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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 655272

Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. Gurdhian Singh, NHC, R3-86, 6-3129	4. USQ Required? ☐ Yes ☒ No	5. Date Sept. 23, 1999
12a. Modification Work ☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. NA	12c. Modification Work Complete NA Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) NA Design Authority/Cog. Engineer Signature & Date
13a. Description of Change Incorporated diesel generator design H-1-83978, Rev.0 and CVDF electrical distribution system changes per DWG. H-1-82246, Rev.3 in to the CAPTOR/DAPPER study. Electrical distribution system changes included the recommendations from the previous revision of the CAPTOR/DAPPER study, SNF-4088, Rev.0.			
13b. Design Baseline Document? ☐ Yes ☒ No			
14a. Justification (mark one) Criteria Change ☐ Design Improvement ☒ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐			
14b. Justification Details Changes in the electrical distribution system and addition of the standby power diesel generator necessitated the re-evaluation of the system parameters.			
15. Distribution (include name, MSIN, and no. of copies) See distribution sheet.			

RELEASE STAMP

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655272

A-7900-013-3 (05/96) GEF096

DISTRIBUTION SHEET					
To		From		Page 1 of 1	
Distribution		NHC, CVDF Project, 81300		Date 9/23/99	
Project Title/Work Order				EDT No. N/A	
Spent Nuclear Fuel Cold Vacuum Drying Facility, W-441				ECN No. 655272	
Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only

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CVD Facility Electrical System CAPTOR/DAPPER Study

Gurdhian Singh

Numatec Hanford Corporation, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13200

ECN: 655272

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Key Words: W-441, Electrical, Study, CVD, CVDF, Captor, Dapper, calculation, load flow, short circuit, analysis

Abstract: Project W-441, CVD Facility Electrical System CAPTOR/DAPPER Study validates Meier's hand calculations. This study includes Load flow, short circuit, voltage drop, protective device coordination, and transient motor starting (TMS) analyses.

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This sheet shows the status and description of the attached Design Analysis sheets.

Discipline: **Electrical**

WO/Job No.:

Calculation No.: **SNF-4088, Rev 1**

Project No. & Name: **W-441, Cold Vacuum Drying Facility**

Calculation Item: **Load, Fault, and Coordination**

These calculations apply to:

Dwg. No.: **H-1-82242, Sheets 1-3; H-1-82246, Sheets 1-3**

Rev. No. **2; 3**

Dwg. No.: **H-1-82247, Sheets 1-3; H-1-82280, Sheets 1-5**

Rev. No. **3; 2**

Other (Study, CDR): **MEI-2288-EL-03 and -04**

Rev. No. **0**

The status of these calculations is:

- ☒ Preliminary Calculations
☐ Final Calculations
☐ Check Calculations (On Calculation Dated)
☐ Void Calculation (Reason Voided)

Incorporated in Final Drawings?

☒ Yes ☐ No

This calculation verified by independent "check" calculations?

☐ Yes ☒ No

Original and Revised Calculation Approvals:

	Rev. 0 Signature/Date	Rev. 1 Signature/Date	Rev. 2 Signature/Date
Originator	Cris Carlson 2/24/99	<i>Cris Carlson</i> 9/23/99	
Checked by	Elliot Ahola 2/24/99	<i>GPM/POC</i> 9-23-99	
Approved by			
Checked Against Approved Vendor Data			

Design Analysis Page No.	INDEX Description
I	Calculation Identification and Index
1	Objective, Criteria, Method of Analysis, References, Data
2	Assumptions, Calculations
3	Conclusions
A	Appendix "A" - PTW Input Data Report
B	Appendix "B" - PTW Demand Load Analysis
C	Appendix "C" - PTW Feeder and Transformer Sizing Report
D	Appendix "D" - PTW Load Flow and Voltage Drop Analysis Report (Summary Only)
E	Appendix "E" - PTW Short Circuit Analysis Report (Summary Only)
F	Appendix "F" - PTW One-Line AutoCad Drawings
G	Appendix "G" - PTW Captor Protective Device Coordination Drawings

EXPIRES 06/24/02

Continuation Sheet

Date _____

8/16/99

WO/Job No. _____

Calculation No. SNF-4088, Rev 1

	Rev. 0 Signature/Date	Rev. 1 Signature/Date	Rev. 2 Signature/Date
Originator			
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Design Analysis
Page No.

Description

H	Captor Protective Device Coordination Settings
I	Appendix "I" - PTW Transient Motor Starting Plots
J	Appendix "J" - PTW Input Information

Revision
No.

Description

[illegible]

DESIGN ANALYSIS

Client: Nutmtec Hanford Corporation

Subject: CVDF Load, Fault, and Coordination Analysis

Location: Cold Vacuum Drying Facility

WO/Job No.:

Date: *9/23/99*

Checked: *9/23/99*

Revised: *N/A*

By: *[Signature]*

By: *[Signature]*

By: *N/A*

1.0 OBJECTIVE:

Validate and as-build the Load and Fault hand calculations performed by Meier Associates. Perform a protective device coordination study, not performed by Meier's, and furnish any recommendations, including recommended device settings. Perform Transient Motor Starting (TMS) analysis for the chillers and also the motors on the standby generator system. Indicate any design problems or NEC Code Violations, if found.

2.0 CRITERIA:

- 2.1 Review the Meier Associates hand calculations.
- 2.2 Review the pertinent project as-build electrical drawings and specifications.
- 2.3 Field verify manufacturer/make of installed equipment.
- 2.4 Estimate actual feeder lengths for the latest drawings and use them in the analysis.

3.0 METHOD OF ANALYSIS:

Power Tools for Windows (PTW) Software, version 3.5.2.1, 1995-1998, SKM Systems Analysis, Inc.

4.0 REFERENCES:

- 4.1 Meier Associates hand calculations MEI-2288-EL-03 and -04, Rev 0, September 21, 1996.
- 4.2 Drawings H-1-82242, Rev 2; H-1-82246, Rev 3; H-1-82247, Rev 3; and H-1-82280, Rev 2.
- 4.3 Electrical Utilities Switching Diagram Drawing H-1-5223, Rev 19.
- 4.4 230 kV Transmission System Fault Study, HNF-SD-LL-ES-016, Rev 1, Page 71, 230 kV Bus "A7".
- 4.5 National Electrical Code (NEC) 1996.
- 4.6 CVDF Generator Building Electrical One-Line Diagram & Conduit Schedule Drawing H-1-83978, Rev 0.
- 4.7 Actual vendor data for the 100 Kw, 480 Vac, 3 Ph generator, see Appendix "J".

5.0 DATA:

The distribution system model was initially derived from field information and the Meier hand calculations. Subsequently, this model was completed in detail using the latest CVDF as-build drawing information. It was created top-down from the 230 kV BPA system, Substation "A7",

DESIGN ANALYSIS

Client: Nutmatec Hanford Corporation

Subject: CVDF Load, Fault, and Coordination Analysis

Location: Cold Vacuum Drying Facility

WO/Job No.:

Date: *9/23/99*

Checked: *9-23-99*

Revised: N/A

By: *[Signature]*

By: *GMY*

By: N/A

transformer A2701C, line breaker C7X14 that feeds 13.8 kV line C7-L14 and to the CVDF facility. The latest worse case 230 kV fault information was used (Ref 4.4).

6.0 ASSUMPTIONS:

6.1 1996 NEC code evaluation will only be performed in a general nature to main basic electrical distribution system (one-line). This study does not encompass the entire physical distribution system.

6.2 All motor load FLA's shall be per those published in the 1996 NEC, table 430-150. The PWT model's motor efficiencies will be adjusted, at the 80% power factor level, such that the calculated FLA's will match as close as possible to those in the table.

6.3 All running induction motors will be included as fault contributions in the short circuit study. Typical default sub-transient reactances shall be used.

6.4 The latest 230 kV, three phase worse case BPA fault levels were used (Ref 4.4), see Appendix "A".

6.5 The per unit driving voltage for the study will be set a 1.045 to raise the nominal main transformer (A2701C) primary voltage from 220 kV to 230 kV.

6.6 The existing PTW Captor Square "D" curves were used and matched to the actual breakers installed.

6.7 In lieu of actual vendor motor data, TMS analysis used the conservative PTW library motor characteristics and loadings.

6.8 The ASCO 940 automatic transfer switch (MCC-1-bus/400A ATS) is electrically operated/mechanically held. Therefore, it would fail either in normal or standby mode. It is not a closed transition transfer switch, and therefore the generator would never be in parallel with the normal supply.

7.0 CALCULATIONS:

The actual PTW (Summer Load) study results are contained in the following appendices, including other pertinent information.

7.1	Appendix "A" -	PTW Input Data Report
7.2	Appendix "B" -	PTW Demand Load Analysis Report
7.3	Appendix "C" -	PTW Feeder and Transformer Sizing Report
7.4	Appendix "D" -	PTW Load Flow and Voltage Drop Analysis Report

DESIGN ANALYSIS

Client: Nutmtec Hanford Corporation

Subject: CVDF Load, Fault, and Coordination Analysis

Location: Cold Vacuum Drying Facility

WO/Job No.:

Date: 9/23/99

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- 7.5 Appendix "E" - PTW Short Circuit Analysis Report (Summary only)
- 7.6 Appendix "F" - PTW One-Line AutoCad Drawings
- 7.7 Appendix "G" - Captor Protective Device Coordination Drawings
- 7.8 Appendix "H" - Captor Protective Device Coordination Settings
- 7.9 Appendix "I" - Transient Motor Starting plots
- 7.10 Appendix "J" - Input Information

8.0 CONCLUSIONS:

Due to the relatively high 13.8 kV fault levels (approaching 10,000A) in the "K" area and the resulting affects upon the CVDF fault levels (approaching 30,000A @ SWBD-1, 480Vac, 3 PH bus), caution must be applied to all electrical equipment Short Circuit Current Ratings (SCCR). The results of this study are outlined below:

8.1 Results of the PTW Demand Load Analysis and Feeder and Transformer Sizing Report:

Discussion: Results indicate the systems design meets the basic NEC requirements, such as equipment size and current carrying capacity requirements. The "Feeder Loads Defined as Zero" resulted from the summer analysis (no heating on - loads not in service).

Conclusion: No significant concerns related to Demand Load Analysis and Feeder and Transformer Sizing exists.

Recommended Future Action: None

8.2 Results of the PTW Load Flow and Voltage Drop Analysis Report:

Discussion: Calculated load flow current for the entire facility (summer load) was 1754A, which is within the SWBD-1, 2500A capacity. Summer load was used because there was little difference between the two seasons, and it contributed the largest motor fault contribution to the worse case fault study. Report yielded only four voltage drop criteria violations and all of them were across transformers. These violations were branch drops reported in excess of %3.0. This is not unusual for transformers that are loaded close to their rating and PTW repeats this flag twice going from the primary to the secondary and then back again. No other voltage drop criteria violations were flagged within the report.

Conclusion: No significant concerns related to this report exist.

Recommended Future Action: None

8.3 Results of the PTW Short Circuit Analysis Report:

The X/R ratios within this facility fall within a range of .1-3.2. The asymmetrical RMS fault currents will decay to symmetrical RMS values in a range of .5-1.7 cycles (information obtained from the detailed Short Circuit Analysis Report). The circuit breakers evaluated within this study appear to operate within their short circuit ratings, even if exposed to some asymmetrical fault current.

DESIGN ANALYSIS

Client: Nutmatec Hanford Corporation

Subject: CVDF Load, Fault, and Coordination Analysis

Location: Cold Vacuum Drying Facility

WO/Job No.:

Date: *9/23/99*

Checked: *9-23-99*

Revised: *N/A*

By: *[Signature]*

By: *[Signature]*

By: *N/A*

8.3.1 Panelboards:

Discussion: The main 480 Vac distribution panels within CVDF were evaluated for SCCR.

Conclusion: The panels evaluated appear to be within their respective SCCR's.

Recommended Future Action: None

8.3.2 SCR heater controllers:

Discussion: There are some SCR heater controllers close to and sourced from panels PNL-003, PNL-005, PNL-007, and PNL-009 that raise some SCCR concerns.

Conclusion: The panel breakers that feed these SCR heater controllers will not provide the SCR controllers with current limiting protection.

Recommended Future Action: None, heavy-duty fused disconnects between the panelboard branch circuit breaker and the SCR controllers have been provided.

8.3.3 The main 1500 Kva, 13.8-480Y/277 Vac, 3 Ph padmounted service transformer (XTA):

Discussion: The main transformer is an RTE with an oil immersed fusing scheme. Its fusing consists of an oil immersed bay-o-net current sensing fuse (C16) in series with a current limiting type ELSP backup fuses (parallel 100A).

Conclusion: This type of fuse scheme will protect the transformer for up to a 160% overload and against internal faults up to 50,000A. The primary riser 13.8 kV fuse (65-T) will also provide fault damage protection for this transformer within typical ANSI requirements.

Recommended Future Action: None

8.4 The PTW Transient Motor Starting (TMS) Analysis:

Discussion: TMS was performed using actual chiller vendor data. Each chiller is comprised of 2-50 HP compressors, 8-1 HP Fans, and a very small evaporator heater (420va). We used the 80% Power Factor, with adjusted efficiencies to approximate the NEC Table 43-150 ampere values for the compressors only, the small fans and heater loads were ignored. The TMS motor/load starting model used 2-50HP, 1800 rpm compressors with an assumed 5 second delay between 50HP starts for each chiller, and with only one chiller started at any one time. The conservative PTW library values for the 50HP compressors used were a NEMA B motor, and a typical compressor load model. The 8-1HP fans were modeled as 1-8HP, 1800 rpm fan, using the conservative PTW library values for a NEMA B motor, and a typical fan load model. TMS analysis, with the system fully loaded, one chiller starting, yielded voltage dips of 3.6% at SWBD-1 and 4.3% at MCC-1.

Conclusion: No system problems are anticipated with the calculated voltage dips.

Recommended Future Action: None

8.5 The PTW Captor Protective Device coordination study:

8.5.1 Three Phase Coordination:

Discussion: The existing Square "D" breakers in SWBD-1 are a 2500A, type "PXH" main, 800A, type "MA", 5-400A, type "LX", 200A, type "KA", and some 20A-100A type "FH".

Conclusion: Coordination of the SWBD-1 feeder breakers with the main appears to be sufficient.

Recommended Future Action: None

DESIGN ANALYSIS

Client: Nutmtec Hanford Corporation

Subject: CVDF Load, Fault, and Coordination Analysis

Location: Cold Vacuum Drying Facility

WO/Job No.:

Date: 9/23/99

Checked: 9-23-99

Revised: N/A

By:

By:

By: N/A

8.5.2 Ground Fault Coordination:

Discussion: Ground fault protection was applied at the SWBD-1, 2500AT, main breaker, and the 400A panelboard feeder breakers.

Conclusion: Current design meets NEC requirements.

Recommended Future Action: None, but more selective coordination could be accomplished by adding current/time adjustable ground fault trip units to other breakers within the system. A closer investigation would have to be performed to establish where and at what level this should occur.

8.6 Diesel Generator Motor Starting Evaluation:

Discussion: The new 100 kw standby diesel generator provides power to panelboard DG-DP-001 which contains exhaust fans EXHF-8045 (20 HP) and EXHF-8047(20 HP), and the two 7.5 HP air compressors in room 120. Other loads on the panelboard, include panelboards LPN-2 and LPN-3, relay terminal panel, and some bay heat tracing. Panelboard LPN-2 will only be picked up when its UPS battery system can no longer support its load (90 minutes). Motor starting was evaluated and included EXHF-8045 and the air compressors, with the other loads running. EXHF-8047 is a standby and is only used if EXHF-8045 is not available.

Conclusion: Starting the motors simultaneously, with all loads running, will produce a voltage dip of approximately 17.8% at panelboard DG-DP-001. If the motors sequenced upon the generator starting with EXHF-8045 first and then each air compressor, the voltage dip will be reduced to approximately 12.9% at panelboard DG-DP-001. Panel LPN-2 has some sensitive loads, including PLC's, remote I/O's, and other monitoring and controlling equipment. The UPS battery backup for this panelboard is designed for 60 minutes, therefore the sensitive loads should not be exposed to the largest voltage dip from starting the 20 HP exhaust fan. The subsequent demand cycling of the 2 (7.5 HP) staged air compressor could produce voltage dips of approximately 6.5%, with only one 7.5 HP motor starting at a time. As long as the sensitive equipment on panelboard LPN-2 can tolerate at least a 10% voltage dip without any detrimental affects (vendor dependent), then the air compressor starting should be acceptable.

Recommended Future Action: Time delay sequence motor starting to help minimize the voltage dips upon generator starting.

Appendix A

PTW Input Data Report

Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

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ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL
INTERPRETATION AND APPLICATION BY A REGISTERED ENGINEER ONLY

SKM POWER*TOOLS FOR WINDOWS
INPUT DATA REPORT
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ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE.

