 3: .5 HP 4: .5 HP

Rec # 548 1-2001-242A RX BLDG FLR DRN SMP PMP 1A Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. 10.0 HP 1 85.0 85.0 625. 54.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .P HP

Rec # 549 1-2001-242B RX BLDG FLR DRN SMP PMP 1B Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. 10.7 HP 1 85.0 85.0 625. 54.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 550 RB DW EQUIP ACCESS DOOR 1/2 Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. .5 HP 1 75.0 80.0 625. 85.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 551 120/240V FEED TO 18-3-1 Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 480. 17.3KVA R 100.0 95.0 0. 20.0 0 .0000
Running Load : Condition 1: 5.7 KVA 2: 5.7 KVA 3: 5.7 KVA 4: 5.7 KVA

Rec # 552 RX BLDG CRANE 1/2 Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. 100.5 HP 1 90.0 85.0 625. 35.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 553 RX BLDG ELEVATOR Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18-3 460. 50.0 HP 1 90.0 85.0 625. 38.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

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Rec # 554 CONTROL ROD DR BRIDGE CRANE Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	5.0 HP	I	80.0	85.0	625	56.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

Rec # 555 TW-9 AUX SYSTEM Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	6.0 HP	I	80.0	85.0	625	56.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

Rec # 556 480/240V TRANSF RAIL CRACK Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	30.0 KVA	R	100.0	75.0	0	20.0	0	.0000			
Running Load : Condition 1: .0 KVA 2: .0 KVA 3: .0 KVA 4: .0 KVA												

Rec # 557 1-8841-20 PRI CONT RECRC SMPL CTR PMP Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	5.0 HP	I	80.0	85.0	625	56.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

Rec # 558 RX BLDG RAILWAY CAR PULLER Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	3.0 HP	I	80.0	85.0	625	68.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

Rec # 559 FUEL POOL SERV FLATF RECEPT Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	3.0 HP	I	80.0	85.0	625	68.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

Rec # 560 REFUEL PLATFORM RECEPTACLES Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	(sec) Master Diagram #	#	Sys
480V MCC 18-3	480	6.0 HP	I	80.0	85.0	625	56.0	1800	.0000			
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP												

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Rec # 561 1/2-5006 RX BLDG JIB CRANE Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	460.	6.0 HP 1	80.0	85.0	625.	56.0	1800	.0000	
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 562 ROD REMOVAL RECEPTACLES Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	460.	5.0 HP 1	80.0	85.0	625.	58.0	1800	.0000	
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 563 RX BLDG SAMPLE PNL TCU Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	480.	9.0 KW R	100.0	90.0	0.	20.0	0	.0000	
Running Load : Condition 1: .0 KW 2: .0 KW 3: .0 KW 4: .0 KW									

Rec # 564 DIESEL ENG COOL WTR HTR 1/2 Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	480.	16.3 KW R	100.0	100.0	0.	20.0	0	.0000	
Running Load : Condition 1: .0 KW 2: .0 KW 3: .0 KW 4: .0 KW									

Rec # 565 EQUIPT HATCH JIB HOIST Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	460.	8.0 HP 1	80.0	85.0	625.	54.0	1800	.0000	
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 566 1-1295-2942B RX VESSEL HEAT-UP EQUIPT Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	460.	7.0 HP 1	80.0	85.0	625.	58.0	1800	.0000	
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 567 JUNCTION BOX IRB-3 Status : E

Source Bus	Rated Volts	Rating Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable (sec) Master Diagram #	Sys
480V MCC 1B-3	460.	30.0 HP 1	85.0	85.0	625.	42.0	1800	.0000	
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

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Rec # 568 JUNCTION BOX IRB-4 Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
480V MCC 1B-3	460.	30.0 HP	I	85.0	85.0	625.	42.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 569 JUNCTION BOX IRB-5 Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
480V MCC 1B-3	460.	30.0 HP	I	85.0	85.0	625.	42.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 570 JUNCTION BOX IRB-6 Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
480V MCC 1B-3	460.	30.0 HP	I	85.0	85.0	625.	42.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 571 JUNCTION BOX IRB-22 Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
480V MCC 1B-3	460.	5.0 HP	I	85.0	85.0	625.	58.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 572 1/2-9400-104 CONRL RM AFU BSTR FAN A Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
CONRL RM BSTR FAN A T	460.	7.5 HP	I	80.0	85.0	625.	56.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: 7.5 HP 4: 7.5 HP									

Rec # 573 1/2-9400-104 CONRL RM AFU BSTR FAN B Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
CONRL RM BSTR FAN B T	460.	7.5 HP	I	80.0	85.0	625.	56.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP									

Rec # 574 1/2-9400-102 CONRL RM STANDBY A/C Status : E									
Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable
CONRL RM STDBY A/C TE	460.	150.0 HP	I	90.0	85.0	625.	33.0	1800	.0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: 135.0 HP 4: 135.0 HP									

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Rec # 575 1/2-9400-100 CONT RM STNDBY AHU Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
CONT RM AHU TERM	460.	50.0 HP	I	90.0	85.0	625.	38.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: 45.0 HP 4: 45.0 HP											

Rec # 576 120/200 XFMR Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 1B-4	480.	15.0 KVA	R	100.0	75.0	0.	20.0	0	.0000		
Running Load : Condition 1: 11.3 KVA 2: 11.3 KVA 3: 11.3 KVA 4: 11.3 KVA											

Rec # 577 1/2-9400-101 CONT RM AFU HTR Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
CONT RM AFU HTR TERM	480.	12.0 KW	R	100.0	100.0	0.	20.0	0	.0000		
Running Load : Condition 1: .0 KW 2: .0 KW 3: 9.0 KW 4: 9.0 KW											

Rec # 578 1-1902B FUEL POOL CLG WTR PMP 1B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SMGR 19	460.	100.0 HP	I	90.0	85.0	625.	37.0	1800	.0000		
Running Load : Condition 1: 90.0 HP 2: 90.0 HP 3: 90.0 HP 4: 90.0 HP											

Rec # 579 1-3701B RX BLDG CLG WTR PMP 1B Status : E *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SMGR 19	460.	125.0 HP	I	90.0	85.0	625.	35.0	1800	.0000		
Running Load : Condition 1: 105.0 HP 2: 105.0 HP 3: 105.0 HP 4: 105.0 HP											

Rec # 580 1-5704B RX BLDG EXH FAN 1B Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SMGR 19	460.	100.0 HP	I	90.0	85.0	625.	37.0	1775	.0000		
Running Load : Condition 1: 97.0 HP 2: 97.0 HP 3: .0 HP 4: 97.0 HP											

Rec # 581 1-5704C RX BLDG EXH FAN 1C Status : E

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V SMGR 19	460.	100.0 HP	I	90.0	85.0	625.	37.0	1775	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

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Rec # 659 1-1001-7C RHRS COOLANT 1002C PMP SUCT Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 19-4 460. 1.0 HP 1 75.0 80.0 357. 79.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 660 1-1001-7D RHRS COOLANT 1002D PMP SUCT Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 19-4 460. 1.0 HP 1 75.0 80.0 571. 79.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 661 1-1001-5B RHRS CHMT COOLANT HX VLV 1B Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 19-4 460. .6 HP 1 75.0 80.0 571. 83.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 662 1/2-5795-30 CONTRL RM RTN AIR FAN 1/2 Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 18/19-5 460. 30.0 HP 1 85.0 85.0 625. 42.0 1750 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 663 1-202-6A RX WTR RECIRC LOOP EQUAL VL Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 18/19-5 460. 8.0 HP 1 80.0 85.0 827. 54.0 1800 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 664 1-202-4A RX WTR RECIRC PMP SUCT VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 18/19-5 460. 16.0 HP 1 85.0 85.0 625. 44.0 3500 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 665 1-202-5A RX WTR RECIRC PMP DISCH VLV Status : E *** Safety - Related ***
 Rated Eff PF LRC St pf SC TC Modification # / Cable
 Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
 480V MCC 18/19-5 460. 14.0 HP 1 85.0 85.0 777. 49.0 3420 .0000
 Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

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Rec # 666 1-1001-29A RHRS INBOARD SHUTOFF VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 20.0 HP I 85.0 85.0 759. 44.0 3365 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 667 1-1001-28A RHRS OUTBOARD SHUTOFF VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 52.0 HP I 90.0 85.0 771. 38.0 3530 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 668 1-202-9A RX WTR RECIRC LOOP EQUAL VL Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 440. .1 HP I 75.0 80.0 625. 85.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 669 1-202-6B RX WTR RECIRC PMP SUCTION Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 440. 8.0 HP I 80.0 85.0 827. 54.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 670 1-202-4B RX WTR RECIRC PMP DISCH VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 16.0 HP I 85.0 85.0 625. 44.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 671 1-202-5B RX WTR RECIRC PMP DISCH VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 14.0 HP I 85.0 85.0 777. 49.0 3420 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 672 1-1001-29B RHRS INBOARD SHUTOFF VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 20.0 HP I 85.0 85.0 759. 44.0 3365 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

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Rec # 673 1-1001-28B RHRS OUTBOARD SHUTOFF VLV Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 52.0 HP 1 90.0 85.0 943. 38.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 674 1-202-9B RX WTR RECIRC LOOP EQUAL VL Status : E *** Safety - Related ***
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 18/19-5 460. 1.0 HP 1 75.0 80.0 625. 85.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 675 1-5788C DRYWELL CL6 BLWR 1C Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 19-6 460. 84.0 HP 1 90.0 85.0 625. 37.0 1800 .0000
Running Load : Condition 1: 75.0 HP 2: 75.0 HP 3: .0 HP 4: 75.0 HP

Rec # 676 1-5788G DRYWELL CL6 BLWR 1G Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 19-6 460. 84.0 HP 1 90.0 85.0 625. 37.0 1800 .0000
Running Load : Condition 1: 75.0 HP 2: 75.0 HP 3: .0 HP 4: 75.0 HP

Rec # 677 1/2-2901-06 THROTTLE TEST VALVE Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 30 460. .1 HP 1 75.0 80.0 625. 85.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 678 1/2-2901-07 THROTTLE TEST VLV Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 30 460. .3 HP 1 75.0 80.0 625. 35.0 1800 .0000
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP

Rec # 679 1/2-5799 AIR COND UNIT Status : E
Rated Eff PF LRC St pf SC TC Modification # / Cable
Source Bus Volts Rating Type (%) (%) (%) (%) Speed (sec) Master Diagram # # Sys
480V MCC 30 460. 25.0 KVA 1 85.0 85.0 625. 43.0 1800 .0000
Running Load : Condition 1: 25.0 KVA 2: .0 KVA 3: 25.0 KVA 4: 25.0 KVA

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*** Load Data ***

Rec # 890 1-57140 RHRSW VALUITS EXHAUST FAN Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 15-2	460.	2.0 HP	1	84.0	84.0	86.2	75.0	1750	.0000	MM4-1-91-011	66343
Running Load : Condition 1: 2.0 HP 2: 2.0 HP 3: .0 HP 4: 2.0 HP											

Rec # 891 1-2399-40 HPCI INBD ISOLN VLV Status : M *** Safety - Related ***

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 19-1	460.	.3 HP	1	75.0	80.0	60.2	85.0	1800	.0000	MM4-1-91-013B	66350
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 892 1-220-4 MAIN STEAM LINE CON DRN VLV Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 18-1A	460.	.7 HP	1	75.0	80.0	62.5	20.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 893 1-220-90A MAIN STEAM LINE DRN VLV 1A Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 18-1A	460.	.3 HP	1	75.0	80.0	62.5	20.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 894 1-220-90B MAIN STEAM LINE DRN VLV 1B Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 18-1A	460.	.3 HP	1	75.0	80.0	62.5	20.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 895 1-220-90C MAIN STEAM LINE DRN VLV 1C Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 18-1A	460.	.3 HP	1	75.0	80.0	62.5	20.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

Rec # 896 1-220-90D MAIN STEAM LINE DRN VLV 1D Status : M

Source Bus	Rated Volts	Rating	Type	Eff (%)	PF (%)	LRC (%)	St pf (%)	Speed	SC TC Modification # / Cable	Master Diagram #	Sys
480V MCC 18-1A	460.	.3 HP	1	75.0	80.0	62.5	20.0	1800	.0000		
Running Load : Condition 1: .0 HP 2: .0 HP 3: .0 HP 4: .0 HP											

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Utility : Sargent & Lundy Internal Use
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*** Load Data ***

Rec #	1-302-0	CRD HYDR SYS PS CONT VLV 1A	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-1A	460.	.7 HP I 75.0 80.0	625. 20.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	1-220-3	N2IN STM LINE SHN DN VLV 1C	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-1A	460.	.7 HP I 75.0 80.0	625. 20.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	1201-33	RX WTR CLNUP SYS BYPS VLV	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-3	460.	1.0 HP I 75.0 80.0	625. 20.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	1201-76	RX WTR SYS REST DRIF BYPS V	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-3	460.	1.0 HP I 75.0 80.0	625. 20.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	1201-78	RX WTR SYS MH COND DUMP VLV	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-3	460.	.7 HP I 75.0 80.0	625. 20.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	1201-77	RX WTR SYS REDWST D&W COL V	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-3	460.	.7 HP I 75.0 80.0	625. 85.0 1800 .0000	
Running Load : Condition 1:		.0 HP 2: .0 HP 3: .0 HP 4: .0 HP		

Rec #	903	REFUEL PLTFM 480V RECEPTCL	Status : M	
	Rated	Eff PF	LRC St pf	SC TC Modification # / Cable
Source Bus	Volts	Rating Type (%) (%)	Speed (sec) Master Diagram # # Sys	
480V MCC 1B-3	480.	11.0 KW R 100.0 90.0	0. 20.0 0 .0000	
Running Load : Condition 1:		.0 KW 2: .0 KW 3: .0 KW 4: .0 KW		

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*** Load Data ***

Rec # 904	1/2-6657/60 DB LUBE OIL PUMP MOTORS										Status : E
	Rated			Eff	PF	LRC	St pf		SC TC Modification # / Cable		
Source Bus	Volts	Rating	Type	(%)	(%)	(%)	(%)	Speed	(sec) Master Diagram #	# Sys	
480V MCC 18-3	480	1.8 HP	I	80.0	75.0	625	20.0	1155	.0000		
Running Load : Condition 1:		1.6 HP	2:		1.6 HP	3:		1.6 HP	4:	1.6 HP	

Rec # 905	120/240V INSTR XFMR										Status : E	*** Safety - Related ***
	Rated			Eff	PF	LRC	St pf		SC TC Modification # / Cable			
Source Bus	Volts	Rating	Type	(%)	(%)	(%)	(%)	Speed	(sec) Master Diagram #	# Sys		
480V MCC 18-2	480	65.0KVA	R	100.0	95.0	0	20.0	0	.0000			
Running Load : Condition 1:		37.5 KVA	2:		37.5 KVA	3:		37.5 KVA	4:	37.5 KVA		

Date :

***** Running Voltage Summary *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

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Unit : 1

* Source Number : 3 *

Internal Bus No.		Bus Rated Volts	Bus Running Voltage and Per Cent of Bus Rated Volts				
			Cond. 1	Cond. 2	Cond. 3	Cond. 4	Cond. 5
3	Source 4.16KV SOURCE 3	4160.0	3845.1 92.4 %	3845.1 92.4 %	3845.1 92.4 %	3845.1 92.4 %	
14	4KV SWGR 13-1	4160.0	3845.0 92.4 %	3845.0 92.4 %	3845.0 92.4 %	3845.0 92.4 %	
27	HIGH SIDE OF XFMR 18	4160.0	3844.2 92.4 %	3844.1 92.4 %	3843.8 92.4 %	3843.8 92.4 %	
28	480V SWGR 18	480.0	438.9 91.4 %	436.3 90.9 %	438.3 91.3 %	438.2 91.3 %	
56	480V MCC 18-1A	480.0	438.2 91.3 %	433.4 90.3 %	427.3 89.0 %	427.1 89.0 %	
57	480V MCC 18-1B	480.0	437.1 91.1 %	434.4 90.5 %	428.4 89.3 %	428.3 89.2 %	
58	480V MCC 18-2	480.0	433.3 90.3 %	429.9 89.6 %	423.9 88.3 %	423.8 88.3 %	
59	480V MCC 18-3	480.0	436.7 91.0 %	434.1 90.4 %	428.8 89.2 %	427.9 89.2 %	
60	480V MCC 18-4	480.0	438.2 91.3 %	435.6 90.7 %	416.8 86.8 %	416.7 86.8 %	
61	DGOMP 1/2 TERM	480.0	425.6 88.7 %	422.9 88.1 %	416.7 86.8 %	416.6 86.8 %	
62	STANDBY TANK HTR TERM	480.0	426.7 88.9 %	424.8 88.3 %	417.8 87.1 %	417.7 87.0 %	
63	ESS SYS JO PMP TERM	480.0	435.2 90.7 %	438.3 91.3 %	424.3 88.4 %	424.8 88.5 %	
64	SBLC PMP 1A TERM	480.0	438.2 91.3 %	433.4 90.3 %	427.3 89.0 %	427.1 89.0 %	
65	H2/O2 PMP TERM	480.0	438.2 91.3 %	431.3 89.9 %	425.2 88.6 %	425.0 88.5 %	
66	RHRS AHU 1A TERM	480.0	438.2 91.3 %	427.1 89.0 %	421.8 87.7 %	420.7 87.7 %	

Date :

***** Running Voltage Summary *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

* Source Number : 3 *

Internal Bus No.	Bus Rated Volts	Bus Running Voltage and Per Cent of Bus Rated Volts				
		Cond. 1	Cond. 2	Cond. 3	Cond. 4	Cond. 5
67	HVAC FAN 1/2 TERM	438.2 91.3 %	425.6 88.7 %	419.4 87.4 %	419.2 87.3 %	
68	DG OIL XFER PMP TERM	438.2 91.3 %	433.4 98.3 %	427.3 89.8 %	428.3 87.6 %	
69	CORE SPRY AHU 1A TER	438.2 91.3 %	427.5 89.1 %	421.4 87.8 %	421.1 87.7 %	
70	AF RHRS AHU TERM	438.2 91.3 %	433.4 98.3 %	427.3 89.8 %	427.1 89.8 %	
71	DG AIR COMP 1/2B TER	438.2 91.3 %	423.9 88.3 %	417.7 87.8 %	417.5 87.8 %	
72	RHR PMP 1A FAN A TER	433.3 98.3 %	424.5 88.4 %	418.4 87.2 %	418.2 87.1 %	
73	RHR PMP 1A FAN B TER	433.3 98.3 %	424.5 88.4 %	418.4 87.2 %	418.3 87.1 %	
74	RHR PMP 1A FAN C TER	433.3 98.3 %	424.6 88.5 %	418.4 87.2 %	418.3 87.1 %	
75	RHR PMP 1A FAN D TER	433.3 98.3 %	424.6 88.5 %	418.4 87.2 %	418.3 87.1 %	
76	125V BTRY CHGR TERM	438.7 89.7 %	427.4 89.8 %	421.3 87.8 %	421.2 87.7 %	
77	250V BTRY CHGR TERM	431.2 89.8 %	427.8 89.1 %	421.7 87.9 %	421.6 87.8 %	
78	DGOMP 1/2 FAN A TERM	425.8 88.7 %	423.3 88.2 %	417.1 86.9 %	417.8 86.9 %	
79	DGOMP 1/2 FAN B TERM	425.8 88.7 %	423.3 88.2 %	417.1 86.9 %	417.8 86.9 %	
80	RHR PMP 1B FAN A TER	433.3 98.3 %	424.4 88.4 %	418.2 87.1 %	418.1 87.1 %	
81	RHR PMP 1B FAN B TER	433.3 98.3 %	424.4 88.4 %	418.2 87.1 %	418.1 87.1 %	

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***** Running Voltage Summary *****

Utility : Sargent & Lundy Internal Use
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Proj. No. : 8913-67
Unit : 1

* Source Number : 3 *

Internal Bus No.	Bus Rated Volts	Bus Running Voltage and Per Cent of Bus Rated Volts				
		Cond. 1	Cond. 2	Cond. 3	Cond. 4	Cond. 5
82	RHR PMP 1B FAN C TER	433.3 98.3 %	424.4 88.4 %	418.2 87.1 %	418.1 87.1 %	
83	RHR PMP 1B FAN D TER	433.3 98.3 %	424.4 88.4 %	418.2 87.1 %	418.1 87.1 %	
84	CONT RM AHU TERM	438.2 91.3 %	435.6 98.7 %	414.1 86.3 %	414.0 86.3 %	
85	CONT RM AFU HTR TERM	438.2 91.3 %	435.6 98.7 %	413.9 86.2 %	413.8 86.2 %	
86	CONT RM STDBY A/C TE	438.2 91.3 %	435.6 98.7 %	415.8 86.6 %	415.7 86.6 %	
87	CONT RM BSTR FAN A T	438.2 91.3 %	435.6 98.7 %	415.1 86.5 %	415.0 86.5 %	
88	CONT RM BSTR FAN B T	438.2 91.3 %	435.6 98.7 %	416.8 86.8 %	416.7 86.8 %	
93	480V MCC 18/19-5	438.9 91.4 %	436.3 98.9 %	438.3 89.7 %	438.2 89.6 %	
109	1B DGWP DUMMY BUS	426.8 88.9 %	424.1 88.4 %	418.0 87.1 %	417.9 87.1 %	

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***** Load Summary by Bus *****

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Unit : 1

Bus Name : 4.16KV SOURCE 3
Rated Voltage : 4160.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
14	Bus name : 4KV SMGR 13-1 Connection rating : 680.0 .ps		713. kVA	805. kVA	1028. kVA	1032. kVA						
Total kVA input :			713.	805.	1028.	1032.						
kW :			625.	696.	873.	876.						
kVAR :			343.	403.	542.	544.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V SWGR 18
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
463	1-1902A	FUEL POOL CLG WTR PMP 1A	100.0	.0	.0	.0	.0		85.0	90.0	625.0	1765	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
464	1-5704A	RX BLDG EXH FAN 1A	100.0	.0	.0	.0	.0		85.0	90.0	625.0	1775	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
465	1-5703B	RX BLDG SPLY FAN 1B	100.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
466	1-5703C	RX BLDG SPLY FAN 1C	100.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
467	1-5702A	E. TURB BLDG SPLY FAN 1A	100.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
468	1-3701A	RX BLDG CLG WTR PMP 1A	125.0	.0	.0	.0	.0		85.0	90.0	625.0	1780	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
469		ESS SERV UPS PANEL 901-63	40.0	35.9	35.9	35.9	35.9		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				
470		TURB & RX BLDGS LTG #1	47.0	37.7	37.7	37.7	37.7		90.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KW	KW	KW	KW	KW		*** Safety - Related ***				
471	1/2-4709	INST AIR COMP 1/2	150.0	135.0	135.0	135.0	135.0		85.0	90.0	625.0	1770	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
56	Bus name : 480V MCC 18-1A			17.	69.	69.	73.						
	Connection rating : 220.0 Amps			kVA	kVA	kVA	kVA						
57	Bus name : 480V MCC 18-1B			49.	49.	49.	49.						
	Connection rating : 220.0 Amps			kVA	kVA	kVA	kVA						
58	Bus name : 480V MCC 18-2			261.	292.	292.	292.						
	Connection rating : 220.0 Amps			kVA	kVA	kVA	kVA						
59	Bus name : 480V MCC 18-3			50.	50.	60.	60.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
60	Bus name : 480V MCC 18-4			11.	11.	210.	210.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V SMGR 18
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
93	Bus name : 480V MCC 18/19-5 Connection rating : 220.0 Amps		0. kVA	0. kVA	0. kVA	0. kVA						
109	Bus name : 18 DSCWP DUMMY BUS Connection rating : 400.0 Amps		89. kVA	89. kVA	90. kVA	90. kVA						

Total kVA input :	688.	771.	972.	975.
kW :	620.	690.	863.	865.
kVAR :	298.	346.	448.	450.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-1A
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	1	2	3	4					
476		RX BLDG EMERG LGTING	35.0	.0	.0	.0	.0	.0	98.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KW	KW	KW	KW	KW	KW	*** Safety - Related ***				
477		XFMR TO FD 1B-1A-1	15.0	11.9	11.9	11.9	11.9	11.9	75.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA	KVA	*** Safety - Related ***				
478	1-5788A	DYML CLG BLOWERS 1A	84.0	.0	.0	.0	.0	.0	85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
482	1-1482-3A	CORESPRAY PMP 1A SUCT VLV	1.7	.0	.0	.0	.0	.0	80.0	75.0	225.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
483	1-4282-25A	CORE SPRAY INBOARD ISOL VLV	4.0	.0	.0	.0	.0	.0	85.0	80.0	827.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
484	1-1482-24A	CORE SPRAY OUTBOARD ISO VLV	4.0	.0	.0	.0	.0	.0	85.0	80.0	827.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
485	1-1001-4A	RHRS HEAT EXCH NORM INL VLV	1.0	.0	.0	.0	.0	.0	80.0	75.0	410.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
486	1-1001-186A	RHRS HEAT EXCH REV INL VLV	1.7	.0	.0	.0	.0	.0	80.0	75.0	263.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
487	1-1482-4A	CORE SPRAY TEST BYPASS VLV	1.6	.0	.0	.0	.0	.0	80.0	75.0	637.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
488	1-1001-185A	RHRS HEAT EXCH NORM OUT VLV	1.7	.0	.0	.0	.0	.0	80.0	75.0	500.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
489	1-1001-187A	RHRS HEAT EXCH REV OUTLET	1.7	.0	.0	.0	.0	.0	80.0	75.0	500.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
490	1-1201-2	RX WTR CLEANUP SYS RECIRC	1.6	1.4	1.4	1.4	1.4	1.4	83.0	70.0	520.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
491	1-5730A	DRYWELLTORUS PURG EXH FAN	30.0	.0	.0	.0	.0	.0	85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP					
493	1-220-1	MAIN STEAM LINE DRN VLV 1A	.7	.0	.0	.0	.0	.0	80.0	75.0	733.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	HP	*** Safety - Related ***				

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-1A
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
892	1-220-4	MAIN STEAM LINE COM DRN VLV	.7	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
893	1-220-90A	MAIN STEAM LINE DRN VLV 1A	.3	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
894	1-220-90B	MAIN STEAM LINE DRN VLV 1B	.3	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
895	1-220-90C	MAIN STEAM LINE DRN VLV 1C	.3	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
896	1-220-90D	MAIN STEAM LINE DRN VLV 1D	.3	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
897	1-302-8	CRD HYDR SYS PS CONT VLV 1A	.7	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
898	1-220-3	MAIN STM LINE DRN CN VLV 1C	.7	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
63	Bus name : ESS SYS JD PMP TERM			3.	3.	3.	3.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
64	Bus name : SBLC PMP 1A TERM			0.	0.	0.	0.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
66	Bus name : RHRS AHU 1A TERM			0.	0.	0.	0.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
65	Bus name : H2/O2 PMP TERM			0.	1.	1.	1.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
67	Bus name : HVAC FAN 1/2 TERM			0.	32.	32.	32.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
68	Bus name : DG OIL XFER PMP TERM			0.	0.	0.	3.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
69	Bus name : CORE SPRY AHU 1A TER			0.	6.	6.	6.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD_CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 18-1A
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
70	Bus name : AF RHRS AHU TERM Connection rating : 400.0 Amps		0. kVA	0. kVA	0. kVA	0. kVA						
71	Bus name : DG AIR COMP 1/2B TER Connection rating : 400.0 Amps		0. kVA	6. kVA	6. kVA	6. kVA						
Total kVA input :			17.	69.	69.	72.						
kW :			13.	58.	58.	60.						
kVAR :			10.	38.	38.	39.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD,CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1A-1B
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip.	No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
495	1-5788B	DRYWELL CL6 BLWER 1B	84.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
496	1A	DRYWELL/TORUS DIFF PR COMPR	50.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
498	1-5788F	DRYWELL CL6 BLOWER 1F	84.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
499	1-1001-26A	RHRS CONTAIN SPRAY SHUTOFF	1.6	.0	.0	.0	.0		80.0	75.0	637.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
500	1-1001-23A	RHRS BACKUP CONTAIN SPRAY	1.6	.0	.0	.0	.0		80.0	75.0	637.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
501	1-1001-34A	RHRS MAIN SHUTOFF SUPPRESS	4.0	.0	.0	.0	.0		85.0	80.0	543.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
502	1-1001-36A	RHRS SUPP CHAMBER DUMPLINE	.6	.0	.0	.0	.0		80.0	75.0	455.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
503	1-1001-37A	RHRS SUPP CHAMBER SPRAY HDR	.7	.0	.0	.0	.0		80.0	75.0	464.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
504	1-1001-50	RHRS SHUTOFF INBD VLV	14.0	.0	.0	.0	.0		85.0	85.0	777.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
505	1-1001-19A	RHRS COOLANT PMP CROSS HDR	2.6	.0	.0	.0	.0		85.0	80.0	333.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
506	1-1001-16A	RHRS HEAT EXCH R100 3A BYP	5.3	.0	.0	.0	.0		85.0	80.0	298.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
507	1-1001-7A	RHRS COOLANT 1002A PMP SUCT	1.0	.0	.0	.0	.0		80.0	75.0	357.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
508	1-1001-7B	RHRS COOLANT 1002B PMP SUCT	1.0	.0	.0	.0	.0		80.0	75.0	357.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
509	1-1001-43A	RHRS SHUTDOWN COOLANT VLV 1A	1.0	.0	.0	.0	.0		80.0	75.0	250.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD,CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 18-1B
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
510	1-1001-43B	RHRS SHUTDOWN COOLANT VLV 1B	1.0	.0	.0	.0	.0	.0	88.0	75.0	285.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
511	1-1001-5A	RHRS CNMT CLNT HX DISCH VLV	.6	.0	.0	.0	.0	.0	88.0	75.0	571.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
62	Bus name : STNDBY TANK HTR TERM				49.	49.	49.	49.					
	Connection rating : 400.0 Amps				kVA	kVA	kVA	kVA					
Total kVA input :					49.	49.	49.	49.					
	kW :				49.	49.	49.	49.					
	kVAR :				0.	0.	0.	0.					