Sep 20, 1999 11:22:44
 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	DESCRIPTION TYPE DUCT INSUL
A2701C-Sec	OH Fdr Tap	1	13800	1000.0	FEET 477	A N OHC3
+/- Impedance: 0.0430 + J 0.1180 Ohms/1000 ft 0.0226 + J 0.0620 PU						
Z0 Impedance: 0.0970 + J 0.6520 Ohms/1000 ft 0.0509 + J 0.3424 PU						
OH Fdr Tap	CVD Riser	1	13800	600.0	FEET 2	A N OHC3
+/- Impedance: 0.3350 + J 0.1460 Ohms/1000 ft 0.1055 + J 0.0460 PU						
Z0 Impedance: 0.3890 + J 0.6800 Ohms/1000 ft 0.1226 + J 0.2142 PU						
CVD Riser	P-1500	1	13800	100.0	FEET 2	C N XLPE
+/- Impedance: 0.1620 + J 0.0493 Ohms/1000 ft 0.0085 + J 0.0026 PU						
Z0 Impedance: 0.1620 + J 0.0493 Ohms/1000 ft 0.0085 + J 0.0026 PU						
S-1500	SWBD-1-Bus	6	480	70.0	FEET 750	C M THWN
+/- Impedance: 0.0216 + J 0.0445 Ohms/1000 ft 0.1094 + J 0.2253 PU						
Z0 Impedance: 0.0680 + J 0.1095 Ohms/1000 ft 0.3443 + J 0.5545 PU						
SWBD-1-Bus	MCC-1-Bus	2	480	72.0	FEET 500	C M THHN
+/- Impedance: 0.0294 + J 0.0466 Ohms/1000 ft 0.4594 + J 0.7281 PU						
Z0 Impedance: 0.0926 + J 0.1147 Ohms/1000 ft 1.45 + J 1.79 PU						
SWBD-1-Bus	BUS-PNL-001	1	480	170.0	FEET 500	C M THHN
+/- Impedance: 0.0294 + J 0.0466 Ohms/1000 ft 2.17 + J 3.44 PU						
Z0 Impedance: 0.0926 + J 0.1147 Ohms/1000 ft 6.83 + J 8.46 PU						
SWBD-1-Bus	BUS-PNL-003	1	480	140.0	FEET 500	C M THHN
+/- Impedance: 0.0294 + J 0.0466 Ohms/1000 ft 1.79 + J 2.83 PU						
Z0 Impedance: 0.0926 + J 0.1147 Ohms/1000 ft 5.63 + J 6.97 PU						
SWBD-1-Bus	BUS-PNL-005	1	480	110.0	FEET 500	C M THHN
+/- Impedance: 0.0294 + J 0.0466 Ohms/1000 ft 1.40 + J 2.22 PU						
Z0 Impedance: 0.0926 + J 0.1147 Ohms/1000 ft 4.42 + J 5.48 PU						
SWBD-1-Bus	BUS-PNL-007	1	480	80.0	FEET 500	C M THHN
+/- Impedance: 0.0294 + J 0.0466 Ohms/1000 ft 1.02 + J 1.62 PU						
Z0 Impedance: 0.0926 + J 0.1147 Ohms/1000 ft 3.22 + J 3.98 PU						

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 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER DESCRIPTION SIZE TYPE DUCT INSUL
SWBD-1-Bus	BUS-PNL-009	1	480	50.0 FEET	500 C M THHN
+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft	0.6380 + J	1.01 PU
Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft	2.01 + J	2.49 PU
SWBD-1-Bus	BUS-SWBD-1-4	1	480	100.0 FEET	4 C M THHN
+/- Impedance:	0.3210 + J	0.0632	Ohms/1000 ft	13.93 + J	2.74 PU
Z0 Impedance:	1.01 + J	0.1556	Ohms/1000 ft	43.91 + J	6.75 PU
SWBD-1-Bus	BUS-SWBD-1-8	1	480	100.0 FEET	12 C M THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft	81.16 + J	3.95 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft	255.79 + J	9.73 PU
SWBD-1-Bus	P-XT7	1	480	20.0 FEET	2 C M THHN
+/- Impedance:	0.2020 + J	0.0585	Ohms/1000 ft	1.75 + J	0.5078 PU
Z0 Impedance:	0.6366 + J	0.1440	Ohms/1000 ft	5.53 + J	1.25 PU
SWBD-1-Bus	UPS IN BUS	1	480	100.0 FEET	1 C M THHN
+/- Impedance:	0.1600 + J	0.0570	Ohms/1000 ft	6.94 + J	2.47 PU
Z0 Impedance:	0.5042 + J	0.1403	Ohms/1000 ft	21.88 + J	6.09 PU
MCC-1-Bus	BUS-MCC-1-B1A	1	480	100.0 FEET	4/0 C M THHN
+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft	2.78 + J	2.16 PU
Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft	8.75 + J	5.31 PU
BUS-MCC-1-B1A	BUS-MCC-1-B1B	1	480	10.0 FEET	4/0 C M THHN
+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft	0.2778 + J	0.2157 PU
Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft	0.8754 + J	0.5313 PU
MCC-1-Bus	BUS-MCC-1-C1A	1	480	100.0 FEET	4/0 C M THHN
+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft	2.78 + J	2.16 PU
Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft	8.75 + J	5.31 PU
BUS-MCC-1-C1A	BUS-MCC-1-C1B	1	480	10.0 FEET	4/0 C M THHN
+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft	0.2778 + J	0.2157 PU
Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft	0.8754 + J	0.5313 PU

Sep 20, 1999 11:22:44
 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	DESCRIPTION TYPE DUCT INSUL
MCC-1-Bus	P-XT6	1	480	22.0 FEET	10 C M	THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		11.27 + J	0.8155 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		35.51 + J	2.01 PU
MCC-1-Bus	BUS-MCC-1-B2	1	480	106.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		86.03 + J	4.19 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		271.14 + J	10.31 PU
MCC-1-Bus	BUS-MCC-1-C2	1	480	110.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		89.28 + J	4.34 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		281.37 + J	10.70 PU
MCC-1-Bus	BUS-MCC-1-D2	1	480	126.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		102.27 + J	4.98 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		322.30 + J	12.26 PU
MCC-1-Bus	BUS-MCC-1-E2	1	480	120.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		97.40 + J	4.74 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		306.95 + J	11.67 PU
MCC-1-Bus	BUS-MCC-1-D1	1	480	100.0 FEET	10 C M	THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		51.22 + J	3.71 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		161.41 + J	9.13 PU
MCC-1-Bus	BUS-MCC-1-B4	1	480	67.0 FEET	6 C M	THHN
+/- Impedance:	0.5100 + J	0.0685	Ohms/1000 ft		14.83 + J	1.99 PU
Z0 Impedance:	1.61 + J	0.1687	Ohms/1000 ft		46.74 + J	4.91 PU
MCC-1-Bus	BUS-MCC-1-C4	1	480	60.0 FEET	6 C M	THHN
+/- Impedance:	0.5100 + J	0.0685	Ohms/1000 ft		13.28 + J	1.78 PU
Z0 Impedance:	1.61 + J	0.1687	Ohms/1000 ft		41.85 + J	4.39 PU
MCC-1-Bus	BUS-MCC-1-D4	1	480	53.0 FEET	8 C M	THHN
+/- Impedance:	0.8110 + J	0.0754	Ohms/1000 ft		18.66 + J	1.73 PU
Z0 Impedance:	2.56 + J	0.1856	Ohms/1000 ft		58.79 + J	4.27 PU

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	DESCRIPTION TYPE DUCT INSUL
MCC-1-Bus	BUS-MCC-1-E4	1	480	47.0 FEET	8 C M	THHN
+/- Impedance:	0.8110 + J	0.0754	Ohms/1000 ft		16.54 + J	1.54 PU
Z0 Impedance:	2.56 + J	0.1856	Ohms/1000 ft		52.14 + J	3.79 PU
MCC-1-Bus	BUS-MCC-1-D3	1	480	121.0 FEET	10 C M	THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		61.97 + J	4.48 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		195.30 + J	11.04 PU
MCC-1-Bus	BUS-MCC-1-E3	1	480	112.0 FEET	6 C M	THHN
+/- Impedance:	0.5100 + J	0.0685	Ohms/1000 ft		24.79 + J	3.33 PU
Z0 Impedance:	1.61 + J	0.1687	Ohms/1000 ft		78.13 + J	8.20 PU
MCC-1-Bus	BUS-MCC-1-E1	1	480	148.0 FEET	8 C M	THHN
+/- Impedance:	0.8110 + J	0.0754	Ohms/1000 ft		52.10 + J	4.84 PU
Z0 Impedance:	2.56 + J	0.1856	Ohms/1000 ft		164.18 + J	11.92 PU
MCC-1-Bus	BUS-MCC-1-F1	1	480	136.0 FEET	8 C M	THHN
+/- Impedance:	0.8110 + J	0.0754	Ohms/1000 ft		47.87 + J	4.45 PU
Z0 Impedance:	2.56 + J	0.1856	Ohms/1000 ft		150.87 + J	10.96 PU
MCC-1-Bus	BUS-MCC-1-F2	1	480	160.0 FEET	10 C M	THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		81.94 + J	5.93 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		258.25 + J	14.60 PU
MCC-1-Bus	BUS-MCC-1-F3	1	480	120.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		97.40 + J	4.74 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		306.95 + J	11.67 PU
MCC-1-Bus	BUS-MCC-1-F4	1	480	117.0 FEET	12 C M	THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		94.96 + J	4.62 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		299.27 + J	11.38 PU
MCC-1-Bus	BUS-MCC-1-F5	1	480	170.0 FEET	10 C M	THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		87.07 + J	6.30 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		274.39 + J	15.52 PU

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	DESCRIPTION TYPE DUCT INSUL
MCC-1-Bus	BUS-MCC-1-G2	1	480	140.0 FEET	2/0 C M	THHN
+/- Impedance: 0.1020 + J 0.0533 Ohms/1000 ft 6.20 + J 3.24 PU						
Z0 Impedance: 0.3214 + J 0.1312 Ohms/1000 ft 19.53 + J 7.97 PU						
MCC-1-Bus	BUS-MCC-1-G3	1	480	100.0 FEET	12 C M	THHN
+/- Impedance: 1.87 + J 0.0910 Ohms/1000 ft 81.16 + J 3.95 PU						
Z0 Impedance: 5.89 + J 0.2241 Ohms/1000 ft 255.79 + J 9.73 PU						
BUS-PNL-001	P-XT1	1	480	10.0 FEET	10 C M	THHN
+/- Impedance: 1.18 + J 0.0854 Ohms/1000 ft 5.12 + J 0.3707 PU						
Z0 Impedance: 3.72 + J 0.2103 Ohms/1000 ft 16.14 + J 0.9128 PU						
BUS-PNL-003	P-XT2	1	480	10.0 FEET	10 C M	THHN
+/- Impedance: 1.18 + J 0.0854 Ohms/1000 ft 5.12 + J 0.3707 PU						
Z0 Impedance: 3.72 + J 0.2103 Ohms/1000 ft 16.14 + J 0.9128 PU						
BUS-PNL-005	P-XT3	1	480	10.0 FEET	10 C M	THHN
+/- Impedance: 1.18 + J 0.0854 Ohms/1000 ft 5.12 + J 0.3707 PU						
Z0 Impedance: 3.72 + J 0.2103 Ohms/1000 ft 16.14 + J 0.9128 PU						
BUS-PNL-007	P-XT4	1	480	10.0 FEET	10 C M	THHN
+/- Impedance: 1.18 + J 0.0854 Ohms/1000 ft 5.12 + J 0.3707 PU						
Z0 Impedance: 3.72 + J 0.2103 Ohms/1000 ft 16.14 + J 0.9128 PU						
BUS-PNL-009	P-XT5	1	480	10.0 FEET	10 C M	THHN
+/- Impedance: 1.18 + J 0.0854 Ohms/1000 ft 5.12 + J 0.3707 PU						
Z0 Impedance: 3.72 + J 0.2103 Ohms/1000 ft 16.14 + J 0.9128 PU						
BUS-XT9-S	BUS-PNL LPN-3	1	208	10.0 FEET	2 C M	THHN
+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft 4.67 + J 1.35 PU						
Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft 14.71 + J 3.33 PU						
S-XT7	BUS-PNL-1	1	208	10.0 FEET	4/0 C M	THHN
+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft 1.48 + J 1.15 PU						
Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft 4.66 + J 2.83 PU						

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	DESCRIPTION TYPE DUCT INSUL
MCC-1-Bus	BUS-SD-DG-1	1	480	100.0 FEET	2 C M	THHN
+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft 8.77 + J 2.54 PU						
Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft 27.63 + J 6.25 PU						
BUS-SD-DG-1	WW1	1	480	5.0 FEET	2 C M	THHN
+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft 0.4384 + J 0.1270 PU						
Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft 1.38 + J 0.3125 PU						
WW1	BUS-5 HP COMB	1	480	1.000 FEET	12 C N	THHN
+/- Impedance: 1.87 + J 0.0892 Ohms/1000 ft 0.8116 + J 0.0387 PU						
Z0 Impedance: 2.97 + J 0.2269 Ohms/1000 ft 1.29 + J 0.0985 PU						
BUS-5 HP COMB	BUS-AIR COMP	1	480	20.0 FEET	12 C M	THHN
+/- Impedance: 1.87 + J 0.0910 Ohms/1000 ft 16.23 + J 0.7899 PU						
Z0 Impedance: 5.89 + J 0.2241 Ohms/1000 ft 51.16 + J 1.95 PU						
WW1	BUS-0066	1	480	1.000 FEET	12 C N	THHN
+/- Impedance: 1.87 + J 0.0892 Ohms/1000 ft 0.8116 + J 0.0387 PU						
Z0 Impedance: 2.97 + J 0.2269 Ohms/1000 ft 1.29 + J 0.0985 PU						
WW1	BUS-0067	1	480	1.000 FEET	12 C N	THHN
+/- Impedance: 1.87 + J 0.0892 Ohms/1000 ft 0.8116 + J 0.0387 PU						
Z0 Impedance: 2.97 + J 0.2269 Ohms/1000 ft 1.29 + J 0.0985 PU						
400A ATS	WW1	1	480	10.0 FEET	2 C M	THHN
+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft 0.8767 + J 0.2539 PU						
Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft 2.76 + J 0.6250 PU						
BUS-STBY-DS	BUS-DG-DP-001	1	480	10.0 FEET	2/0 C M	THHN
+/- Impedance: 0.1020 + J 0.0533 Ohms/1000 ft 0.4427 + J 0.2313 PU						
Z0 Impedance: 0.3214 + J 0.1312 Ohms/1000 ft 1.39 + J 0.5694 PU						
400A ATS	BUS-STBY-DS	1	480	10.0 FEET	2/0 C M	THHN
+/- Impedance: 0.1020 + J 0.0533 Ohms/1000 ft 0.4427 + J 0.2313 PU						
Z0 Impedance: 0.3214 + J 0.1312 Ohms/1000 ft 1.39 + J 0.5694 PU						

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FEEDER INPUT DATA

FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER DESCRIPTION SIZE TYPE DUCT INSUL
BUS-DG-DP-001	BUS-XT9-P	1	480	10.0 FEET	6 C M THHN
+/- Impedance:	0.5100 + J	0.0685	Ohms/1000 ft		2.21 + J 0.2973 PU
Z0 Impedance:	1.61 + J	0.1687	Ohms/1000 ft		6.98 + J 0.7322 PU
WW1	BUS DG1-PP1-1	1	480	10.0 FEET	12 C M THHN
+/- Impedance:	1.87 + J	0.0910	Ohms/1000 ft		8.12 + J 0.3950 PU
Z0 Impedance:	5.89 + J	0.2241	Ohms/1000 ft		25.58 + J 0.9727 PU
BUS-DG-DP-001	BUS-2-7.5 HP	1	480	100.0 FEET	10 C M THHN
+/- Impedance:	1.18 + J	0.0854	Ohms/1000 ft		51.22 + J 3.71 PU
Z0 Impedance:	3.72 + J	0.2103	Ohms/1000 ft		161.41 + J 9.13 PU
UPS OUT BUS	BUS-LPN-2	1	208	10.0 FEET	2 C M THHN
+/- Impedance:	0.2020 + J	0.0585	Ohms/1000 ft		4.67 + J 1.35 PU
Z0 Impedance:	0.6366 + J	0.1440	Ohms/1000 ft		14.71 + J 3.33 PU

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TRANSFORMER INPUT DATA

PRIMARY RECORD NO NAME	VOLTS L-L	* SECONDARY RECORD NO NAME	VOLTS L-L	FULL-LOAD KVA	NOMINAL KVA
P-1500	D 13800.0	S-1500	YG 480.00	1725.00	1500.00
Pos. Seq. Z%:	1.93 + J	5.79 1.29 + j	3.86 PU		
Zero Seq. Z%:	1.93 + J	5.79 1.29 + j	3.86 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		
P-XT7	D 480.00	S-XT7	YG 208.00	0.00000	75.00
Pos. Seq. Z%:	2.42 + J	2.10 32.27 + j	28.00 PU		
Zero Seq. Z%:	2.42 + J	2.10 32.27 + j	28.00 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		
P-XT6	D 480.00	S-XT6	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		
A2701C-Pri	YG 220000.	A2701C-Sec	YG 13800.0	50000.0	30000.0
Pos. Seq. Z%:	0.377 + J	12.72 0.012 + j	0.424 PU		
Zero Seq. Z%:	0.377 + J	12.72 0.012 + j	0.424 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		
UPS IN BUS	D 480.00	UPS OUT BUS	YG 208.00	0.00000	30.00
Pos. Seq. Z%:	0.000 + J	0.000 0.030 + j	0.030 PU		
Zero Seq. Z%:	0.000 + J	0.000 0.030 + j	0.030 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		
P-XT1	D 480.00	S-XT1	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):	0.000 Deg.		

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TRANSFORMER INPUT DATA

PRIMARY RECORD NO NAME	VOLTS L-L	* SECONDARY RECORD NO NAME	VOLTS L-L	FULL-LOAD KVA	NOMINAL KVA
P-XT2	D 480.00	S-XT2	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 0.000 Deg.					
P-XT3	D 480.00	S-XT3	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 0.000 Deg.					
P-XT4	D 480.00	S-XT4	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 0.000 Deg.					
P-XT5	D 480.00	S-XT5	YG 208.00	0.00000	15.00
Pos. Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Zero Seq. Z%:	2.10 + J	1.82 140.0 + j	121.3 PU		
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 0.000 Deg.					
BUS-XT9-P	D 480.00	BUS-XT9-S	YG 208.00	0.00000	30.00
Pos. Seq. Z%:	3.75 + J	2.04 125.0 + j	68.00 PU		
Zero Seq. Z%:	3.75 + J	2.04 125.0 + j	68.00 PU		
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 30.00 Deg.					

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GENERATION DATA

BUS NAME	GENERATION	VOLT	SIZE	InitKW	MaxKVAR	TYPE
A2701C-Pri	230 Kv	1.045 pu				SB
	Three Phase Contribution: 4184.50 MVA X/R : 6.39					
	Line to Earth Contribution: 0.00000 MVA X/R : 0.00000					
	Pos sequence impedance (100 MVA base) 0.0037 + J 0.0236 PU					
	Zero sequence impedance (100 MVA base) Infinite					

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DEMAND LOAD DATA

B U S	LOAD NAME	DEMAND CATEGORY	VOLTS	SIZE	PF/LAG/LEAD
BUS DG1-PP1-1	DG1-PP1-1	BUS DG1-PP1-1	480.00	3.53 kVA	0.90 LAG
BUS-0066	HVAC-HTR-8023	BUS-0066	480.00	5.00 KW	1.00
BUS-0067	HVAC-HTR-8024	BUS-0067	480.00	5.00 KW	1.00
BUS-MCC-1-B1B	LOAD-CHW-7010H	BUS-MCC-1-B1B	480.00	0.4200 KW	1.00
BUS-MCC-1-C1B	LOAD-CHW-7001H	BUS-MCC-1-C1B	480.00	0.4200 KW	1.00
BUS-SWBD-1-4	HVAC-HTP-8001	BUS-SWBD-1-4	480.00	40.30 KW	1.00

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MOTOR LOAD DATA

BUS NAME	LOAD NAME	VOLT	SIZE	#	UNIT	TYPE	EFF	PF	LAG/LEAD
BUS-2-7.5 HP	7.5 HP-1	480.0	7.50*1.HP			KVA	0.80	0.80	LAG
BUS-2-7.5 HP	7.5 HP-2	480.0	7.50*1.HP			KVA	0.80	0.80	LAG
BUS-AIR COMP	5 HP AIR COMP	480.0	5.00*1.HP			KVA	0.77	0.80	LAG
BUS-MCC-1-B1B	CHW-CHR-7010A	480.0	50.0*1.KW			KVA	0.90	0.80	LAG
BUS-MCC-1-B1B	CHW-CHR-7010B	480.0	50.0*1.KW			KVA	0.90	0.80	LAG
BUS-MCC-1-B1B	CHW-CHR-7010F	480.0	8.00*1.KW			KVA	0.80	0.80	LAG
BUS-MCC-1-B2	CHW-P-7002	480.0	0.50*1.HP			KVA	0.53	0.80	LAG
BUS-MCC-1-B4	HVAC-EXHF-8027	480.0	30.0*1.HP			KVA	0.88	0.80	LAG
BUS-MCC-1-C1B	CHW-CHR-7001A	480.0	50.0*1.KW			KVA	0.90	0.80	LAG
BUS-MCC-1-C1B	CHW-CHR-7001B	480.0	50.0*1.KW			KVA	0.90	0.80	LAG
BUS-MCC-1-C1B	CHW-CHR-7001F	480.0	8.00*1.KW			KVA	0.80	0.80	LAG
BUS-MCC-1-C2	CHW-P-7012	480.0	0.50*1.HP			KVA	0.53	0.80	LAG
BUS-MCC-1-C4	HVAC-EXHF-8025	480.0	30.0*1.HP			KVA	0.88	0.80	LAG
BUS-MCC-1-D1	HVAC-FAN-8005	480.0	10.0*1.HP			KVA	0.84	0.80	LAG
BUS-MCC-1-D2	CHW-P-7030	480.0	7.50*1.HP			KVA	0.80	0.80	LAG
BUS-MCC-1-D4	HVAC-EXHF-8045	480.0	20.0*1.HP			KVA	0.87	0.80	LAG
BUS-MCC-1-E2	CHW-P-7040	480.0	7.50*1.HP			KVA	0.80	0.80	LAG
BUS-MCC-1-E4	HVAC-EXHF-8047	480.0	20.0*1.HP			KVA	0.87	0.80	LAG
BUS-MCC-1-F3	TWC-P-7058	480.0	1.50*1.HP			KVA	0.59	0.80	LAG
BUS-MCC-1-F4	TWC-P-7055	480.0	1.50*1.HP			KVA	0.59	0.80	LAG
BUS-MCC-1-F5	TWC-P-7075	480.0	19.1*1.kVA			KVA	0.84	0.80	LAG
BUS-MCC-1-G3	PUMP DI-P001	480.0	0.75*1.HP			KVA	0.55	0.80	LAG
BUS-SWBD-1-4	HVAC-EXHF-8006	480.0	0.75*1.HP			KVA	0.55	0.80	LAG
BUS-SWBD-1-8	HVAC-EXHF-8005	480.0	0.75*1.HP			KVA	0.55	0.80	LAG

Appendix B

PTW Demand Load Analysis Report

Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

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ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL, INTERPRETATION
AND APPLICATION BY A REGISTERED ENGINEER ONLY

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DEMAND LOAD ANALYSIS REPORT
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*** SOLUTION COMMENTS ***
=====

LOAD ANALYSIS INCLUDES ALL LOADS.

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LOAD SUMMARY

LOAD SCHEDULE FOR 400A ATS 480. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
SOURCE OF PWR WW1							
END USE LOADS							
BRANCH LOADS							
BUS-STBY-DS	45.8	55.1	45.8	55.1	54.2	65.2	88.68
TOTALS	45.8	55.1	45.8	55.1	54.2	65.2	88.68

LOAD SCHEDULE FOR A2701C-Pr1 220000. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
SOURCE OF PWR SOURCE BUS							
END USE LOADS							
BRANCH LOADS							
A2701C-Sec	1382.4	3.6	1371.4	3.6	1557.7	4.1	96.61
TOTALS	1382.4	3.6	1371.4	3.6	1557.7	4.1	96.61

LOAD SCHEDULE FOR A2701C-Sec 13800. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
SOURCE OF PWR A2701C-Pr1							
END USE LOADS							
BRANCH LOADS							
OH Fdr Tap	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61
TOTALS	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61

LOAD SCHEDULE FOR BUS DG1-PP1-1 480. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
SOURCE OF PWR WW1							
END USE LOADS							
BRANCH LOADS							
GENERAL LOADS	3.5	4.2	3.5	4.2	3.5	4.2	90.00
TOTALS	3.5	4.2	3.5	4.2	3.5	4.2	90.00

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-0066 SOURCE OF PWR WW1 480. VOLTS LINE TO LINE

ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	5.0	6.0	5.0	6.0	6.3	7.5	100.00
BRANCH LOADS							
TOTALS	5.0	6.0	5.0	6.0	6.3	7.5	100.00

LOAD SCHEDULE FOR BUS-0067 SOURCE OF PWR WW1 480. VOLTS LINE TO LINE

ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	5.0	6.0	5.0	6.0	6.3	7.5	100.00
BRANCH LOADS							
TOTALS	5.0	6.0	5.0	6.0	6.3	7.5	100.00

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-2-7.5 HP 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-DG-DP-001

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
KVA TYPE MTR	8.7	10.5	8.7	10.5	8.7	10.5	80.00
LARGEST KVA MTR	8.7	10.5	8.7	10.5	10.9	13.1	80.00
BRANCH LOADS							
TOTALS	17.5	21.0	17.5	21.0	19.7	23.7	80.00

LOAD SCHEDULE FOR BUS-5 HP COMB 480. VOLTS LINE TO LINE
 SOURCE OF PWR WW1

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-AIR COMP	6.1	7.3	6.1	7.3	7.6	9.1	80.00
TOTALS	6.1	7.3	6.1	7.3	7.6	9.1	80.00

LOAD SCHEDULE FOR BUS-AIR COMP 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-5 HP COMB

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	6.1	7.3	6.1	7.3	7.6	9.1	80.00
BRANCH LOADS							
TOTALS	6.1	7.3	6.1	7.3	7.6	9.1	80.00

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LOAD SUMMARY

LOAD SCHEDULE FOR		BUS-DG-DP-001		BUS-STBY-DS		480. VOLTS LINE TO LINE		
		SOURCE OF PWR						
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F	
=====								
END USE LOADS								
GENERAL LOADS	.5	.6	.5	.6	.5	.6	90.00	
HEATING	5.6	6.8	5.6	6.8	7.0	8.5	100.00	
SPARE	1.0	1.2	1.0	1.2	1.0	1.2	90.00	
BRANCH LOADS								
BUS-XT9-P	22.0	26.5	22.0	26.5	27.0	32.5	88.50	
BUS-2-7.5 HP	17.5	21.0	17.5	21.0	19.7	23.7	80.00	
=====								
TOTALS	45.8	55.1	45.8	55.1	54.2	65.2	88.68	

LOAD SCHEDULE FOR		BUS-LPN-2		UPS OUT BUS		208. VOLTS LINE TO LINE		
		SOURCE OF PWR						
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F	
=====								
END USE LOADS								
GENERAL LOADS	25.9	71.8	25.9	71.8	25.9	71.8	90.00	
RECEPTACLES	1.1	3.0	1.1	3.0	1.1	3.0	90.00	
MOTOR	.5	1.5	.5	1.5	.5	1.5	90.00	
LARGEST MOTOR	3.5	9.8	3.5	9.8	4.4	12.3	90.00	
BRANCH LOADS								
=====								
TOTALS	31.0	86.1	31.0	86.1	31.9	88.6	90.00	

LOAD SCHEDULE FOR		BUS-MCC-1-B1A		MCC-1-Bus		480. VOLTS LINE TO LINE		
		SOURCE OF PWR						
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F	
=====								
END USE LOADS								
BRANCH LOADS								
BUS-MCC-1-B1B	135.3	162.8	135.3	162.8	151.0	181.7	80.12	
=====								
TOTALS	135.3	162.8	135.3	162.8	151.0	181.7	80.12	

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LOAD SUMMARY

LOAD SCHEDULE FOR		BUS-MCC-1-B1B				480. VOLTS LINE TO LINE	
		SOURCE OF PWR		BUS-MCC-1-B1A			
ITEM DESCRIPTION *	CONNECTED	LOAD	* DEMAND	LOAD	* DESIGN	LOAD	* %
	KVA	AMPS	KVA	AMPS	KVA	AMPS	P F
=====							
END USE LOADS							
HEATING	.4	.5	.4	.5	.5	.6	100.00
KVA TYPE MTR	72.5	87.2	72.5	87.2	72.5	87.2	80.00
LARGEST KVA MTR	62.5	75.2	62.5	75.2	78.1	94.0	80.00
=====							
BRANCH LOADS							
=====							
TOTALS	135.3	162.8	135.3	162.8	151.0	181.7	80.12

LOAD SCHEDULE FOR		BUS-MCC-1-B2				480. VOLTS LINE TO LINE	
		SOURCE OF PWR		MCC-1-Bus			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F

END USE LOADS							
LARGEST KVA MTR	.9	1.1	.9	1.1	1.1	1.3	80.00
BRANCH LOADS							

TOTALS	.9	1.1	.9	1.1	1.1	1.3	80.00

LOAD SCHEDULE FOR		BUS-MCC-1-B4		SOURCE OF PWR		MCC-1-Bus		480. VOLTS LINE TO LINE	
ITEM DESCRIPTION	* CONNECTED	LOAD	* DEMAND	LOAD	* DESIGN	LOAD	* %		
	KVA	AMPS	KVA	AMPS	KVA	AMPS	P F		
=====									
END USE LOADS									
LARGEST KVA MTR	31.8	38.2	31.8	38.2	39.7	47.8	80.00		
BRANCH LOADS									
=====									
TOTALS	31.8	38.2	31.8	38.2	39.7	47.8	80.00		

LOAD SCHEDULE FOR		BUS-MCC-1-C1A				480. VOLTS LINE TO LINE		
		SOURCE OF PWR		MCC-1-Bus				
ITEM DESCRIPTION	* CONNECTED	LOAD	* DEMAND	LOAD	* DESIGN	LOAD	* %	
	KVA	AMPS	KVA	AMPS	KVA	AMPS	P F	
=====								
END USE LOADS								
BRANCH LOADS								
BUS-MCC-1-C1B	135.3	162.8	135.3	162.8	151.0	181.7	80.12	
=====								
TOTALS	135.3	162.8	135.3	162.8	151.0	181.7	80.12	
=====								

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-MCC-1-C1B 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-MCC-1-C1A

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	.4	.5	.4	.5	.5	.6	100.00
KVA TYPE MTR	72.5	87.2	72.5	87.2	72.5	87.2	80.00
LARGEST KVA MTR	62.5	75.2	62.5	75.2	78.1	94.0	80.00
BRANCH LOADS							
TOTALS	135.3	162.8	135.3	162.8	151.0	181.7	80.12

LOAD SCHEDULE FOR BUS-MCC-1-C2 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	.9	1.1	.9	1.1	1.1	1.3	80.00
BRANCH LOADS							
TOTALS	.9	1.1	.9	1.1	1.1	1.3	80.00

LOAD SCHEDULE FOR BUS-MCC-1-C4 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	31.8	38.2	31.8	38.2	39.7	47.8	80.00
BRANCH LOADS							
TOTALS	31.8	38.2	31.8	38.2	39.7	47.8	80.00

LOAD SCHEDULE FOR BUS-MCC-1-D1 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	11.1	13.4	11.1	13.4	13.9	16.7	80.00
BRANCH LOADS							
TOTALS	11.1	13.4	11.1	13.4	13.9	16.7	80.00

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-MCC-1-D2 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	8.7	10.5	8.7	10.5	10.9	13.1	80.00
BRANCH LOADS							
TOTALS	8.7	10.5	8.7	10.5	10.9	13.1	80.00

LOAD SCHEDULE FOR BUS-MCC-1-D3 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-MCC-1-D4 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	21.4	25.8	21.4	25.8	26.8	32.2	80.00
BRANCH LOADS							
TOTALS	21.4	25.8	21.4	25.8	26.8	32.2	80.00

LOAD SCHEDULE FOR BUS-MCC-1-E1 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

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LOAD SUMMARY

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*****
LOAD SCHEDULE FOR BUS-MCC-1-E2          480. VOLTS LINE TO LINE
                     SOURCE OF PWR      MCC-1-Bus
=====
ITEM DESCRIPTION * CONNECTED  LOAD * DEMAND  LOAD * DESIGN  LOAD * %
                   KVA      AMPS KVA    AMPS KVA    AMPS P F
=====
                        END USE LOADS
LARGEST KVA MTR    8.7      10.5    8.7    10.5    10.9    13.1  80.00
                        BRANCH LOADS
=====
TOTALS             8.7      10.5    8.7    10.5    10.9    13.1  80.00
=====
  
```

```

LOAD SCHEDULE FOR BUS-MCC-1-E3          480. VOLTS LINE TO LINE
                     SOURCE OF PWR      MCC-1-Bus
=====
ITEM DESCRIPTION * CONNECTED  LOAD * DEMAND  LOAD * DESIGN  LOAD * %
                   KVA      AMPS KVA    AMPS KVA    AMPS P F
=====
                        END USE LOADS
                        BRANCH LOADS
=====
*** WARNING *** DESIGN LOAD IS ZERO KVA
  
```

```

LOAD SCHEDULE FOR BUS-MCC-1-E4          480. VOLTS LINE TO LINE
                     SOURCE OF PWR      MCC-1-Bus
=====
ITEM DESCRIPTION * CONNECTED  LOAD * DEMAND  LOAD * DESIGN  LOAD * %
                   KVA      AMPS KVA    AMPS KVA    AMPS P F
=====
                        END USE LOADS
LARGEST KVA MTR    21.4     25.8    21.4    25.8    26.8    32.2  80.00
                        BRANCH LOADS
=====
TOTALS             21.4     25.8    21.4    25.8    26.8    32.2  80.00
=====
  
```