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD,CITIES-FILE:01145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-2
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

No.	** Equip.	No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
512	1-5701B	RECIRC MG SET VENT FAN 1B	60.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
513		MAIN F2 SEAL OIL PMP	15.0	13.5	13.5	13.5	13.5		85.0	85.0	625.0	585	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
514		RX PROT SYS MG SET 1A	25.0	16.5	16.5	16.5	16.5		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
515	1-5616	H2 SEAL OIL VACUUM PMP	2.0	1.8	1.8	1.8	1.8		85.0	80.0	625.0	1725	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
517		120/240VAC XFMR FD	17.3	1.6	1.6	1.6	1.6		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				
519		345KV SWYD RLY HGE XFMR	75.0	58.5	58.5	58.5	58.5		75.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				
530	1-3806 A-F	MAIN STM ISOL ... / UNIT CLR	5.0	5.0	5.0	5.0	5.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
531		COMPUTER RM A/C UNIT B	6.0	6.0	6.0	6.0	6.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
905		120/240V INSTR XFMR	65.0	37.5	37.5	37.5	37.5		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				
72	Bus name : RHR PMP 1A FAN A TER			0.	4.	4.	4.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
73	Bus name : RHR PMP 1A FAN B TER			0.	4.	4.	4.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
74	Bus name : RHR PMP 1A FAN C TER			0.	4.	4.	4.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
75	Bus name : RHR PMP 1A FAN D TER			0.	4.	4.	4.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						
76	Bus name : 125V BTRY CHGR TERM			35.	35.	35.	35.						
	Connection rating : 400.0 Amps			kVA	kVA	kVA	kVA						

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Date :

***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE;01145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-2
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No. / Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	BPTC (sec)
			1	2	3	4	5					
77	Bus name : 250V BTRY CHGR TERM Connection rating : 400.0 Amps		83. kVA	83. kVA	83. kVA	83. kVA						
80	Bus name : RHR PMP 1B FAN A TER Connection rating : 400.0 Amps		0. kVA	4. kVA	4. kVA	4. kVA						
81	Bus name : RHR PMP 1B FAN B TER Connection rating : 400.0 Amps		0. kVA	4. kVA	4. kVA	4. kVA						
82	Bus name : RHR PMP 1B FAN C TER Connection rating : 400.0 Amps		0. kVA	4. kVA	4. kVA	4. kVA						
83	Bus name : RHR PMP 1B FAN D TER Connection rating : 400.0 Amps		0. kVA	4. kVA	4. kVA	4. kVA						
Total kVA input :			258.	288.	288.	288.						
kW :			232.	256.	256.	256.						
kVAR :			112.	132.	132.	132.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-3
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
532	1-5714	RX BLDG VENT SYS EVAP CLR	20.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
533		DRYWELL PNEUMATIC COMP RTR	25.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
534	1-1205A	RX WTR CLN UP SYS REC PMP1A	50.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
535	1-8841-9	PRI CONTNT PARTCTL SMPL PMP	7.5	.0	.0	.0	.0		85.0	80.0	625.0	1750	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
536	1-2001-245A	RX DRYWELL EQUIP DRN SHPPMP	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
537	1-2001-245B	RX DRYWELL EQUIP DRN SHPPMP	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
538	1-2001-241A	RX DRYWELL FLR DRN SMP PMP	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
539	1-2001-241B	RX DRYWELL FLR DRN SMP PMP	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
540	1-1279-7	RX WTR CLNUP SYS PCT PMP	7.5	.0	.0	.0	.0		85.0	80.0	625.0	1750	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
541	1-2001-265	HPCI RM DRN PMP	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
542	1-1279-2A	RX WTR CLNUP FLTR HLD PMP1A	2.0	.0	.0	1.0	1.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
543	1-1279-8	RX WTR CLNUP SYS PCT TK AGT	.0	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
544	1-5707A	RX FD PMP VENT FAN 1A	50.0	50.0	50.0	50.0	50.0		85.0	90.0	625.0	1750	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
545	1-2001-246	RX BLDG EQUIP DRN THK PMP	7.5	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
 Unit : 1

Bus Name : 480V MCC 18-3
 Rated Voltage : 480.0 volts
 Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
546	1-5782A	RX BLDG CONDST RTN TO DTR1A	.5	.5	.5	.5	.5		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
547	1-5782B	RX BLDG CONDST RTN TO DTR1B	.5	.5	.5	.5	.5		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
548	1-2001-242A	RX BLDG FLR DRN SMP PMP 1A	10.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
549	1-2001-242B	RX BLDG FLR DRN SMP PMP 1B	10.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
550		RB DW EQUIP ACCESS DOOR 1/2	.5	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
551		120/240V FEED TO 18-3-1	17.3	5.7	5.7	5.7	5.7		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA						
552		RX BLDG CRANE 1/2	100.5	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
553		RX BLDG ELEVATOR	50.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
554		CONTROL ROD DR BRIDGE CRANE	5.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
555		TN-9 AUX SYSTEM	6.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
556		480/240V TRANSF RAIL CRK	30.0	.0	.0	.0	.0		75.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA						
557	1-8841-20	PRI CONT RECRC SMPL CTR PMP	5.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
558		RX BLDG RAILWAY CAR PULLER	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
559		FUEL POOL SERV FLATF RECEPT	3.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-3
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip.	No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
560		REFUEL PLATFORM RECEPTACLES	6.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
561	1/2-5006	RX BLDG JIB CRANE	6.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
562		ROD REMOVAL RECEPTACLES	5.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
563		RX BLDG SAMPLE PNL TCU	9.0	.0	.0	.0	.0		90.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KW	KW	KW	KW	KW						
564		DIESEL ENG COOL WTR HTR 1/2	16.3	.0	.0	.0	.0		100.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KW	KW	KW	KW	KW						
565		EQUIPT HATCH JIB HOIST	8.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
566	1-1295-2442R	RX VESSEL HEAT-UP EQUIPT	7.0	.0	.0	.0	.0		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
567		JUNCTION BOX IRB-3	38.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
568		JUNCTION BOX IRB-4	38.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
569		JUNCTION BOX IRB-5	38.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
570		JUNCTION BOX IRB-6	38.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
571		JUNCTION BOX IRB-22	5.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
899	1201-33	RX WTR CLUMP SYS BYPS VLV	1.0	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						
900	1201-76	RX WTR SYS REST ORIF BYPS V	1.0	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : M	Load type : Induction	HP	HP	HP	HP	HP						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 18-3
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
901	1201-78	RX WTR SYS MN COND DUMP VLV Status : M Load type : Induction	.7 HP	.0 HP	.0 HP	.0 HP	.0 HP	.0 HP	88.0	75.0	625.0	1800	.0000
902	1201-77	RX WTR SYS REDMST D&W COL V Status : M Load type : Induction	.7 HP	.0 HP	.0 HP	.0 HP	.0 HP	.0 HP	88.0	75.0	625.0	1800	.0000
903		REFUEL PLTFM 480V RECEPTCL Status : M Load type : Resistive	11.0 KW	.0 KW	.0 KW	.0 KW	.0 KW	.0 KW	98.0	100.0	.0	0	.0000
904	1/2-6657/60	DS LUBE OIL PUMP MOTORS Status : E Load type : Induction	1.8 HP	1.6 HP	1.6 HP	1.6 HP	1.6 HP	1.6 HP	75.0	88.0	625.0	1155	.0000

Total kVA input :	58.	58.	59.	59.
kW :	49.	49.	51.	51.
kVAR :	38.	38.	31.	31.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 480V MCC 1B-4
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
576	120/208 XFMR Status : E Load type : Resistive	15.0 KVA	11.3 KVA	11.3 KVA	11.3 KVA	11.3 KVA		75.0	100.0	.0	0	.0000
84	Bus name : CONT RM AHU TERM Connection rating : 400.0 Amps		0. kVA	0. kVA	44. kVA	44. kVA						
85	Bus name : CONT RM AFU HTR TERM Connection rating : 400.0 Amps		0. kVA	0. kVA	9. kVA	9. kVA						
86	Bus name : CONT RM STDBY A/C TE Connection rating : 400.0 Amps		0. kVA	0. kVA	132. kVA	132. kVA						
87	Bus name : CONT RM BSTR FAN A T Connection rating : 400.0 Amps		0. kVA	0. kVA	8. kVA	8. kVA						
88	Bus name : CONT RM BSTR FAN B T Connection rating : 400.0 Amps		0. kVA	0. kVA	0. kVA	0. kVA						
Total kVA input :			11.	11.	203.	203.						
kW :			8.	8.	174.	174.						
kVAR :			7.	7.	104.	104.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
 Unit : 1

Bus Name : DSCWP 1/2 TERM
 Rated Voltage : 480.0 volts
 Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
462	1/2-3938	DG CLG WTR PMP 1/2	100.0	90.0	90.0	90.0	90.0		91.2	88.5	54.0	3525	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				83.	83.	83.	83.						
kW :				76.	76.	76.	76.						
kVAR :				34.	34.	34.	34.						

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : STNDBY TANK HTR TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
497	1-1103	STNDBY LQD CONTRL TK HTR	60.0	47.8	47.8	47.8	47.8		100.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KW	KW	KW	KW	KW		*** Safety - Related ***				

Total kVA input : 48. 48. 48. 48.

kW : 48. 48. 48. 48.

kVAR : 0. 0. 0. 0.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : ESS SYS JO PMP TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No. / Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
494	ESSENTIAL FILL SYS JOCK PMP Status : E Load type : Induction	3.0 HP	2.7 HP	2.7 HP	2.7 HP	2.7 HP	85.0	88.0	625.0	1800	.0000	

Total kVA input : 3. 3. 3. 3.

kW : 3. 3. 3. 3.

kVAR : 2. 2. 2. 2.

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : SBLC PMP 1A TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
472	1-1102A	STANDBY LIQUID CONT PMP 1A	50.0	.0	.0	.0	.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
Total kVA input :				0.	0.	0.	0.						
kW :				0.	0.	0.	0.						
kVAR :				0.	0.	0.	0.						

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : H2/O2 PMP TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
479		POST LOCA H2 & O2 MON PMP	1.0	.0	.9	.9	.9		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	1.	1.	1.						
kW :				0.	1.	1.	1.						
kVAR :				0.	1.	1.	1.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
 Unit : 1

Bus Name : RHRS AHU 1A TERM
 Rated voltage : 480.0 volts
 Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
473	1-5746A	RHRS EMERG AHU 1A	7.5	0	7.5	7.5	7.5		85.0	88.0	62.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input : 0. 8. 8. 8.

kW : 0. 7. 7. 7.
 kVAR : 0. 4. 4. 4.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : HVAC FAN 1/2 TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
474	1/2-5727	DG RM HVAC 6PLY FAN 1/2	30.0	.0	30.0	30.0	30.0		85.0	85.0	625.0	885	.00000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	31.	31.	31.						
kW :				0.	26.	26.	26.						
kVAR :				0.	16.	16.	16.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : DG OIL XFER PMP TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
481	1/2-5203	DIESEL OIL XFER PMP 1/2	3.0	.0	.0	.0	3.0	85.0	88.0	625.0	1755	.0000	
	Status : E	Load type : Induction	HP	HP	HP	HP	HP	*** Safety - Related ***					
Total kVA input :				0.	0.	0.	3.						
kW :				0.	0.	0.	3.						
kVAR :				0.	0.	0.	2.						

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CORE SPRAY AHU 1A TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	Load Name or Bus Name	** kVA	Rated hp/kW	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
					1	2	3	4	5					
475	1-5748A	CORESPRAY EMERG AHU 1A	5.0	5.0	0	5.0	5.0	5.0	5.0	85.0	88.0	625.0	1740	.0000
	Status : E	Load type : Induction		HP	HP	HP	HP	HP	HP	*** Safety - Related ***				
Total kVA input :					0.	5.	5.	5.	5.					
kW :					0.	5.	5.	5.	5.					
kVAR :					0.	3.	3.	3.	3.					

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : AF RHRS AHU TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
488	2-5746A	ALT FD RHRS EMERG AHU 2A	7.5	.0	.0	.0	.0		85.0	88.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	0.	0.	0.						
kW :				0.	0.	0.	0.						
kVAR :				0.	0.	0.	0.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : D6 AIR COMP 1/2B TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No. /	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
492	1/2-5209B	DIESEL START AIR COMP 1/2B	5.0	.8	5.0	5.0	5.0		85.0	80.0	625.0	1735	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	5.	5.	5.						
kW :				0.	5.	5.	5.						
kVAR :				0.	3.	3.	3.						

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1A FAN A TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
520	1-5745A	RHR SW PMP 1A CLR FAN A	3.0	.8	3.1	3.1	3.1		75.5	88.0	728.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input : 8. 4. 4. 4.

kW : 8. 3. 3. 3.

kVAR : 8. 3. 3. 3.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1A FAN B TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
521	1-5745A	RHR SW PMP 1A CLR FAN B	3.0	.0	3.1	3.1	3.1		75.5	80.0	728.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	4.	4.	4.						
kW :				0.	3.	3.	3.						
kVAR :				0.	3.	3.	3.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1A FAN C TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip.	No. /	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
					1	2	3	4	5					
522	1-5745A		RHR SW PMP 1A CLR FAN C	3.0	.0	3.1	3.1	3.1		75.5	80.0	728.0	1730	.0000
	Status : E		Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input :	0.	4.	4.	4.
kW :	0.	3.	3.	3.
kVAR :	0.	3.	3.	3.

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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1A FAN D TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
523	1-5745A	RHR SW PMP 1A CLR FAN D	3.0	.0	3.1	3.1	3.1		75.5	88.0	728.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	4.	4.	4.						
kW :				0.	3.	3.	3.						
kVAR :				0.	3.	3.	3.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 125V BTRY CHGR TEAM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
516		125V BATTERY CHGR#1A	39.9	35.2	35.2	35.2	35.2		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive	KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				

Total kVA input :	35.	35.	35.	35.
kW :	33.	33.	33.	33.
kVAR :	11.	11.	11.	11.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 250V BTRY CHGR TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	/ Load Name or Bus Name	**	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
					1	2	3	4	5					
518		250V BATTERY CHARGER 1/2		93.9	82.9	82.9	82.9	82.9		95.0	100.0	.0	0	.0000
	Status : E	Load type : Resistive		KVA	KVA	KVA	KVA	KVA		*** Safety - Related ***				
Total kVA input :					83.	83.	83.	83.						
kW :					79.	79.	79.	79.						
kVAR :					26.	26.	26.	26.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : 18 DGCMP DUMMY BUS
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
61	Bus name : DGCMP 1/2 TERM Connection rating : 400.0 Amps		83. kVA	83. kVA	83. kVA	83. kVA						
78	Bus name : DGCMP 1/2 FAN A TERM Connection rating : 400.0 Amps		2. kVA	2. kVA	2. kVA	2. kVA						
79	Bus name : DGCMP 1/2 FAN B TERM Connection rating : 400.0 Amps		2. kVA	2. kVA	2. kVA	2. kVA						
Total kVA input :			87.	87.	87.	87.						
kW :			79.	79.	79.	79.						
kVAR :			37.	37.	37.	37.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
 Unit : 1

Bus Name : 480V MCC 18/19-5
 Rated Voltage : 480.0 volts
 Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
662	1/2-5795-30	CONTR RM RTN AIR FAN 1/2	30.0	.0	.0	.0	.0		85.0	85.0	625.0	1750	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
663	1-202-6A	RX WTR RECIRC LOOP EQUAL VL	8.0	.0	.0	.0	.0		85.0	80.0	627.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
664	1-202-4A	RX WTR RECIRC PMP SUCT VLV	16.0	.0	.0	.0	.0		85.0	85.0	625.0	3500	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
665	1-202-5A	RX WTR RECIRC PMP DISCH VLV	14.0	.0	.0	.0	.0		85.0	85.0	777.0	3420	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
666	1-1001-29A	RHRS INBOARD SHUTOFF VLV	20.0	.0	.0	.0	.0		85.0	85.0	759.0	3365	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
667	1-1001-28A	RHRS OUTBOARD SHUTOFF VLV	52.0	.0	.0	.0	.0		85.0	90.0	771.0	3530	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
668	1-202-9A	RX WTR RECIRC LOOP EQUAL VL	.1	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
669	1-202-6B	RX WTR RECIRC PMP SUCTION	8.0	.0	.0	.0	.0		85.0	80.0	627.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
670	1-202-4B	RX WTR RECIRC PMP DISCH VLV	16.0	.0	.0	.0	.0		85.0	85.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
671	1-202-5B	RX WTR RECIRC PMP DISCH VLV	14.0	.0	.0	.0	.0		85.0	85.0	777.0	3420	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
672	1-1001-29B	RHRS INBOARD SHUTOFF VLV	20.0	.0	.0	.0	.0		85.0	85.0	759.0	3365	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
673	1-1001-28B	RHRS OUTBOARD SHUTOFF VLV	52.0	.0	.0	.0	.0		85.0	90.0	943.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
674	1-202-9B	RX WTR RECIRC LOOP EQUAL VL	.1	.0	.0	.0	.0		80.0	75.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input : 0. 0. 0. 0.

kW : 0. 0. 0. 0.

kVAR : 0. 0. 0. 0.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : DSCMP 1/2 FAW A TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
524	1/2-5749A	DG 1/2 CL6 WTR PMP CL6 FANA	1.5	1.4	1.4	1.4	1.4		75.0	75.0	752.0	1740	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				2.	2.	2.	2.						
kW :				1.	1.	1.	1.						
kVAR :				1.	1.	1.	1.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : DGCMP 1/2 FAN B TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	/ Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
525	1/2-57498	DG 1/2 CL6 WTR PMP CL6 FANB	1.5	1.4	1.4	1.4	1.4		75.0	75.0	752.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				2.	2.	2.	2.						
kW :				1.	1.	1.	1.						
kVAR :				1.	1.	1.	1.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE;Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1B FAN A TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	Load Name or Bus Name	** kVA	Rated hp/kW	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
					1	2	3	4	5					
526	1-57458	RHR SW PMP 1B CLR FAN A	3.0		.8	3.1	3.1	3.1		75.5	88.0	728.0	1730	.0000
	Status : E	Load type : Induction		HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :					0.	4.	4.	4.						
kW :					0.	3.	3.	3.						
kVAR :					0.	3.	3.	3.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1B FAN B TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No.	/ Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
527	1-5745B	RHR SW PMP 1B CLR FAN B	3.0	.0	3.1	3.1	3.1		75.5	88.0	728.0	1738	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input :	0.	4.	4.	4.
kW :	0.	3.	3.	3.
kVAR :	0.	3.	3.	3.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1B FAN C TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
528	1-5745B	RHR SW PMP 1B CLR FAN C	3.0	.0	3.1	3.1	3.1		75.5	88.0	728.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				

Total kVA input : 0. 4. 4. 4.

kW : 0. 3. 3. 3.
kVAR : 0. 3. 3. 3.

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : RHR PMP 1B FAN D TER
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip.	No. / Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
529	1-5745B	RHR SW PMP 1B CLR FAN D	3.0	.0	3.1	3.1	3.1		75.5	80.0	728.0	1730	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP		*** Safety - Related ***				
Total kVA input :				0.	4.	4.	4.						
kW :				0.	3.	3.	3.						
kVAR :				0.	3.	3.	3.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD_CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CONT RM AHU TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
575	1/2-9400-100	CONTL RM STNDBY AHU	50.0	.0	.0	45.0	45.0		85.0	98.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
Total kVA input :				0.	0.	44.	44.						
kW :				0.	0.	37.	37.						
kVAR :				0.	0.	23.	23.						

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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CONT RM AFU HTR TERM
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
577	1/2-9400-101 CONT RM AFU HTR Status : E Load type : Resistive	12.0 KW	.0 KW	.0 KW	9.0 KW	9.0 KW	100.0	100.0	.0	0	.0000	
Total kVA input :			0.	0.	9.	9.						
kW :			0.	0.	9.	9.						
kVAR :			0.	0.	0.	0.						

189981

Date :

AC Electrical Load Monitoring System Ver 2.20
Sargent & Lundy Engineers
Chicago, Ill.

Calc. No. 8913-67-19-1
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***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CONT RM STDBY A/C TE
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	Equip. No.	Load Name or Bus Name	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
574	1/2-9400-102	CONTL RM STANDBY A/C	150.0	.0	.0	135.0	135.0		85.0	90.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
Total kVA input :				0.	0.	132.	132.						
kW :				0.	0.	112.	112.						
kVAR :				0.	0.	69.	69.						

189981

Date :

AC Electrical Load Monitoring System Ver 2.20
Sargent & Lundy Engineers
Chicago, Ill.

Calc. No. 8913-67-19-1
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**** Load Summary by Bus ****

Utility : Sargent & Lundy Internal Use
Station : QUAD_CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CONT RM BSTR FAN A 1
Rated Voltage : 480.0 volts
Source : 3, 4, 16KV SOURCE 3

Load or Bus No.	** Equip. No. /	Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
				1	2	3	4	5					
572	1/2-9400-104	CONRL RM AFU BSTR FAN A	7.5	.0	.0	7.5	7.5		85.0	80.0	625.0	1800	.0000
	Status : E	Load type : Induction	HP	HP	HP	HP	HP						
Total kVA input :				0.	0.	8.	8.						
kW :				0.	0.	7.	7.						
kVAR :				0.	0.	4.	4.						

189981

Date :

AC Electrical Load Monitoring System Ver 2.20
Sargent & Lundy Engineers
Chicago, Ill.

Calc. No. 8913-67-19-1
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Proj. No. 8913-67

***** Load Summary by Bus *****

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:Q1145.DAT

Proj. No. : 8913-67
Unit : 1

Bus Name : CONT RM BSTR FAN B T
Rated Voltage : 480.0 volts
Source : 3, 4.16KV SOURCE 3

Load or Bus No.	** Equip. No. / Load Name or Bus Name **	Rated hp/kW kVA	Max. Design hp/kW/kVA for Condition					PF (%)	EFF (%)	LRC (%)	Speed RPM	SCTC (sec)
			1	2	3	4	5					
573	1/2-9400-184 CONT RM AFU BSTR FAN B Status : E Load type : Induction	7.5 HP	.0 HP	.0 HP	.0 HP	.0 HP	85.0	88.0	625.0	1800	.0000	
Total kVA input :			0.	0.	0.	0.						
kW :			0.	0.	0.	0.						
kVAR :			0.	0.	0.	0.						

SARGENT & LUNDY
ENGINEERS

Calc. For Quad Cities 1/1 Safety-related Continuous

Load Running/Starting Voltages

X

Safety-Related

Non-Safety-Related

Calc. No. 8913-67-19-1

Rev. 0 Date

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Proj. No. 8913-67

Client	Commonwealth Edison Company		
Project	Quad Cities Unit 1		
Proj. No.	8913-67	Equip. No.	

Prepared by	Date
Reviewed by	Date
Approved by	Date

APPENDIX B

CASE B COMPUTER PRINTOUTS

(BLOCK MOTOR STARTING EVALUATION)

SARGENT & LUNDY
ENGINEERS

Calc. For Quad Cities 1/1 Safety-related Continuous

Load Running/Starting Voltages

X Safety-Related

Non-Safety-Related

Calc. No. 8913-67-19-1

Rev. 0 Date

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Proj. No. 8913-67

Client	Commonwealth Edison Company
Project	Quad Cities Unit 1
Proj. No.	8913-67
Equip. No.	

Prepared by	Date
Reviewed by	Date
Approved by	Date

Listed in the following order:

Condition 1 Block Motor Starting, File: S1.DAT

Load Tickets for R Type Loads,
(Bus Data, Connection Data, and other loads remain
unchanged from Q1145.DAT)
Motor Block Starting Printout

Condition 2 Block Motor Starting, File: S2.DAT

Load Tickets for R Type Loads,
(Bus Data, Connection Data, and other loads remain
unchanged from Q1145.DAT)
Motor Block Starting Printout

Condition 3 Motor Starting

CM STANDBY AHU 1A Starting, File: S3A.DAT
Load Tickets for R Type Loads and CM AHU BOOSTER FAN A,
CM STANDBY A/C;
(Bus Data, Connection Data, and other loads remain
unchanged from Q1145.DAT)
Motor Starting Printout

CM STANDBY A/C Starting, File: S3B.DAT
Load Tickets for R Type Loads and CM AHU BOOSTER FAN A;
(Bus Data, Connection Data, and other loads remain
unchanged from Q1145.DAT)
Motor Starting Printout

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S1.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 469

Equip. No. / Load Name ...	ESS SERV UPS PANEL 901-63
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V SMGR 10
Motor Rated Volts	480.0
Rated hp, kW, or kVA	48.0
Units (hp, kW, or kVA)	kVA
Load Type (I, S, B or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	95.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***
Cond 1 : 34.4 KVA
Cond 2 : 34.4 KVA
Cond 3 : 34.4 KVA
Cond 4 : 34.4 KVA
Cond 5 : .0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SI.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19-1
Rev. 0 Date 189981
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Proj. No. 8913-67

AC Load Ticket

Record Number = 476

Equip. No. / Load Name	TURB & RX BLDGS LTS #1
Status (E,N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V SWGR 1B
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	47.0
Units (hp, kW, or kVA)	KW
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	98.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***
Cond 1 : 34.7 KW
Cond 2 : 34.7 KW
Cond 3 : 34.7 KW
Cond 4 : 34.7 KW
Cond 5 : .0 KW

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QURD CITIES-FILE:SL.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19-1
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AC Load Ticket

Record Number = 477

Equip. No. / Load Name ...	XFMR TO FD 18-1A-1
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 18-1A
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	15.0
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***
Cond 1 : 11.0 KVA
Cond 2 : 11.0 KVA
Cond 3 : 11.0 KVA
Cond 4 : 11.0 KVA
Cond 5 : .0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SI.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19-1
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AC Load Ticket

Record Number = 497

Equip. No. / Load Name ... 1-1103 STNDY LQD CONTRL TK HTR
Status (E, N, or M) ... E (Existing, New, or Modified)
Source Bus Name STNDY TANK HTR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 60.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : 44.0 KW
Load Type (I, S, B, or R) ... R Cond 2 : 44.0 KW
Rated Efficiency (%) 100.0 Cond 3 : 44.0 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 44.0 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SL.DAT

Project No. : 8913-67
Unit No. 1

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AC Load Ticket

Record Number = 516

Equip. No. / Load Name ...	125V BATTERY CHGR#1A
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	125V BTRY CHGR TERM
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	39.9 *** Load Brake Power ***
Units (hp, kW, or kVA)	KVA
Load Type (I, S, B or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	95.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

Cond 1 :	33.8 KVA
Cond 2 :	33.8 KVA
Cond 3 :	33.8 KVA
Cond 4 :	33.8 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : GRAND CITIES-FILE:SI.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19-1

Rev. 0 Date

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AC Load Ticket

Record Number = 518

Equip. No. / Load Name ...	250V BATTERY CHARGER 1/2
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	250V BTRY CHGR TERM
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	93.9 *** Load Brake Power ***
Units (hp, kW, or kVA)	KVA
Load Type (I, S, B or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	95.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SI.DAT

Project No. : 8913-67
Unit No. 1

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AC Load Ticket

Record Number = 519

Equip. No. / Load Name ... 345KV SWYD RLY HSE XFMR
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name 480V MCC 16-2
Motor Rated Volts 480.0
Rated hp, kW, or kVA 75.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 53.9 KVA
Load Type (I, S, G or R) ... R Cond 2 : 53.9 KVA
Rated Efficiency (%) 100.0 Cond 3 : 53.9 KVA
Rated Power Factor (%) ... 75.0 Cond 4 : 53.9 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SL.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 576

Equip. No. / Load Name ... 120/208 XFMR
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name 480V MCC 1B-4
Motor Rated Volts/..... 480.0
Rated hp, kW, or kVA 15.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 11.1 KVA
Load Type (I, S, B or R) ... R Cond 2 : 11.1 KVA
Rated Efficiency (%) 100.0 Cond 3 : 11.1 KVA
Rated Power Factor (%) ... 75.0 Cond 4 : 11.1 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
 Station : QUAD CITIES-FILE:SL.DAT

Project No. : 8913-67
 Unit No. 1

AC Load Ticket

Record Number = 577

Equip. No. / Load Name ... 1/2-9400-101 CONT RM AFU HTR
 Status (E, N, or M) E (Existing, New, or Modified)
 Source Bus Name CONT RM AFU HTR TERM
 Motor Rated Volts / 480.0
 Rated hp, kW, or kVA 12.0 *** Load Brake Power ***
 Units (hp, kW, or kVA) KW Cond 1 : .0 KW
 Load Type (I, S, B or R) ... R Cond 2 : .0 KW
 Rated Efficiency (%) 100.0 Cond 3 : 8.8 KW
 Rated Power Factor (%) ... 100.0 Cond 4 : 8.8 KW
 Locked Rotor Current (%) . 0. Cond 5 : .0 KW
 Starting Power Factor (%) 20.0
 Speed (RPM) 0
 S.C. Time Constant (sec) . .0000
 Mod or M/D Number
 Cable Number
 System Code
 Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 1

Motor Number	Motor Name	
462	1/2-3908	DG CLG WTR PMP 1/2
498	1-1201-2	RX WTR CLEANUP SYS RECIRC
524	1/2-5749A	DG 1/2 CLG WTR PMP CLG FANA
525	1/2-5749B	DG 1/2 CLG WTR PMP CLG FANB
666	1-1001-29A	RHRS INBOARD SHUTOFF VLV
669	1-202-6B	RX WTR RECIRC PMP SUCTION
671	1-202-5B	RX WTR RECIRC PMP DISCH VLV

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SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 1

INTERNAL		BUS RUNNING	BUS RATED	% OF
BUS NUMBER	BUS NAME	VOLTS	VOLTS	RATED
3	SOURCE 4.16KV SOURCE 3	3845.3	4160.0	92.4
14	4KV SWGR 13-1	3845.0	4160.0	92.4
27	HIGH SIDE OF XFMR 18	3843.6	4160.0	92.4
28	480V SWGR 18	410.7	480.0	86.0
56	480V MCC 18-1A	411.7	480.0	85.8
57	480V MCC 18-1B	410.9	480.0	85.6
58	480V MCC 18-2	406.9	480.0	84.8
59	480V MCC 18-3	410.4	480.0	85.5
60	480V MCC 18-4	411.9	480.0	85.8
61	DGCOMP 1/2 TERM	367.4	480.0	76.5
62	STANDBY TANK HTR TERM	400.7	480.0	83.5
63	ESS SYS J1 PMP TERM	408.5	480.0	85.1
64	SBLC PMP 1A TERM	411.7	480.0	85.8
65	M2/D2 PMP TERM	411.7	480.0	85.8
66	RHRS AHU 1A TERM	411.7	480.0	85.8
67	HVAC FAN 1/2 TERM	411.7	480.0	85.8
68	DG OIL XFER PMP TERM	411.7	480.0	85.8
69	CORE SPRY AHU 1A TER	411.7	480.0	85.8
70	AF RHRS AHU TERM	411.7	480.0	85.8
71	DG AIR COMP 1/2B TER	411.7	480.0	85.8
72	RHR PMP 1A FAN A TER	406.9	480.0	84.8
73	RHR PMP 1A FAN B TER	406.9	480.0	84.8
74	RHR PMP 1A FAN C TER	406.9	480.0	84.8
75	RHR PMP 1A FAN D TER	406.9	480.0	84.8
76	125V BTRY CHGR TERM	404.3	480.0	84.2
77	250V BTRY CHGR TERM	404.7	480.0	84.3
78	DGCOMP 1/2 FAN A TERM	366.2	480.0	76.3
79	DGCOMP 1/2 FAN B TERM	366.2	480.0	76.3
80	RHR PMP 1B FAN A TER	406.9	480.0	84.8
81	RHR PMP 1B FAN B TER	406.9	480.0	84.8
82	RHR PMP 1B FAN C TER	406.9	480.0	84.8
83	RHR PMP 1B FAN D TER	406.9	480.0	84.8
84	CONT RM AHU TERM	411.9	480.0	85.8
85	CONT RM AFU HTR TERM	411.9	480.0	85.8
86	CONT RM STDBY A/C TE	411.9	480.0	85.8
87	CONT RM BSTR FAN A T	411.9	480.0	85.8
88	CONT RM BSTR FAN B T	411.9	480.0	85.8
93	480V MCC 18/19-5	403.4	480.0	84.0
109	18 DGCOMP DUMMY BUS	371.3	480.0	77.3

Calc. No. 8913-67-19-1

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Proj. No. 8913-67

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:52.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19-1
Rev. 0 Date
Page B14 of 189981
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AC Load Ticket

Record Number = 469

Equip. No. / Load Name ... ESS SERV UPS PANEL 901-63
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V SMGR 18
Motor Rated Volts 480.0
Rated hp, kW, or kVA 48.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 35.8 KVA
Load Type (I, S, B or R) ... R Cond 2 : 35.8 KVA
Rated Efficiency (%) 100.0 Cond 3 : 35.8 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 35.8 KVA
Locked Rotor Current (%) . 8. Cond 5 : .0 KVA
Starting Power Factor (%) 28.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S2.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 470

Equip. No. / Load Name ...	TURB & RX BLDGS LTG #1
Status (E,N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V SMGR 1B
Motor Rated Volts/.....	480.0
Rated hp, kW, or kVA	47.0
Units (hp, kW, or kVA)	KW
Load Type (I,S,G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	90.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***

Cond 1 :	37.6 KW
Cond 2 :	37.6 KW
Cond 3 :	37.6 KW
Cond 4 :	37.6 KW
Cond 5 :	.0 KW

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S2.DAT

Project No. : 8913-67
Unit No. 1

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Proj. No. 8913-67

AC Load Ticket

Record Number = 477

Equip. No. / Load Name ...	XFMR TO FD 18-1A-1
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 18-1A
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	15.0 *** Load Brake Power ***
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

Cond 1 :	11.8 KVA
Cond 2 :	11.8 KVA
Cond 3 :	11.8 KVA
Cond 4 :	11.8 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:52.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 497

Equip. No. / Load Name ... 1-1103 STNDBY LQD CONTRL TK HTR
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name STNDBY TANK HTR TERM
Motor Rated Volts/..... 480.0
Rated hp, kW, or kVA 60.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : 47.2 KW
Load Type (I, S, B or R) ... R Cond 2 : 47.2 KW
Rated Efficiency (%) 100.0 Cond 3 : 47.2 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 47.2 KW
Locked Rotor Current (%) . 0 Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S2.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 516

Equip. No. / Load Name ... 125V BATTERY CHGR01A
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 125V BTRY CHGR TERM
Motor Rated Volts / 480.0
Rated hp, kW, or kVA 39.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 34.9 KVA
Load Type (I, S, B or R) ... R Cond 2 : 34.9 KVA
Rated Efficiency (%) 100.0 Cond 3 : 34.9 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 34.9 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S2.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 518

Equip. No. / Load Name ... 250V BATTERY CHARGER 1/2
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 250V BTRY CHGR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 93.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 82.2 KVA
Load Type (I, S, G or R) ... R Cond 2 : 82.2 KVA
Rated Efficiency (%) 100.0 Cond 3 : 82.2 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 82.2 KVA
Locked Rotor Current (%) . 0. Cond 5 : 0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . 0.0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S2.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 519

Equip. No. / Load Name ...	345KV SWYD RLY HSE XFMR
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 1B-2
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	75.0 *** Load Brake Power ***
Units (hp, kW, or kVA)	KVA
Load Type (I, S, B or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:52.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 576

Equip. No. / Load Name ...	120/200 XFMR
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 18-4
Motor Rated Volts/.....	480.0
Rated hp, kW, or/kVA	15.0
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	28.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	No

*** Load Brake Power ***

Cond 1 :	12.0 KVA
Cond 2 :	12.0 KVA
Cond 3 :	12.0 KVA
Cond 4 :	12.0 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:52.DAT

Project No. : 8913-67
Unit No. 1

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AC Load Ticket

Record Number = 577

Equip. No. / Load Name ... 1/2-9400-101 CONT RM AFU HTR
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM AFU HTR TERM
Motor Rated Volts/..... 480.0
Rated hp, kW, or kVA 12.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : .0 KW
Load Type (I, S, G or R) ... R Cond 2 : .0 KW
Rated Efficiency (%) 100.0 Cond 3 : 9.6 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 9.6 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 2

Motor Number	Motor Name	
499	1-1001-26A	RHRS CONTAIN SPRAY SHUTOFF
500	1-1001-23A	RHRS BACKUP CONTAIN SPRAY
501	1-1001-34A	RHRS MAIN SHUTOFF SUPPRESS
502	1-1001-36A	RHRS SUPP CHAMBER DUMPLINE
520	1-5745A	RHR SW PMP 1A CLR FAN A
521	1-5745A	RHR SW PMP 1A CLR FAN B
522	1-5745A	RHR SW PMP 1A CLR FAN C
523	1-5745A	RHR SW PMP 1A CLR FAN D
526	1-5745B	RHR SW PMP 1B CLR FAN A
527	1-5745B	RHR SW PMP 1B CLR FAN B
528	1-5745B	RHR/SW PMP 1B CLR FAN C
529	1-5745B	RHR SW PMP 1B CLR FAN D

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SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 2

INTERNAL		BUS RUNNING	BUS RATED	% OF
BUS NUMBER	BUS NAME	VOLTS	VOLTS	RATED
3	SOURCE 4.16KV SOURCE 3	3845.1	4160.0	92.4
14	4KV SWGR 13-1	3845.0	4160.0	92.4
27	HIGH SIDE OF XFMR 10	3843.8	4160.0	92.4
28	480V SWGR 10	429.5	480.0	89.5
56	480V MCC 10-1A	426.5	480.0	88.8
57	480V MCC 10-1B	425.7	480.0	88.7
58	480V MCC 10-2	420.0	480.0	87.5
59	480V MCC 10-3	427.2	480.0	89.0
60	480V MCC 10-4	428.7	480.0	89.3
61	DGCWP 1/2 TERM	415.8	480.0	86.6
62	STNDBY TANK HTR TERM	415.2	480.0	86.5
63	ESS SYS JP PMP TERM	423.4	480.0	88.2
64	SILC PMP 1A TERM	426.5	480.0	88.8
65	H2/O2 PMP TERM	424.4	480.0	88.4
66	RHRS AHU 1A TERM	420.1	480.0	87.5
67	HVAC FAN 1/2 TERM	416.5	480.0	87.2
68	DG OIL XFER PMP TERM	426.5	480.0	88.8
69	CORE SPRY AHU 1A TER	420.5	480.0	87.6
70	AF RHRS AHU TERM	426.5	480.0	88.8
71	DG AIR COMP 1/2B TER	416.8	480.0	86.8
72	RHR PMP 1A FAN A TER	392.0	480.0	81.7
73	RHR PMP 1A FAN B TER	392.1	480.0	81.7
74	RHR PMP 1A FAN C TER	392.3	480.0	81.7
75	RHR PMP 1A FAN D TER	392.3	480.0	81.7
76	125V BTRY CHGR TERM	417.4	480.0	87.0
77	250V BTRY CHGR TERM	417.9	480.0	87.1
78	DGCWP 1/2 FAN A TERM	416.2	480.0	86.7
79	DGCWP 1/2 FAN B TERM	416.2	480.0	86.7
80	RHR PMP 1B FAN A TER	391.2	480.0	81.5
81	RHR PMP 1B FAN B TER	391.4	480.0	81.5
82	RHR PMP 1B FAN C TER	391.4	480.0	81.5
83	RHR PMP 1B FAN D TER	391.2	480.0	81.5
84	CONT RM AHU TERM	426.7	480.0	89.3
85	CONT RM AFU HTR TERM	426.7	480.0	89.3
86	CONT RM STDBY A/C TE	426.7	480.0	89.3
87	CONT RM BSTR FAN A T	426.7	480.0	89.3
88	CONT RM BSTR FAN B T	426.7	480.0	89.3
93	480V MCC 10/19-5	429.5	480.0	89.5
109	10 DGCWP DUMMY BUS	417.1	480.0	86.9

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Proj. No. 8913-67

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE-S3A.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 572

Equip. No. / Load Name ... 1/2-9400-104 CONRL RM AFU BSTR FAN A
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM BSTR FAN A T
Motor Rated Volts/..... 460.0
Rated hp, kW, or kVA 7.5 *** Load Brake Power ***
Units (hp, kW, or kVA) HP Cond 1 : .0 HP
Load Type (I, S, G or R) ... I Cond 2 : .0 HP
Rated Efficiency (%) 80.0 Cond 3 : .0 HP
Rated Power Factor (%) ... 85.0 Cond 4 : .0 HP
Locked Rotor Current (%) . 625. Cond 5 : .0 HP
Starting Power Factor (%) 56.0
Speed (RPM) 1800
S.C. Time Constant (sec) . .0000
Mod or A/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53A.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 574

Equip. No. / Load Name ... 1/2-9400-102 CONTL RM STANDBY A/C
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM STDBY A/C TE
Motor Rated Volts 460.0
Rated hp, kW, or kVA 150.0 *** Load Brake Power ***
Units (hp, kW, or kVA) HP Cond 1 : .0 HP
Load Type (I, S, B or R) ... I Cond 2 : .0 HP
Rated Efficiency (%) 90.0 Cond 3 : .0 HP
Rated Power Factor (%) ... 85.0 Cond 4 : 135.0 HP
Locked Rotor Current (%) . 625. Cond 5 : .0 HP
Starting Power Factor (%) 33.0
Speed (RPM) 1800
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

as

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use

Project No. : 8913-67

Station : QUAD CITIES-FILE:SSA.DAT

Unit No. 1

AC Load Ticket

Record Number = 469

Equip. No. / Load Name ...	ESS SERV UPS PANEL 901-63
Status (E,N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V SWGR 18
Motor Rated Volts/.....	480.0
Rated hp, kW, or kVA	40.0
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	95.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***

Cond 1 :	35.5 KVA
Cond 2 :	35.5 KVA
Cond 3 :	35.5 KVA
Cond 4 :	35.5 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S3A.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 470

Equip. No. / Load Name ... TURB & RX BLDGS LTG #1
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V SMGR 1B
Motor Rated Volts 480.0
Rated hp, kW, or kVA 47.0 *** Load Brake Power ***
Units (hp/kW, or kVA) KW Cond 1 : 36.9 KW
Load Type (I, S, G or R) ... R Cond 2 : 36.9 KW
Rated Efficiency (%) 100.0 Cond 3 : 36.9 KW
Rated Power Factor (%) ... 98.0 Cond 4 : 36.9 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53A.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 477

Equip. No. / Load Name ...	XFMR TO FD 18-1A-1
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 18-1A
Motor Rated Volts/.....	480.0
Rated hp, kW, or kVA	15.0
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	28.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***

Cond 1 :	11.6 KVA
Cond 2 :	11.6 KVA
Cond 3 :	11.6 KVA
Cond 4 :	11.6 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S3A.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 497

Equip. No. / Load Name ... 1-1183 STNDBY LGD CONTRL TK HTR
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name STNDBY TANK HTR TERM
Motor Rated Volts/..... 480.0
Rated hp, kW, or kVA 60.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : 46.7 KW
Load Type (I, S, G or R) ... R Cond 2 : 46.7 KW
Rated Efficiency (%) 100.0 Cond 3 : 46.7 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 46.7 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use

Project No. : 8913-67

Station : QUAD CITIES-FILE:53A.DAT

Unit No. 1

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AC Load Ticket

Record Number = 516

Equip. No. / Load Name ... 125V BATTERY CHGR#1A
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name 125V BTRY CHGR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 39.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 34.8 KVA
Load Type (I, S, G or R) ... R Cond 2 : 34.8 KVA
Rated Efficiency (%) 100.0 Cond 3 : 34.8 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 34.8 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or R/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S3A.DAT

Project No. : 8913-67
Unit No. 1

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AC Load Ticket

Record Number = 518

Equip. No. / Load Name ... 250V BATTERY CHARGER 1/2
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name 250V BTRY CHGR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 93.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 82.0 KVA
Load Type (I, S, G or R) ... R Cond 2 : 82.0 KVA
Rated Efficiency (%) 100.0 Cond 3 : 82.0 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 82.0 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

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Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53A.DAT

Project No. : 8913-67
Unit No. 1

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AC Load Ticket

Record Number = 519

Equip. No. / Load Name ... 345KV SWYD RLY HSE XFMR
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V MCC 1B-2
Motor Rated Volts 480.0
Rated hp, kW, or kVA 75.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 57.1 KVA
Load Type (I, S, B or R) ... R Cond 2 : 57.1 KVA
Rated Efficiency (%) 100.0 Cond 3 : 57.1 KVA
Rated Power Factor (%) ... 75.0 Cond 4 : 57.1 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:SA.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 576

Equip. No. / Load Name ... 120/200 XFMR
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V MCC 1B-4
Motor Rated Volts 480.0
Rated hp, kW, or kVA 15.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 10.9 KVA
Load Type (I, S, G or R) ... R Cond 2 : 10.9 KVA
Rated Efficiency (%) 100.0 Cond 3 : 10.9 KVA
Rated Power Factor (%) ... 75.0 Cond 4 : 10.9 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53A.DAT

Project No. : 8913-67
Unit No. 1

Calc. No. 8913-67-19481
Rev. 0 Date
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AC Load Ticket

Record Number = 577

Equip. No. / Load Name ... 1/2-9400-101 CONT RM AFU HTR
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM AFU HTR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 12.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : .0 KW
Load Type (I, S, G or R) ... R Cond 2 : .0 KW
Rated Efficiency (%) 100.0 Cond 3 : 8.7 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 8.7 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

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Prepared by: _____

Reviewed by: _____

Approved by: _____

SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 3

Motor Motor

Number Name

575 1/2-9400-100 CONTL RM STNDY AHU

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SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 3

INTERNAL BUS NUMBER	BUS NAME	BUS RUNNING VOLTS	BUS RATED VOLTS	% OF RATED
3	SOURCE 4.16KV SOURCE 3	3845.2	4160.0	92.4
14	4KV SMGR 13-1	3845.0	4160.0	92.4
27	HIGH SIDE OF XFMR 18	3843.8	4160.0	92.4
28	480V SMGR 18	425.5	480.0	88.6
56	480V MCC 18-1A	422.4	480.0	88.0
57	480V MCC 18-1B	423.6	480.0	88.2
58	480V MCC 18-2	419.0	480.0	87.3
59	480V MCC 18-3	423.1	480.0	88.2
60	480V MCC 18-4	409.1	480.0	85.2
61	DGCWP 1/2 TERM	411.7	480.0	85.8
62	STNDY TANK/HTR TERM	413.1	480.0	86.1
63	ESS SYS JD/PMP TERM	419.3	480.0	87.4
64	SBLC PMP 1A TERM	422.4	480.0	88.0
65	H2/O2 PMP TERM	420.3	480.0	87.6
66	RHRS AHU 1A TERM	416.0	480.0	86.7
67	HVAC FAN 1/2 TERM	414.4	480.0	86.3
68	DG OIL XFER PMP TERM	422.4	480.0	88.0
69	CORE SPRY AHU 1A TER	416.4	480.0	86.8
70	AF RHRS AHU TERM	422.4	480.0	88.0
71	DG AIR COMP 1/2B TER	412.7	480.0	86.0
72	RHR PMP 1A FAN A TER	413.4	480.0	86.1
73	RHR PMP 1A FAN B TER	413.4	480.0	86.1
74	RHR PMP 1A FAN C TER	413.5	480.0	86.1
75	RHR PMP 1A FAN D TER	413.5	480.0	86.1
76	125V BTRY CHGR TERM	416.4	480.0	86.7
77	250V BTRY CHGR TERM	416.8	480.0	86.8
78	DGCWP 1/2 FAN A TERM	412.1	480.0	85.9
79	DGCWP 1/2 FAN B TERM	412.1	480.0	85.9
80	RHR PMP 1B FAN A TER	413.2	480.0	86.1
81	RHR PMP 1B FAN B TER	413.3	480.0	86.1
82	RHR PMP 1B FAN C TER	413.3	480.0	86.1
83	RHR PMP 1B FAN D TER	413.2	480.0	86.1
84	CONT RM AHU TERM	401.5	480.0	83.6
85	CONT RM AFU HTR TERM	406.2	480.0	84.6
86	CONT RM STDBY A/C TE	409.1	480.0	85.2
87	CONT RM BSTR FAN A T	409.1	480.0	85.2
88	CONT RM BSTR FAN B T	409.1	480.0	85.2
93	480V MCC 18/19-5	425.5	480.0	88.6
109	18 DGCWP DUMMY BUS	412.9	480.0	86.0

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Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:S38.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 572