```

LOAD SCHEDULE FOR BUS-MCC-1-F1          480. VOLTS LINE TO LINE
                     SOURCE OF PWR      MCC-1-Bus
=====
ITEM DESCRIPTION * CONNECTED  LOAD * DEMAND  LOAD * DESIGN  LOAD * %
                   KVA      AMPS KVA    AMPS KVA    AMPS P F
=====
                        END USE LOADS
                        BRANCH LOADS
=====
*** WARNING *** DESIGN LOAD IS ZERO KVA
  
```

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-MCC-1-F2 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-MCC-1-F3 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	2.4	2.9	2.4	2.9	3.0	3.6	80.00
BRANCH LOADS							
TOTALS	2.4	2.9	2.4	2.9	3.0	3.6	80.00

LOAD SCHEDULE FOR BUS-MCC-1-F4 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	2.4	2.9	2.4	2.9	3.0	3.6	80.00
BRANCH LOADS							
TOTALS	2.4	2.9	2.4	2.9	3.0	3.6	80.00

LOAD SCHEDULE FOR BUS-MCC-1-F5 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	19.1	23.0	19.1	23.0	23.9	28.7	80.00
BRANCH LOADS							
TOTALS	19.1	23.0	19.1	23.0	23.9	28.7	80.00

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-MCC-1-G2 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-MCC-1-G3 480. VOLTS LINE TO LINE
 SOURCE OF PWR MCC-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
LARGEST KVA MTR	1.3	1.5	1.3	1.5	1.6	1.9	80.00
BRANCH LOADS							
TOTALS	1.3	1.5	1.3	1.5	1.6	1.9	80.00

LOAD SCHEDULE FOR BUS-PNL LPN-3 208. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-XT9-S

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	2.0	5.5	2.0	5.5	2.0	5.5	85.40
LIGHTING	20.0	55.6	20.0	55.6	25.1	69.5	88.73
BRANCH LOADS							
TOTALS	22.0	61.1	22.0	61.1	27.0	75.1	88.50

LOAD SCHEDULE FOR BUS-PNL-001 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	21.3	25.6	21.3	25.6	26.6	32.0	100.00
MOTOR	22.2	26.7	22.2	26.7	22.2	26.7	80.00
BRANCH LOADS							
P-XT1	2.5	3.0	2.5	3.0	2.5	3.0	90.00
TOTALS	43.7	52.6	43.7	52.6	48.8	58.7	95.54

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-PNL-003 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	147.4	177.3	147.4	177.3	184.3	221.6	100.00
MOTOR	35.7	43.0	35.7	43.0	35.7	43.0	81.98
BRANCH LOADS							
P-XT2	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	182.1	219.0	182.1	219.0	218.8	263.2	99.48

LOAD SCHEDULE FOR BUS-PNL-005 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	147.4	177.3	147.4	177.3	184.3	221.6	100.00
MOTOR	34.9	42.0	34.9	42.0	34.9	42.0	97.34
BRANCH LOADS							
P-XT3	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	185.7	223.4	185.7	223.4	222.6	267.7	99.90

LOAD SCHEDULE FOR BUS-PNL-007 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
HEATING	147.4	177.3	147.4	177.3	184.3	221.6	100.00
MOTOR	34.9	42.0	34.9	42.0	34.9	42.0	97.34
BRANCH LOADS							
P-XT4	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	185.7	223.4	185.7	223.4	222.6	267.7	99.90

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LOAD SUMMARY

LOAD SCHEDULE FOR		BUS-PNL-009				480. VOLTS LINE TO LINE		
		SOURCE OF PWR		SWBD-1-Bus				
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F	
END USE LOADS								
HEATING	147.4	177.3	147.4	177.3	184.3	221.6	100.00	
MOTOR	34.9	42.0	34.9	42.0	34.9	42.0	97.34	
BRANCH LOADS								
P-XT5	4.4	5.3	4.4	5.3	4.5	5.4	91.52	
TOTALS	185.7	223.4	185.7	223.4	222.6	267.7	99.90	

LOAD SCHEDULE FOR		BUS-PNL-1				208. VOLTS LINE TO LINE	
		SOURCE OF PWR		S-XT7			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	35.6	98.7	35.6	98.7	35.6	98.7	90.00
LIGHTING	5.2	14.5	5.2	14.5	6.5	18.2	90.00
RECEPTACLES	16.9	46.9	13.4	37.3	13.4	37.3	90.00
HEATING	9.0	25.0	9.0	25.0	11.3	31.2	100.00
MOTOR	.1	.3	.1	.3	.1	.3	90.00
SPACE	1.0	2.8	1.0	2.8	1.0	2.8	90.00
BRANCH LOADS							
TOTALS	67.0	186.0	63.6	176.5	67.0	185.9	92.95

LOAD SCHEDULE FOR		BUS-SD-DG-1				480. VOLTS LINE TO LINE	
		SOURCE OF PWR		MCC-1-Bus			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
=====							
END USE LOADS							
BRANCH LOADS							
WW1	64.2	77.3	64.2	77.3	74.9	90.1	91.51
=====							
TOTALS	64.2	77.3	64.2	77.3	74.9	90.1	91.51

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-STBY-DS 480. VOLTS LINE TO LINE
 SOURCE OF PWR 400A ATS

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-DG-DP-001	45.8	55.1	45.8	55.1	54.2	65.2	88.68
TOTALS	45.8	55.1	45.8	55.1	54.2	65.2	88.68

LOAD SCHEDULE FOR BUS-SWBD-1-4 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
HEATING	40.3	48.5	40.3	48.5	50.4	60.6	100.00
LARGEST KVA MTR	1.3	1.5	1.3	1.5	1.6	1.9	80.00
TOTALS	41.3	49.7	41.3	49.7	51.7	62.1	99.98

LOAD SCHEDULE FOR BUS-SWBD-1-8 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
LARGEST KVA MTR	1.3	1.5	1.3	1.5	1.6	1.9	80.00
TOTALS	1.3	1.5	1.3	1.5	1.6	1.9	80.00

LOAD SCHEDULE FOR BUS-XT9-P 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-DG-DP-001

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-XT9-S	22.0	26.5	22.0	26.5	27.0	32.5	88.50
TOTALS	22.0	26.5	22.0	26.5	27.0	32.5	88.50

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LOAD SUMMARY

LOAD SCHEDULE FOR BUS-XT9-S 208. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-XT9-P

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-PNL LPN-3	22.0	61.1	22.0	61.1	27.0	75.1	88.50
TOTALS	22.0	61.1	22.0	61.1	27.0	75.1	88.50

LOAD SCHEDULE FOR CVD Riser 13800. VOLTS LINE TO LINE
 SOURCE OF PWR OH Fdr Tap

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
P-1500	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61
TOTALS	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61

LOAD SCHEDULE FOR MCC-1-Bus 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-MCC-1-B1A	135.3	162.8	135.3	162.8	151.0	181.7	80.12
BUS-MCC-1-C1A	135.3	162.8	135.3	162.8	151.0	181.7	80.12
P-XT6	9.7	11.7	9.7	11.7	11.2	13.4	98.81
BUS-MCC-1-B2	.9	1.1	.9	1.1	1.1	1.3	80.00
BUS-MCC-1-C2	.9	1.1	.9	1.1	1.1	1.3	80.00
BUS-MCC-1-D2	8.7	10.5	8.7	10.5	10.9	13.1	80.00
BUS-MCC-1-E2	8.7	10.5	8.7	10.5	10.9	13.1	80.00
BUS-MCC-1-D1	11.1	13.4	11.1	13.4	13.9	16.7	80.00
BUS-MCC-1-B4	31.8	38.2	31.8	38.2	39.7	47.8	80.00
BUS-MCC-1-C4	31.8	38.2	31.8	38.2	39.7	47.8	80.00
BUS-MCC-1-D4	21.4	25.8	21.4	25.8	26.8	32.2	80.00
BUS-MCC-1-E4	21.4	25.8	21.4	25.8	26.8	32.2	80.00
BUS-MCC-1-D3	.0	.0	.0	.0	WARNING: LOAD IS ZERO		
BUS-MCC-1-E3	.0	.0	.0	.0	WARNING: LOAD IS ZERO		
BUS-MCC-1-E1	.0	.0	.0	.0	WARNING: LOAD IS ZERO		
BUS-MCC-1-F1	.0	.0	.0	.0	WARNING: LOAD IS ZERO		
BUS-MCC-1-F2	.0	.0	.0	.0	WARNING: LOAD IS ZERO		
BUS-MCC-1-F3	2.4	2.9	2.4	2.9	3.0	3.6	80.00
BUS-MCC-1-F4	2.4	2.9	2.4	2.9	3.0	3.6	80.00
BUS-MCC-1-F5	19.1	23.0	19.1	23.0	23.9	28.7	80.00
BUS-MCC-1-G2	.0	.0	.0	.0	WARNING: LOAD IS ZERO		

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LOAD SUMMARY

LOAD SCHEDULE FOR MCC-1-Bus 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-MCC-1-G3

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
CONTINUED							
BUS-MCC-1-G3	1.3	1.5	1.3	1.5	1.6	1.9	80.00
BUS-SD-DG-1	64.2	77.3	64.2	77.3	74.9	90.1	91.51
TOTALS	504.3	606.6	504.3	606.6	529.5	636.9	82.51

LOAD SCHEDULE FOR OH Fdr Tap 13800. VOLTS LINE TO LINE
 SOURCE OF PWR A2701C-Sec

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
CVD Riser	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61
TOTALS	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61

LOAD SCHEDULE FOR P-1500 13800. VOLTS LINE TO LINE
 SOURCE OF PWR CVD Riser

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-1500	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61
TOTALS	1382.4	57.8	1371.4	57.4	1557.7	65.2	96.61

LOAD SCHEDULE FOR P-X11 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-PNL-001

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-X11	2.5	3.0	2.5	3.0	2.5	3.0	90.00
TOTALS	2.5	3.0	2.5	3.0	2.5	3.0	90.00

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LOAD SUMMARY

LOAD SCHEDULE FOR P-XT2 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-PNL-003

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-XT2	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	4.4	5.3	4.4	5.3	4.5	5.4	91.52

LOAD SCHEDULE FOR P-XT3 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-PNL-005

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-XT3	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	4.4	5.3	4.4	5.3	4.5	5.4	91.52

LOAD SCHEDULE FOR P-XT4 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-PNL-007

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-XT4	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	4.4	5.3	4.4	5.3	4.5	5.4	91.52

LOAD SCHEDULE FOR P-XT5 480. VOLTS LINE TO LINE
 SOURCE OF PWR BUS-PNL-009

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS BRANCH LOADS							
S-XT5	4.4	5.3	4.4	5.3	4.5	5.4	91.52
TOTALS	4.4	5.3	4.4	5.3	4.5	5.4	91.52

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LOAD SUMMARY

LOAD SCHEDULE FOR P-XT6				480. VOLTS LINE TO LINE			
SOURCE OF PWR			MCC-1-Bus				
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
S-XT6	9.7	11.7	9.7	11.7	11.2	13.4	98.81
TOTALS	9.7	11.7	9.7	11.7	11.2	13.4	98.81

LOAD SCHEDULE FOR P-XT7				480. VOLTS LINE TO LINE			
SOURCE OF PWR			SWBD-1-Bus				
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
S-XT7	67.0	80.6	63.6	76.5	67.0	80.6	92.95
TOTALS	67.0	80.6	63.6	76.5	67.0	80.6	92.95

LOAD SCHEDULE FOR S-1500				480. VOLTS LINE TO LINE			
SOURCE OF PWR			P-1500				
ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
SWBD-1-Bus	1382.4	1662.7	1371.4	1649.6	1557.7	1873.6	96.61
TOTALS	1382.4	1662.7	1371.4	1649.6	1557.7	1873.6	96.61

LOAD SCHEDULE FOR S-XT1				208. VOLTS LINE TO LINE			
SOURCE OF PWR			P-XT1				
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
=====							
END USE LOADS							
GENERAL LOADS	.3	.9	.3	.9	.3	.9	90.00
RECEPTACLES	2.2	6.0	2.2	6.0	2.2	6.0	90.00
=====							
BRANCH LOADS							
=====							
TOTALS	2.5	6.9	2.5	6.9	2.5	6.9	90.00

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LOAD SUMMARY

LOAD SCHEDULE FOR S-XT2 SOURCE OF PWR P-XT2 208. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	.6	1.6	.6	1.6	.6	1.6	90.00
RECEPTACLES	2.9	8.0	2.9	8.0	2.9	8.0	90.00
HEATING	.3	.8	.3	.8	.4	1.0	100.00
MOTOR	.7	1.9	.7	1.9	.7	1.9	90.00
BRANCH LOADS							
TOTALS	4.4	12.3	4.4	12.3	4.5	12.5	91.52

LOAD SCHEDULE FOR S-XT3 SOURCE OF PWR P-XT3 208. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	.6	1.6	.6	1.6	.6	1.6	90.00
RECEPTACLES	2.9	8.0	2.9	8.0	2.9	8.0	90.00
HEATING	.3	.8	.3	.8	.4	1.0	100.00
MOTOR	.7	1.9	.7	1.9	.7	1.9	90.00
BRANCH LOADS							
TOTALS	4.4	12.3	4.4	12.3	4.5	12.5	91.52

LOAD SCHEDULE FOR S-XT4 SOURCE OF PWR P-XT4 208. VOLTS LINE TO LINE

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	.6	1.6	.6	1.6	.6	1.6	90.00
RECEPTACLES	2.9	8.0	2.9	8.0	2.9	8.0	90.00
HEATING	.3	.8	.3	.8	.4	1.0	100.00
MOTOR	.7	1.9	.7	1.9	.7	1.9	90.00
BRANCH LOADS							
TOTALS	4.4	12.3	4.4	12.3	4.5	12.5	91.52

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LOAD SUMMARY

LOAD SCHEDULE FOR S-XT5				208. VOLTS LINE TO LINE			
		SOURCE OF PWR		P-XT5			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	.6	1.6	.6	1.6	.6	1.6	90.00
RECEPTACLES	2.9	8.0	2.9	8.0	2.9	8.0	90.00
HEATING	.3	.8	.3	.8	.4	1.0	100.00
MOTOR	.7	1.9	.7	1.9	.7	1.9	90.00
BRANCH LOADS							
TOTALS	4.4	12.3	4.4	12.3	4.5	12.5	91.52

LOAD SCHEDULE FOR S-XT6				208. VOLTS LINE TO LINE			
		SOURCE OF PWR		P-XT6			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
GENERAL LOADS	2.3	6.3	2.3	6.3	2.3	6.3	90.00
RECEPTACLES	.5	1.3	.5	1.3	.5	1.3	90.00
HEATING	6.0	16.6	6.0	16.6	7.5	20.8	100.00
SPARE	1.2	3.3	1.2	3.3	1.2	3.3	90.00
BRANCH LOADS							
TOTALS	9.7	26.9	9.7	26.9	11.2	31.0	98.81

LOAD SCHEDULE FOR S-XT7				208. VOLTS LINE TO LINE			
		SOURCE OF PWR		P-XT7			
ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-PNL-1	67.0	186.0	63.6	176.5	67.0	185.9	92.95
TOTALS	67.0	186.0	63.6	176.5	67.0	185.9	92.95

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LOAD SUMMARY

LOAD SCHEDULE FOR SWBD-1-Bus 480. VOLTS LINE TO LINE
 SOURCE OF PWR S-1500

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
MCC-1-Bus	504.3	606.6	504.3	606.6	529.5	636.9	82.51
BUS-PNL-001	43.7	52.6	43.7	52.6	48.8	58.7	95.54
BUS-PNL-003	182.1	219.0	182.1	219.0	218.8	263.2	99.48
BUS-PNL-005	185.7	223.4	185.7	223.4	222.6	267.7	99.90
BUS-PNL-007	185.7	223.4	185.7	223.4	222.6	267.7	99.90
BUS-PNL-009	185.7	223.4	185.7	223.4	222.6	267.7	99.90
BUS-SWBD-1-4	41.3	49.7	41.3	49.7	51.7	62.1	99.98
BUS-SWBD-1-8	1.3	1.5	1.3	1.5	1.6	1.9	80.00
P-XT7	67.0	80.6	63.6	76.5	67.0	80.6	92.95
UPS IN BUS	31.0	37.3	31.0	37.3	31.9	38.4	90.00
TOTALS	1382.4	1662.7	1371.4	1649.6	1557.7	1873.6	96.61

LOAD SCHEDULE FOR UPS IN BUS 480. VOLTS LINE TO LINE
 SOURCE OF PWR SWBD-1-Bus

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
UPS OUT BUS	31.0	37.3	31.0	37.3	31.9	38.4	90.00
TOTALS	31.0	37.3	31.0	37.3	31.9	38.4	90.00

LOAD SCHEDULE FOR UPS OUT BUS 208. VOLTS LINE TO LINE
 SOURCE OF PWR UPS IN BUS

ITEM DESCRIPTION	* CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
END USE LOADS							
BRANCH LOADS							
BUS-LPN-2	31.0	86.1	31.0	86.1	31.9	88.6	90.00
TOTALS	31.0	86.1	31.0	86.1	31.9	88.6	90.00

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 Normal Operation

LOAD SUMMARY

LOAD SCHEDULE FOR WW1 SOURCE OF PWR BUS-SD-DG-1 480. VOLTS LINE TO LINE

ITEM DESCRIPTION *	CONNECTED KVA	LOAD AMPS	* DEMAND KVA	LOAD AMPS	* DESIGN KVA	LOAD AMPS	* % P F
=====							
END USE LOADS							
BRANCH LOADS							
BUS-5 HP COMB	6.1	7.3	6.1	7.3	7.6	9.1	80.00
BUS-0066	5.0	6.0	5.0	6.0	6.3	7.5	100.00
BUS-0067	5.0	6.0	5.0	6.0	6.3	7.5	100.00
400A ATS	45.8	55.1	45.8	55.1	54.2	65.2	88.68
BUS DG1-PP1-1	3.5	4.2	3.5	4.2	3.5	4.2	90.00
=====							
TOTALS	64.2	77.3	64.2	77.3	74.9	90.1	91.51

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TOTAL SOURCE LOAD SUMMARY					

LOAD DESCRIPTION TYPE	UNITS	CONNECTED LOAD	DEMAND LOAD	DESIGN LOAD	POWER FACTOR %

GENERAL LOADS		KW	65.0	65.0	65.0
		KVAR	31.7	31.7	31.7
	KVA	72.4	72.4	72.4	89.88 LAGGING
LIGHTING		KW	22.5	22.5	28.1
		KVAR	11.5	11.5	14.4
	KVA	25.3	25.3	31.6	89.00 LAGGING
RECEPTACLES		KW	28.9	19.0	19.0
		KVAR	14.0	9.2	9.2
	KVA	32.1	21.1	21.1	90.00 LAGGING
HEATING		KW	683.9	683.9	854.8
		KVAR	.0	.0	.0
	KVA	683.9	683.9	854.8	100.00 UNITY
MOTOR		KW	152.2	152.2	152.2
		KVAR	59.3	59.3	59.3
	KVA	163.3	163.3	163.3	93.17 LAGGING
LARGEST MOTOR		KW	3.2	3.2	4.0
		KVAR	1.5	1.5	1.9
	KVA	3.5	3.5	4.4	90.00 LAGGING
SPARE		KW	2.0	2.0	2.0
		KVAR	1.0	1.0	1.0
	KVA	2.2	2.2	2.2	90.00 LAGGING
SPACE		KW	.9	.9	.9
		KVAR	.4	.4	.4
	KVA	1.0	1.0	1.0	90.00 LAGGING
KVA TYPE MTR		KW	316.4	316.4	316.4
		KVAR	237.3	237.3	237.3
	KVA	395.5	395.5	395.5	80.00 LAGGING
LARGEST KVA MTR		KW	50.0	50.0	62.5
		KVAR	37.5	37.5	46.9
	KVA	62.5	62.5	78.1	80.00 LAGGING

TOTAL LOADS		KW	1324.9	1315.0	1504.9
		KVAR	394.3	389.5	402.1
		KVA	1382.4	1371.4	1557.7
		% PF	95.8	95.9	96.6
			LAGGING	LAGGING	LAGGING

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LOAD DEMAND TABLE

LOAD DESCRIPTION	LOAD TYPE	FIRST DEMAND KVA	FIRST DEMAND %	SECOND DEMAND KVA	SECOND DEMAND %	THIRD DEMAND KVA	THIRD DEMAND %	DESIGN FACT
GENERAL LOADS	K	100.	100.	ALL	50.	ALL	100.	1.00
LIGHTING	K	ALL	100.	ALL	100.	ALL	100.	1.25
RECEPTACLES	Z	10.	100.	ALL	50.	ALL	100.	1.00
OFFICE EQUIPMENT	K	ALL	100.	ALL	100.	ALL	100.	1.00
HEATING	Z	ALL	100.	ALL	100.	ALL	100.	1.25
CAPACITORS	Z	ALL	100.	ALL	100.	ALL	100.	1.35
MOTOR	K	ALL	100.	ALL	100.	ALL	100.	1.00
LARGEST MOTOR	K	ALL	100.	ALL	100.	ALL	100.	1.25
SPARE	K	ALL	100.	ALL	100.	ALL	100.	1.00
SPACE	K	ALL	100.	ALL	100.	ALL	100.	1.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00
Load Not Defined	K	.00	0.	0.	0.	ALL	0.	.00

NOTES: LARGEST MOTOR CIRCUIT IDENTIFIED,
 AND USED TO CALCULATE DEMAND LOAD BASED ON NEC ART 430
 DEMAND AND DESIGN FACTORS APPLIED AT EACH LOAD BUS
 AND ALL LOAD TOTALS ARE POWER FACTOR CORRECTED
 DESIGN LOAD VALUES BASED ON MOTOR RUNNING OR STARTING CONDITION

Appendix C

PTW Feeder and Transformer Sizing Report

Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

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ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL, INTERPRETATION
AND APPLICATION BY A REGISTERED ENGINEER ONLY

SKM POWER*TOOLS FOR WINDOWS
FEEDER AND TRANSFORMER SIZING REPORT
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 Normal Operation

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FEEDER AND TRANSFORMER STUDY CRITERIA

SIZE AND REPORT, DO NOT CHANGE THE DATA BASE

BRANCH VOLTAGE DROP CRITERIA 3.00 %

VOLTAGE DROP CALCULATIONS ARE PRELIMINARY
 EXECUTE VOLTAGE DROP AND LOAD FLOW STUDY FOR MORE ACCURATE RESULTS

PRIMARY/SECONDARY TRANSFORMER FDRS SIZED AT 125. % OF TX FULL LOAD RATING
 OH Fdr Tap CVD Riser NO FEEDER COMBINATION MET SIZING CRITERIA

No Feeder Met :CASE 2

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*** NOTICE ***
1
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-1500 TO S-1500
TX KVA: 1500.0 TR FLA: 62.8
MINIMUM FEEDER AMPACITY: 78.4

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-1500 TO S-1500
TX KVA: 1500.0 TR FLA: 1804.2
MINIMUM FEEDER AMPACITY: 2255.3

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT7 TO S-XT7
TX KVA: 75.0 TR FLA: 90.2
MINIMUM FEEDER AMPACITY: 112.8

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT7 TO S-XT7
TX KVA: 75.0 TR FLA: 208.2
MINIMUM FEEDER AMPACITY: 260.2

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT6 TO S-XT6
TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM A2701C-Pri TO A2701C-Sec
TX KVA: 30000.0 TR FLA: 1255.1
MINIMUM FEEDER AMPACITY: 1568.9

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM UPS IN BUS TO UPS OUT BUS
TX KVA: 31.0 TR FLA: 37.3
MINIMUM FEEDER AMPACITY: 46.6

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM UPS IN BUS TO UPS OUT BUS
TX KVA: 31.0 TR FLA: 86.1
MINIMUM FEEDER AMPACITY: 107.6

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT1 TO S-XT1
TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

*** NOTICE ***
FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT2 TO S-XT2
  
```

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TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

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*** NOTICE *** FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT3 TO S-XT3
TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

*** NOTICE *** FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT4 TO S-XT4
TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

*** NOTICE *** FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM P-XT5 TO S-XT5
TX KVA: 15.0 TR FLA: 18.0
MINIMUM FEEDER AMPACITY: 22.6

*** NOTICE *** FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM BUS-XT9-P TO BUS-XT9-S
TX KVA: 30.0 TR FLA: 36.1
MINIMUM FEEDER AMPACITY: 45.1

*** NOTICE *** FEEDER SIZED TO 125. PERCENT OF TRANSFORMER SIZE
BRANCH FROM BUS-XT9-P TO BUS-XT9-S
TX KVA: 30.0 TR FLA: 83.3
MINIMUM FEEDER AMPACITY: 104.1

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FEEDER SIZE REPORT

F E E D E R S C H E D U L E

FEEDER ROUTING NO NAME	FEEDER VOLTAGE	NO /PH	WIRE QTY	SIZE FDR	TYPE MAT	INSUL TYPE	GROUND WIRE	RACEWAY SIZE	TYPE
FROM 400A ATS 480. *****									
TO BUS-STBY-DS	EX	(1)	5	2/0	CU	THHN	6	2"	M
TO WW1	EX	(1)	4	2	CU	THHN	6	1 1/4"	M
FROM A2701C-Sec 13800. *****									
TO OH Fdr Tap	EX	(1)	3	477	AL	OHC3			N
FROM BUS-5 HP COMB 480. *****									
TO BUS-AIR COMP	EX	(1)	4	12	CU	THHN	10	1/2"	M
FROM BUS-DG-DP-001 480. *****									
TO BUS-2-7.5 HP	EX	(1)	4	10	CU	THHN	10	1/2"	M
TO BUS-XT9-P	EX	(1)	4	6	CU	THHN	8	3/4"	M
FROM BUS-MCC-1-B1A 480. *****									
TO BUS-MCC-1-B1B	EX	(1)	3	4/0	CU	THHN		2"	M
FROM BUS-MCC-1-C1A 480. *****									
TO BUS-MCC-1-C1B	EX	(1)	3	4/0	CU	THHN		2"	M
FROM BUS-PNL-001 480. *****									
TO P-XT1	EX	(1)	4	10	CU	THHN	10	1/2"	M
FROM BUS-PNL-003 480. *****									
TO P-XT2	EX	(1)	4	10	CU	THHN	10	1/2"	M
FROM BUS-PNL-005 480. *****									
TO P-XT3	EX	(1)	4	10	CU	THHN	10	1/2"	M

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FEEDER SIZE REPORT

F E E D E R S C H E D U L E

FEEDER ROUTING NO NAME	FEEDER VOLTAGE	NO /PH	WIRE SIZE QTY	TYPE FDR	INSUL MAT	GROUND TYPE	RACEWAY WIRE	SIZE	TYPE
FROM BUS-PNL-007 480.									

TO P-XT4	EX	(1)	4	10	CU	THHN	10	1/2"	M
FROM BUS-PNL-009 480.									

TO P-XT5	EX	(1)	4	10	CU	THHN	10	1/2"	M
FROM BUS-SD-DG-1 480.									

TO WW1	EX	(1)	4	2	CU	THHN	6	1 1/4"	M
FROM BUS-STBY-DS 480.									

TO BUS-DG-DP-001		(1)	5	4	CU	THHN	8	2"	M
FROM BUS-XT9-S 208.									

TO BUS-PNL LPN-3	EX	(1)	5	2	CU	THHN	6	1 1/4"	M
FROM CVD Riser 13800.									

TO P-1500		(1)	3	350	CU	XLPE		3"	N
FROM MCC-1-Bus 480.									

TO BUS-MCC-1-B1A	EX	(1)	4	4/0	CU	THHN	4	2"	M
TO BUS-MCC-1-B2	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO BUS-MCC-1-B4	EX	(1)	4	6	CU	THHN	8	3/4"	M
TO BUS-MCC-1-C1A	EX	(1)	4	4/0	CU	THHN	4	2"	M
TO BUS-MCC-1-C2	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO BUS-MCC-1-C4	EX	(1)	4	6	CU	THHN	8	3/4"	M
TO BUS-MCC-1-D1	EX	(1)	4	10	CU	THHN	10	1/2"	M
TO BUS-MCC-1-D2	EX	(1)	4	12	CU	THHN	10	1/2"	M

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FEEDER SIZE REPORT

F E E D E R S C H E D U L E

FEEDER ROUTING		FEEDER	NO	WIRE	SIZE	TYPE	INSUL	GROUND	RACEWAY	
NO	NAME	VOLTAGE	/PH	QTY	FDR	MAT	TYPE	WIRE	SIZE	TYPE
FROM		MCC-1-Bus		480. (CONTINUED)						

TO	BUS-MCC-1-D3	EX	(1)	4	10	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-D4	EX	(1)	4	8	CU	THHN	10	3/4 "	M
TO	BUS-MCC-1-E1	EX	(1)	4	8	CU	THHN	10	3/4 "	M
TO	BUS-MCC-1-E2	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-E3	EX	(1)	4	6	CU	THHN	8	3/4"	M
TO	BUS-MCC-1-E4	EX	(1)	4	8	CU	THHN	10	3/4 "	M
TO	BUS-MCC-1-F1	EX	(1)	4	8	CU	THHN	10	3/4 "	M
TO	BUS-MCC-1-F2	EX	(1)	4	10	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-F3	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-F4	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-F5	EX	(1)	4	10	CU	THHN	10	1/2"	M
TO	BUS-MCC-1-G2	EX	(1)	4	2/0	CU	THHN	6	1 1/2"	M
TO	BUS-MCC-1-G3	EX	(1)	4	12	CU	THHN	10	1/2"	M
TO	BUS-SD-DG-1	EX	(1)	4	2	CU	THHN	6	1 1/4"	M
TO	P-XT6	EX	(1)	4	10	CU	THHN	10	1/2"	M
FROM		OH Fdr Tap		13800.						

TO	CVD Riser		(1)	3	2	AL	OHC3			N
FROM		S-1500		480.						

TO	SWBD-1-Bus	EX	(6)	5	750	CU	THWN		4"	M
FROM		S-XT7		208.						

TO	BUS-PNL-1	EX	(1)	4	4/0	CU	THHN	4	2"	M
FROM		SWBD-1-Bus		480.						

TO	BUS-PNL-001	EX	(1)	4	500	CU	THHN	3	3"	M
TO	BUS-PNL-003	EX	(1)	4	500	CU	THHN	3	3"	M
TO	BUS-PNL-005	EX	(1)	4	500	CU	THHN	3	3"	M

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FEEDER SIZE REPORT

F E E D E R S C H E D U L E

FEEDER ROUTING NO NAME	FEEDER VOLTAGE	NO /PH	WIRE SIZE QTY FDR	TYPE MAT	INSUL TYPE	GROUND WIRE	RACEWAY SIZE	TYPE
---------------------------	-------------------	-----------	----------------------	-------------	---------------	----------------	-----------------	------

FROM SWBD-1-Bus 480. (CONTINUED)

TO BUS-PNL-007	EX	(1)	4 500	CU	THHN	3	3"	M
TO BUS-PNL-009	EX	(1)	4 500	CU	THHN	3	3"	M
TO BUS-SWBD-1-4	EX	(1)	4 4	CU	THHN	8	1"	M
TO BUS-SWBD-1-8	EX	(1)	4 12	CU	THHN	10	1/2"	M
TO MCC-1-Bus	EX	(2)	4 500	CU	THHN	1/0	3"	M
TO P-XT7	EX	(1)	4 2	CU	THHN	6	1 1/4"	M
TO UPS IN BUS	EX	(1)	4 1	CU	THHN	6	1 1/4"	M

FROM UPS OUT BUS 208.

TO BUS-LPN-2	EX	(1)	5 2	CU	THHN	6	1 1/4"	M
--------------	----	------	-----	----	------	---	--------	---

FROM WW1 480.

TO BUS DG1-PP1-1	EX	(1)	4 12	CU	THHN	10	1/2"	M
TO BUS-0066	EX	(1)	4 12	CU	THHN	10	1/2"	N
TO BUS-0067	EX	(1)	4 12	CU	THHN	10	1/2"	N
TO BUS-5 HP COMB	EX	(1)	4 12	CU	THHN	10	1/2"	N

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FEEDER EVALUATION

FEEDER DESIGN LOAD ANALYSIS

FEEDER ROUTING NO NAME	EXTG VD	% /PH	QTY FDR	SIZE MAT	FEEDER DESCRIPTION INSUL AMBIENT	DESIGN LOAD	DERATED CAPACITY
FROM 400A ATS 480.							

TO BUS-STBY-DS	EX	.03	1	CU	THHN 30.	65. A	175. A
TO WW1	EX	.05	1	CU	THHN 30.	65. A	95. A
FROM A2701C-Sec 13800.							

TO OH Fdr Tap	EX	.06	1	AL	OHC3 30.	65. A	670. A
FROM BUS-5 HP COMB 480.							

TO BUS-AIR COMP	EX	.10	1	CU	THHN 30.	9. A	25. A
FROM BUS-DG-DP-001 480.							

TO BUS-2-7.5 HP	EX	.85	1	CU	THHN 30.	24. A	30. A
TO BUS-XT9-P	EX	.06	1	CU	THHN 30.	33. A	55. A
FROM BUS-MCC-1-B1A 480.							

TO BUS-MCC-1-B1B	EX	.05	1	CU	THHN 30.	182. A	230. A
FROM BUS-MCC-1-C1A 480.							

TO BUS-MCC-1-C1B	EX	.05	1	CU	THHN 30.	182. A	230. A
FROM BUS-PNL-001 480.							

TO P-XT1	EX	.01	1	CU	THHN 30.	3. A	30. A
FROM BUS-PNL-003 480.							

TO P-XT2	EX	.02	1	CU	THHN 30.	5. A	30. A
FROM BUS-PNL-005 480.							

TO P-XT3	EX	.02	1	CU	THHN 30.	5. A	30. A

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FEEDER EVALUATION

FEEDER DESIGN LOAD ANALYSIS

FEEDER ROUTING NO NAME	EXTG VD	% /PH	QTY FDR	SIZE MAT	FEEDER DESCRIPTION INSUL AMBIENT	DESIGN LOAD	DERATED CAPACITY
FROM BUS-PNL-007 480.							

TO P-XT4	EX	.02	1	CU	THHN 30.	5. A	30. A
FROM BUS-PNL-009 480.							

TO P-XT5	EX	.02	1	CU	THHN 30.	5. A	30. A
FROM BUS-SD-DG-1 480.							

TO WW1	EX	.03	1	CU	THHN 30.	90. A	95. A
FROM BUS-STBY-DS 480.							

TO BUS-DG-DP-001		.07	1	4 CU	THHN 30.	65. A	70. A
FROM BUS-XT9-S 208.							

TO BUS-PNL LPN-3	EX	.13	1	CU	THHN 30.	75. A	95. A
FROM CVD Riser 13800.							

TO P-1500		.00	1	350 CU	XLPE 30.	65. A	390. A
FROM MCC-1-Bus 480.							

TO BUS-MCC-1-B1A	EX	.53	1	CU	THHN 30.	182. A	230. A
TO BUS-MCC-1-B2	EX	.08	1	CU	THHN 30.	1. A	25. A
TO BUS-MCC-1-B4	EX	.52	1	CU	THHN 30.	48. A	55. A
TO BUS-MCC-1-C1A	EX	.53	1	CU	THHN 30.	182. A	230. A
TO BUS-MCC-1-C2	EX	.08	1	CU	THHN 30.	1. A	25. A
TO BUS-MCC-1-C4	EX	.46	1	CU	THHN 30.	48. A	55. A
TO BUS-MCC-1-D1	EX	.60	1	CU	THHN 30.	17. A	30. A
TO BUS-MCC-1-D2	EX	.93	1	CU	THHN 30.	13. A	25. A

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FEEDER EVALUATION

FEEDER DESIGN LOAD ANALYSIS

```
=====
FEEDER ROUTING      EXTG % QTY SIZE FEEDER DESCRIPTION  DESIGN DERATED
NO NAME              VD /PH FDR  MAT  INSUL AMBIENT  LOAD  CAPACITY
=====
```

FROM MCC-1-Bus 480. (CONTINUED)

```
*****
TO BUS-MCC-1-D3 EX .00 1 CU THHN 30. 0. A 30. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-D4 EX .43 1 CU THHN 30. 32. A 40. A
TO BUS-MCC-1-E1 EX .00 1 CU THHN 30. 0. A 40. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-E2 EX .88 1 CU THHN 30. 13. A 25. A
TO BUS-MCC-1-E3 EX .00 1 CU THHN 30. 0. A 55. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-E4 EX .38 1 CU THHN 30. 32. A 40. A
TO BUS-MCC-1-F1 EX .00 1 CU THHN 30. 0. A 40. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-F2 EX .00 1 CU THHN 30. 0. A 30. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-F3 EX .24 1 CU THHN 30. 4. A 25. A
TO BUS-MCC-1-F4 EX .23 1 CU THHN 30. 4. A 25. A
TO BUS-MCC-1-F5 EX 1.75 1 CU THHN 30. 29. A 30. A
TO BUS-MCC-1-G2 EX .00 1 CU THHN 30. 0. A 175. A
*** WARNING *** FEEDER LOAD IS DEFINED AS ZERO
TO BUS-MCC-1-G3 EX .11 1 CU THHN 30. 2. A 25. A
TO BUS-SD-DG-1 EX .68 1 CU THHN 30. 90. A 95. A
TO P-XT6 EX .13 1 CU THHN 30. 13. A 30. A
```

FROM OH Fdr Tap 13800.

```
*****
TO CVD Riser .18 1 2 AL OHC3 30. 65. A 180. A
```

FROM S-1500 480.

```
*****
TO SWBD-1-Bus EX .26 6 CU THWN 30. 1874. A 2850. A
```

FROM S-XT7 208.

```
*****
TO BUS-PNL-1 EX .12 1 CU THHN 30. 186. A 230. A
```

FROM SWBD-1-Bus 480.

```
*****
TO BUS-PNL-001 EX .15 1 CU THHN 30. 59. A 380. A
```

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FEEDER EVALUATION

FEEDER DESIGN LOAD ANALYSIS

```

=====
FEEDER ROUTING      EXTG % QTY SIZE FEEDER DESCRIPTION  DESIGN DERATED
NO NAME              VD /PH FDR MAT  INSUL AMBIENT  LOAD  CAPACITY
=====
                FROM  SWBD-1-Bus                480. (CONTINUED)
                *****
TO  BUS-PNL-003      EX   .45 1          CU  THHN  30.  263. A  380. A
TO  BUS-PNL-005      EX   .33 1          CU  THHN  30.  268. A  380. A
TO  BUS-PNL-007      EX   .24 1          CU  THHN  30.  268. A  380. A
TO  BUS-PNL-009      EX   .15 1          CU  THHN  30.  268. A  380. A
TO  BUS-SWBD-1-4     EX   .72 1          CU  THHN  30.   62. A   70. A
TO  BUS-SWBD-1-8     EX   .11 1          CU  THHN  30.    2. A   25. A
TO  MCC-1-Bus        EX   .42 2          CU  THHN  30.  637. A  760. A
TO  P-X7             EX   .12 1          CU  THHN  30.   81. A   95. A
TO  UPS IN BUS       EX   .23 1          CU  THHN  30.   38. A  130. A

                FROM  UPS OUT BUS                208.
                *****
TO  BUS-LPN-2        EX   .15 1          CU  THHN  30.   89. A   95. A

                FROM  WW1                        480.
                *****
TO  BUS DG1-PP1-1    EX   .03 1          CU  THHN  30.    4. A   25. A
TO  BUS-0066         EX   .01 1          CU  THHN  30.    8. A   25. A
TO  BUS-0067         EX   .01 1          CU  THHN  30.    8. A   25. A
TO  BUS-5 HP COMB    EX   .01 1          CU  THHN  30.    9. A   25. A
  
```

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TRANSFORMER SIZE REPORT

T R A N S F O R M E R S C H E D U L E

LOCATION	DESCRIPTION	VOLTAGE	CONN	PCT.	TRANSFORMER	DESCRIPTION
BUS NO.	NAME		LEVELS	CODE	TAP	
FROM A2701C-Pri	220000.	YG	.0	TYPE: <Us	SIZE:	.0 KVA
TO A2701C-Sec	13800.	YG		DESCRIPTION: A2701C		
DEMAND LOAD:	1371.4 KVA	EX		12.73 %Z NOMINAL RATING		.0 KVA
FROM BUS-XT9-P	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO BUS-XT9-S	208.	YG		DESCRIPTION: XT901C		
DEMAND LOAD:	22.0 KVA	EX		4.27 %Z NOMINAL RATING		.0 KVA
FROM P-1500	13800.	D	.0	TYPE: <Us	SIZE:	.0 KVA
TO S-1500	480.	YG		DESCRIPTION: 1500 Kva Pad		
DEMAND LOAD:	1371.4 KVA	EX		6.10 %Z NOMINAL RATING		.0 KVA
FROM P-XT1	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT1	208.	YG		DESCRIPTION: XFMR XT1 Pad		
DEMAND LOAD:	2.5 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA
FROM P-XT2	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT2	208.	YG		DESCRIPTION: XFMR XT2 Pad		
DEMAND LOAD:	4.4 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA
FROM P-XT3	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT3	208.	YG		DESCRIPTION: XFMR XT3 Pad		
DEMAND LOAD:	4.4 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA
FROM P-XT4	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT4	208.	YG		DESCRIPTION: XFMR XT4 Pad		
DEMAND LOAD:	4.4 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA
FROM P-XT5	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT5	208.	YG		DESCRIPTION: XFMR XT5 Pad		
DEMAND LOAD:	4.4 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA
FROM P-XT6	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT6	208.	YG		DESCRIPTION: XFMR XT6 Pad		
DEMAND LOAD:	9.7 KVA	EX		2.78 %Z NOMINAL RATING		.0 KVA