Equip. No. / Load Name ... 1/2-9400-104 CONRL RM AFU BSTR FAN A
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM BSTR FAN A T
Motor Rated Volts 460.0
Rated hp, kW, or kVA 7.5 *** Load Brake Power ***
Units (hp, kW, or kVA) HP Cond 1 : .0 HP
Load Type (I, S, G or R) ... I Cond 2 : .0 HP
Rated Efficiency (%) 88.0 Cond 3 : .0 HP
Rated Power Factor (%) ... 85.0 Cond 4 : .0 HP
Locked Rotor Current (%) . 625. Cond 5 : .0 HP
Starting Power Factor (%) 56.0
Speed (RPM) 1800
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 469

Equip. No. / Load Name ...	ESS SERV UPS PANEL 901-63
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V SWGR 18
Motor Rated Volts /	480.0
Rated hp, kW, or kVA	40.0
Units (hp, kW, or kVA)	kVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	95.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	28.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	Yes

*** Load Brake Power ***
Cond 1 : 33.8 KVA
Cond 2 : 33.8 KVA
Cond 3 : 33.8 KVA
Cond 4 : 33.8 KVA
Cond 5 : .0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 470

Equip. No. / Load Name ... TURB & RX BLDGS LTG #1
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V SWGR 18
Motor Rated Volts 480.0
Rated hp, kW, or kVA 47.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : 33.6 KW
Load Type (I, S, G or R) ... R Cond 2 : 33.6 KW
Rated Efficiency (%) 100.0 Cond 3 : 33.6 KW
Rated Power Factor (%) ... 90.0 Cond 4 : 33.6 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 477

Equip. No. / Load Name ... XFMR TO FD 18-1A-1
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 480V MCC 18-1A
Motor Rated Volts 480.0
Rated hp, kW, or kVA 15.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 10.6 KVA
Load Type (I, S, G or R) ... R Cond 2 : 10.6 KVA
Rated Efficiency (%) 100.0 Cond 3 : 10.6 KVA
Rated Power Factor (%) ... 75.0 Cond 4 : 10.6 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

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Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
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Project No. : 8913-67
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AC Load Ticket

Record Number = 497

Equip. No. / Load Name ... 1-1103 STNDBY LQD CONTRL TK HTR
Status (E,M, or M) E (Existing, New, or Modified)
Source Bus Name STNDBY TANK HTR TERM
Motor Rated Volts/..... 480.0
Rated hp, kW, or/kVA 60.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : 42.5 KW
Load Type (I, S, B or R) ... R Cond 2 : 42.5 KW
Rated Efficiency (%) 100.0 Cond 3 : 42.5 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 42.5 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 516

Equip. No. / Load Name ... 125V BATTERY CHGR#1A
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name 125V BTRY CHGR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 39.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 33.2 KVA
Load Type (I, S, G or R) ... R Cond 2 : 33.2 KVA
Rated Efficiency (%) 100.0 Cond 3 : 33.2 KVA
Rated Power Factor (%) ... 95.0 Cond 4 : 33.2 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 518

Equip. No. / Load Name ... 250V BATTERY CHARGER 1/2
Status (E, N, or M) E (Existing, New, or Modified)
Source Bus Name 250V BTRY CHGR TERM
Motor Rated Volts/..... 480.0
Rated hp, kW, or kVA 93.9 *** Load Brake Power ***
Units (hp, kW, or kVA) KVA Cond 1 : 78.1 KVA
Load Type (I, S, B or R) ... R Cond 2 : 78.1 KVA
Rated Efficiency (%) 100.0 Cond 3 : 78.1 KVA
Rated Power Factor (%) ... 95.8 Cond 4 : 78.1 KVA
Locked Rotor Current (%) . 0. Cond 5 : .0 KVA
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) Yes

Routing:

Comments:

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Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
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Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 519

Equip. No. / Load Name ...	345KV SHYD RLY HSE XFMR
Status (E,N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 1B-2
Motor Rated Volts	480.0
Rated hp, kW, or kVA	75.0 *** Load Brake Power ***
Units (hp, kW, or kVA)	KVA Cond 1 : 51.9 KVA
Load Type (I,S,G or R) ...	K Cond 2 : 51.9 KVA
Rated Efficiency (%)	100.0 Cond 3 : 51.9 KVA
Rated Power Factor (%) ...	75.0 Cond 4 : 51.9 KVA
Locked Rotor Current (%) .	0. Cond 5 : 0 KVA
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
Unit No. 1

AC Load Ticket

Record Number = 576

Equip. No. / Load Name ...	120/200 XFMR
Status (E, N, or M)	E (Existing, New, or Modified)
Source Bus Name	480V MCC 1B-4
Motor Rated Volts/.....	480.0
Rated hp, kW, or kVA	15.0
Units (hp, kW, or kVA)	KVA
Load Type (I, S, G or R) ...	R
Rated Efficiency (%)	100.0
Rated Power Factor (%) ...	75.0
Locked Rotor Current (%) .	0.
Starting Power Factor (%)	20.0
Speed (RPM)	0
S.C. Time Constant (sec) .	.0000
Mod or M/D Number	
Cable Number	
System Code	
Safety Related (Y/N)	No

*** Load Brake Power ***

Cond 1 :	8.5 KVA
Cond 2 :	8.5 KVA
Cond 3 :	8.5 KVA
Cond 4 :	8.5 KVA
Cond 5 :	.0 KVA

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

Utility : Sargent & Lundy Internal Use
Station : QUAD CITIES-FILE:53B.DAT

Project No. : 8913-67
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AC Load Ticket

Record Number = 577

Equip. No. / Load Name ... 1/2-9400-101 CONT RM AFU HTR
Status (E,N, or M) E (Existing, New, or Modified)
Source Bus Name CONT RM AFU HTR TERM
Motor Rated Volts 480.0
Rated hp, kW, or kVA 12.0 *** Load Brake Power ***
Units (hp, kW, or kVA) KW Cond 1 : .0 KW
Load Type (I,S,G or R) ... R Cond 2 : .0 KW
Rated Efficiency (%) 100.0 Cond 3 : 6.8 KW
Rated Power Factor (%) ... 100.0 Cond 4 : 6.8 KW
Locked Rotor Current (%) . 0. Cond 5 : .0 KW
Starting Power Factor (%) 20.0
Speed (RPM) 0
S.C. Time Constant (sec) . .0000
Mod or M/D Number
Cable Number
System Code
Safety Related (Y/N) No

Routing:

Comments:

Prepared by: _____

Reviewed by: _____

Approved by: _____

SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 CONT : 3

Motor Motor

Number Name

574 1/2-9400-102 CONTR RM STANDBY A/C

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SARGENT & LUNDY ELMS-AC ** MOTOR START VOLTAGE SUMMARY ** SOURCE : 3 COND : 3

INTERNAL BUS NUMBER	BUS NAME	BUS RUNNING VOLTS	BUS RATED VOLTS	% OF RATED
3	SOURCE 4.16KV SOURCE 3	3845.3	4160.0	92.4
14	4KV SMGR 13-1	3845.0	4160.0	92.4
27	HIGH SIDE OF XFMR 18	3843.3	4160.0	92.4
28	480V SMGR 18	485.8	480.0	84.6
56	480V MCC 18-1A	482.7	480.0	83.9
57	480V MCC 18-1B	484.0	480.0	84.2
58	480V MCC 18-2	399.3	480.0	83.2
59	480V MCC 18-3	483.4	480.0	84.0
60	480V MCC 18-4	361.8	480.0	75.4
61	DSCMP 1/2 TERM	391.4	480.0	81.5
62	STNDBY TANK HTR TERM	394.1	480.0	82.1
63	ESS SYS JO PMP TERM	399.4	480.0	83.2
64	SBLC PMP 1A TERM	482.7	480.0	83.9
65	R2/O2 PMP TERM	480.5	480.0	83.4
66	WHS AHU 1A TERM	396.0	480.0	82.5
67	HVAC FAN 1/2 TERM	394.3	480.0	82.1
68	DG OIL XFER PMP TERM	482.7	480.0	83.9
69	CORE SPRY AHU 1A TER	396.4	480.0	82.6
70	AF RHRS AHU TERM	482.7	480.0	83.9
71	DG AIR COMP 1/2B TER	392.5	480.0	81.8
72	RHR PMP 1A FAN A TER	393.4	480.0	82.0
73	RHR PMP 1A FAN B TER	393.5	480.0	82.0
74	RHR PMP 1A FAN C TER	393.5	480.0	82.0
75	RHR PMP 1A FAN D TER	393.5	480.0	82.0
76	125V BTRY CHGR TERM	396.7	480.0	82.6
77	250V BTRY CHGR TERM	397.1	480.0	82.7
78	DSCMP 1/2 FAN A TERM	391.8	480.0	81.6
79	DSCMP 1/2 FAN B TERM	391.8	480.0	81.6
80	RHR PMP 1B FAN A TER	393.3	480.0	81.9
81	RHR PMP 1B FAN B TER	393.3	480.0	81.9
82	RHR PMP 1B FAN C TER	393.3	480.0	81.9
83	RHR PMP 1B FAN D TER	393.3	480.0	81.9
84	CONT RM AHU TERM	358.7	480.0	74.7
85	CONT RM AFU HTR TERM	359.3	480.0	74.9
86	CONT RM STDBY A/C TE	358.4	480.0	74.7
87	CONT RM BSTR FAN A T	361.8	480.0	75.4
88	CONT RM BSTR FAN B T	361.8	480.0	75.4
93	480V MCC 18/19-5	485.8	480.0	84.6
109	18 DSCMP DUMMY BUS	392.7	480.0	81.8

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Rev. 0 Date 1095

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SARGENT & LUNDY
ENGINEERS

Calc. For Quad Cities 1/1 Safety-related Continuous

Load Running/Starting Voltages

X Safety-Related

Non-Safety-Related

Calc. No. 8913-67-19-1

Rev. 0 Date

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Client	Commonwealth Edison Company
Project	Quad Cities Unit 1
Proj. No. 8913-67	Equip. No.

Prepared by	Date
Reviewed by	Date
Approved by	Date

APPENDIX C

ATTACHED REFERENCES

SARGENT & LUNDY

ENGINEERS

DESIGN INFORMATION TRANSMITTAL

Rev. 0 Date
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Proj. No. 8913-67☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. QC-EPED-0497-01

CLIENT CECO

Page 1 of 16

STATION QUAD CITIES UNIT(S) 1/I

To W BLOETHE - 21

PROJECT NO(S) 8913-67

SUBJECT QUAD CITIES UNIT 1, DIV I LOAD TABLES FOR
SWITCHGEAR 18 AND MCC'S

MODIFICATION OR DESIGN CHANGE NUMBER(S)

K. YIP

EPED

K. Yip

4-1-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

THIS INFORMATION IS APPROVED FOR USE

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE
(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

ENCLOSED ARE THE LOAD TABLES SIGNED BY CECO. PLEASE
USE THESE FOR YOUR BUS VOLTAGE CALC.ALSO ENCLOSED IS M. TUCKER'S (CECO) 3-23-92 LETTER ON
LOAD SHED MODIFICATIONS. PLEASE REVISE THE LOAD INPUTS
FROM THE TABLES TO INCORPORATE THE UNIT 1, DIVISION I
LOAD SHED MODIFICATIONS.NOTE: MCC 18/19-5 is on DIT-QC-EPED-0489-01
Pg 13/16

SOURCE OF INFORMATION

Calc. no. _____ Rev. and/or date _____ Report no. _____ Rev. and/or date _____

Other CECO CHRON 182875 (3-23-92), 182866 (3-21-92)

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RLS-92-073

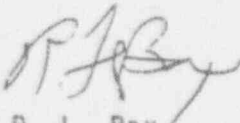
March 25 1992

TO: M. L. Reed
E/I & C Design Superintendent

SUBJECT: QUAD CITIES REVIEW OF LOAD TABLES AND ASSUMPTIONS
(Reference CHRON #182866)

The Load Tables and Assumptions provided in CHRON #182866 have been reviewed by Quad Cities Operating and Technical Staff personnel. Minor corrections to the Load Tables are noted on the affected pages.

If you have any questions or require any additional information please contact J. Wethington at Quad Cities Station on extension 2190.



R. L. Bax
Station Manager
Quad Cities Station

RLB/JW/rjb

DIT No:	GC-EPED-0497-01
PROJECT No:	8913-67
PAGE	2 OF 16

In Reply, Refer to

CHRON # 182866 ✓

Subject: Load Tables and Assumptions
Degraded Voltage Analysis
Quad Cities Station

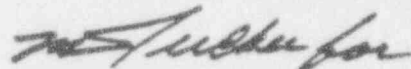
Mr. F.L. Sax

Calculations are in progress under the direction of the E/I&C group of NED for the degraded voltage analysis. A new analysis is required by the recent EDSFI NRC inspection. This analysis requires a determination of the actual worst case loading conditions of the 480 Volt Switchgear and Motor Control Centers for Quad Cities Station. To assist in this effort, Quad Cities personnel with operating experience have been providing input to the load tabulations.

The load tables have been revised to incorporate comments from Quad Cities, provide better references and to incorporate "lessons learned" from the recently completed Dresden degraded voltage analysis. The revised tables and assumptions are attached.

The degraded voltage analysis must be completed for Unit 2 prior to restart. To support this effort, it is requested that the load tables be reviewed and signed by March 25, 1992.

Please call Mike Tucker on extension 7648 at Downers Grove if you have any questions related to the load tables or to the degraded voltage analysis.



M.L. Reed

E/I&C Design Superintendent

quad loads\QCLTCVR.DOC

cc: J.W. Wethington H.L. Massin (w/o att.)
M.L. Reed M.F. Pietraszewski (w/o att.)
D.C. Bucknell C.H. Norton
D.V. Lubbe R.E. Charneski
M.S. Tucker R.M. Schiavoni (S&L)
NEDCC

DIT No: RC-EPED-0497-01
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LOAD ASSUMPTIONS FOR
DEGRADED VOLTAGE ANALYSIS
QUAD CITIES STATION

1. Load data, such as motor horsepower, power factor and efficiency, is taken from the preliminary ELMS input data sheets with the exception of the PCP battery chargers (125 and 250 Volt Battery Chargers). The value given in the vendor manual is used. Although the ELMS run is preliminary, the load data is assumed to be correct.
2. The voltage drop between unit substation transformers and the 480 Volt switchgear has been neglected. The secondary of this transformer is directly connected to an extension of the switchgear bus bar. The impedance of this bus section is insignificant in comparison with the cable and transformer impedance.
3. The load conditions are as shown in Appendix A. This information was supplied by Quad Cities Station personnel having reactor operating experience.
4. Motor operated valve (MOV) currents are neglected for running conditions. The operation of the MOVs may cause a temporary (less than one minute) dip in voltage at the motor terminals to below 90% of rated voltage. This may result in heating of the motor windings. The short duration of this dip is unlikely to cause sudden failure of the motor. Heat rise is a cumulative effect which is dependent on the insulation class and service factor of the motor. It is further assumed that the modest heat rise from this voltage dip from MOV operation causes a negligible reduction in motor life.

Under starting conditions for the Diesel Generator Cooling Water Pump, there are three valves which change state concurrent with the LOCA signal: the recirc. pump discharge valve (MOV 202-5A or 202-5B) and the LPCI Inboard PCI valve (MOV 1001-28A or 1001-28B). These two valves operate on a reactor pressure permissive of 900 psia signal (LPCI loop select logic), which may occur within a very brief time of the LOCA signal (2.5 pounds drywell pressure); therefore, the current from these MOVs is included in the starting case. In general, other MOV motors do not start to operate for the large break LOCA until several seconds into the event, allowing the starting currents to decay to running current levels. For large break conditions, the MOVs of injection valves (LPCI and core spray) do not start to operate for approximately 35 seconds after the ECCS initiation signal. This is from an interlock on reactor pressure (350 psia).

5. The operation of the drywell coolers will be neglected for the running voltage analysis. The operation of the drywell coolers will be included in the starting voltage analysis.
The Quad-Cities Emergency Operating Procedures instruct the operator to initiate drywell sprays at a containment pressure of greater than 9 psia. Prior to the initiation of drywell sprays the drywell coolers are tripped. It is estimated that, for large break LOCA, drywell sprays will be initiated within 2 minutes of the ECCS initiation.

The operation of the drywell coolers may cause a temporary dip in voltage at the motor terminals to below 90% of rated voltage. This may result in heating of the motor windings. The short duration of this dip is unlikely to cause sudden failure of the motor. Heat rise is a cumulative effect which is dependent on the insulation class and service factor of the motor. The short duration of this voltage dip is assumed to have a negligible reduction in motor life. *Must verify this assumption for a small break LOCA, or design a plant modification to trip the drywell coolers on high drywell pressure / low-low reactor water level logic.*
6. The voltage dip from loads neglected under the previous assumptions will not cause the critical motor load under study to stall. Verification of this assumption will require a review of the motor torque-speed characteristics with the pump load. Any available pump characteristics will need to be retrieved and evaluated when specific pumps are identified.
7. The neglected voltage dips will not cause the overload device to trip from the increased current. The setting of the overload must be reviewed to justify this assumption.
8. Other intermittent loads, such as sump pumps, drain tank pumps, and area cooling units, have an assumed duty cycle of 30%. The number of intermittent loads varies for each load case and condition. 30% of the intermittent loads (rounded up to the nearest whole number) are considered to be on. The largest loads are considered for conservatism. For the winter load case, all area cooling units are assumed off and all heaters are assumed on (not intermittent). For the summer case, all area cooling units are considered on continuously.
9. LOCA causes normal reactor SCRAM (no ATWS considered). Therefore, Standby Liquid Control System is not actuated and load on Reactor Protection MG set drops from value given in BOP ELMS to 75% of value shown (22 BHP X 75%=16.5 BHP) *Must verify this assumption.*
10. EDG Starting Air Compressor is assumed off under the starting voltage condition and on under the running voltage condition.

11. EDG Vent fan starts when EDG is at 800 rpm. The EDG Cooling Water Pump starts from Relay SDR, which in turn is initiated from the fast start relay (FSR). It is assumed that there is approximately six seconds between pump and fan start. The pump starting current will have decayed to a value close to the running current by the start of the vent fan. Therefore, the vent fan is considered on only for the running condition.
12. The ACAD Air Compressor is assumed off. This is used to force air into the containment for dilution of hydrogen. Significant amounts of hydrogen are not expected until very late in the event, when many of the other motors would be secured. *Must verify this assumption.*
13. EDG Oil Transfer pump is assumed off for starting condition and on for running condition.
14. The resistance of the overload heaters has been neglected. The value of this resistance is small compared to the cable impedance. The critical loads appear to be larger motors; for smaller loads (less than 5 HP) this assumption would require verification. However, for the larger motors, the overall impedance is bounded by the accuracy of impedance of the cable based on the accuracy of the cable length. Therefore, neglecting the heater resistance has a negligible impact on calculational accuracy.
15. The internal impedance of switchgear 19 and the MCC's is negligible compared to the impedance of the cables and transformer 19.
16. Motors are assumed to be constant KVA loads over the voltage range of interest, as is the UPS Panel 902-63. All motors on switchgear 19 and associated MCC's are three phase induction motors.
17. All other loads are assumed to be constant impedance loads.
18. The voltage rating of the Control Room Standby HVAC motors is 460 V per NUS (letter in file). All other voltage ratings taken from ELMS Input Data sheets.
19. To obtain values for total current, a terminal voltage of 414V is used for motors (90% of 460) and 432V for non-motor loads (90% of 480) independent of actual equipment rated voltage.

20. Under extremely degraded voltage conditions (less than 90% of rated voltage), heaters are assumed to cycle on more often or remain on for longer periods. Low voltage levels will not damage the heaters; rather, the heater will simply not provide as much heat. The reduced heat output is assumed to be sufficient for the intended purpose. The exception to this is the Control Room Standby HVAC (Train B) Air Filter Unit Heater. This heater requires a minimum of 438 Volts to provide the technical specification requirement on filter efficiency. *Must verify this assumption.*
21. The output voltage of the battery chargers will drop when less than 90% of rated input voltage is available. This will result in a "Battery Low Voltage" alarm before the battery discharges to a point where there is insufficient energy available from the battery to supply the load profile.

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Preparer: *Stefan* Concurrency: *CK* Date: *3-23-92* Concurrence: *DCB 5-24-92* Date:

Load Center: SWGR 18

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Sldby HVAC	Post LOCA Steady State	Remarks	SR or NSR
S&L	DG CLG WTR PMP 1/2	1/2-3003	ON	ON	ON	ON		SR
46.3	FUEL POOL CLG WTR PMP 1A	1-1902A	TRIP	ON	ON	ON	TRIP ON HIGH RAD OR GROUP 1	NSR
S&L	RX BLDG EXH FAN 1A	1-5704A	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 1	NSR
S&L	RX BLDG SPLY FAN 1B	1-5703B	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 1	NSR
S&L	RX BLDG SPLY FAN 1C	1-5703C	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 1	NSR
46.7	E TURB BLDG SPLY FAN 1A	1-5702A	ON	ON	ON	ON		NSR
46.5	RX BLDG CLG WTR PMP 1A	1-3701A	ON	ON	ON	ON		NSR
S&L	ESS SERV UPS PANEL 901-03		ON	ON	ON	ON		NSR
S&L	TURB & RX BLDGS LTG #1		ON	ON	ON	ON		NSR
	INST AIR COMPR 1/2	1/2-4709	ON	ON	ON	ON	ASSUMPTION 8	NSR
	480V MCC 18-1A		ON	ON	ON	ON		SR
	480V MCC 18-1B		ON	ON	ON	ON		SR
	480V MCC 18-2		ON	ON	ON	ON		SR
	480V MCC 18-3		ON	ON	ON	ON		SR
	480V MCC 18-4		ON	ON	ON	ON		SR
S&L	RX BLDG 480V MCC 18-1A		ON	ON	ON	ON		SP
			ON	ON	ON	ON		SR

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 ENCLOSURE No: 8913-67
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Appendix A - Load Tables (Pre-Mods)
Station Load Cities Units: 1

Preparer: *[Signature]* Concurrence: *[Signature]* Date: 3-13-92 Concurrence: *[Signature]* Date: *[Signature]*

Load Center: MCC 18-1A

Comments By	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
	STANDBY LIQUID CONT PMP 1A	1-1102A	OFF	OFF	OFF	OFF		SR
	RHRS EMERG AHU 1A	1-5746A	OFF	ON	ON	ON	THERMOSTAT	SR
	DG RM HVAC SPLY FAN 1/2	1/2-5727	OFF	ON	ON	ON	START @ 800 RPM	SR
	CORES PRAY EMERG AHU 1A	1-5746A	OFF	ON	ON	ON	THERMOSTAT	SR
	RX BLDG EMERG LOGING		OFF	OFF	OFF	OFF		SR
	XFMR TO FD 18-1A-1		ON	ON	ON	ON		SR
S&L	DRYWELL CLG BLOWER 1A	1-5788A	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	SR
S&L	POST LOCA H2 & O2 MCH PMP 1A	2253-81A	OFF	ON	ON	ON	MANUAL START AFTER LOCA	SR
	ALT FD RHRS EMERG AHU 2A	2-5746A	OFF	OFF	OFF	OFF		SR
	DIESEL OIL XFER PMP 1/2	1/2-5203	OFF	OFF	OFF	ON	WILL NOT REACH LOW LEVEL UNTIL LONG INTO EVENT	SR
S&L	CORES PRAY PMP 1A SUCT VLV	1-1402-3A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	CORE SPRAY INBOARD ISOL VLV	1-1402-25A	OFF	OFF	OFF	OFF	STARTS AT 325 PSI ASSUMED NON-COINCIDENT WITH VALVES STARTING @ 900 PSI	SR
	CORE SPRAY OUTBOARD ISO VLV	1-1402-24A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS HEAT EXCH NORM INL VLV	1-1001-4A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS HEAT EXCH REV INL VLV	1-1001-188A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	CORE SPRAY TEST BYPASS VLV	1-1402-4A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS HEAT EXCH NORM OUT VLV	1-1001-185A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS HEAT EXCH REV OUTLET	1-1001-187A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR CLEANUP SYS RECIRC	1-1201-2	START	ON	ON	ON	CLOSES ON GROUP III	SR
DVL	DRYWELL&TORUS PURG EXH FAN	1-5708A	OFF	OFF	OFF	OFF		NSR
	DIESEL START AIR COMP 1/2B	1/2-5209B	OFF	ON	ON	ON	ASSUMPTION 8	SR
	MAIN STM LINE DRN VLV 1A	1-220-1	OFF	OFF	OFF	OFF		SR
	ESSENTIAL FILL SYS JOCK PMP		ON	ON	ON	ON		SR
S&L	MAIN STEAM LINE COMB. DRAIN VLV	1-220-4	OFF	OFF	OFF	OFF		NSR
S&L	MAIN STEAM LINE DRAIN VLV 1A	1-220-80A	OFF	OFF	OFF	OFF		NSR
S&L	CRD HYDR. SYS PRESS CONTROL VLV 1A	1-902-A	OFF	OFF	OFF	OFF		NSR
S&L	MAIN STEAM LINE DR. VLV 1D	1-220-90C	OFF	OFF	OFF	OFF		NSR
S&L	MAIN STEAM LINE DR. VLV 1B	1-220-90B	OFF	OFF	OFF	OFF		NSR
S&L	MAIN STEAM LINE DR. VLV 1D	1-220-90D	OFF	OFF	OFF	OFF		NSR
S&L	MAIN STEAM LINE DRAIN COND. VLV 1G	1-220-3	OFF	OFF	OFF	OFF		NSR