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TRANSFORMER SIZE REPORT

TRANSFORMER SCHEDULE

=====

LOCATION DESCRIPTION	VOLTAGE	CONN	PCT.	TRANSFORMER DESCRIPTION
BUS NO. NAME		LEVELS	CODE	TAP

=====

FROM P-XT7	480.	D	.0	TYPE: DT	SIZE:	.0 KVA
TO S-XT7	208.	YG		DESCRIPTION: XFMR XT7 Pad		
DEMAND LOAD: 63.6 KVA		EX		3.20 %Z NOMINAL RATING		.0 KVA
FROM UPS IN BUS	480.	D	.0	TYPE: <Us	SIZE:	.0 KVA
TO UPS OUT BUS	208.	YG		DESCRIPTION: UPS 30 KVAad		
DEMAND LOAD: 31.0 KVA		EX		.00 %Z NOMINAL RATING		.0 KVA

Appendix D

PTW Load Flow and Voltage Drop Analysis Report (Summary Only)

Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

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ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL
INTERPRETATION AND APPLICATION BY A REGISTERED ENGINEER ONLY

SKM POWER*TOOLS FOR WINDOWS
LOAD FLOW AND VOLTAGE DROP ANALYSIS REPORT
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*** SOLUTION COMMENTS ***

SOLUTION PARAMETERS

BRANCH VOLTAGE CRITERIA : 3.00 %
 BUS VOLTAGE CRITERIA : 5.00 %
 ACCELERATION FACTOR FOR 'PV' GENERATORS : 1.00
 ACCELERATION FACTOR FOR CONSTANT KVA LOADS: 1.00
 EXACT(ITERATIVE) SOLUTION : YES
 UTILITY IMPEDANCE : YES
 TRANSFORMER PHASE SHIFT : NO

ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE

LOAD FLOW IS BASED ON DIRECTLY CONNECTED LOADS.
 LOAD ANALYSIS INCLUDES ALL LOADS.

<<PERCENT VOLTAGE DROPS ARE BASED ON NOMINAL DESIGN VOLTAGES>>

SWING GENERATORS

SOURCE NAME	VOLTAGE	ANGLE
230 Kv	1.045	.00

LARGEST LOAD: 147.40 KVA

CONVERGENCE CRITERIA: .007 KVA

LARGEST BUS MISMATCH	BUS-PNL-1	2.003 KVA
LARGEST BUS MISMATCH	BUS-PNL LPN-3	.072 KVA
LARGEST BUS MISMATCH	BUS-PNL LPN-3	.003 KVA

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BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS (SWING GENERATORS)

SOURCE	VOLTAGE	ANGLE	KW	KVAR	VD%	(UTILITY IMPEDANCE)
230 Kv	1.045	.00	1363.75	490.83	.02	.00369+J .02361

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BALANCED VOLTAGE DROP AND LOAD FLOW BUS DATA SUMMARY

BUS NAME	BASE VOLT	PU VOLT	BUS NAME	BASE VOLT	PU VOLT
230 Kv	1.04	1.0450	400A ATS	480.00	.9938
A2701C-Pri	220000.00	1.0448	A2701C-Sec	13800.00	1.0427
BUS DG1-PP1-1	480.00	.9939	BUS-0066	480.00	.9941
BUS-0067	480.00	.9941	BUS-2-7.5 HP	480.00	.9856
BUS-5 HP COMB	480.00	.9941	BUS-AIR COMP	480.00	.9933
BUS-DG-DP-001	480.00	.9933	BUS-LPN-2	208.00	1.0006
BUS-MCC-1-B1A	480.00	.9956	BUS-MCC-1-B1B	480.00	.9951
BUS-MCC-1-B2	480.00	.9998	BUS-MCC-1-B4	480.00	.9962
BUS-MCC-1-C1A	480.00	.9956	BUS-MCC-1-C1B	480.00	.9951
BUS-MCC-1-C2	480.00	.9997	BUS-MCC-1-C4	480.00	.9967
BUS-MCC-1-D1	480.00	.9956	BUS-MCC-1-D2	480.00	.9929
BUS-MCC-1-D3	480.00	1.0004	BUS-MCC-1-D4	480.00	.9970
BUS-MCC-1-E1	480.00	1.0004	BUS-MCC-1-E2	480.00	.9933
BUS-MCC-1-E3	480.00	1.0004	BUS-MCC-1-E4	480.00	.9973
BUS-MCC-1-F1	480.00	1.0004	BUS-MCC-1-F2	480.00	1.0004
BUS-MCC-1-F3	480.00	.9985	BUS-MCC-1-F4	480.00	.9985
BUS-MCC-1-F5	480.00	.9861	BUS-MCC-1-G2	480.00	1.0004
BUS-MCC-1-G3	480.00	.9995	BUS-PNL LPN-3	208.00	.9590
BUS-PNL-001	480.00	1.0030	BUS-PNL-003	480.00	1.0005
BUS-PNL-005	480.00	1.0016	BUS-PNL-007	480.00	1.0024
BUS-PNL-009	480.00	1.0031	BUS-PNL-1	208.00	.9746
BUS-SD-DG-1	480.00	.9945	BUS-STBY-DS	480.00	.9935
BUS-SWBD-1-4	480.00	.9986	BUS-SWBD-1-8	480.00	1.0036
BUS-XT9-P	480.00	.9928	BUS-XT9-S	208.00	.9601
CVD Riser	13800.00	1.0405	MCC-1-Bus	480.00	1.0004
OH Fdr Tap	13800.00	1.0421	P-1500	13800.00	1.0404
P-XT1	480.00	1.0029	P-XT2	480.00	1.0003
P-XT3	480.00	1.0014	P-XT4	480.00	1.0021
P-XT5	480.00	1.0029	P-XT6	480.00	.9993
P-XT7	480.00	1.0032	S-1500	480.00	1.0068
S-XT1	208.00	.9984	S-XT2	208.00	.9925
S-XT3	208.00	.9935	S-XT4	208.00	.9943
S-XT5	208.00	.9951	S-XT6	208.00	.9839
S-XT7	208.00	.9758	SWBD-1-Bus	480.00	1.0044
UPS IN BUS	480.00	1.0021	UPS OUT BUS	208.00	1.0021
WW1			480.00	.9942	

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 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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BALANCED VOLTAGE DROP AND LOAD FLOW BRANCH DATA SUMMARY

FROM NAME	TO NAME	TYPE	VD%	AMPS	KVA	RATING%
400A ATS	WW1	FDR	.04	56.48	46.66	59.45
400A ATS	BUS-STBY-DS	FDR	.02	56.48	46.66	32.27
A2701C-Pri	A2701C-Sec	TX2	.21	3.64	1449.17	2.90
A2701C-Sec	OH Fdr Tap	FDR	.06	58.03	1446.20	8.66
BUS-5 HP COMB	BUS-AIR COMP	FDR	.08	7.33	6.06	29.33
BUS-DG-DP-001	BUS-XT9-P	FDR	.05	27.63	22.82	50.23
BUS-DG-DP-001	BUS-2-7.5 HP	FDR	.77	21.34	17.62	71.12
BUS-MCC-1-B1A	BUS-MCC-1-B1B	FDR	.05	163.58	135.40	71.12
BUS-MCC-1-C1A	BUS-MCC-1-C1B	FDR	.05	163.58	135.40	71.12
BUS-PNL-001	P-XT1	FDR	.01	3.00	2.50	10.00
BUS-PNL-003	P-XT2	FDR	.02	5.32	4.42	17.72
BUS-PNL-005	P-XT3	FDR	.02	5.32	4.43	17.73
BUS-PNL-007	P-XT4	FDR	.02	5.32	4.43	17.73
BUS-PNL-009	P-XT5	FDR	.02	5.32	4.44	17.74
BUS-SD-DG-1	WW1	FDR	.03	78.70	65.07	82.84
BUS-STBY-DS	BUS-DG-DP-001	FDR	.02	56.48	46.65	32.27
BUS-XT9-P	BUS-XT9-S	TX2	3.27	27.63	22.80	UNKNOWN
BUS-XT9-S	BUS-PNL LPN-3	FDR	.11	63.76	22.05	67.11
CVD Riser	P-1500	FDR	.01	58.03	1443.19	37.44
MCC-1-Bus	BUS-MCC-1-B1A	FDR	.48	163.58	136.05	71.12
MCC-1-Bus	BUS-MCC-1-C1A	FDR	.48	163.58	136.05	71.12
MCC-1-Bus	P-XT6	FDR	.11	11.60	9.65	38.66
MCC-1-Bus	BUS-MCC-1-B2	FDR	.06	1.06	.88	4.23
MCC-1-Bus	BUS-MCC-1-C2	FDR	.07	1.06	.88	4.23
MCC-1-Bus	BUS-MCC-1-D2	FDR	.75	10.59	8.81	42.36
MCC-1-Bus	BUS-MCC-1-E2	FDR	.71	10.59	8.80	42.35
MCC-1-Bus	BUS-MCC-1-D1	FDR	.48	13.41	11.15	44.71
MCC-1-Bus	BUS-MCC-1-B4	FDR	.42	38.38	31.92	69.79
MCC-1-Bus	BUS-MCC-1-C4	FDR	.37	38.37	31.91	69.76
MCC-1-Bus	BUS-MCC-1-D4	FDR	.34	25.86	21.51	64.66
MCC-1-Bus	BUS-MCC-1-E4	FDR	.30	25.85	21.50	64.63
MCC-1-Bus	BUS-MCC-1-D3	FDR	.00	.00	.00	.00
MCC-1-Bus	BUS-MCC-1-E3	FDR	.00	.00	.00	.00
MCC-1-Bus	BUS-MCC-1-E1	FDR	.00	.00	.00	.00
MCC-1-Bus	BUS-MCC-1-F1	FDR	.00	.00	.00	.00
MCC-1-Bus	BUS-MCC-1-F2	FDR	.00	.00	.00	.00
MCC-1-Bus	BUS-MCC-1-F3	FDR	.19	2.86	2.38	11.42
MCC-1-Bus	BUS-MCC-1-F4	FDR	.19	2.86	2.38	11.42
MCC-1-Bus	BUS-MCC-1-F5	FDR	1.43	23.30	19.38	77.66
MCC-1-Bus	BUS-MCC-1-G2	FDR	.00	.00	.00	.00

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 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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BALANCED VOLTAGE DROP AND LOAD FLOW BRANCH DATA SUMMARY

FROM NAME	TO NAME	TYPE	VD%	AMPS	KVA	RATING%
MCC-1-Bus	BUS-MCC-1-G3	FDR	.09	1.53	1.27	6.12
MCC-1-Bus	BUS-SD-DG-1	FDR	.59	78.70	65.45	82.84
OH Fdr Tap	CVD Riser	FDR	.16	58.03	1445.40	32.24
P-1500	S-1500	TX2	3.36	58.03	1443.02	83.65
P-XT1	S-XT1	TX2	.45	3.00	2.50	UNKNOWN
P-XT2	S-XT2	TX2	.78	5.32	4.42	UNKNOWN
P-XT3	S-XT3	TX2	.78	5.32	4.43	UNKNOWN
P-XT4	S-XT4	TX2	.78	5.32	4.43	UNKNOWN
P-XT5	S-XT5	TX2	.79	5.32	4.44	UNKNOWN
P-XT6	S-XT6	TX2	1.54	11.60	9.64	UNKNOWN
P-XT7	S-XT7	TX2	2.74	81.16	67.69	UNKNOWN
S-1500	SWBD-1-Bus	FDR	.24	1668.28	1396.36	58.54
S-XT7	BUS-PNL-1	FDR	.12	187.28	65.84	81.43
SWBD-1-Bus	MCC-1-Bus	FDR	.40	610.59	509.87	80.34
SWBD-1-Bus	BUS-PNL-001	FDR	.14	52.61	43.93	13.85
SWBD-1-Bus	BUS-PNL-003	FDR	.39	219.10	182.96	57.66
SWBD-1-Bus	BUS-PNL-005	FDR	.28	223.56	186.69	58.83
SWBD-1-Bus	BUS-PNL-007	FDR	.21	223.67	186.77	58.86
SWBD-1-Bus	BUS-PNL-009	FDR	.13	223.78	186.86	58.89
SWBD-1-Bus	BUS-SWBD-1-4	FDR	.58	49.64	41.45	70.92
SWBD-1-Bus	BUS-SWBD-1-8	FDR	.09	1.52	1.27	6.10
SWBD-1-Bus	P-XT7	FDR	.12	81.16	67.77	85.43
SWBD-1-Bus	UPS IN BUS	FDR	.23	37.29	31.14	28.68
UPS IN BUS	UPS OUT BUS	TX2	.00	37.29	31.07	UNKNOWN
UPS OUT BUS	BUS-LPN-2	FDR	.15	86.05	31.07	90.58
WW1	BUS-5 HP COMB	FDR	.00	7.33	6.06	29.33
WW1	BUS-0066	FDR	.00	5.98	4.94	23.92
WW1	BUS-0067	FDR	.00	5.98	4.94	23.92
WW1	BUS DG1-PP1-1	FDR	.03	4.27	3.53	17.09

NOTE: FDR RATING% = % AMPS RATING BASED ON LIBRARY FLA OR BRANCH INPUT FLA
 TX2 RATING% = % KVA RATING BASED ON TRANSFORMER FL KVA

71 BUSES

*** TOTAL SYSTEM LOSSES ***
 38. KW 97. KVAR

WARNING STUDY CONTAINS 4 VOLTAGE CRITERIA VIOLATIONS
 VIOLATIONS DENOTED BY (\$) AT BUS AND BRANCH %VD LOCATIONS

Appendix E

PTW Short Circuit Analysis Report (Summary only)

Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

Sep 20, 1999 11:22:44

ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL
INTERPRETATION AND APPLICATION BY A REGISTERED ENGINEER ONLY

SKM POWER*TOOLS FOR WINDOWS
SHORT CIRCUIT ANALYSIS REPORT
COPYRIGHT SKM SYSTEMS ANALYSIS, INC. 1995-1996

Sep 20, 1999 11:22:44
Project W-441 Cold Vacuum Drying Facility (CVDF)
Normal Operation

ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE

SWING GENERATORS		
SOURCE NAME	VOLTAGE	ANGLE

230 Kv	1.04	.00

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 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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***** FAULT ANALYSIS SUMMARY *****

BUS NAME	VOLTAGE L-L	3 PHASE	AVAILABLE FAULT CURRENT		
			X/R	LINE/GRND	X/R
400A ATS	480.	8997.3	.7	5815.0	.5
A2701C-Pri		220000.		11480.6	6.4
A2701C-Sec		13800.		9840.3	26.8
BUS DG1-PP1-1	480.	6151.8	.4	3778.3	.3
BUS-0066	480.	9103.8	.7	5984.3	.5
BUS-0067	480.	9103.8	.7	5984.3	.5
BUS-2-7.5 HP	480.	1975.2	.3	1152.9	.2
BUS-5 HP COMB	480.	9104.7	.7	5984.8	.5
BUS-AIR COMP	480.	4346.4	.3	2630.2	.2
BUS-DG-DP-001	480.	8410.2	.7	5401.7	.5
BUS-LPN-2	208.	18941.7	.6	19258.7	.5
BUS-MCC-1-B1A	480.	15614.6	1.7	11662.2	1.3
BUS-MCC-1-B1B	480.	15059.2	1.6	11120.2	1.2
BUS-MCC-1-B2	480.	1426.6	.1	836.5	.1
BUS-MCC-1-B4	480.	7026.8	.4	4359.5	.3
BUS-MCC-1-C1A	480.	15614.6	1.7	11662.2	1.3
BUS-MCC-1-C1B	480.	15059.2	1.6	11120.2	1.2
BUS-MCC-1-C2	480.	1376.0	.1	806.6	.1
BUS-MCC-1-C4	480.	7672.7	.4	4797.8	.3
BUS-MCC-1-D1	480.	2367.1	.2	1391.1	.1
BUS-MCC-1-D2	480.	1217.6	.1	709.0	.1
BUS-MCC-1-D3	480.	1953.5	.1	1150.8	.1
BUS-MCC-1-D4	480.	5876.3	.3	3582.4	.2
BUS-MCC-1-E1	480.	2299.8	.2	1359.4	.1
BUS-MCC-1-E2	480.	1276.6	.1	743.8	.1
BUS-MCC-1-E3	480.	4534.2	.3	2739.3	.2
BUS-MCC-1-E4	480.	6503.9	.4	3991.3	.2
BUS-MCC-1-F1	480.	2492.5	.2	1475.3	.1
BUS-MCC-1-F2	480.	1490.5	.1	875.5	.1
BUS-MCC-1-F3	480.	1266.2	.1	741.0	.1
BUS-MCC-1-F4	480.	1297.8	.1	759.6	.1
BUS-MCC-1-F5	480.	1442.7	.2	835.2	.1
BUS-MCC-1-G2	480.	11113.6	1.0	7702.6	.8
BUS-MCC-1-G3	480.	1510.5	.1	885.9	.1
BUS-PNL LPN-3	208.	1768.5	.5	1794.7	.5
BUS-PNL-001	480.	14856.5	2.2	11698.3	1.8
BUS-PNL-003	480.	16218.2	2.3	13040.6	1.9
BUS-PNL-005	480.	17851.0	2.4	14726.4	2.0
BUS-PNL-007	480.	19843.4	2.5	16904.0	2.1
BUS-PNL-009	480.	22325.9	2.7	19819.1	2.3
BUS-PNL-1	208.	5792.4	.9	5870.9	.9
BUS-SD-DG-1	480.	9902.6	.7	6490.9	.5
BUS-STBY-DS	480.	8693.8	.7	5600.7	.5

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 Project W-441 Cold Vacuum Drying Facility (CVDF)
 Normal Operation

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***** FAULT ANALYSIS SUMMARY *****

BUS NAME	VOLTAGE	AVAILABLE FAULT CURRENT			
	L-L	3 PHASE	X/R	LINE/GRND	X/R
BUS-SWBD-1-4	480.	7484.4	.5	4706.5	.3
BUS-SWBD-1-8	480.	1517.9	.1	890.8	.1
BUS-XT9-P	480.	7404.1	.6	4673.0	.4
BUS-XT9-S	208.	1821.3	.5	1888.3	.5
CVD Riser		13800.		7696.0	3.9
MCC-1-Bus	480.	24399.4	2.9	21928.6	2.5
OH Fdr Tap		13800.		8634.7	13.0
P-1500		13800.		7634.2	3.7
P-XT1	480.	10637.1	.9	7327.0	.7
P-XT2	480.	11299.2	.9	7807.3	.7
P-XT3	480.	12045.4	.9	8350.2	.6
P-XT4	480.	12891.7	.8	8967.3	.6
P-XT5	480.	13858.3	.8	9673.0	.6
P-XT6	480.	8883.9	.4	5594.1	.3
P-XT7	480.	22113.7	1.5	18643.0	1.1
S-1500	480.	29513.3	3.2	29965.6	3.2
S-XT1	208.	1471.9	.9	1501.9	.9
S-XT2	208.	1477.0	.9	1505.4	.9
S-XT3	208.	1482.2	.9	1509.0	.9
S-XT4	208.	1487.4	.9	1512.6	.9
S-XT5	208.	1492.7	.9	1516.3	.9
S-XT6	208.	1458.9	.8	1492.9	.8
S-XT7	208.	6016.7	.9	6254.7	.9
SWBD-1-Bus	480.	28148.6	3.2	27663.2	3.0
UPS IN BUS	480.	11771.7	.8	8073.3	.6
UPS OUT BUS	208.	27058.5	.8	40508.1	.8
WW1	480.	9583.0	.7	6249.6	.5

***** FAULT ANALYSIS REPORT COMPLETED *****

Appendix F

PTW One-Line AutoCad Drawings

Page 72 - PTW SWBD-1 One-line

Page 73 - PTW MCC-1 One-Line

Page 74 - PTW Generator One-Line

PTW ONE-LINE
MCC-1 & STANDBY GENERATOR
NORMAL OPERATION

OUT OF SERVICE

SNF-4088, REV 1
PAGE 73 OF 102

PTW ONE-LINE
STANDBY GENERATOR
STANDBY OPERATION

NOT IN SERVICE

Appendix G

PTW Captor Protective Device Coordination Drawings

TCC: Swbd-1

Current Scale X10

TCC: mcc-1

SWBD Main
 SQUARE D
 Type PF ADJ B
 Description 2500
 600 V
 AF 2500.0 A
 Sensor/Trap 2500.0 A
 AIC 100.0 EA
 Settings
 LTPU 1.0
 LTD 16
 STPU 3.0
 STD-LIT .1(P*2 T In)
 INST 5.0

SWBD Main GF
 SQUARE D
 Type PE (G)
 Description 2000-2500A
 600 V
 AF 2000.0 A
 Sensor/Trap 2000.0 A
 AIC 9999.0 EA
 Settings
 GF Pick Up 720
 GF Delay 0.2(P*2 T Out)

SWBD-1-Bus
 480 V
 LF 483.04 V
 VDN-0.63 %
 RMS 3P 2607.51 A
 RMS SLO 27385.80 A
 DL 1328.60 KVA
 DL PF 96.07

SWBD-1-3
 SQUARE D
 Type LXLXI A
 Description 100-600A
 600 V
 AF 400.0 A
 Sensor/Trap 400.0 A
 AIC 65.0 EA
 Settings
 LTPU 1.0
 LTD 10
 STPU 3.0
 STD-LIT .2(P*2 T In)
 INST 8.0

SWBD-1-3G
 SQUARE D
 Type LXLXI (G)
 Description 250, 400A
 600 V
 AF 600.0 A
 Sensor/Trap 400.0 A
 AIC 99.0 EA
 Settings
 LTPU 0.75
 .1 sec.

CBL-SWBD-1-3
 Size 500
 Type THHN
 Rating 380.0 A
 Conductor Phase 1
 Length 140.0 ft
 LF 219.37 A
 VDN 0.39 %

BUS-PNL-003
 480 V
 LF 481.18 V
 VDN-0.25 %
 RMS 3P 16177.45 A
 RMS SLO 15023.16 A
 Kva 182.11 DL 182.11 KVA
 Rating 400 PF 99.25
 NEMA 1
 Surface

Appendix H

PTW Captor Protective Device Coordination Settings

Sep 21, 1999 08:25:44

TCC Name: Coord.rpt
 Reference Voltage: 480
 Current Scale X 10²

 ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL, INTERPRETATION,
 AND APPLICATION BY A REGISTERED ENGINEER ONLY.
 CAPTOR (Computer Aided Plotting for Time Overcurrent Reporting)
 COPYRIGHT SKM SYSTEMS ANALYSIS, INC. 1996

Device Name:	SWBD Main	Bus Name:	SWBD-1-Bus
Description:	SQUARE D-PX ADJ B-2500	Bus Voltage:	480.0V
AIC Rating:	100kA	Fault Duty:	28027.5A
Frame:	2500 480V 2500A 100kA 17kA 0kA	Curve Multiplier:	1.00000
Sensor:	2500A		
Plug:			
Setting:	1) LTPU 1.0		
	2) LTD 16		
	3) STPU 3.0		
	4) STD-I2T .1 I ² t In		
	5) INST 5.0		

Device Name:	SWBD Main Gf	Bus Name:	SWBD-1-Bus
Description:	SQUARE D-PE (G)-2000-2500A	Bus Voltage:	480.0V
AIC Rating:	9999kA	Fault Duty:	28027.5A
Frame:	2000 480V 2000A 9999kA 0kA 12kA	Curve Multiplier:	1.00000
Sensor:	2000A		
Plug:			
Setting:	1) GF Pick Up 720		
	2) GF Delay 0.2 I ² t Out		

Device Name:	SWBD-1-1	Bus Name:	SWBD-1-Bus
Description:	SQUARE D-MA-MAL-125-1000A	Bus Voltage:	480.0V
AIC Rating:	30kA	Fault Duty:	28027.5A
Frame:	1000 480V 1000A 30kA	Curve Multiplier:	1.00000
Trip:	800A		
Setting:	1) LTD		
	2) INST 5.0		

Device Name:	SWBD-1-3	Bus Name:	SWBD-1-Bus
Description:	SQUARE D-LX,LXI A-100-600A	Bus Voltage:	480.0V
AIC Rating:	65kA	Fault Duty:	28027.5A
Frame:	400 480V 400A 65kA 0kA 0kA	Curve Multiplier:	1.00000
Sensor:	400A		
Plug:			
Setting:	1) LTPU 1.0		
	2) LTD 10		
	3) STPU 3.0		
	4) STD-I2T .2 I ² t In		
	5) INST 8.0		

Device Name:	SWBD-1-3G	Bus Name:	SWBD-1-Bus
Description:	SQUARE D-LX, LXI (G)-250, 400A	Bus Voltage:	480.0V
AIC Rating:	99kA	Fault Duty:	28027.5A
Frame:	600 600V 600A 99kA 0kA 0kA	Curve Multiplier:	1.00000
Sensor:	400A		
Plug:			
Setting:	1) LTPU 0.75		
	2) .1 sec.		

Device Name:	MCC-1-B1	Bus Name:	MCC-1-Bus
Description:	SQUARE D-KA-KAL-70-225A	Bus Voltage:	480.0V
AIC Rating:	25kA	Fault Duty:	24275.4A
Frame:	225 480V 225A 25kA	Curve Multiplier:	1.00000
Trip:	200A		
Setting:	1) LTD		
	2) INST		5.0

Device Name:	PNL-003-14	Bus Name:	
Description:	SQUARE D-KA-KAL-70-225A	Bus Voltage:	480.0V
AIC Rating:	25kA	Fault Duty:	200000.0A
Frame:	150 480V 150A 25kA	Curve Multiplier:	1.00000
Trip:	150A		
Setting:	1) LTD		
	2) INST		5.0

Appendix I

PTW Transient Motor Starting Plots

Page 84 - Normal Operation with one chiller starting

Page 85 - Standby Operation with all motors starting

Page 86 - Standby Operation with motors starting in sequence

Page 87 - Standby Operation with EXHF-8045 running and air compressor starting

Chillers

Generator1

● Study1 - Generator1 - BUS-DG-DP-001 - Bus Voltage
 ▲ Study1 - Generator1 - 7.5 HP-1 - Motor Speed

■ Study1 - Generator1 - EXHF-8045 - Motor Speed

Generator2

Generator3

Appendix J
PTW Input Information

HNF-SD-LL-ES-016
Detail Fault Study230 kV Transmission
System Fault Study

PAGE 15

NO. 15. 3LG Bus fault on: A7 230. kv

15. 3LG Bus fault on:
A7 230. kv

FAULT CURRENT (A @ DEG)

0 SEQ	A PHASE	B PHASE	C PHASE
10499.80 -81.1	10499.80 -81.1	10499.80 158.9	10499.80 38.9
THEVENIN IMPEDANCE (OHM)			
1.95631+j12.4998	1.95631+j12.4998	5.31388+j21.5727	

SHORT CIRCUIT MVA= 4184.5 ANSI X/R RATIO= 6.02804 X/R RATIO= 6.3895 R0/X1= 0.42512 X0/X1= 1.72584

BUS	0 A7	230.0KV	AREA A	+ SEQ	- SEQ	TIER	0	(PREFault V=1.0000	-0.0 PU)	A PHASE	B PHASE	C PHASE
VOLTAGE (KV, L-G)	>	>		0.0000	0.0	0.0000	0.0	0.0000	0.0	0.0000	0.0	0.0000
BRANCH CURRENT (A) TO												
0 A9	230.0 L		3247.30 97.5	0.00	0.00	0.00	0.0	3247.30 97.5	3247.30 -22.5	3247.30 -142.5		
0 A2	230.0 L		7253.90 99.5	0.00	0.00	0.00	0.0	7253.90 99.5	7253.90 -20.5	7253.90 -140.5		
0 Z2#1 A7	13.8 T		0.00 0.0	0.00	0.00	0.00	0.0	0.00 0.0	0.00 0.0	0.00 0.0		
0 Z2#2 A7	13.8 T		0.00 0.0	0.00	0.00	0.00	0.0	0.00 0.0	0.00 0.0	0.00 0.0		

16. 1LG Bus fault on:
A7 230. kv

FAULT CURRENT (A @ DEG)

0 SEQ	A PHASE	B PHASE	C PHASE
2798.00 -78.8	8394.10 -78.8	0.00 0.0	0.00 0.0
THEVENIN IMPEDANCE (OHM)			
1.95631+j12.4998	1.95631+j12.4998	5.31388+j21.5727	

SHORT CIRCUIT MVA= 3345.3 ANSI X/R RATIO= 7.1209 X/R RATIO= 5.04768 R0/X1= 0.42512 X0/X1= 1.72584

BUS	0 A7	230.0KV	AREA A	+ SEQ	- SEQ	TIER	0	(PREFault V=1.0000	-0.0 PU)	A PHASE	B PHASE	C PHASE
VOLTAGE (KV, L-G)	>	>		97.4820 -0.8	35.4010 -177.7	0		62.1650 177.4	0.0000	0.0	144.7250 -130.1	151.3800 128.0
BRANCH CURRENT (A) TO												
0 A9	230.0 L		865.70 99.8	865.20 99.8	0.20 -87.7	0.20 -87.7	0.0	2540.50 101.2	81.20 -126.1	81.80 -126.5		
0 A2	230.0 L		1931.80 101.8	1933.50 101.8	0.20 -87.7	0.20 -87.7	0.0	5252.20 102.6	551.10 -86.0	551.20 -85.7		
0 Z2#1 A7	13.8 T		0.40 89.2	0.40 89.2	0.20 -87.7	0.20 -87.7	0.0	308.00 89.3	307.60 89.2	307.60 89.4		
0 Z2#2 A7	13.8 T		0.40 89.2	0.40 89.2	0.20 -87.7	0.20 -87.7	0.0	308.30 89.2	307.90 89.1	307.80 89.3		

H001156

4. (2)
JUN 16 1998

ENGINEERING DATA TRANSMITTAL SNF-4088, REV 1

Page 1 of 1
1. EDT NO 612814

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Fluor Daniel Northwest, Inc. Facilities & Infrastructure Projects		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Task Order DYN-98-30K		6. Design Authority/ Design Agent/Cog. Engr.: J.M. Hache/R. K. Newhouse		7. Purchase Order No.: N/A	
8. Originator Remarks: For release and distribution only				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 100 Area Electrical	
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: N/A	
15. DATA TRANSMITTED					
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator
1	HNF2757		0	Voltage Regulation and Load Study for the 100 Area Proposed Reconfiguration	N/A
16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)		1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)		1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged	
17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)					
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
2	1	Design Authority	J. M. Hache	6-15-98	S2-12
2	1	Design Agent	R. K. Newhouse	6-11-98	S3-08
		Cog. Eng.			
		Cog. Mgr.			
		QA	N/A		
		Safety	N/A		
		Env.	N/A		
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
3		G. D. Roosendaal			L6-64
3		R. L. Fritz			S2-12
3		D. L. Ford			S2-12
3		R. D. Healis			S3-55
3		W. A. White			A2-45
3		J. M. HACHE			S2-12
18.		19.		20.	
D. J. Tolleson Signature of EDT Originator		J.M. Hache Design Authority/ Cognizant Manager		21. DOE APPROVAL (if required) Ctrl. No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	

Rev. 2
Wed May 13 08:21:44 1998

Case#1 & 2

100D - 2-1000 Running & 1-900 Running

100K - 1-1500 Running & 1-300 Running

Page 6

SNF-4088, REV 1

~~HNF2757, Rev. 0~~

GENERATION DATA

BUS NAME	GENERATION	VOLT	SIZE	InitKW	MaxKVAR	TYPE
----------	------------	------	------	--------	---------	------

001-A2701C-PRI UTIL-0001		1.045 pu				SB
--------------------------	--	----------	--	--	--	----

Three Phase Contribution: 4184.50 MVA X/R : 6.39

Line to Earth Contribution: 0.00000 MVA X/R : 0.00000

Pos sequence impedance (100 MVA base) 0.0037 + J 0.0236 PU

Zero sequence impedance (100 MVA base) Infinite

SENT BY: TRANE SPOKANE;

7- 8-99 8:54AM; 5095354354 =>

5097835075;

#2/2

SNF-4088, REV 1

HA AKON INDUSTRIES (Canada) LTD.

11100 River Road
Richmond B.C.
V6X 1Z5TO : SPOKANE, WA
ATTN : DON TOWNSHENDFAX # : 509-535-4354
TEL # : 509-535-9057

PAGES : 1

DATE : July 5, 1999

SUBJECT : COLD VACUUM, 5365

JUST HEARD FROM OUR SUPPLIER. THEIR RESPONSE IS THAT THERE IS NO FAULT CURRENT PROTECTION FOR THE SCR. THE WAY HE EXPLAINED IT TO ME WAS THAT EVEN THE HIGH SPEED FUSES USED TO PROTECT SEMICONDUCTORS ARE NOT FAST ENOUGH TO PROTECT THE SCR. AND BESIDES, WITH THE COST OF HIGH SPEED FUSES GOING UP AND THE COST OF SCR'S GOING DOWN, IT IS ALMOST AS CHEAP TO JUST REPLACE THE SCR RATHER THAN TO REPLACE ANY BLOWN FUSES. BUT WITH THE CLEAN AIR (FILTERED) THAT THE COILS ON THIS JOB ARE SEE, HE IS NOT PARTICULARLY CONCERNED ABOUT SHORTING THE COILS.

HOPE THIS ANSWERS THE QUESTION.

REGARDS,
STEPHEN LO
HA AKON INDUSTRIES

CRIS,
Could you take a look at this information and advise if there is any benefit of adding ~~fuse~~ current limiting fuses.
Gunderson
7/7/99

Post-It® Fax Note 7671		Date 7/7/99	# of pages 1
To CRIS Carlson		From GUNDESON SINCE	
Co./Dept. EDNW		Co.	
Phone #		Phone # 376-3129	
Fax # 376-9399		Fax # 376-3252	

Frequency		50Hz				60Hz			
Voltage		380	400	415	440	416	440	460	480 600
Ratings 125/130°C (50/60 Hz)	kVA	95	95	95	88	115	118.8	125	125
	kW	76	76	76	70.4	92	95	100	100
Ratings 105°C	kVA	84	84	84	78	100	106.3	112.5	112.5
	kW	67.2	67.2	67.2	62.4	80	85	90	90
Voltage Regulation: with SX460		±1.5%				With 4% Engine governing			
with SX440, MX341		±1.0%				With 4% Engine governing			
with MX321		±0.5%				With 4% Engine governing			
Overload (Long-Term)		1hr in a 12hr Period 110% Rated Load							
Insulation system		Class H Throughout							
Short Circuit Current Capacity (MX341,321 only)		300%				350%			
Waveform Distortion (THD) No Load		<1.8%				<1.8%			
Radio Interference		BS800. For other Standards Apply to Factory				TIF <50			
Telephone Interference		THF <2%							
Unbalanced Magnetic Pull (kN/mm at full load)		3.49							
Heat Dissipation (W at full load)		8354	7888	7596	6456	10323	10135	10414	9918
Cooling Air Requirement (m ³ /sec)			0.367					0.464	
	(cfm)		820.4					984.6	
Inertia Constant (H) seconds		0.14	0.14	0.14	0.15	0.16	0.16	0.15	0.15
Maximum Overspeed (rev/min)		2250							
DE Bearing (Standard)	ISO	Ball 6315 - 2RS							
NDE Bearing	ISO	Ball 6310 - 2RS							
Stator Winding		12 Ends Reconnectable 2 Layer 2/3 Pitch							
Weight of wound stator assembly	(kg)	108							
Weight of wound rotor assembly	(kg)	134.76							
Weight of complete generator	(kg)	447							
% Efficiencies 125/130°C	FL	90.1	90.6	90.9	91.6	89.9	90.4	90.6	91.0
(See Page 2 for details)	3/4FL	91.3	91.7	91.9	92.2	91.3	91.6	91.7	92.0
	1/2FL	92.2	92.3	92.4	92.4	92.2	92.4	92.5	92.6
	1/4FL	91.4	91.2	91.1	90.4	91.6	91.5	91.5	91.4
Reactances (Full load) *	x _d (per unit)	2.33	2.10	1.95	1.61	2.82	2.61	2.50	2.30
	x' _d (per unit)	0.19	0.17	0.16	0.13	0.25	0.23	0.22	0.20
	x'' _d (per unit)	0.13	0.12	0.11	0.09	0.16	0.15	0.14	0.13
	x _q (per unit)	1.50	1.36	1.26	1.04	1.62	1.50	1.44	1.32
	x' _q (per unit)	0.174	0.157	0.146	0.120	0.233	0.215	0.207	0.190
	x ₂ (per unit)	0.067	0.060	0.056	0.046	0.081	0.075	0.072	0.066
	x ₂ (per unit)	0.163	0.138	0.128	0.105	0.195	0.180	0.173	0.159
	x ₀ (per unit)	0.095	0.088	0.080	0.066	0.113	0.104	0.100	0.092
Time Constants	T' _d (sec)	0.028							
	T'' _d (sec)	0.010							
	T' _{do} (sec)	0.80							
	T _e (sec)	0.007							
Short Circuit Ratio (1/x _d)		0.429	0.476	0.513	0.621	0.355	0.383	0.400	0.435
Excitation amps Full Load		210	210	210	197	197	202	210	210
No Load						0.5			
Stator Windings Resistance (20°C) Line to Line		0.116 Ω							
Rotor Windings Resistance (20°C)		1.11 Ω							

* "Full load" refers to 125/130°C Ratings

ISSUE

Continuous development of our products entitles us to change specification details without notice. Therefore they must not be regarded as binding.