189901

Preparer: Rey S. Soto Concurrence: (Signature) Date: 3-23-92 Date: 3-24-92

Lead Center: MCC 18-1B

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By S&L	DAYWELL CLG BLOWER 1B	1-5788B	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY TRIPS ON GROUP B ISOLATION OF SECTION	NSR
DVA/S&L	DAYWELL TQRT'S OFF PRESS COMP 1A	1-5740-1A	TRIP	OFF	OFF	OFF	ASSUMPTION 8	NSR
DVL	STDBY LOO CONTRL TK HTR	1-1103	ON	ON	ON	ON	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	SR
DVL	DAYWELL CLG BLOWER 1F	1-5788F	ON	OFF	OFF	OFF	4 OF 8 COULD BE ON AT TIME OF RHR SW INITIATION FIRST 4 ARBITRARILY TAKEN AS ON	NSR
DVL	RHRS CONTAIN SPRAY SHUTOFF	1-1001-26A	OFF	ON	OFF	OFF	AS ABOVE	SR
DVL	RHRS BACKUP CONTAIN SPRAY	1-1001-23A	OFF	ON	OFF	OFF	AS ABOVE	SR
DVL	RHRS MAIN SHUTOFF SUPPRESS	1-1001-34A	OFF	ON	OFF	OFF	AS ABOVE	SR
DVL	RHRS SUPP CHAMBER DUMPLINE	1-1001-36A	OFF	ON	OFF	OFF	AS ABOVE	SR
DVL	RHRS SUPP CHAMBER SPRAY HDR	1-1001-37A	OFF	OFF	OFF	OFF	4 OF 8 COULD BE ON AT TIME OF RHR SW INITIATION LAST 4 ARBITRARILY TAKEN AS OFF	SR
DVL	RHRS COOLANT PMP CROSS HDR	1-1001-19	OFF	OFF	OFF	OFF	AS ABOVE	SR
DVL	RHRS CNMT CLNT HK DISCH VLV	1-1001-5A	OFF	OFF	OFF	OFF	AS ABOVE	SR
DVL	RHRS HEAT EXCH R100 3A BYP	1-1001-16A	OFF	OFF	OFF	OFF	AS ABOVE	SR
DVL	RHRS SHUTOFF INBD VLV	1-1001-50	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
DVL	RHRS COOLANT 1002A PMP SUCT	1-1001-7A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
DVL	RHRS COOLANT 1002B PMP SUCT	1-1001-7B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
DVL	RHRS SHUTDOWN COOLANT VLV	1-1001-43A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
DVL	RHRS SHUTDOWN COOLANT VLV	1-1001-43B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR

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Appendix A - Load Tables (Pre-Mode)

Station 12 Load Chiles Units: 1

Preparer: *[Signature]*Concurrence: *[Signature]*

Date: 3-23-92

Concurrence: *[Signature]* 3-24-92

Date:

Load Center: MCC 18-2

Comments By	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Sidby HVAC	Post LOCA Steady State	Remarks	SR or NSR
	RECIRC MG SET VENT FAN 1B	1-5701B	ON <i>[initials]</i>	ON <i>[initials]</i>	ON <i>[initials]</i>	ON <i>[initials]</i>		NSR
S&L	K ¹ BY H ₂ SEAL OIL PMP		ON	ON	ON	ON		NSR
	FX PROT SYS MG SET 1A		ON	ON	ON	ON		NSR
	H ₂ SEAL OIL VACUUM PMP	1-5616	ON	ON	ON	ON		NSR
	125V BATTERY CHGR# 1A		ON	ON	ON	ON		SR
	120/240VAC XFMR FD		ON	ON	ON	ON		SR
	250V BATTERY CHARGER 1/2		ON	ON	ON	ON		SR
DVL	3.8KV 8WYD RLY HSE XFMR		ON	ON	ON	ON		NSR
	RHR SW PMP 1A CLR FAN A	1-5745A	OFF	START	ON	ON		SR
	RHR SW PMP 1A CLR FAN B	1-5745A	OFF	START	ON	ON		SR
	RHR SW PMP 1A CLR FAN C	1-5745A	OFF	START	ON	ON		SR
	RHR SW PMP 1A CLR FAN D	1-5745A	OFF	START	ON	ON		SR
S&L	DG 1/2 CLG WTR PMP CLG FANA	1/2-5749A	START	ON	ON	ON	STARTS ON DGGWP START	SR
S&L	DG 1/2 CLG WTR PMP CLG FANB	1/2-5749B	START	ON	ON	ON	STARTS ON DGGWP START	SR
	RHR SW PMP 1B CLR FAN A	1-5745B	OFF	START	ON	ON		SR
	RHR SW PMP 1B CLR FAN B	1-5745B	OFF	START	ON	ON		SR
	RHR SW PMP 1B CLR FAN C	1-5745B	OFF	START	ON	ON		SR
	RHR SW PMP 1B CLR FAN D	1-5745B	OFF	START	ON	ON		SR
DVL/S&L	MAIN STM ISOL VLV UNIT CLR	1-3906 A-F	ON	ON	ON	ON		NSR
DVL	COMPUTER BY A/C UNIT B		ON	ON	ON	ON		NSR

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Appendix A - Load Tables (Pre-Mods)

Station: Quad Cities Units: 1

Preparer: *[Signature]*

Concurrence: *[Signature]*

Date: 3-23-92

Concurrence: *[Signature]*

Date: 3-24-92

Date:

Load Center: MCC 18-3

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By	RX BLDG VENT SYS EVAP CLR	1-5714	OFF	OFF	OFF	OFF	OOS	NSR
S&L	DRYWELL PNEUMATIC COMPRESSOR MTR	1-4708	TRIP	OFF	OFF	OFF	TRIPS ON GROUP II-ISOLATION OF SUCTION	NSR
S&L	RX WTR CLN UP SYS RECIRC PMP 1A	1-1205A	TRIP	OFF	OFF	OFF	TRIPS ON GROUP II	NSR
DVL	PRI CONTMT PARTCTL SMPL PMP	1-8841-9	TRIP	OFF	OFF	OFF	ASS. GROUP II	NSR
DVL	RX DRYWELL EQUIP DRN SMPPMP	1-2001-245A	TRIP	OFF	OFF	OFF	ASS. TRIPS ON GROUP II	NSR
DVL	RX DRYWELL EQUIP DRN SMPPMP	1-2001-245B	TRIP	OFF	OFF	OFF	ASS. TRIPS ON GROUP II	NSR
DVL	RX DRYWELL FLR DRN SMP PMP	1-2001-241A	TRIP	OFF	OFF	OFF	ASS. TRIPS ON GROUP II	NSR
DVL	RX DRYWELL FLR DRN SMP PMP	1-2001-241B	TRIP	OFF	OFF	OFF	ASS. TRIPS ON GROUP II	NSR
	RX WTR CLNUP SYS PCT PMP	1-1279-7	OFF	OFF	OFF	OFF	ASSUMPTION 8	NSR
	RX WTR CLNUP PMP	1-2001-265	TRIP	OFF	OFF	OFF		NSR
S&L	RX WTR CLNUP FLTR HOLDING P. 1A	1-1279-2A	OFF	OFF	ON	ON	START ON LO FLOW AFTER GROUP II	NSR
	RX WTR CLNUP SYS PCT TK AGT	1-1279-8	OFF	OFF	OFF	OFF		NSR
	RX FD PMP VENT FAN 1A	1-5707A	ON	ON	ON	ON		NSR
DVL	RX BLDG EQUIP DRN TNK PMP	1-2001-248	TRIP	OFF	OFF	OFF	ASS. GROUP II	NSR
	RX BLDG CONDST RTN TO DTR1A	1-5782A	ON	ON	ON	ON		NSR
	RX BLDG CONDST RTN TO DTR1B	1-5782B	ON	ON	ON	ON		NSR
DVL	RX BLDG FLR DRN SMP PMP 1A	1-2001-242A	OFF	OFF	OFF	OFF	ASSUMPTION 8 ON GR 11	NSR
DVL	RX BLDG FLR DRN SMP PMP 1B	1-2001-242B	OFF	OFF	OFF	OFF	ASSUMPTION 8 ON GR 11	NSR
	RB DW EQUIP ACCESS DOOR 1/2		OFF	OFF	OFF	OFF	REFUEL ONLY	NSR
	120/208V FEED TO 18-3-1		ON	ON	ON	ON		SR
	RX BLDG CRANE 1/2		OFF	OFF	OFF	OFF		NSR
DVL	RX BLDG ELEVATOR		OFF	OFF	OFF	OFF	ASSUMPTION 8	NSR
DVL	CONTROL ROD DR BRIDGE CRANE		OFF	OFF	OFF	OFF		NSR
DVL	TN-9 AUX SYSTEM		OFF	OFF	OFF	OFF		NSR
DVL	480/240V TRANSF RAIL CASK		OFF	OFF	OFF	OFF		NSR
DVL	PRI CONT RECIRC SMPL CTR PMP	1-8841-20	TRIP	OFF	OFF	OFF		NSR
DVL	RX BLDG RAILWAY CAR PULLER		OFF	OFF	OFF	OFF		NSR
DVL	FUEL POOL SERV PLATF RECEPT		OFF	OFF	OFF	OFF		NSR
DVL	REFUEL PLATFORM RECEPTACLES		OFF	OFF	OFF	OFF		NSR
DVL	RX BLDG JIB CRANE	1/2-5808	OFF	OFF	OFF	OFF		NSR
DVL	ROD REMOVAL RECEPTACLES		OFF	OFF	OFF	OFF		NSR
DVL	RX BLDG SAMPLE PNL TCL		OFF	OFF	OFF	OFF		NSR

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57X540100

Preparer: Dr. [Signature] Concurrence: [Signature] Date: 3-23-92 Concurrence: [Signature] Date: 3-24-92

Load Center: MCC 18-3 (CONT'D)

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Sldby HVAC	Post LOCA Steady State	Remarks	SR or NSR
DVL	DIESEL ENG COOL WTR HTR 1/2		LUBE PUMPS	LUBE PUMPS	LUBE PUMPS	LUBE PUMPS ONLY	TRIPS AT 200 RPM; ALSO LUBE PUMPS WHICH DO NOT TRIP	NSR
DVL	EQUIPT HATCH JIB HOIST		OFF	OFF	OFF	OFF		NSR
DVL	PX VESSEL HEAT-UP EQUIPT	1-1295-2A&2	OFF	OFF	OFF	OFF		NSR
S&L	JB WELDER RECEPTE	JB 180-3	OFF	OFF	OFF	OFF		NSR
S&L	JB WELDER RECEPTE	JB 180-4	OFF	OFF	OFF	OFF		NSR
S&L	JB WELDER RECEPTE	JB 180-5	OFF	OFF	OFF	OFF		NSR
S&L	JB WELDER RECEPTE	JB 180-6	OFF	OFF	OFF	OFF		NSR
S&L	FLUE EGGS RECEPTE	JB 180-28	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-33	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-34	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-35	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-36	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-37	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-38	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-39	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-40	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-41	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-42	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-43	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-44	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-45	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-46	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-47	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-48	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-49	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-50	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-51	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-52	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-53	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-54	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-55	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-56	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-57	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-58	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-59	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-60	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-61	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-62	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-63	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-64	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-65	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-66	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-67	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-68	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-69	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-70	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-71	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-72	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-73	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-74	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-75	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-76	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-77	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-78	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-79	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-80	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-81	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-82	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-83	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-84	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-85	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-86	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-87	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-88	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-89	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-90	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-91	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-92	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-93	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-94	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-95	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-96	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-97	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-98	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-99	OFF	OFF	OFF	OFF		NSR
S&L	PX WTR CLER HTR 1/2 PHASE	180-100	OFF	OFF	OFF	OFF		NSR

Appendix A - Load Tables (Pre-Mode)
Station: Quad Cities Units: 1

Preparer: JS Concurrence: (11) Date: 3-23-92 Concurrence: NB 3-24-92 Date:

Load Center: MCC 18-4

Comments
By

Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Sldby HVAC	Post LOCA Steady State	Remarks	SR or NSR
CONFL RM AFU BSTR FAN A	1/2-9400-104	OFF	OFF	START	ON		SR
CONT RM AFU BSTR FAN B	1/2-9400-104	OFF	OFF	OFF	ON		SR
CONTL RM STANDBY A/C	1/2-9400-102	OFF	OFF	START	ON		SR
CONTL RM STNDBY AHU	1/2-9400-100	OFF	OFF	START	ON		SR
120/208 XFMR		ON	ON	ON	ON		SR
CONT RM AFU HTR	1/2-9400-101	OFF	OFF	ON	ON		SR

OFF

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CHRON # 182875

Mr. C.A. Moerke
Site Engineering Supervisor
Quad Cities

Subject: Load Shed Modifications
Degraded Voltage Analysis
Station 4, Quad Cities

Dear Mr. Moerke:

E/I&C has performed additional degraded voltage analyses at the request of Quad Cities Station personnel. This was in an effort to avoid tripping the Drywell Cooling blowers and the unit RBCCW Pumps. This analysis has concluded that the trip of RBCCW is essential for resolution of the degraded voltage issue.

Quad Cities has recommended tripping the Fuel Pool Cooling Pumps in addition to the loads presently included in the load shed modification. Fuel Pool Cooling will not function without RBCCW; therefore, there is little need to retain this function. E/I&C concurs with this recommendation. Tripping the Fuel Pool Cooling Pumps on a LOCA signal will provide additional margin which may offset cable replacements. An evaluation of the need for cable replacements when the Fuel Pool Cooling Pumps are tripped is in progress.

The Fuel Pool Cooling Pumps should be added to the scope of the current load shed modifications and an additional ECN prepared to incorporate this new trip if the additional work scope does not jeopardize unit restart. A revised list of loads to be shed on a LOCA signal is attached.

If you have any questions, please call Mike Tucker on extension 7648 at Downers Grove.

Prepared: M.S. Tucker
M.S. Tucker
Senior Engineer

Date: 3/23/92

Approved: M.L. Reed
M.L. Reed
E/I&C Design Superintendent

Date: 3/23/92

DEGRDEDVLTS\QUAD\FPCOOLPT.DOC

cc: J.W. Wethington D.V. Lubbe
M.F. Pietraszewski M.L. Reed
M.S. Tucker NEDCC

DIT No: QC-EPED-0497-01

PROJECT No: 8913-67

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Quad Cities
Degraded Voltage Analysis

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Load Shed Modifications

The following loads are to be tripped on a LOCA signal
(High Drywell Pressure or Low Low Reactor Water Level, i.e., the same signal that starts the diesel generators)

Drywell Cooler Blowers

Blower 1A, MCC 18-1A ✓	Blower 2A, MCC 28-1A ✓
Blower 1B, MCC 18-1B ✓	Blower 2B, MCC 28-1B ✓
Blower 1C, MCC 19-6 ✓	Blower 2C, MCC 29-6 ✓
Blower 1D, MCC 19-4 ✓	Blower 2D, MCC 29-4 ✓
Blower 1E, MCC 19-3 ✓	Blower 2E, MCC 29-3 ✓
Blower 1F, MCC 18-1B ✓ ✓	Blower 2F, MCC 28-1B ✓
Blower 1G, MCC 19-6 ✓	Blower 2G, MCC 29-6 ✓

RBCCW Pumps

Pump 1A, 480V Switchgear 18 ✓	Pump 2A, 480V Switchgear 28 ✓
Pump 1B, 480V Switchgear 19 ✓	Pump 2B, 480V Switchgear 29 ✓
Pump 1/2C, 480V Switchgear 19 ✓	Pump 1/2C, 480V Switchgear 29 ✓

Recirc MG Set Vent Fans

Fan 1A, MCC 19-2 ✓	Fan 2A, MCC 29-2 ✓
Fan 1B, MCC 18-2 ✓	Fan 2B, MCC 28-2 ✓

Turbine Building Exhaust Fans

Fan 1C, 480V Switchgear 19 ✓	Fan 2C, 480V Switchgear 29 ✓
------------------------------	------------------------------

Turbine Building Supply Fans

Fan 1A, 480V Switchgear 18 ✓	Fan 2A, 480V Switchgear 28 ✓
Fan 1B, 480V Switchgear 19 ✓	Fan 2B, 480V Switchgear 29 ✓

Fuel Pool Cooling Pumps

Pump 1A, 480V Switchgear 18 ✓ ✓	Pump 2A, 480V Switchgear 28 ✓
Pump 1B, 480V Switchgear 19 ✓	Pump 2B, 480V Switchgear 29 ✓

DIT No: QC-EPED-0497-01
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☒ SAFETY-RELATED☐ NON-SAFETY-RELATEDDIT No. QC-EPED-0469-00CLIENT CECOPage 1 of 6STATION QUAD CITIES UNIT(S) 1To W BLOETHE - 25PROJECT NO(S) 8913-67SUBJECT POWER CABLES FOR SAFETY-RELATED CONTINUOUS DUTY LOADS, DIV I

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIP x767

EPED

[Signature]1-22-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

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(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

POWER CABLE DATA ARE ENCLOSED FOR VOLTAGE CALCULATIONS.

ALL SUBJECT LOADS WERE COVERED. THE LOADS WERE CHOSEN BY A PRUDENT ANALYSIS OF THE M.E.L.

Calc. No. 8913-67-19-1Rev. 0 DatePage C18 ofProj. No. 8913-67

SOURCE OF INFORMATION

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Rev. and/or date _____ Rev. and/or date _____

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DIT NO. RC-EPED-0469-7
 PROJECT NO. 8913-17
 PG 2 OF 6

QUAD UNIT 1

MCC No.	Compt. No.	Service	Power Cable Data			REF DIT NO. RC-EPED- Remark
			No.	Size	Length Ft.	
SWGR 18	COMPT 124C	D.G. COOLING WTR PMP 1/2	{12394} {77417}	3/c 4/0	344 TOTAL	- 0057
MCC 18-1B	COMPT E3	STANDBY LIQUID CONTROL TANK HEATER	12760	3/c #2	455	
MCC 18-1A	COMPT E3	ESS FILL SYS. JOCKEY PUMP	10751	3/c #10	384	
MCC 18-1A	COMPT F4	SBLC PUMP 1A (1-1102A)	12420	3/c #2	453	
MCC 18-1A	COMPT H3	480V. FEED H2/O2 MONITOR PNL.	67389	3/c #10	284	
MCC 18-1A	COMPT C3	FEED RHRS EMERGENCY AIR HAND. 1A	11367	3/c #14	289	

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 Rev. 0 Date 89981
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DIT NO. QC-EPED-0-111-111
 PROJECT NO. 2215-1
 PG 3 OF 6

QUAD UNIT 1

MCC No.	Service	Power Cable Data			Remark
		No.	Size	Length FT	
MCC 18-1A COMPT G2	DIESEL 1/2 RM HVAC FEED SUPPLY FAN	{13105} {13106}	3/C #6	236	
MCC 18-1A COMPT F2	CORE SPRAY EMERG. AIR FEED HANDLING UNIT 1A	12723	3/C #14	406	
MCC 18-1A COMPT E1	FEED DIESEL OIL TRANSFER PUMP 1/2	12711	3/C #14	279	
MCC 18-1A COMPT C1	EMERGENCY COOLER #2A	67686	3/C #10	462	
MCC 18-1A COMPT J4	DIESEL STARTING AIR COMP. 1/2 B	12979	3/C #14	260	

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 Rev. Date
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187701

QUAD UNIT 1

MCC No.	Compt. No.	Service	Power Cable Data			REF. DIT NO. 00-EEEL-000-01
			No.	Size	Length Ft.	
MCC 18-2	COMPT F1	RHR SERVICE WTR PUMP 1A COOLER FAN A	18509	3/C #10	548	-0057
MCC 18-2	COMPT F2	RHR SERVICE WTR PUMP 1A COOLER FAN B	18515	3/C #10	545	
MCC 18-2	COMPT F3	RHR SERVICE WTR PUMP 1A COOLER FAN C	18526	3/C #10	541	
MCC 18-2	COMPT F4	RHR SERVICE WTR PUMP 1A COOLER FAN D	18529	3/C #10	541	
MCC 18-2	COMPT F5	DIESEL GEN. 1/2 COOLING WTR PUMP COOLER FAN A	18533	3/C #14	593	
MCC 18-2	COMPT G1	DIESEL GEN 1/2 COOLING WTR PUMP COOLER FAN B	18535	3/C #14	596	

189981

DIT NO. RC-EPED-04011
 PROJECT NO. 8913-01
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QUAD UNIT 1

MCC No.	Compt. No.	Service	Power Cable Data			REF DIT NO. RC-EPED-04011 Remark
			No.	Size	Length FT	
MCC 12-2	COMPT G2	RHR SERVICE WTR PUMP 1B COOLER FAN A	18539	3/C #10	564	
MCC 12-2	COMPT G3	RHR SERVICE WTR PUMP 1B COOLER FAN B	12541	3/C #10	561	
MCC 18-2	COMPT G4	RHR SERVICE WTR PUMP 1B COOLER FAN C	12543	3/C #10	561	
MCC 18-2	COMPT G5	RHR SERVICE WTR PUMP 1B COOLER FAN D	12545	3/C #10	564	
MCC 18-2	COMPT C1	125 V. BATTERY CHARGER 1A	67653	3/C #2	154	
MCC 18-2	COMPT D3	250 V. BATTERY CHARGER 1/2	76939	3/C 4/0	158	

189981

DIT NO. RC-EPED-0462-1
 PROJECT NO. 8913-67
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QUAD UNIT 1

MCC No.	Service	Power Cable Data			REF DIT NO. RC-EIJD Remark
		No.	Size	Length Ft.	
MCC 18-4 COMPT 2D	CONTROL ROOM STANDBY AHU	68701	3/c #6	56	- 0057
MCC 18-4 COMPT 2C	CONTROL ROOM AFU HEATER	68704	3/c #10	102	
MCC 18-4 COMPT 1D	CONTROL ROOM STBY A/C	68705	3/c 4/0	47	
MCC 18-4 COMPT 1C	CONTROL ROOM AFU BOOSTER FAN A	68712	3/c #10	76	
MCC 18-4 COMPT 2B	CONTROL ROOM AFU BOOSTER FAN B	68715	3/c #10	69	

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 Rev. 0 Date 10
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 Proj. No. 8913-67

189981

SARGENT & LUNDY

ENGINEERS

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DIT No. - QC-EPED-0489-01

CLIENT CECOPage 1 of 16STATION QUAD CITIES UNIT(S) 1/IITo W BLOETHE - 21PROJECT NO(S) 8913-69SUBJECT QUAD CITIES UNIT 1 DIV II LOAD TABLES FOR SWITCHGEAR 19 AND MCC'S

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIPEPEDK. Yip / S. K. Laha4-1-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

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ENCLOSED ARE THE LOAD TABLES SIGNED BY CECO. PLEASE USE THESE FOR YOUR BUS VOLTAGE CALC.

ALSO ENCLOSED IS M. TUCKER'S (CECO) 3-23-92 LETTER ON LOAD SHED MODIFICATIONS. PLEASE REVISE THE LOAD INPUTS FROM THE TABLES TO INCORPORATE THE UNIT 1, DIVISION II LOAD SHED MODIFICATIONS.

SOURCE OF INFORMATION

Calc. no. _____ Rev. and/or date _____ Report no. _____

Other CECO CHRON 182875 (3-23-92); 182866 (3-21-92)

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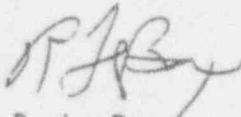
March 25, 1992

TO: M. L. Reed
E/I & C Design Superintendent

SUBJECT: QUAD CITIES REVIEW OF LOAD TABLES AND ASSUMPTIONS
(Reference CHRON #182866)

The Load Tables and Assumptions provided in CHRON #182866 have been reviewed by Quad Cities Operating and Technical Staff personnel. Minor corrections to the Load Tables are noted on the affected pages.

If you have any questions or require any additional information please contact J. Wethington at Quad Cities Station on extension 2190.



R. L. Bax
Station Manager
Quad Cities Station

RLB/JW/rjb

DIT No: <u>QC-EPED-0989-01</u>
PROJECT No: <u>8913-69</u>
PAGE <u>2</u> OF <u>16</u>

In Reply, Refer to

CHRON # 182866

Subject: Load Tables and Assumptions
Degraded Voltage Analysis
Quad Cities Station

Mr. R.L. Bax

Calculations are in progress under the direction of the E/I&C group of NED for the degraded voltage analysis. A new analysis is required by the recent EDSFI NRC inspection. This analysis requires a determination of the actual worst case loading conditions of the 480 Volt Switchgear and Motor Control Centers for Quad Cities Station. To assist in this effort, Quad Cities personnel with operating experience have been providing input to the load tabulations.

The load tables have been revised to incorporate comments from Quad Cities, provide better references and to incorporate "lessons learned" from the recently completed Dresden degraded voltage analysis. The revised tables and assumptions are attached.

The degraded voltage analysis must be completed for Unit 2 prior to restart. To support this effort, it is requested that the load tables be reviewed and signed by March 25, 1992.

Please call Mike Tucker on extension 7648 at Downers Grove if you have any questions related to the load tables or to the degraded voltage analysis.



M.L. Reed
E/I&C Design Superintendent

quad loads\QCLTCVR.DOC

cc: J.W. Wethington H.L. Massin (w/o att.)
M.L. Reed M.F. Pietraszewski (w/o att.)
D.C. Bucknell C.H. Norton
D.V. Lübbe R.E. Charneski
M.S. Tucker R.M. Schiavoni (S&L)
NEDCC



DIT No:	QC-EPED-0488-61
PROJECT No:	8913-69
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LOAD ASSUMPTIONS FOR
DEGRADED VOLTAGE ANALYSIS
QUAD CITIES STATION

1. Load data, such as motor horsepower, power factor and efficiency, is taken from the preliminary ELMS input data sheets with the exception of the PCP battery chargers (125 and 250 Volt Battery Chargers). The value given in the vendor manual is used. Although the ELMS run is preliminary, the load data is assumed to be correct.
2. The voltage drop between unit substation transformers and the 480 Volt switchgear has been neglected. The secondary of this transformer is directly connected to an extension of the switchgear bus bar. The impedance of this bus section is insignificant in comparison with the cable and transformer impedance.
3. The load conditions are as shown in Appendix A. This information was supplied by Quad Cities Station personnel having reactor operating experience.
4. Motor operated valve (MOV) currents are neglected for running conditions. The operation of the MOVs may cause a temporary (less than one minute) dip in voltage at the motor terminals to below 90% of rated voltage. This may result in heating of the motor windings. The short duration of this dip is unlikely to cause sudden failure of the motor. Heat rise is a cumulative effect which is dependent on the insulation class and service factor of the motor. It is further assumed that the modest heat rise from this voltage dip from MOV operation causes a negligible reduction in motor life.

Under starting conditions for the Diesel Generator Cooling Water Pump, there are three valves which change state concurrent with the LOCA signal: the recirc. pump discharge valve (MOV 202-5A or 202-5B) and the LPCI Inboard PCI valve (MOV 1001-28A or 1001-28B). These two valves operate on a reactor pressure permissive of 900 psia signal (LPCI loop select logic), which may occur within a very brief time of the LOCA signal (2.5 pounds drywell pressure); therefore, the current from these MOVs is included in the starting case. In general, other MOV motors do not start to operate for the large break LOCA until several seconds into the event, allowing the starting currents to decay to running current levels. For large break conditions, the MOVs of injection valves (LPCI and core spray) do not start to operate for approximately 35 seconds after the ECCS initiation signal. This is from an interlock on reactor pressure (350 psia).

5. The operation of the drywell coolers will be neglected for the running voltage analysis. The operation of the drywell coolers will be included in the starting voltage analysis.
The Quad Cities Emergency Operating Procedures instruct the operator to initiate drywell sprays at a containment pressure of greater than 9 psia. Prior to the initiation of drywell sprays the drywell coolers are tripped. It is estimated that, for large break LOCA, drywell sprays will be initiated within 2 minutes of the ECCS initiation.
The operation of the drywell coolers may cause a temporary dip in voltage at the motor terminals to below 90% of rated voltage. This may result in heating of the motor windings. The short duration of this dip is unlikely to cause sudden failure of the motor. Heat rise is a cumulative effect which is dependent on the insulation class and service factor of the motor. The short duration of this voltage dip is assumed to have a negligible reduction in motor life. *Must verify this assumption for a small break LOCA, or design a plant modification to trip the drywell coolers on high drywell pressure / low-low reactor water level logic.*
6. The voltage dip from loads neglected under the previous assumptions will not cause the critical motor load under study to stall. Verification of this assumption will require a review of the motor torque-speed characteristics with the pump load. Any available pump characteristics will need to be retrieved and evaluated when specific pumps are identified.
7. The neglected voltage dips will not cause the overload device to trip from the increased current. The setting of the overload must be reviewed to justify this assumption.
8. Other intermittent loads, such as sump pumps, drain tank pumps, and area cooling units, have an assumed duty cycle of 30%. The number of intermittent loads varies for each load case and condition. 30% of the intermittent loads (rounded up to the nearest whole number) are considered to be on. The largest loads are considered for conservatism. For the winter load case, all area cooling units are assumed off and all heaters are assumed on (not intermittent). For the summer case, all area cooling units are considered on continuously.
9. LOCA causes normal reactor SCRAM (no ATWS considered). Therefore, Standby Liquid Control System is not actuated and load on Reactor Protection MG set drops from value given in BOP ELMS to 75% of value shown (22 BHP X 75%=16.5 BHP) *Must verify this assumption.*
10. EDG Starting Air Compressor is assumed off under the starting voltage condition and on under the running voltage condition.

11. EDG Vent fan starts when EDG is at 800 rpm. The EDG Cooling Water Pump starts from Relay SDR, which in turn is initiated from the fast start relay (FSR). It is assumed that there is approximately six seconds between pump and fan start. The pump starting current will have decayed to a value close to the running current by the start of the vent fan. Therefore, the vent fan is considered on only for the running condition.
12. The ACAD Air Compressor is assumed off. This is used to force air into the containment for dilution of hydrogen. Significant amounts of hydrogen are not expected until very late in the event, when many of the other motors would be secured. *Must verify this assumption.* 
13. EDG Oil Transfer pump is assumed off for starting condition and on for running condition.
14. The resistance of the overload heaters has been neglected. The value of this resistance is small compared to the cable impedance. The critical loads appear to be larger motors; for smaller loads (less than 5 HP) this assumption would require verification. However, for the larger motors, the overall impedance is bounded by the accuracy of impedance of the cable based on the accuracy of the cable length. Therefore, neglecting the heater resistance has a negligible impact on calculational accuracy.
15. The internal impedance of switchgear 19 and the MCC's is negligible compared to the impedance of the cables and transformer 19.
16. Motors are assumed to be constant KVA loads over the voltage range of interest, as is the UPS Panel 902-63. All motors on switchgear 19 and associated MCC's are three phase induction motors.
17. All other loads are assumed to be constant impedance loads.
18. The voltage rating of the Control Room Standby HVAC motors is 460 V per NUS (letter in file). All other voltage ratings taken from ELMS Input Data sheets.
19. To obtain values for total current, a terminal voltage of 414V is used for motors (90% of 460) and 432V for non-motor loads (90% of 480) independent of actual equipment rated voltage. 

20. Under extremely degraded voltage conditions (less than 90% of rated voltage), heaters are assumed to cycle on more often or remain on for longer periods. Low voltage levels will not damage the heaters; rather, the heater will simply not provide as much heat. The reduced heat output is assumed to be sufficient for the intended purpose. The exception to this is the Control Room Standby HVAC (Train B) Air Filter Unit Heater. This heater requires a minimum of 438 Volts to provide the technical specification requirement on filter efficiency. *Must verify this assumption.*
21. The output voltage of the battery chargers will drop when less than 90% of rated input voltage is available. This will result in a "Battery Low Voltage" alarm before the battery discharges to a point where there is insufficient energy available from the battery to supply the load profile.

(A)

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PROJECT No: 8913-67

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Preparer: JS Concurrency: JS Date: 3-23-97 Concurrency: JS Date: 3-24-92

Load Center: SWGR 19

Comments	By	Loc d Name	Equipment Number	LOCA Time Zero	PMR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
	S&L	FUEL POOL CLG WTR PMP 1B	1-1902B	ON	ON	ON	ON		NSR
	S&L	RX BLDG CLG WTR PMP 1B	1-3701B	ON	ON	ON	ON		NSR
	S&L	RX BLDG EXH FAN 1B	1-5704B	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 2	NSR
	S&L	RX BLDG EXH FAN 1C	1-5704C	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 2	NSR
	S&L	RX BLDG SPLY FAN 1A	1-5703A	TRIP	OFF	OFF	OFF	TRIP ON HIGH RAD OR GROUP 2	NSR
	S&L	TURB BLDG EXH FAN 1C	1-5705C	ON	ON	ON	ON		NSR
	S&L	RX BLDG LTQING 1B		ON	ON	ON	ON		NSR
		E. TURB BLDG SPLY FAN 1B	1-5702B	ON	ON	ON	ON		NSR
		DG CLG WTR PMP #1	1-3903	START	ON	ON	ON		SR
		RX BLDG CLG PMP 1/2C	1/2-3701C	ON	ON	ON	ON		NSR
		480V MCC 19-1		ON	ON	ON	ON		SR
		480V MCC 19-2		ON	ON	ON	ON		SR
		480V MCC 19-3		ON	ON	ON	ON		SR
		480V MCC 19-4		ON	ON	ON	ON		SR
		480V MCC 18/19-5		ON	ON	ON	ON		SR
		480V MCC 19-6		ON	ON	ON	ON		SR

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Rev. 0 Date 08998
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DIT No: QC-EPED-0489-01
PROJECT No: 8913-69
PAGE 8 OF 16

Appendix A - Load Tables (Pre-Mods)
 Station: Quad Cities Units: 1

Preparer: *[Signature]* Concurrence: *[Signature]*

Date: 3-23-92

Concurrence: DCB 5-24-92

Date:

Comments

By

Load Center: MCC 19-1

S&L

S&L

S&L

S&L

DVL/S&L

DVL

DVL/S&L

S&L

DVL/S&L

S&L

DVL/S&L

S&L

S&L

Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdby HVAC	Post LOCA Steady State	Remarks	SR or NSR
HVAC SPLY FAN#1 NORMAL FEED	1-5727	OFF	ON	ON	ON	START 800 RPM	SR
CORESPRAY EMERG AHU 1B	1-5748B	OFF	ON	ON	ON	THERMOSTAT	SR
ALT FD DG#2 FUEL OIL XFRPMP	2-5203-1	OFF	OFF	OFF	OFF		SR
DG FUEL OIL XFER PMP #1	1-5203-1	OFF	OFF	OFF	ON		SR
120/208V XFMR FD 19-1-1		ON	ON	ON	ON		SR
STNDY LOD CNTRL PMP 1B	1-1102B	OFF	OFF	OFF	OFF		SR
RHR EMERG AHU 1B	1-5748B	OFF	ON	ON	ON	THERMOSTAT	SR
F I WTR CLNUP SYS FLTR HOLDING PMP	1-1279-2B	OFF	ON	ON	ON	START ON LO FLOW AFTER GROUP III	NSR
DRYWELL & TORUS PRG EXH FAN	1-5706-1B	OFF	OFF	OFF	OFF		NSR
HPCI EMERG AHU	1-5747	OFF	ON	ON	ON	THERMOSTAT HIGH TEMP. IN ROOM	SR
RESIN FEED TNK AGITATOR	1-1279-11B	OFF	OFF	OFF	OFF		NSR
HPCI CLG WTR GLN SL CONDPMP	2301-57	OFF	OFF	OFF	OFF		NSR
ALT FD DG RM HVAC SPLY FAN2	2-5727	OFF	OFF	OFF	OFF		SR
RA WTR CLNUP SYS RECIRC PMP 1B	1-1205B	TRIP	OFF	OFF	OFF	TRIPS ON GROUP III	NSR
POST LOCA H2 O2 MON PMP 1B	2352-61B	OFF	ON	ON	ON	MANUAL START AFTER LOCA	SR
ALT FD RHRS EMERG AHU 2B	2-5748B	OFF	OFF	OFF	OFF		SR
RX WTR CLNUP SYS BOILER VLV	1-1201-80	START	OFF	OFF	OFF	CLOSES ON GROUP III	NSR
HPCI TURB STM SUPPLY VLV	1-2301-4	OFF	OFF	OFF	OFF	STROKES @ 100% BETWEEN T-0 & RHR SW INITIATION	SR
RHRS HX REV INLET VLV	1-1001-188B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
CORE SPRAY OTBD ISOL VLV 1B	1-1402-24B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
CORE SPRAY INBD ISOL VLV 1B	1-1402-25B	OFF	OFF	OFF	OFF	STARTS AT 325 PSI. ASSUMED NON-COINCIDENT WITH VALVES STARTING @ 900 PSI	SR
CORE SPRAY TEST BYPASS VLV 1	1-1402-4B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
RHRS HX NORM OUTLET VLV	1-1001-185B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
RHRS HX REVERSE OUTLET VLV	1-1001-187B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
HPCI TANK HEATER		OFF	OFF	OFF	OFF		SR
RHRS HX NORMAL INLET VLV	1-1001-4B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
CORE SPRAY PUMP SUCTION VLV 1A	1-1402-3B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
CLOSED COOLING WTR HEADER ISO. VLV	1-3701	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR

Appendix A - Load Tables (Pre-Mode)

Station: Quad CHes Units: 1

Preparer: *JS* Concurrency: *CH*

Date: *3-23-92*

Concurrency: *DCB 3-24-92*

Date:

Load Center: MCC 19-2

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By	RECIRC MG SET VENT FAN 1A	1-5701	ON	ON	ON	ON		NSR
S&L	RX PROT M-G SET 1B		ON	ON	ON	ON	DROPS LOAD, SEE ASSUMPTION 9	NSR <i>52</i>
	DG STARTING AIR COMPR 1B		OFF	ON	ON	ON	STARTS SOON AFTER LOCA	SR
	250VDC BATTERY CHARGER #1		ON	ON	ON	ON		SR
	DG STARTING AIR COMPR 1A		OFF	ON	ON	ON	STARTS SOON AFTER LOCA	SR
	125VDC BATTERY CHARGER #1		ON	ON	ON	ON		SR
	TURB BLDG EMERG LGTS		OFF	OFF	OFF	OFF		NSR
S&L	ALT FD D31 CLG WTR PMP CLR FANS A & B		OFF	OFF	OFF	OFF		SR
	RHR SW PMP 1C CLR FAN A		OFF	START	ON	ON		SR
	RHR SW PMP 1C CLR FAN B		OFF	START	ON	ON		SR
	RHR SW PMP 1C CLR FAN C		OFF	START	ON	ON		SR
	RHR SW PMP 1C CLR FAN D		OFF	START	ON	ON		SR
S&L	DG1 CLG WTR PMP CLR FAN A		START	ON	ON	ON	STARTS ON D31WGP START	SR
S&L	D31 CLG WTR PMP CLR FAN B		START	ON	ON	ON	STARTS ON D31WGP START	SR
	RHR SW PMP 1D CLR FAN A		OFF	START	ON	ON		SR
	RHR SW PMP 1D CLR FAN B		OFF	START	ON	ON		SR
	RHR SW PMP 1D CLR FAN C		OFF	START	ON	ON		SR
	RHR SW PMP 1D CLR FAN D		OFF	START	ON	ON		SR
	RX FD PUMP VENT FAN 1B	1-5707B	ON	ON	ON	ON		NSR

Preparer: *[Signature]* Concurrency: *[Signature]* Date: 3-24-92 Date: 3-24-92

Load Center: MCC 19-3

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
S&L	TURB BEARING LIFT PMP 1A	1-5020A	OFF	ON	ON	ON		NSR
S&L	TURB BEARING LIFT PMP 1B	1-5020B	OFF	ON	ON	ON		NSR
S&L	TURB BEARING LIFT PMP 1C	1-5020C	OFF	ON	ON	ON		NSR
S&L	TURB BEARING LIFT PMP 1D	1-5020D	OFF	ON	ON	ON		NSR
S&L	TURB BEARING LIFT PMP 1E	1-5020E	OFF	ON	ON	ON		NSR
S&L	TURBINE TURNING GEAR	1-5000	OFF	ON	ON	ON		NSR
S&L	TURB TURNING GEAR OIL PMP	1-5008	OFF	ON	ON	ON		NSR
S&L	DRY WELL OIL BLOWER	1-5788E	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	NSR
S&L	TURBINE TURNING GEAR		OFF	ON	ON	ON		NSR
S&L	PLASTIC MOTOR		OFF	OFF	OFF	OFF		NSR
S&L	TURBINE OIL DENTIN FLGE		OFF	OFF	OFF	OFF		NSR

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Appendix A - Load Tables (Pre-Mode)
Station Quad Cities Units: 1

Preparer: *M. Tucker* Concurrency: *CH* Date: *3-23-92* Concurrency: *DB* *3-24-92* Date:

Load Center: MCC 19-4

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By S&L	DRYWELL CLG BLOWER 1D	1-5788D	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	NSR
S&L	SBGT AIR HTRS	1/2-7503B	START	ON	ON	ON	START ON HI RAD OR GROUP 1	SR
S&L	SBGT FAN	1/2-7506B	START	ON	ON	ON	START ON HI RAD OR GROUP 1	SR
S&L	ACAD AIR COMPR		OFF	OFF	OFF	OFF		SR
S&L	DRYWELL/TOPUS DFF PRESS COMP 1B	1-8740-1B	TRIP	OFF	OFF	OFF	TRIPS ON GROUP 1 ISOLATION OF SUCTION	NSR
DVL/S&L	PX BLDG VENT TO STANDBY GAS	1-7603	OFF	OFF	OFF	OFF	CLOSE ON OTHER UNIT HIGH RAD OR GROUP 1	SR
S&L	SBGT OUTSIDE AIR SUPP DMPR	1/2-7504B	START	OFF	OFF	OFF	START ON HI RAD OR GROUP 1	SR
S&L	SBGT SYS FAN DISCH DAMPER	1/2-7507B	START	OFF	OFF	OFF	START ON HI RAD OR GROUP 1	SR
S&L	SBGT SYS INLET DAMPERS	1/2-7505B	START	OFF	OFF	OFF	START ON HI RAD OR GROUP 1	SR
	RHRS CONTAIN SPRAY ISOL VLV	1-1001-26B	OFF	ON	OFF	OFF	4 OF 8 COULD BE ON AT TIME OF RHR SW INITIATION; FIRST 4 ARBITRARILY TAKEN AS ON	SR
	RHRS BACKUP CONTAIN SPRAY	1-1001-23B	OFF	ON	OFF	OFF	AS ABOVE	SR
	RHRS MN SHUTOFF SUPP VLV 1B	1-1001-34B	OFF	ON	OFF	OFF	AS ABOVE	SR
	RHRS SUPP CHAMBER DUMPLINE	1-1001-36B	OFF	ON	OFF	OFF	AS ABOVE	SR
	RHRS SUPP CHAMBER SPRAY HDR	1-1001-37B	OFF	OFF	OFF	OFF	4 OF 8 COULD BE ON AT TIME OF RHR SW INITIATION; LAST 4 ARBITRARILY TAKEN AS OFF	SR
	RHRS COOLING PMP CROSS 102A	1-1001-19B	OFF	OFF	OFF	OFF	"AS ABOVE"	SR
	RHRS HX R1003B BYPASS VLV 1B	1-1001-16B	OFF	OFF	OFF	OFF	"AS ABOVE"	SR
	RHRS CNMT COOLANT HX VLV 1B	1-1001-5B	OFF	OFF	OFF	OFF	"AS ABOVE"	SR
	RHRS SHUTDOWN COOLING VLV 1	1-1001-43C	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS SHUTDOWN COOLING VLV 1	1-1001-43D	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS COOLANT 1002C PMP SUCT	1-1001-7C	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
	RHRS COOLANT 1002D PMP SUCT	1-1001-7D	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR

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Preparer: *McTigue* Concurrence: *lt*Date: *3-23-92* Concurrence: *DB 3-24-92*

Date:

Load Center: MCC 18/19-5

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By DVL	CONTROL RM RTN AIR FAN 1/2	1/2-5795-30	TRIP	OFF	OFF	OFF		SR
S&L	RX WTR RECIRC LOOP EQUAL VLV 1A	1-202-6A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR RECIRC PMP SUCTION VLV 1A	1-202-4A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR RECIRC PMP DISCH VLV 1A	1-202-5A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RHR INBOARD SHUTOFF VLV 1A	1-1001-29A	START	OFF	OFF	OFF	START AT 900 PSI	SR
S&L	RHR OUTBOARD SHUTOFF VLV 1A	1-1001-28A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR RECIRC LOOP EQUAL BYPASS VLV 1A	1-202-9A	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR RECIRC LOOP EQUAL VLV 1B	1-202-6B	START	OFF	OFF	OFF	START AT 900 PSI	SR
S&L	RX WTR RECIRC PMP SUCTION VLV 1B	1-202-4B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RX WTR RECIRC PMP DISCH VLV 1B	1-202-5B	START	OFF	OFF	OFF	START AT 900 PSI	SR
S&L	RHR INBOARD SHUTOFF VLV 1B	1-1001-29B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR
S&L	RHR OUTBOARD SHUTOFF VLV 1B	1-1001-28B	OFF	OFF	OFF	OFF	START AT 325 PSI. ASSUMED NON-COINCIDENT WITH VALVES STARTING @ 900 PSI	SR
S&L	RX WTR RECIRC LOOP EQUAL BYPASS VLV 1B	1-202-9B	OFF	OFF	OFF	OFF	ASSUMPTION 4	SR

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Preparer: W. Fisher Concurrence: UW Date: 3-27-92 Concurrence: DCB 3-24-92 Date: _____

Load Center: MCC 19-8

Comments	Load Name	Equipment Number	LOCA Time Zero	RHR SW Initiation	CR Stdbby HVAC	Post LOCA Steady State	Remarks	SR or NSR
By S&L	DRYWELL CLO BLOWER 10	1-5788C	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	NSR
S&L	DRYWELL CLO BLOWER 10	1-5788G	ON	OFF	OFF	OFF	SECURED BY OPERATOR PRIOR TO INITIATING DRYWELL SPRAY	NSR

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189981

March 23, 1992
In Reply, Refer to

CHRON # 100075

Mr. C.A. Moerke
Site Engineering Supervisor
Quad Cities

Calc. No. 8913-67-19-1
Rev. 0 Date
Page C38 of
Proj. No. 8913-67

Subject: Load Shed Modifications
Degraded Voltage Analysis
Station 4, Quad Cities

Dear Mr. Moerke:

E/I&C has performed additional degraded voltage analyses at the request of Quad Cities Station personnel. This was in an effort to avoid tripping the Drywell Cooling blowers and the unit RBCCW Pumps. This analysis has concluded that the trip of RBCCW is essential for resolution of the degraded voltage issue.

Quad Cities has recommended tripping the Fuel Pool Cooling Pumps in addition to the loads presently included in the load shed modification. Fuel Pool Cooling will not function without RBCCW; therefore, there is little need to retain this function. E/I&C concurs with this recommendation. Tripping the Fuel Pool Cooling Pumps on a LOCA signal will provide additional margin which may offset cable replacements. An evaluation of the need for cable replacements when the Fuel Pool Cooling Pumps are tripped is in progress.

The Fuel Pool Cooling Pumps should be added to the scope of the current load shed modifications and an additional ECN prepared to incorporate this new trip if the additional work scope does not jeopardize unit restart. A revised list of loads to be shed on a LOCA signal is attached.

If you have any questions, please call Mike Tucker on extension 7648 at Downers Grove.

Prepared: M.S. Tucker
M.S. Tucker
Senior Engineer

Date: 3/23/92

Approved: M.L. Reed
M.L. Reed
E/I&C Design Superintendent

Date: 3/23/92

DEGRDEDVLT\QUAD\FPCOOLPT.DOC

cc: J.W. Wethington D.V. Lubbe
M.F. Pietraszewski M.L. Reed
M.S. Tucker NEDCC

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Quad Cities
Degraded Voltage Analysis

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Load Shed Modifications

The following loads are to be tripped on a LOCA signal
(High Drywell Pressure or Low Low Reactor Water Level, i.e., the same signal that starts the diesel generators)

Drywell Cooler Blowers

Blower 1A, MCC 18-1A ✓	Blower 2A, MCC 28-1A ✓
Blower 1B, MCC 18-1B ✓	Blower 2B, MCC 28-1B ✓
Blower 1C, MCC 19-6 ✓	Blower 2C, MCC 29-6 ✓
Blower 1D, MCC 19-4 ✓	Blower 2D, MCC 29-4 ✓
Blower 1E, MCC 19-3 ✓	Blower 2E, MCC 29-3 ✓
Blower 1F, MCC 18-1B ✓	Blower 2F, MCC 28-1B ✓
Blower 1G, MCC 19-6 ✓	Blower 2G, MCC 29-6 ✓

RBCCW Pumps

Pump 1A, 480V Switchgear 18 ✓	Pump 2A, 480V Switchgear 28 ✓
Pump 1B, 480V Switchgear 19 ✓	Pump 2B, 480V Switchgear 29 ✓
Pump 1/2C, 480V Switchgear 19 ✓	Pump 1/2C, 480V Switchgear 29 ✓

Recirc MG Set Vent Fans

Fan 1A, MCC 19-2 ✓	Fan 2A, MCC 29-2 ✓
Fan 1B, MCC 18-2 ✓	Fan 2B, MCC 28-2 ✓

Turbine Building Exhaust Fans

Fan 1C, 480V Switchgear 19 ✓	Fan 2C, 480V Switchgear 29 ✓
------------------------------	------------------------------

Turbine Building Supply Fans

Fan 1A, 480V Switchgear 18 ✓	Fan 2A, 480V Switchgear 28 ✓
Fan 1B, 480V Switchgear 19 ✓	Fan 2B, 480V Switchgear 29 ✓

Fuel Pool Cooling Pumps

Pump 1A, 480V Switchgear 18 ✓	Pump 2A, 480V Switchgear 28 ✓
Pump 1B, 480V Switchgear 19 ✓	Pump 2B, 480V Switchgear 29 ✓

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☒ SAFETY-RELATED☐ NON-SAFETY-RELATEDDIT No. - GL-EPED-0539-00CLIENT CECOPage 1 of 8STATION QUAD CITIES UNIT(S) 1/IW BLOETHE - 25PROJECT NO(S) 8913-67Z OUYANG - 25SUBJECT MCC OVERLOAD HEATERS FOR SAFETY-RELATED
CONTINUOUS DUTY LOADS (< 3HP)

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIPEPED[Signature]4-3-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

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IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE

(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

PLEASE USE THE ENCLOSED DATA FOR YOUR DEGRADED
POWER VOLTAGE CALCS.

Calc. No. 8913-67-19-1Rev. 0 Date _____Page C40 of _____Proj. No. 8913-67**SOURCE OF INFORMATION**Calc. no. _____ Report no. _____
Rev. and/or date _____ Rev. and/or date _____

Other _____

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DIT NO. QC-EPLD-0451-
 PROJECT NO. SHE-C-1
 PG 2 OF 8

QUAD UNIT 1/I

MCC No.	Service	G.E. Overload Heater Data	Remark
Compt. No.			
18-1A/H3 (AT PANEL 2251-81A)	POST LOCA H2/O2 MONITOR PUMP	C2.20A	1.0 HP Per walkdown
18-1A/E1	DIESEL OIL TRANSFER PUMP 1/2 (1/2-5203)	C4.19A	3.0 HP REF: DWG AE-1000 REV. "AE"
18-1A/E3	ESS FILL SYS. JOCKEY PUMP	C15.1B	3.0 HP Per walkdown

DIT NO. QC-EPED-05
 PROJECT NO. 5712
 PG 3 OF 8

QUAD UNIT 1/I

MCC No.	Service	G.E. Overload Heater Data	Remark
Compt. No.			
18-2 / F1	RHR SW. PUMP 1A COOLER FAN A	OL HTR: C5.26A	3.0 HP Per. with 1
18-2 / F2	RHR SW. PUMP 1A COOLER FAN B	OL HTR: C5.26A	3.0 HP V
18-2 / F3	RHR SW. PUMP 1A COOLER FAN C	OL HTR: C5.26A	3.0 HP V
18-2 / F4	RHR SW. PUMP 1A COOLER FAN D	OL HTR: C5.26A	3.0 HP V

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DIT NO. QC-EPED-0577-1
 PROJECT NO. 8413-07
 PG 4 OF 1

QUAD UNIT 1

MCC No.	Service	Overload Heater Data	Remark
Compt. No.			
18-2/F5	D.G. COOLING WTR PUMP 1/2 COOLING FAN A	OL HTR: C3.01A	0.8 HP
18-2/G1	DG COOLING WTR PUMP 1/2 COOLING FAN B	OL HTR: C3.01A	0.8 HP
18-2/G2	RHR SW. PUMP 1B COOLER FAN A	OL HTR: C5.26A	3.0 HP
18-2/G3	RHR SW. PUMP 1B COOLER FAN B	OL HTR: C5.26A	3.0 HP

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DIT NO. QC-EPED-0531-00
 PROJECT NO. 811.2-071
 PG 5 OF 8

QUAD UNIT 1

MCC No.	Service	Overload Heater Data	Remark
Compt. No.			
18-2/G4	RHR SW PUMP 1B COOLER FAN C	OL HTR: C5.26A	3.0 HP
18-2/G5	RHR SW PUMP 1B COOLER FAN D	OL HTR: C5.26A	3.0 HP

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SARGENT & LUNDY

ENGINEERS

Calc. For MCC O.L. RELAY & O.L. H.