SNF-4088-2.1

Post-It® Fax Note	7671	Date	6/28/99	# of pages	10
To	CRIS CARLSON	From	GURDHIAN SINGH		
Co./Dept	FDNDW	Co.	NHC		
Phone #	376-0622	Phone #	376-3129		
Fax #	376-9399	Fax #	376-3252

SQUARE D

Dedicated to Growth • Committed to Quality

S 104 Freya
Lilac Flag Bldg. #117
Spokane, WA. 99202

TO: CHRIS CALLOW

FROM: Paul Scott - Spokane Field Office
(509) 535-3685 Phone (509) 535-0747 Fax

DATE: 1-6-99

Pages Including This Cover Sheet 9.

CHRIS -

HERE ARE ON JOB YOU REQUESTED

Paul

SQUARE D
GROUPE SCHNEIDER

south 104 freya
lilac flag bldg.
suite 1.17
spokane
wa. 99202

Quotation

FINALE BOM - 9-9-97

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC**Project Sub-Name:****Project Location:** RICHLAND, WA**Quote Name:** COLD VACUUM DRYING FAC**Through Addenda Number:** 3**Bid Date:** 12/05/1996**Architect / Engineer:****Contractor:****Sales Representative:** PAUL SCOTT**Terms & Conditions***This Quotation is subject to Square D's published Terms and Conditions***Payment Terms:** STANDARD**Billing Type(s):****Quote Markings**

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
001-00	1	<p>SQUARE D CUSTOM QED SWITCHBOARD POWER STYLE QED SWITCHBOARD DESIGNED AND TESTED IN ACCORDANCE WITH: UL 891/NATIONAL ELECTRIC CODE/NEMA PB-2</p> <p>2500A 480Y/277 VAC 3PH 4W 60HZ</p> <p>SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMEN SHORT CRCT CURRENT RTNG:30 KA RMS SYM. SERIES RATED FEEDERS ACCESSIBILITY: FRONT ONLY INCOMING: BOTTOM LEFT/CABLE FED BUSSING:PLATED CU BUS/UL891 HEAT RISE</p> <p>MAIN OVERCURRENT PROTECTION ----- SM: FIXED MOUNTED MICROLOGIC 80% C/B 2500A/3P PX2500 EQUIPPED WITH: LONG.SHORT,INSTANTANEOUS,GFP LOCAL CURRENT AMMETER TRIP INDICATOR CONTROL POWER FOR GF PUSH-TO-TEST SUPPLIED IN SWITCHBOARD</p> <p>SM DISTRIBUTION ----- 1- 800/3P I-LINE MOUNTED TYPE MA C/B' THERMAL MAGNETIC TYPE EQUIPPED WITH: 5- 400/3P I-LINE MOUNTED TYPE LA C/B' THERMAL MAGNETIC TYPE EACH EQUIPPED WITH: 1- 200/3P I-LINE MOUNTED TYPE KA C/B' THERMAL MAGNETIC TYPE EQUIPPED WITH: 1- 20/3P I-LINE MOUNTED TYPE FH C/B' THERMAL MAGNETIC TYPE EQUIPPED WITH: 1- 60/3P I-LINE MOUNTED TYPE FH C/B' THERMAL MAGNETIC TYPE EQUIPPED WITH:</p> <p>TYPE 1 DIMENSIONS ----- 7' 6"W 36.0"D 1 @ 54"W 1 @ 36"W</p> <p>Estimated Ship Days (ARO): 40 Workings Days</p>
002-00	1	<p>MCC MODEL 6I MODEL 6 MOTOR CONTROL CENTER CONSISTING OF 480 VOLT,3-PHASE 4 WIRE 60 HERTZ 25K AMPS AVAILABLE FAULT CURRENT 800 AMPS HORIZONTAL BUS, SILVER PLATED COPPER 300 AMPS VERTICAL BUS, SILVER PLATED COPPER 300 AMPS GROUND BUS, COPPER 120 VOLT CONTROL NEMA 1A ENCLOSURE TYPE NEMA 1B WIRING 42KA BUS BRACING CU VERTICAL GROUND BUS FISHTAPE BARRIERS</p>

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		<p>8 - 20" W STD SECTIONS 1 - 25" W AUXILIARY SECTION OVERALL DIMENSIONS: 145.0"W X 20.0"D X 94.5"H</p> <p>INCOMING MAIN CONSISTING OF</p> <p>CIRCUIT BREAKER, 800 AMPS TOP ENTRY NEUTRAL LUG ASSEMBLY UNIT NAMEPLATE</p> <p>COMMON STARTER COMPONENTS:</p> <p>FULL VOLTAGE NON-REVERSING STARTERS (FVNR): WMAG-GARD CIRCUIT BREAKER INDIVIDUAL CNTL XFMR BASE VA MELTING ALLOY OVERLOAD RELAY GREEN OFF PILOT LIGHT RED ON PILOT LIGHT HIGH INTERRUPTING BREAKER UNIT NAMEPLATE</p> <p>COMBINATION STARTERS:</p> <p>2 - 1 HP FVNR SZ 1 STRS 2 - 1.5 HP FVNR SZ 1 STRS 2 - 7.5 HP FVNR SZ 1 STRS</p> <p>COMMON BRANCH FEEDER ACCESSORIES:</p> <p>BRANCH FEEDER UNIT NAMEPLATE</p> <p>BRANCH FEEDERS:</p> <p>1 - 20A/3P CIRCUIT BREAKER HIGH INTERRUPTING BREAKER 2 - 25A/3P CIRCUIT BREAKERS HIGH INTERRUPTING BREAKER 2 - 30A/3P CIRCUIT BREAKERS HIGH INTERRUPTING BREAKER 3 - 35A/3P CIRCUIT BREAKERS HIGH INTERRUPTING BREAKER 1 - 50A/3P CIRCUIT BREAKER HIGH INTERRUPTING BREAKER 1 - 175A/3P CIRCUIT BREAKER 2 - 200A/3P CIRCUIT BREAKERS</p> <p>COMMON ALTIVAR DRIVE CONTROLLER COMPONENTS:</p> <p>ATV86 DRIVE CONTROLLER VAR. TORQUE VERSION: CIRCUIT BREAKER INDIVIDUAL CONTROL XFMR BASIC UNIT NAMEPLATE RED "POWER ON" PILOT LIGHT</p> <p>ALTIVAR DRIVE CONTROLLER:</p> <p>2 - 20HP ATV86 DRIVE CONT. (D16) VAR.TOR.VER. 1800 RPM MOTOR SPEED ASSUMED MOTOR DATA: 027 FULL LOAD AMPS</p>

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		NEMA DESIGN B MOTOR NEMA MOTOR CODE F 2 - 30HP ATV88 DRIVE CONT. (D33) VAR.TOR.VER. 1800 RPM MOTOR SPEED ASSUMED MOTOR DATA: 040 FULL LOAD AMPS NEMA DESIGN B MOTOR NEMA MOTOR CODE F MISCELLANEOUS UNITS: ----- 1 - 9" EQUIPPED SPACE UNIT NAMEPLATE 3 - 12" EQUIPPED SPACES UNIT NAMEPLATE Estimated Ship Days (ARO): 15 Workings Days
003-00	1	Designation: dp-1 NF MB PANELBOARD (INTERIOR) NF PANELBOARD CONSISTING OF 480Y/277 VAC 3PH 4W 60 HZ SCCR:14K MAIN: 100A EDB CIRCUIT BREAKER ULSE INCOMING CONDUCTOR(S): (1)#14-#2/0 AWG BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/3S/5/12 38"H X 20"W X 6.50"D INCOMING: TOP BOX CAT.#: MH38WP FRONT CAT.#: N38TK REF. DRAWING: PBA 555 BRANCHES: (1) 25A/3P EDB (2) 20A/3P EDB (4) 15A/3P EDB (1) 40A/3P EDB SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE Estimated Ship Days (ARO): 15 Workings Days
052-00	1	Designation: dp-1 MH38WP (BOX) STANDARD TYPE 3R ENCLOSURE HGT 38 Estimated Ship Days (ARO): 4 Workings Days
053-00	1	Designation: dp-1 N38TK (FRONT) NF TYPE 3R INTERIOR TRIM KIT HGT 38 Estimated Ship Days (ARO): 15 Workings Days
006-00	4	Designation: dp-2 NF MB PANELBOARD (INTERIOR) NF PANELBOARD CONSISTING OF 480Y/277 VAC 3PH 4W 60 HZ SCCR:14K MAIN: 400A LA CIRCUIT BREAKER ULSE INCOMING CONDUCTOR(S): (1)#1 AWG-800 kcmil Cu or

Q2C Number: 102-11383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		(2) #1 AWG-250 kcmil BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/3S/5/12 86"H X 20"W X 6.50"D INCOMING : TOP BOX CAT.#: SPECIAL FRONT CAT.#: SPECIAL REF. DRAWING: PBA 555 BRANCHES: (10) 15A/3P EDB (1) 25A/3P EDB (1) 45A/3P EDB (1) 80A/3P EDB (1) 150A/3P KA SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE DESIGNATIONS: dp-2, dp-3, dp-4, dp-5 Estimated Ship Days (ARO): 15 Workings Days
054-00	4	Designation: dp-2 (SPECIAL BOX) TYPE 3R ENCLOSURE HGT 86 Estimated Ship Days (ARO): 4 Workings Days
055-00	4	Designation: dp-2 (SPECIAL FRONT) NF TYPE 3R INTERIOR TRIM KIT HGT 86 Estimated Ship Days (ARO): 15 Workings Days
009-00	5	Designation: I1 NOOD MB PANELBOARD (INTERIOR) NOOD PANELBOARD CONSISTING OF 208Y/120 VAC 3PH 4W 60 HZ SCCR:10K MAIN: 50A QOB CIRCUIT BREAKER INCOMING CONDUCTOR(S): (1)#2-#2 A/Cu BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/3S/5/12 INCOMING : BOTTOM BOX CAT.#: FRONT CAT.#: BRANCHES: (6) 15A/1P QOB (6) 20A/1P QOB (3) 20A/1P QOB SPACE ONLY SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE, (1) fuse label DESIGNATIONS: I1, I2, I3, I4, I5 Estimated Ship Days (ARO): 15 Workings Days
060-00	5	Designation: I1 (SPECIAL BOX) STANDARD TYPE 3R ENCLOSURE HGT 26 Estimated Ship Days (ARO): 4 Workings Days
061-00	5	Designation: I1 (SPECIAL FRONT)

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		NOOD TYPE 3R INT TRIM KIT HGT 26
		Estimated Ship Days (ARO): 15 Workings Days
012-00	1	Designation: I6 NOOD MB PANELBOARD (INTERIOR) NOOD PANELBOARD CONSISTING OF 208Y/120 VAC 3PH 4W 60 HZ SCCR:10K MAIN: 50A QOB CIRCUIT BREAKER INCOMING CONDUCTOR(S): (1)#8-#2 Al/Cu BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/3S/5/12 INCOMING : BOTTOM BOX CAT.#: FRONT CAT.#: BRANCHES: (2) 20A/2P QOB (1) 15A/1P QOB (4) 20A/1P QOB (6) 20A/1P QOB SPACE ONLY SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE, (1) size label Estimated Ship Days (ARO): 15 Workings Days
062-00	1	Designation: I6 (SPECIAL BOX) STANDARD TYPE 3R ENCLOSURE HGT 26 Estimated Ship Days (ARO): 4 Workings Days
063-00	1	Designation: I6 (SPECIAL FRONT) NOOD TYPE 3R INT TRIM KIT HGT 26 Estimated Ship Days (ARO): 15 Workings Days
015-00	1	Designation: I7 NOOD MB PANELBOARD (INTERIOR) NOOD PANELBOARD CONSISTING OF 208Y/120 VAC 3PH 4W 60 HZ SCCR:10K MAIN: 225A Q2 CIRCUIT BREAKER ULSE INCOMING CONDUCTOR(S): (1)#4-300 kcmil Al/Cu BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/3S/5/12 50"H X 20"W X 6.50"D INCOMING : BOTTOM BOX CAT.#: MH50WP FRONT CAT.#:MH50TK REF. DRAWING: PBA 507, 511 BRANCHES: (35) 20A/1P QOB (1) 30A/1P QOB (2) 15A/1P QOB (2) 25A/2P QOB SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE Estimated Ship Days (ARO): 15 Workings Days
068-00	1	Designation: I7 MH50WP (BOX)

Q2C Number: 102-11383

Quote Number: 1

Revision Number: 0

Project Name: CCLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		STANDARD TYPE 3R ENCLOSURE HGT 50
		Estimated Ship Days (ARO): 4 Workings Days
069-00	1	Designation: I7 MH50TK (FRONT) NQOD TYPE 3R INT TRIM KIT HGT 50
		Estimated Ship Days (ARO): 15 Workings Days
016-00	1	Designation: ups-1 NQOD MB PANELBOARD (INTERIOR) NQOD PANELBOARD CONSISTING OF 208Y/120 VAC 3PH 4W 60 HZ SCCR:10K MAIN: 150A Q2 CIRCUIT BREAKER ULSE INCOMING CONDUCTOR(S): (1)#4-300 kcmil Al/Cu BUS: COPPER STANDARD PLATING CU GROUND BAR TYPE 3R/38/5/12 50"H X 20"W X 6.50"D INCOMING : BOTTOM BOX CAT.#: MH50WP FRONT CAT.#:MH50TK REF. DRAWING: PBA 507.511 BRANCHES: (38) 20A/1P QOB (4) 15A/1P QOB SPECIAL: USER PLACEMENT, COPPER SOLID NEUTRAL, NAMEPLATE
		Estimated Ship Days (ARO): 15 Workings Days
066-00	1	Designation: ups-1 MH50WP (BOX) STANDARD TYPE 3R ENCLOSURE HGT 50
		Estimated Ship Days (ARO): 4 Workings Days
067-00	1	Designation: ups-1 MH50TK (FRONT) NQOD TYPE 3R INT TRIM KIT HGT 50
		Estimated Ship Days (ARO): 15 Workings Days
021-00	3	8538SCA24V81FF4P1P2T FUSED, CLASS H, COMBO STARTER CONSISTING OF Type S NEMA Rated Combination Starter NEMA Size 1 Device(s) In NEMA 12 (with reset) Enclosure(s) With Fused Disconnect Switch (H, J, K Clips) Standard Melting Alloy Overload Relay Thermal Units NOT Included Red & Green Pilot Lights With Control Power Transformer (CPT) Std. VA CPT w/2 pri & 1 sec fuse
		Estimated Ship Days (ARO): 12 Workings Days
022-00	9	8538SBA23V81FF4P1P2T FUSED, CLASS H, COMBO STARTER CONSISTING OF Type S NEMA Rated Combination Starter NEMA Size 0 Device(s) In NEMA 12 (with reset) Enclosure(s)

Q2C Number: 10241383

Quote Number: 1

Revision Number: 0

Project Name: COLD VACUUM DRYING FAC

Quote Name: COLD VACUUM DRYING FAC

Item No.	Qty.	Catalog Number / Details
		With Fused Disconnect Switch (H, J, K Clips) Standard Melting Alloy Overload Relay Thermal Units NOT Included Red & Green Pilot Lights With Control Power Transformer (CPT) Std. VA CPT w/2 pri & 1 sec fuse Estimated Ship Days (ARO): 12 Working Days
023-00	10	9001KS43K6 TRANSLATOR
		Markings: (ON IDS)
024-00	10	9001KN260SP NAMEPLATE
025-00	10	9001KYAF1 ENCL
026-00	6	15T3HF 15.00 KVA B 9 TRNSF
027-00	1	75T3HF 75.0 KVA TRNSF
028-00	1	45T3HFIS DRY TYPE TRANSFOR43064-004-50
029-00	1	FAL34100 MOLED CASE CIRCUIT BREAKER, 480V
030-00	1	FAL34070 MOLED CASE CIRCUIT BREAKER, 480V
031-00	2	FA100AWK ENCLOSURE CIRCUIT BREAKER NEMA 12AND3R
032-00	11	HU361AWK SWITCH NOTFUSIBLE HD 600V 30A 3 POLE NEMA 12
033-00	10	H361AWK SWITCH FUSIBLE HD 600V 30A 3 POLE NEMA 12,3R
034-00	3	HU362AWK SWITCH NOTFUSIBLE HD 600V 60A 3 POLE NEMA 12
035-00	2	H362AWK SWITCH FUSIBLE HD 600V 60A 3 POLE NEMA 12,3R
036-00	1	H362RB SWITCH FUSIBLE HD 600V 60A 3 POLE NEMA 3R
037-00	4	HU363AWK SWITCH NOTFUSIBLE HD 600V 100A 3 POLE NEMA 12
038-00	2	H363AWK SWITCH FUSIBLE HD 600V 100A 3 POLE NEMA 12,3R
039-00	2	H364AWK SWITCH FUSIBLE HD 600V 200A 3 POLE NEMA 12,3R