WALKDOWN DATA

Safety-Related

Non-Safety-Related

Calc. No. 8913-67-19-1

Rev. 0 Date

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Proj. No. 8913-67

Client	CECO
Project	QUAD CITIES UNIT 1
Proj. No.	8913-95
Equip. No.	

Prepared by	<i>Paul Langdon</i>	Date	2-7-92
Reviewed by	<i>Paul Langdon</i>	Date	2-7-92
Approved by		Date	

MCC	COMPT	OVERLOAD RELAY	O.L. HEATER
18-1A	E3	G.E. CR124 SERIES 'A'	C15.1B
18-1A	H3	NONE	NONE
18-2	F1	UNLABELED	C5.26A
	F2		
	F3		
	F4		
	F5		
	G1		
	G2		
	G3		
	G4		
	G5		
19-1	B5	NONE	NONE
19-1	E4	NONE	NONE
19-2	B1	NONE	NONE
	E1	UNLABELED	C5.26A
	E2		
	E3		
	E4		
	E5		
	F1		
	F2		
	F3		
	F4		
	F5		

DIT No: QC-EPED-0539-00

PROJECT No: 8913-67

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SARGENT & LUNDY

ENGINEERS

Spec. For MCC NAMEPLATE

WALKDOWN DATA

Safety-Related

Non-Safety-Related

Calc. No. 8913-67-19-1

Rev. 0 Date

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Proj. No. 8913-67

Client **CECO**

Project **QUAD CITIES UNIT**

Proj. No. **8913-95** Equip. No.

Prepared by *[Signature]* Date **2-7-92**

Reviewed by *[Signature]* Date **2-7-92**

Approved by _____ Date _____

MCC/COMPT.

NAMEPLATE ENGRAVING

18-1A/E3
/H3

ECCS KEEP FULL PUMP 1-1402-57 EQ
SPARE

18-2/F1

RHR SW PUMP 1A COOLER FAN A (MASTER FAN) 1-5745A

/F2

" " " " " " B 1-5745A

/F3

" " " " " " C "

/F4

" " " " " " D "

/F5

DG 1/2 CW PUMP COOLER FAN A 1/2-5749

/G1

" " " " " " B "

/G2

RHR SW PUMP 1B COOLER FAN A 1-5745B

/G3

" " " " " " B "

/G4

" " " " " " C "

/G5

" " " " " " D (MASTER FAN) 1-5745B

19-1/B5

DG2 FUEL OIL XFER PUMP ALT FEED 2-5203

/E4

POST LOCA W2 # O2 MON SAMPLE PUMP 1B 1-2402B EQ

19-2/B1

DG2 CWP COOLERS AND FANS 2A # 2B ALT FD 2-5749

/E1

RHR SW PUMP 1C COOLER FAN A (MASTER FAN) 1-5745C

/E2

RHR SW PUMP 1C COOLER FAN B 1-5745C

/E3

" " " " " " C 1-5745C

/E4

" " " " " " D "

/E5

DG 1 CW PUMP COOLER FAN A NOEMAL FEED (MASTER FAN) 1-5749

/F1

" " " " " " B " 1-5749

/F2

RHR SW PUMP 1D COOLER FAN A 1-5745D

/F3

" " " " " " B "

/F4

" " " " " " C "

/F5

" " " " " " D (MASTER FAN) 1-5745D

DIT No: QC-EPED-0539-00

PROJECT No: 8913-67

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Client **CECO**
Project **QUAD CITIES**
Proj. No. **8913-94** Equip. No.

Prepared by *[Signature]* Date **2-26-92**
Reviewed by *[Signature]* Date **2-26-92**
Approved by _____ Date _____

PER FIELD VERIFICATION WALKDOWN:

MCC	COMPT.	SERVICE	OL HTR. QTY./TYPE
29-2	E1	RHR SW PUMP 2C CLR FAN	3 / C5.26A
	E2	↓	↓
	E3	↓	↓
	E4	↓	↓
	E5	DG COOL WTR PUMP CLR FAN	C5.92A
	F1	↓	C3.01A
	F2	RHR SW PUMP 2D CLR FAN	C5.26A
	F3	↓	↓
	F4	↓	C5.92A
	F5	↓	C5.26A

PNL	SERVICE	OL HTR. QTY./TYPE
→ 2251-81A	POST LOCA H ₂ & O ₂ MONITOR PMP 1A	3 / C2.20A
2251-81B	↓	3 / C2.20A
2252-81A	↓	2A } SEE NOTE BELOW
2252-81B	↓	2B }

NOTE - UNIT 2 H₂ & O₂ PANELS ARE INACCESSIBLE DURING CURRENT REFUELING OUTAGE DUE TO HIGH AREA RADIATION & OUTAGE ACTIVITIES.

☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. - GC-EPED-0564-00

CLIENT CECOPage 1 of 2STATION QUAD CITIES UNIT(S) 1/DIV.ITo W. G. BLOETHE - 25PROJECT NO(S) 8913-69Z. OUYANG - 25SUBJECT NON-SAFETY RELATED VALVE INFORMATION

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

S. K. SAHA
Preparer (Please print name)EPED
DivisionS. K. Saha
Preparer's signature4-23-92
Issue date

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(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

The following non-safety related valves will be added in ELMS-AC Data-base in future revision of the file.

VLV. NO.	DESCRIPTION	% PF	% EFFY	RPM	HP
1-220-4	Main Steam line Comb. Drn. Vlv.	75	80	1800	0.66
* 1-220-90A	Main Steam line Drn. Vlv. 1A				0.33
* 1-220-90B	" " " " 1B				0.33
* 1-220-90C	" " " " 1C				0.33
* 1-220-90D	" " " " 1D				0.33
1-302-8	CRD. Hydr. Sys. Press Cont. Vlv. 1A				0.66
1-220-3	Main Steam line Drain Cond. Vlv. 1C				0.66

SOURCE OF INFORMATIONCalc. no. _____ Report no. _____
Rev. and/or date _____ Rev. and/or date _____

Other _____

DISTRIBUTIONE. SCHUMACHER/R. SCHIAVONI /FILE 107B
R. H. JASON — 21
M. WARPEHOSKI — 21ORIGINAL FILE 15D
K. YIP — 21

PROJECT NO(S). 8913-69

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VLV. NO.	DESCRIPTION	% PF	% EFF	RPM	HP
1201-83	Rx Wtr. Cleanup Sys. Filter Bypass Vlv.	75	80	1800	1.0
1201-76	Rx Wtr. Cleanup Sys. Restricting orifice Bypass Vlv.	75	80	1800	1.0
1201-78	Rx Wtr. Cleanup Sys. Main Cond. Dump Vlv.	75	80	1800	0.65
1201-77	Rx Wtr. Cleanup Sys. Rad-waste Drain & Waste Cld. Vlv.	75	80	1800	0.65
	Refuel platform 480v 3phase Receptacle	90	100		11 KW

Voltage 480V.
R type

* HP rating of these valves is not in Quad cities dwgs. HP data is used from identical valves at Dresden Station dwgs.

Since these valves are not operating, these data has no effect on the calculation. Therefore, it does not require verification.

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Rev. 0 Date

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January 8, 1992 189981

Memorandum of Telephone Conversation

SARGENT & LUNDY

	Date 1/7/92	Letter No. D1937E
		Time 3:10 p.m.
Person Called	Company	(815) 459-9100
Jeff Mitchell	Power Conversion Products	
Person Calling	Company	
Jan Wisniewski	S&L - EAD	
Project	Project No.	
Dresden - Units 2 & 3	8982-64	
Subject Discussed:	Load Modeling for PCP Chargers (250 V-3S-260-200)	

Summary of Discussion, Decisions, and Commitments:

I called Mr. Mitchell asking about the proper model to be used for their chargers when operating around -10% voltage on the input side.

Mr. Mitchell told me that their chargers have SCR's and as such, behave as a constant current load. At full load and -10% input voltage their power factor, as presented to the system, would be 95%.

Calc. No. 8913-67-19-1
Rev. 0 Date
Page C51 of
Proj. No. 8913-67

JBW:cab

c:\ead\MS-TELE.JBW

cc: M. Tucker - CECO - Downers Grove
J. Mitchell - PCP
R. M. Schiavoni - 21

File: QA Calculation


J. B. Wisniewski

SARGENT & LUNDY

DESIGN INFORMATION TRAN

☒ SAFETY-RELATED

☐ NON-SAFETY-RELATED

DIT No. - QC-EPED-0560-00

CLIENT CECO

Page 1 of 1

STATION QUAD CITIES UNIT(S) 1/I

To W. G. BLOETHE

PROJECT NO(S) 8913-69

SUBJECT 480V SWGR 18 FEEDER CABLES TO MCC'S

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

S. K. SAHA

EPED

S. K. Saha

4-21-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

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IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE
 (List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

PLEASE USE THE FOLLOWING CABLE LENGTH & SIZES FOR YOUR MCC LOADING CALCULATIONS.

TO MCC	CABLES	SIZE	LENGTH
18-1A	11355, 6 & 7	1/c, 250 MCM	308'
18-1B	12446, 7 & 8	1/c, 250 MCM	308'
18-2	11359, 0 & 1	1/c, 250 MCM	314'
18-3	69093	3-1/c, 500 MCM	450'
18-4	68700	3-1/c, 500 MCM	750'
18/19-5	12358, 9 & 0	3-1/c, 250 MCM	278.5'

SOURCE OF INFORMATION

Calc. no. 7318-46-19-1

REV. 7

Report no. _____

Rev. and/or date _____

Rev. and/or date _____

Other _____

DISTRIBUTION

E. SCHUMACHER / R. SCHIAVONI / FILE 107B

ORIGINAL FILE 15D

R. H. JASON - 21

K. YIP - 21

B. SURAWSKI - 21

SARGENT & LUNDY

DESIGN INFORMATION T

☒ SAFETY-RELATED

☐ NON-SAFETY-RELATED

DIT No. - QC-EPED-0568-00

CLIENT CECO

Page 1 of 2

STATION QUAD CITIES UNIT(S) 1 + 2

To W BLOETHE-25

PROJECT NO(S) 8913-67, -71

SUBJECT DG COOLING WATER PUMP 1/2 AND ITS COOLER
FANS A and B

MODIFICATION OR DESIGN CHANGE NUMBER(S)

K. YIP
Preparer (Please print name)

EPED
Division

[Signature] KR. NG 4-28-92
Preparer's signature Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

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(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

PLEASE USE THE ENCLOSED SKETCH AND DATA FOR YOUR
DEGRADED POWER VOLTAGE CALC.

SOURCE OF INFORMATION

Calc. no. _____ Rev. and/or date _____ Report no. _____ Rev. and/or date _____

Other DIT-QC-EDDP-0057, -0058; QC-EPED-0551-00 M/P. ES-145 P. 121, 122

DISTRIBUTION

E SCHUMACHER / R SCHIAVONI / FILE
T EISENBART - 21
B SURAWSKI - 21

ORIGINAL FILE 15D
R JASON - 21
S. SAHA - 21

☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. - AC-EPED-0551-00

CLIENT COMMONWEALTH EDISON CO.Page 1 of 6STATION QUAD CITIES UNIT(S) 1/2To J. R. WIENIEWSKIPROJECT NO(S) 9048-37SUBJECT RE-ROUTE POWER FEED CABLESFOR DIESEL GENERATOR 1/2 COOLING PUMP FANMODIFICATION OR DESIGN CHANGE NUMBER(S) M&4-2-92-006 (I)K. R. NG
Preparer (Please print name)EPED
DivisionK. R. NG
Preparer's signature4-14-92
Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

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Calc. No. 8913-67-19-1
Rev. 0 Date
Page C54 of
Proj. No. 8913-67

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE
(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

THIS IS TO PROVIDE INFORMATION FOR RE-ROUTE OF THE POWER FEED CABLE FOR SWING DIESEL COOLING WATER PUMP COOLER FANS A & B. IT IS DETERMINED THAT THE POWER FOR BOTH FANS A & B WILL BE FED FROM THE INCOMING SOURCE SIDE OF THE DISCONNECT SWITCH LOCATED IN PANEL 2251-100 FOR THE COOLING PUMP MOTOR. THE NORMAL AND ALTERNATE POWER SOURCE FOR BOTH FANS WILL BE FED FROM THE SAME NORMAL AND ALTERNATE POWER SOURCE OF THE COOLING PUMP MOTOR, RESPECTIVELY.

SOURCE OF INFORMATION

Calc. no. N/A N/A Report no. N/A N/A
Rev. and/or date Rev. and/or date

Other M/D ES-142, PG 122, WALKDOWN WED.

DISTRIBUTION

ORIGINAL - 15D

E. SCHUMACHER / T.R. EISENBART / FILE - MISC / 1127

PROJECT NO(S) 9048-37DIT No. - QC-EPED-0551-00Page 2 of

THE FAN MOTORS ARE 1.5 HP WITH NORMAL FULL LOAD
CURRENT OF 2.5 AMPS.

#10 AWG WIRE WILL BE USED FOR ALL INTERNAL
CONNECTIONS.

PLEASE PROVIDE ADEQUATE FUSE SIZE FOR ISOLATION
AND PROTECTION OF THE FANS.

Calc. No. 8913-67-19-1

Rev. 0 Date

Page C55 of

Proj. No. 8913-67

(A) 1
(B) 2
(C) 3

Calc. No. 8913-67-19-1
Rev. 0 Date
Page C56 of 88981
Proj. No. 8913-67

DIT No: GC-EPED-0551-00
PROJECT No: 9048-37
PAGE 3 OF

NORMAL FEED
SEE SECT. 184 & 185
CLO. WTR. PUMP & YS
A.C. R. S. E.

ALTERNATE FEED
FROM 480V SWGR 28
COMPT. 254C
DNG 4E-2660H

2251-100

DISC. SW.
(FAN "A")
1DS/A
4E-1676C

DISC. SW.
(FAN "B")
2DS/A
4E-1676D

L1A
L1B
L1C
L2A
L2B
L2C
L3A
L3B
L3C

FAA-A
FAA-B
FAA-C
FAB-A
FAB-B
FAB-C

FNA-A
FNA-B
FNA-C
FNB-A
FNB-B
FNB-C

DISC. SW.
1DS/N (FAN "A")
4E-1676C
DISC. SW.
2DS/N (FAN "B")
4E-1676D

ECN# 04-00765E

TRIP ELEMENT
REMOVED & AMPERED
ON O.L. UNIT.

1000V

ECN NO. 04-00765E
PROJECT NO. 9048-37
PAGE 3 OF 88981
MOD. NO. 184
THIS PAGE
DRAWING NUMBER 184

PREPARED BY
DATE

REVIEWED BY
DATE

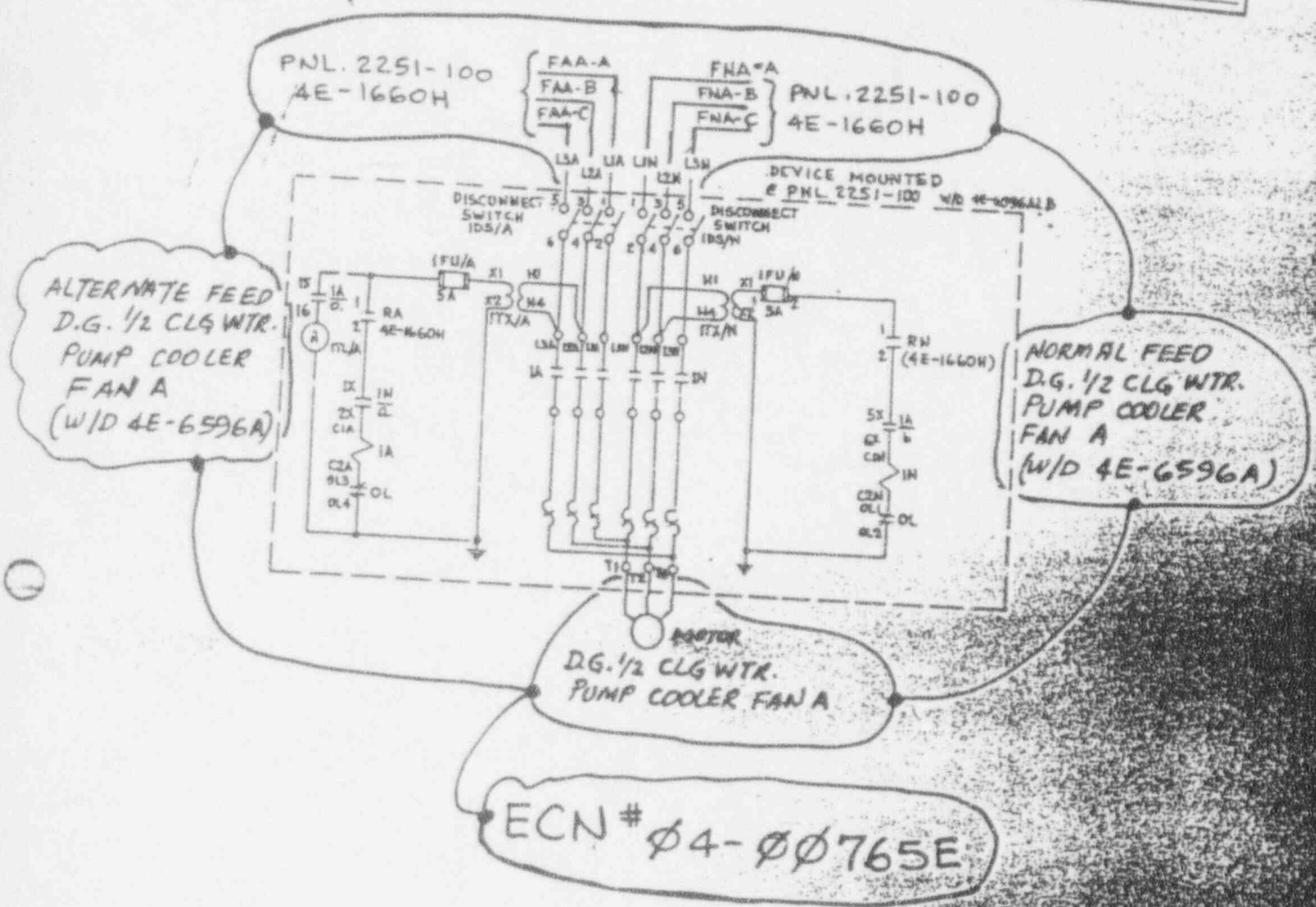
ISSUED FOR COMMENTS
X ISSUED FOR CONSTRUCTION

480 V SWGR. BUS 18
INTERNAL SCHEMATIC DIAGRAM
SECT. 184 COMPT.C & SECT. 185 COMPT. B

4E-1660H

REV. "J"

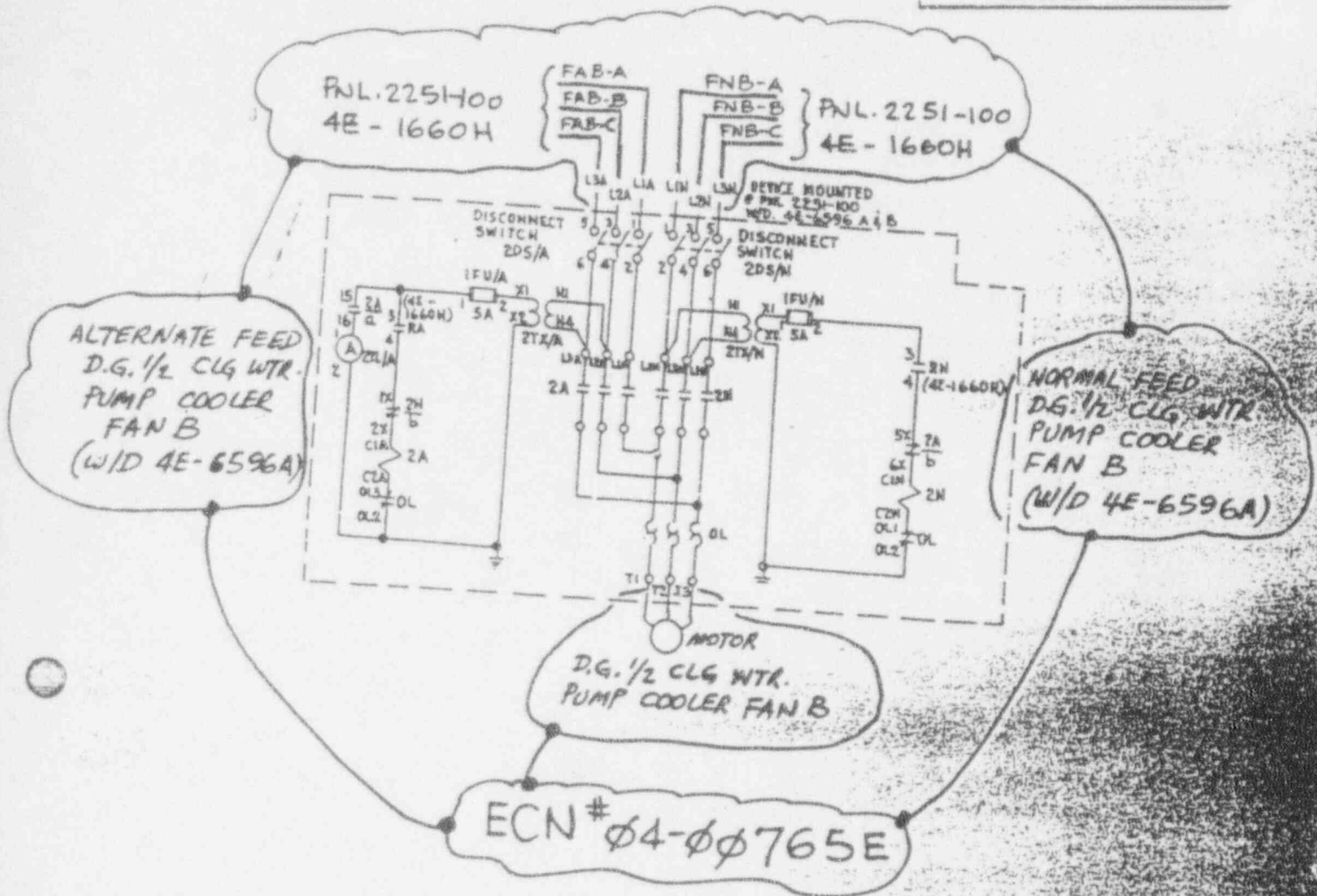
DIT NO: RC-EPED-0551-00
 PROJECT NO: 9048-37
 PAGE 4 OF



ISSUED FOR COMMENTS
 X ISSUED FOR CONSTRUCTION

WIRING & SCHEMATIC DIAG.
 TURBINE BLDG ESS SERV 480V MCC 1B-2 PFS
 4E1671.1

PROJECT NO.
 PAGE
 MOD NO. M04-2-32-30
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 DRAWING NUMBER 4E 1676
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 DATE



ISSUED FOR COMMENTS
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ECN NO. 04-00765E
 PROJECT NO. 9048-37
 PAGE 5 OF 189
 MOD NO. M04-2592
 THIS PAGE
 DRAWING NUMBER 4E-3676D

PREPARED BY
 DATE
 REVIEWED BY
 DATE

WIRING & SCHEMATIC DIAG.
 TURB. BLDG. ESS. SERV. 480V. MCC 1B2PT4

APPROVED
 ECN# 04-00765E

184401



Calc. For DIESEL GEN. 1/2 COOLING	
WTR. PUMP COOLER FAN A & B	
Safety-Related	Non-Safety-Related

Calc. No. 8913-67-19-1
Rev. 0 Date
Page C59 of
Proj. No. 8913-67

Client	CECO
Project	QUAD CITIES
Proj. No.	9048-37/38 Equip. No.

Prepared by	<i>Paul Langhin</i>	Date	4-15-92
Reviewed by	<i>Paul Langhin</i>	Date	4-15-92
Approved by		Date	

FIELD WALKDOWN VERIFICATION DATA PROVIDED FOR
D.G. 1/2 COOLING WATER PUMP COOLER FAN 'A'
FAN 'B' MOTOR NAMEPLATE IS INACCESSIBLE
HOWEVER BOTH MOTORS APPEAR TO BE IDENTICAL
FAN BLADE SIZE AND DIRECTIONAL ORIENTATION
ARE IDENTICAL.

NAMEPLATE DATA

WESTINGHOUSE LIFE-LINE 'T'
HORSEPOWER NOM. - 1.5
3-PHASE / 60 CYCLE
1740 RPM
KVA CODE L
SERIAL - 7211
VEL FPM - 400
2.5 AMPS
INS. CL. B
460 VOLTS

EX 0.75

REF. DWG. 4E-1072 , COL/ROW: C/20

DIT No:	DC-612-RS1-2
PROJECT No:	9048-37
PAGE	6 OF 6

☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. - QC-EPED-0578-00

CLIENT CECoPage 1 of 2STATION QUAD CITIES UNIT(S) 1To W BLOETHE - 25PROJECT NO(S) 8913-67Z. OUYANG - 25SUBJECT DG 1/2 LUBE OIL CIRCULATING PUMP & TURBO
CHARGER PUMP

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIP
Preparer (Please print name)EPED
Division[Signature]
Preparer's signature5-13-92
Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

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PLEASE USE THE FOLLOWING WALKDOWN DATA FOR
YOUR DEGRADED POWER VOLTAGE CALC.

SOURCE OF INFORMATION

Calc. no. _____ Report no. _____
Rev. and/or date _____ Rev. and/or date _____

Other _____

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E SCHUMACHER / R SCHIAVONI / FILE 1078

ORIGINAL FILE 15D

T. EISENBART - 21

S SAHA - 21

B. SURAWSKI - 21

R JASON - 21

SARGENT & LUNDY
ENGINEERS

Specs. For **MOTOR NAMEPLATE
WALKDOWN DATA**

Safety-Related

Non-Safety-Related

Calc. No. 8913-67-17-1
Rev. 0 Date 89931
Page C61 of
Proj. No. 8913-67

Page of

Client **CECO**
Project **QUAD CITIES**
Proj. No. **8913-68** Equip. No. **DVC05P**

Prepared by *[Signature]* Date **5-13-92**
Reviewed by *[Signature]* Date **5-13-92**
Approved by _____ Date _____

PER FIELD VERIFICATION WALKDOWN:

DIESEL ENGINE LUBE OIL CIRCULATING PUMP MOTOR 1/2-6657

DELCO, FRAME 184, SERIAL # G-77
MODEL # G1450
1 H.P., 230/460V, 60 CYCLE, 3 PHASE
3.4/1.7 AMP, 155 RPM, SERVICE FACTOR: 1
INS. CL. B, AMB. 65°C, CONTINUOUS DUTY
CODE K, DES B
1.15 SERVICE FACTOR @ 40°C AMB.
BRG'S. # 77503-77505 LRIRV

DIESEL ENGINE LUBE OIL TURBO CHARGER PUMP MOTOR
1/2-6660

RELIANCE ELECTRIC, FRAME EC56C, TYPE P
ID # P56H1319T-TQ
3/4 H.P., 208-230/480V, 60 CYCLE, 3 PHASE
2.9-2.6/1.3 AMP, 1725 RPM
SERVICE FACTOR 1.15, AMB. 40°C
TIME RATING - CONTINUOUS
CODE J, INS. CL. F
TE 200V MIN

DIT No: DC-EPED-0578-00
PROJECT No: _____
PAGE 2 OF 2

SARGENT & LUNDY

DESIGN INFORMATION TR.

☒ SAFETY-RELATED

☐ NON-SAFETY-RELATED

DIT No. - 15-12-747-01

CLIENT - SARGENT & LUNDY

Page 1 of 2

STATION - QUAD UNIT(S) -

To W. BLOETHE

PROJECT NO(S) - 712-87

SUBJECT - POWER FEED FOR SAFETY-RELATED CONTINUOUS DUTY
LOAD DIV II

MODIFICATION OR DESIGN CHANGE NUMBER(S) -

1 KR NG

EPED

KR NG / K/lyn

5-8-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

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MAY 12 1992

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THE PURPOSE OF REVISION IS TO REVISE THE SERVICE
NAME FOR MCL 18-1A COMPT C1 ON PAGE 3
OF THE ORIGINAL DIT. THE SERVICE NAME IS
" (ALT FEED) RHR AHU 2A "

PAGE 2 OF THIS REVISION REPLACES PAGE 3 OF THE
ORIGINAL DIT

SOURCE OF INFORMATION

Calc. no. _____ Report no. _____
Rev. and/or date _____ Rev. and/or date _____

Other _____

DISTRIBUTION

ORIGINAL - FILE 15D
E. SCHMACHER / R. M. SCHIAVONI / FILE 1078

DIT NO. QC-EPED-0467-71
 PROJECT NO. 8913-67
 PG 2 OF 2

GRID UNIT 1

MCC No.	Compt. No.	Service	Power Cable Data			Remark
			No.	Size	Length FT	
MCC 18-1A	COMPT G2	DIESEL 1/2 RM HVAC FEED SUPPLY FAN	{13105 13106}	3/C #6	236	0057
MCC 18-1A	COMPT F2	CORE SPRAY EMERG. AIR FEED HANDLING UNIT 1A	12783	3/C #14	406	
MCC 18-1A	COMPT E1	FEED DIESEL OIL TRANSFER PUMP 1/2	12711	3/C #14	279	
MCC 18-1A	COMPT C1	(ALT FEED) RHR AHU 2A RI	67686	3/C #10	462	
MCC 18-1A	COMPT J4	DIESEL STARTING AIR COMP. 1/2 B	12979	3/C #14	260	

SARGENT & LUNDY

DESIGN INFORMATION TRANSMISSION

Rev. 0 Date 189981
Page C64 of
Proj. No. 8913-67☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. QCEPED-0592-00

CLIENT CECO

Page 1 of 3

STATION QUADCITIES UNIT(S) 1A2

To W. BLOETHE-25 EAD

PROJECT NO(S) 8913-71

Z. OUYANG-25 GAD

SUBJECT QUADCITIES SINGLE PHASE TRANSFORMERS

FIELD MEASUREMENT

MODIFICATION OR DESIGN CHANGE NUMBER(S) —

B. D. DEAN

EPED

Dean

6-26-92

Preparer (Please print name)

Division

Preparer's signature

Issue date

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ENCLOSED PAGES CONTAIN QUADCITIES SINGLEPHASE
TRANSFORMER FIELD MEASUREMENT RECEIVED FROM CECO.
STATE ASSUMPTION IN CALCULATIONS THAT THESE
MEASURED VALUES DO NOT CHANGE SUBSTANTIALLY
DURING LOCA CONDITION

SOURCE OF INFORMATION

Calc. no. — Rev. and/or date Report no. — Rev. and/or date
Other EAT From MR. M. S. TUCKER OF CECO TO MR. M. SCHIAVONI QLE DTD 6-24-92

DISTRIBUTION

ORIGINAL FILE - 150
M. W. JSKS - 21
R. M. SCHIAVONI - 21

B. SURAWSKI/TRE - File 1078
R. H. JASON - 21



1400 Opus Place
Downers Grove, Illinois 60515

Rev. 0 Date 189981
Page C65 of
Proj. No. 8913-67

TELECOPY TRANSMITTAL

DATE: 6/24/92

DOCUMENT: Results of Transformer Measurements
Quad Cities

TO: Name R. M. Schiavoni Phone 6246
Department EPEN
Location 21Y11
Telecopy Phone 8-727-2047

FROM: Name Tucker Phone 2648
Department Nuclear Engineering Department
Location Downers Grove
Telecopy Phone 708-515-7181

TOTAL NUMBER OF PAGES: 2 (Including this Form)

REMARKS:

DIT No: <u>QCEPE-0592</u>
PROJECT No: <u>8913-71</u>
PAGE <u>2</u> OF <u>3</u>

Quad Cities Single Phase 480-120/240 Volt Transformers
 on Safety Related Motor Control Centers

Current and Voltage Measurement

MCC	Compt.	Service	MCC Voltage	Phase Current
18-2	A3	18-2-1	476 Volts	1.9 Amps
18-3	A3	18-3-1	476 Volts	6.9 Amps
28-2	A3	28-2-1	476 Volts	2.9 Amps
28-2	D5	Instrument Bus	478 Volts	19.0 Amps
28-3	A3	28-3-1	475 Volts	4.8 Amps

Test and Measurement Equipment

Voltmeter: Fluke Model Number (later)
 Calibration: 127136Q

Ammeter:
 Calibration: 054118Q

DIT No: QC-REP 0592-00
PROJECT No: 8913-71
PAGE 3 OF 3

☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. - QC-EPED-0599-00

CLIENT CECOPage 1 of 1STATION QUAD CITIES UNIT(S) 1To W. BLOETHE - 25PROJECT NO(S) 8913-67Z. OUYANG - 25SUBJECT LOADING OF CONT ROOM AIR FILTER UNIT
HEATERS

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIP
Preparer (Please print name)EPED
Division[Signature] 7-14-92
Preparer's signature Issue date

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(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

AT MCC 1B-4, THE CONTROL ROOM AIR FILTER UNIT HEATER 1/2 - 9400 - 101 WHICH WAS PREVIOUSLY 9 KW HAS BEEN REVISED TO 12 KW PER PLANT MOD EMPC PO4-0-91-108, ECN 04-00597M, AND DCR 4-92-024.

PLEASE UPDATE THE LOAD INPUT TO YOUR DEGRADED VOLTAGE CALCS. THE ELMS FILE WILL BE UPDATED.

SOURCE OF INFORMATIONCalc. no. _____ Report no. _____
Rev. and/or date _____ Rev. and/or date _____Other DCR 4-92-024**DISTRIBUTION**ES/TRE/RMS/FILE 1078
S. SAHA - 21
M. WARPENOSKI - 21ORIGINAL FILE 15D
B. SURAWSKI - 21
B. DESAI - 21

☒ SAFETY-RELATED☐ NON-SAFETY-RELATED

DIT No. - QC-EPED-0601-00

CLIENT CECOPage 1 of 2STATION QUAD CITIES UNIT(S) 1/ITo W. BLCETHE -25PROJECT NO(S) 8913-67Z. OUYANG -25SUBJECT LOAD DATA FOR RWCU VALVE 1-1201-2 (FED FROM MCC 18-1A)

MODIFICATION OR DESIGN CHANGE NUMBER(S) _____

K. YIP
Preparer (Please print name)EPED
Division[Signature]
Preparer's signature7-22-92
Issue date

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(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

ENCLOSED IS THE LATEST DATA FOR THE RWCU VALVE 1-1201-2 (1.6 HP). PLEASE REVISE YOUR INPUT TO THE DEGRADED VOLTAGE CALCULATION.

SOURCE OF INFORMATION

Calc. no. 7318-46-19-2 11 Report no. _____
Rev. and/or date _____ Rev. and/or date _____

Other _____

DISTRIBUTION

ES/TRE/RMS/FILE 1078
M. WARPEHOSKI - 21
B. DESAIB. SURAWSKI - 21
ORIGINAL FILE
S. SAHA - 21

SARGENT & LUNDY**ELECTRICAL LOAD MONIT**Rev. 0 Date
Page C69 of 189981
Proj. No. 8913-67

SAFETY RELATED

YES ☐ NO ☐

AC LOAD DATA FORM

PAGE ____ OF ____

UTILITY: CECO STATION: QUAD CITIES UNIT: 1 PROJ. NO.: 8913-75

ITEM	DESCRIPTION	DATA	NOTES
A	EQUIPMENT NO.	1-1201-Z	
	LOAD NAME	RX CLNUP RECIRC ISOLN VLV	
B	STATUS (E,N,OR M)	M	
C	SOURCE BUS NAME	480V MCC 1B-1A	
D	MOTOR RATED VOLTAGE	460	
E	RATING HP, KW OR KVA	7.05 1.6	
F	UNITS FOR RATING (HP, KW OR KVA)	HP	REF # 37
G	LOAD TYPE (I, S, G OR R)	I	
H	RATED EFFICIENCY (%)	75 70	
I	RATED POWER FACTOR (%)	80 83	REF # 37
J	LOCKED ROTOR CURRENT (%)	429 520	REF # 38
K	STARTING POWER FACTOR (%)	83 75	S&L S&L ESC-193
L	SPEED (RPM)	1800	
M	S/C AC TIME CONSTANT (SEC)		
N	MOD. OR M/D NUMBER	P04-1-91-042	
O	CABLE NUMBER	13801	
P	SYSTEM CODE		Calc. No. 7318-46-19-2
Q	SAFETY RELATED (Y/N)	Y	Rev. // Date
	1) LOAD COND. #1 BHP/KW/KVA	0	Page 8.2-817
	2) LOAD COND. #2 BHP/KW/KVA	0	Proj. No. 8913-75
	3) LOAD COND. #3 BHP/KW/KVA	0	
	4) LOAD COND. #4 BHP/KW/KVA	0	
	5) LOAD COND. #5 BHP/KW/KVA	0	

SOURCE OF DATA EXCEPT AS NOTED:

CALC. 7318-46-19-1, REV. 7

DIT-QC-EPED-0601-00

Pg. 2 of 2

DATA FORM PREPARATION				DATA ENTRY INTO (ELMS)			
DATE	PREPARER	REVIEWER	REV.	DATE	PREPARER	REVIEWER	REV.
3-26-92	MCWaples	S. K. Saha	0	3-26-92	MCWaples	S. K. Saha	0
7-7-92	MCWaples	S. K. Saha	1	7-7-92	MCWaples	S. K. Saha	1

SARGENT & LUNDY
ENGINEERS

DESIGN INFORMATION TRANSMISSION

Rev. 0 Date 187981
Page C70 of
Proj. No. 8913-67

☒ SAFETY-RELATED ☐ NON-SAFETY-RELATED DIT No. - QC-EPED-0602-00

CLIENT C.E.CO.

Page 1 of 3

STATION QUADCITIES UNIT(S) 1

To W.BLOETHE-25-EAD

PROJECT NO(S) 8913-67

Z. OUYANG-25-EAD

SUBJECT QUADCITIES INSTRUMENT BUS TRANSFORMER
FIELD MEASUREMENT

MODIFICATION OR DESIGN CHANGE NUMBER(S) —

B.D. DESAI

EPED

BDOOL

7-23-92

PREPARER (PLEASE PRINT NAME)

DIVISION

PREPARER'S SIGNATURE

ISSUE DATE

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IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE (List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

ENCLOSED PAGES CONTAIN QUADCITIES
INSTRUMENT BUS TRANSFORMER FIELD
MEASUREMENT, FOR YOUR USE IN DEGRADED
VOLTAGE CALCULATIONS.

STATE ASSUMPTION IN CALCULATION THAT
THESE MEASURED VALUE DO NOT CHANGE
SUBSTANTIALLY DUE TO LOCA CONDITION

SOURCE OF INFORMATION

Calc. No. — Rev. and/or date — Report No. — Rev. and/or date —

Other FAX FROM MR. M. STUCKER OF CEZO TO BILL LATES DTD. 9-13-90.

DISTRIBUTION

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B.S./TRE - File 1078

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Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515
Engineering & Construction
Nuclear Operations

TELECOPY TRANSMITTAL

Tuesday 09/18/90

DATE:

9/13/90

DOCUMENT:

INSTRUMENT VOLTAGE STUDY
MEASUREMENTS, DRAWINGS & ONE LINE

TO:

Name BILL LATES

Phone X7712

Department _____

Location S&L

Telecopy Phone X2049

FROM:

Name M. S. TUCKER

Phone X7648

Department E/I & C

Location DG

Telecopy Phone X7199

DIT No: QC-EPED-00

PROJECT No: 8913-67

PAGE 2 OF 3

TOTAL NUMBER OF PAGES: 5 (Including this Form)

REMARKS:

Quad Cities Unit 1
Instrument Bus Low Voltage Study

775 MW UNIT

1 Purpose

The purpose of this study is to determine the cause of the low voltage present on Quad Cities Unit 1 Instrument bus and to provide recommendations for improving the voltage on the bus.

2 Prerequisites

- A. The Instrument Bus is being fed from MCC 18-2; breakers in cubicles C6 and D4 of MCC 18-2 are closed.
- D. Essential Service Bus is being fed from the normal source, not MCC 18-2 (breaker in cubicle D5 is open).
- C. 4kV Switchgear 13 is being fed from normal source, UAT/TR11 (breaker 1303 closed).

3 Measurements

- A. Instrument Bus Voltage (Panel 901-50)
 $V_{L1-N} = \frac{114.13}{114.1}$ Volts
 $V_{L2-N} = \frac{114.1}{114.1}$ Volts *4E-1672 AFB*
- B. Transformer low side current (cable ~~11599~~ or 11601) a.c.
 $I_{L1} = \frac{42.0}{47.9}$ Amperes
 $I_{L2} = \frac{47.9}{17.5}$ Amperes
 $I_N = \frac{17.5}{17.5}$ Amperes *4E-16765 901-50*
- C. Transformer high side current (cable 11598)
 $I_A = \frac{45.6}{45.8}$ Amperes
 $I_B = \frac{45.8}{45.8}$ Amperes *4E-1676B*
- D. MCC 18-2 Voltage
 $V_{A-B} = \frac{472}{472}$ Volts
- E. MCC 18-2 Feed current
 $100 I_A = \frac{126}{125}$ Amperes (cable 11359) *from 18 feed to 18-2*
 $100 I_B = \frac{125}{125}$ Amperes (cable 11360)
 $95 I_C = \frac{78}{78}$ Amperes (cable 11361)
- F. 480V Swgr 18 Voltage
 $V_{A-B} = \frac{477}{476}$ Volts
 $V_{A-C} = \frac{476}{476}$ Volts
 $V_{C-A} = \frac{477}{477}$ Volts
- G. Grid Voltage
 $\frac{259}{259}$ kV Volts; 4 Phase *Central Loc. 1*
- H. 4kV Switchgear 13
 $\frac{4250}{4250}$ Volts; B-C Phase *114280-AB 4250 AC 165A*
- I. 4kV Switchgear 13-1
 $\frac{4286}{4286}$ Volts; all Phase "
- J. Confirm Transformer Tap settings are per 4E-1676B

901-40
I=50
V=117.5

DIT No:	Q.C. E.P.E.D. 0602-000
PROJECT No:	8913-67
PAGE	3 OF 3

SARGENT & LUNDY
ENGINEERS

DESIGN INFORMATION TRAN

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CLIENT CECO. Page 1 of 5

STATION QUADCIETES UNIT(S) 1 To W. BLOEME - 25

PROJECT NO(S) 8913-67 Z. OUYANG - 25

SUBJECT RHR SERVICE WATER PUMP ROOM

COOLER FANS MOTOR DATA FOR QUADCIETES UNIT-1

MODIFICATION OR DESIGN CHANGE NUMBER(S) N/A

B. D. DESAI EPED B. Desai 7-24-92
PREPARER (PLEASE PRINT NAME) DIVISION PREPARER'S SIGNATURE ISSUE DATE

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ATTACHED PAGES CONTAIN THE RHR
SERVICE WATER PUMP ROOM COOLER FAN
MOTOR DATA FOR DEGRAD VOLTAGE
CALCULATIONS.

SOURCE OF INFORMATION

Calc. No. Report No.
Rev. and/or date Rev. and/or date

Other FAX FROM SEL SITE OFFICE & WALKDOWN DATA.

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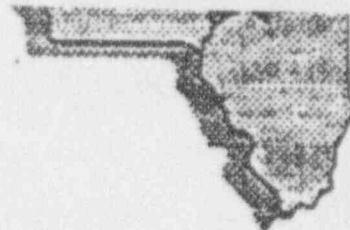


SARGENT & LUNDY
ENGINEERS

Rev. 0 Date 0998
Page C74 of
Proj. No. 8913-67

Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242

Fax: (309) 654-2650



Date: 7-15-92

Time: 7:50

DIT No:	QC-EPED-0605-00
PROJECT No:	8913-67
PAGE	2 OF 5

To: BIPIN DESAI

Location: 21

Extension: 6112

From: BOB BROWN

Project No: _____ X-2105

Comments: FROM CHRIS SEPANIAK. HE SAID

THE FANS ARE 30' IN THE AIR
+ impossible to reach w/o scaffold.

HE HAS A REQUEST FROM STATION TO
measure voltage at fans, but doesn't
Cover sheet plus: 2 pages

KNOW HOW & WHEN
Call upon receipt: yes no HE'LL DO IT, maybe
you should call him
AGAIN.

For verification or trouble call: (309) 654-2241 extension 2842
(309) 654-2241 extension 2598

SI : 769H74
Users : Q
Descrip: MOTOR, 3 HP; 460 VOLT, 3 PHASE, 4.65 AMP, 1730 RPM, 1200 VELOCITY FPM,
: FRAME 182T, LIFE-LINE T MOTOR, INS. CLASS B, MODEL TBAM, MOTOR STYLE
: 72D48203, KVA CODE K
:
:

Unit of Issue : RA
System Average Price : 576.000

Last Purchase Price : 576.00
Last Purchase Date : 12/18/87
Last Quoted Price : 0.00
Last Quoted PO :
Storage : LEVEL I
QA Class : COMMERCIAL GRADE

Last Update date : 03/05/87
Last Active date : 11/07/90

Part # : 72D48203
Model # : TBAM
Drawing # :
PSC # : 99999999

MPGR Name : WESTINGHOUSE

OPT:	01_M.PRC2	03_M.OHS	04_M.SIST	?_HRT.P
07/15/92	05_M.OOR	07_HIST-DTL	08_DISP-SUP	M_MENU
06:50:28	09_M.SPLR	10_M.RSV	11_M.ACT	12_RETURN
				X_EXIT

DIT No: 0605-00
PROJECT No: 8913-67
PAGE 3 OF 5

PLATE DATA

Serial - 7A11 Phase 3 60 cycles
Volts 460
Amps 4.65 ✓
Ins B, KVA Code K
Frame 182T
Model TBAM
RPM- 1730
Motor Style 72048203
Cat # PMRINSHTSPD185C
upper bearing 25AC02JPP3
lower bearing 30BC02JPP3

DIT No: QC-EPED-
0605-00
PROJECT No: 8913-67
PAGE 4 OF 5

DRESDEN UNITS 2, 3 &
QUAD CITIES UNITS 1, 2

(19)

PROJECT NO. 7318-33
SH. OF REV.
DATE:

RUES COOLING WTR PUMP IAFAN (A)

ITEM	DESCRIPTION	DATA	
1	FULL LOAD CURRENT (AMPS)	4.65	
2	DUTY CYCLE		
3	INSULATION CLASS	B	W/D 4E-1676C
4	WINDING TYPE		K/D 4E-1310
5	PHASE	3	P/D 4E-1072
6	CYCLE (HZ)	60	C/T 4E-190PC
7	CUBICLE NO.		LOCATION COL 184 C
8	SERVICE FACTOR		CL 507'0"
9	O.L. SIZE		
10	FRAME	102 T	
11	MANUFACTURER	WESTINGHOUSE (LIFELINE T)	
12	MODEL NO.	TBAM	
13	SERIAL / ID NO.	7211	
14	USER CAT #	PNRINSHTSPOT FSC	
	MTR STYLE	72D48203	
15	VOLTS	460	<div style="border: 1px solid black; padding: 5px;"> DIT No: 66-ED-0- PROJECT No: 7318-33 PAGE 5 OF 5 </div>
16	KVA CODE	K	
17	HP	3	
18	RAM	1730	
19	VELOCITY	1200	
20	TIME HRS	24	AMB 10°C
MECHANICAL DRIVEN EQUIPMENT	MANUFACTURER	BUFFALO PUMP	
	MODEL		
	SERIAL NO. SHIP CODE	72P-10815	
	SIZE		
	BRAKE HORSE POWER (BHP)		

NOTES: * INFORMATION OBTAINED FROM NP
 ** INFORMATION OBTAINED FROM DWG

EQUIPT. DATA ACQUIRED FROM	<input checked="" type="checkbox"/> NAMEPLATE	<input type="checkbox"/> DWG. NO.	<input type="checkbox"/> OTHER
----------------------------	---	-----------------------------------	--------------------------------

PREPARER: *Blakroewe*
 REVIEWER: *R. J. Smith*

DATE: 7-11-77
 DATE: 7-11-77

SARGENT & LUNDY
ENGINEERS

DESIGN INFORMATION TRANSMISSION

U.S. GOV. ACQUISITION
Rev. 0 Date 189981
Page C78 of
Proj. No. 8913-67

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CLIENT CECO

Page 1 of 3

STATION QUAD CITIES UNIT(S) 1

To W. BLOETHE - 25

PROJECT NO(S) 8913-67

SUBJECT RHR SERVICE WATER PUMP ROOM COOLER FANS
FIELD MEASUREMENTS

MODIFICATION OR DESIGN CHANGE NUML R(S) —

B. D. DEJAI
PREPARER (PLEASE PRINT NAME)

EPED
DIVISION

Boon
PREPARER'S SIGNATURE

7-27-92
ISSUE DATE

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ATTACHED PAGES CONTAINS QUAD CITIES
RHR SERVICE WATER PUMP ROOM COOLER FANS
FIELD MEASUREMENT FOR DEGRADED VOLTAGE
CALCULATIONS

SOURCE OF INFORMATION

Calc. No. — Report No. —
Rev. and/or date Rev. and/or date

Other FAX FROM M.S. TUCKER CECO TO B.D. DEJAI DTD 7-16-92

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K. TIP / R.M. SCHIAVONI-21

BS/TREIES- File 1076
R.H. JASON-21

TELECOPY TRANSMITTAL

DATE: 7/16/92

DOCUMENT: Quad Cities BHR SW Pump
cooling fans

TO: Name Bipin Desai Phone 6112
Department EPED
Location 21 Y05
Telecopy Phone 2049

FROM: Name Tucker Phone 7698
Department Nuclear Engineering Department
Location Downers Grove
Telecopy Phone 708-515-7181

TOTAL NUMBER OF PAGES: 2 (Including this Form)

REMARKS:

DIT No: SC-EPED-
0606-69
PROJECT No: 8913-67
PAGE 2 OF 3

QUAD CITIES U-1 RHR SW VAULT COOLING FAN MOTORS MCC 18-2

FAN	CURRENT	VOLTAGE AT MCC PHASE TO PHASE
RHR SW PUMP 1A-A	A PHASE 4.2 AMPS	A-B 471 VOLTS
	B PHASE 4.3 AMPS	A-C 471 VOLTS
	C PHASE 4.3 AMPS	B-C 473 VOLTS
RHR SW PUMP 1A-B	A PHASE 4.3 AMPS	A-B 471 VOLTS
	B PHASE 4.5 AMPS	A-C 471 VOLTS
	C PHASE 4.5 AMPS	B-C 473 VOLTS
RHR SW PUMP 1A-C	A PHASE 4.4 AMPS	A-B 471 VOLTS
	B PHASE 4.3 AMPS	A-C 471 VOLTS
	C PHASE 4.3 AMPS	B-C 473 VOLTS
RHR SW PUMP 1A-D	A PHASE 4.5 AMPS	A-B 471 VOLTS
	B PHASE 4.4 AMPS	A-C 471 VOLTS
	C PHASE 4.4 AMPS	B-C 473 VOLTS
RHR SW PUMP 1B-A	A PHASE 4.2 AMPS	A-B 472 VOLTS
	B PHASE 4.3 AMPS	A-C 472 VOLTS
	C PHASE 4.5 AMPS	B-C 474 VOLTS
RHR SW PUMP 1B-B	A PHASE 4.2 AMPS	A-B 472 VOLTS
	B PHASE 4.4 AMPS	A-C 472 VOLTS
	C PHASE 4.5 AMPS	B-C 473 VOLTS
RHR SW PUMP 1B-C	A PHASE 4.3 AMPS	A-B 472 VOLTS
	B PHASE 4.4 AMPS	A-C 472 VOLTS
	C PHASE 4.4 AMPS	B-C 474 VOLTS
RHR SW PUMP 1B-D	A PHASE 4.4 AMPS	A-B 472 VOLTS
	B PHASE 4.5 AMPS	A-C 471 VOLTS
	C PHASE 4.3 AMPS	B-C 474 VOLTS

QA INSTRUMENTS USED:

MULTIMETER- 1271540 VOM
CAL DUE 3-93

AMMPROBE- 054118Q
CAL DUE 12-92

Chris Janak
Christopher Janak
Electrical System Engineer
Quad Cities Station

DIT No: QC-EPED-0606-00
PROJECT No: 8913-67
PAGE 3 OF 3