Power System Study
for the
San Jose WPCP Reliability Improvements Project
San Jose, California

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EXECUTIVE SUMMARY

Each aspect of the study, its pertinent results, and recommendations are summarized below. Detailed discussions appear later in each respective section of this report.

1. The main purpose of the **Short-Circuit Study** was to determine if each protective device was rated to handle the maximum fault current that it may be subjected to during a fault condition. This was done by comparing the device's published short-circuit current rating to its calculated fault current duty.

    - The Short Circuit Study indicates that all devices and panels are appropriately rated based on the Bill of Material supplied by General Electric.

2. The **Coordination Study** will be completed following submittal approval of the Short Circuit Study and Equipment listed in the Bill of Material.

3. The **Harmonics Analysis** indicates that the implementation of 3% line reactors on each of the GE Fuji VFDs will meet IEEE 519 requirements when 480V linear loading exceeds approximately 75HP and the Point of Common Coupling is selected at the secondary side of the 1000kVA transformers. A harmonics analysis was not conducted for the medium voltage variable frequency drives as an analysis of those drives was performed by the equipment manufacturer separately. A GE Matrix Broadband filter would only be needed on the 45HP drive should the plant operation be composed of the four 480V drives and no other 480V linear loads.

INTRODUCTORY SECTION

Study Objective

Rosendin Electric, Inc. was contracted to perform a Short Circuit Study, Coordination Analysis, and Harmonics Analysis for the *San Jose WPCP Reliability Improvements Project* project located in *San Jose*, *California*. The scope of the short-circuit study included the electrical system from the incoming 12kV dual medium voltage service feeders serving a double-ended Main Switchgear feeding several medium voltage VFDs, unit substations servicing 480V MCCs and low voltage panels .

The purpose of a **Short-Circuit Study** is to determine if each protective device, within the scope of this study, is rated to handle the maximum fault current that it may be subjected to in the event of a fault. This is done by comparing each device's published short-circuit current rating to its individually calculated fault current duty. The calculated short-circuit current values are also used in selecting protective device settings in the Coordination Study. A discussion of the method of calculation is contained in the *Short-Circuit Study - Introduction* section of this report. The results are discussed in the *Short-Circuit Study – Analysis* section of this report. The report also contains documentation of the system components in the *Appendix / Short-Circuit Study - Analysis* section, including information on each transformer and motor, utility fault current contributions, installed feeder conductors and their respective conduits.

The **Coordination Study** work scope includes the determination of recommended settings for all adjustable protective devices down to low voltage 120/208V distribution panel main breakers. The settings recommended in this study provide a reasonable compromise between the often-conflicting goals of service continuity and equipment protection. The nature of the load and its tolerance to service interruptions must be considered as well as the consequences of delays in clearing a fault. Where possible, the minimum amount of equipment is removed from service when a system protective device operates to clear a fault or system abnormality. This is known as selectivity. The recommended settings, tabulated according to the device location, are located in the *Appendix / Coordination Study - Analysis* section of this report.

A high degree of selectivity was achieved for the majority of the studied electrical system. The section entitled *Coordination Study - Analysis* should be referenced for identifying and setting breakers to achieve the highest level of protection and selectivity. The time current curves found in the *Appendix / Coordination Study - Curve/Graphics* section of the report were generated using recognized industry software.

The methods used in the course of these studies conform to NEC, ANSI, and other applicable standards and accepted industry practices.

All insulated cables within the scope of the study have been checked for protection to ensure compliance with the National Electrical Code standard for over-current-protection.

Primary transformer protection was examined to insure avoidance of nuisance outages from inrush currents, as well as providing over-current protection as required by the 1999 National Electrical Code, and fault protection as provided by the American National Standards Institute (ANSI). Coordination with secondary protective equipment was also an objective. This protection was examined by means of time current curves.

Compliance with the 2002 National Electric Code (NEC) sections pertaining to system protection was evaluated. Motor starting was also examined to identify the impact of starting each of the larger motors within the system (assuring breaker settings were sufficient to allow proper starting). Motor curves are found on several of the Time Current Curves located in this report.

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Description of the Electrical System

A one-line diagram was entered into ESA's EasyPower 7.0 Software to accurately model the electrical system from the utility source, the service transformer(s) and feeders, Main Switchboard(s), and subsequent downstream 277/480V panel boards, step down transformers, MCCs, and finally any 120/208V sub-panels. The single-line diagram(s) illustrated in the Appendix of this report represent the Single Line Diagram(s) provided by the Design Engineer of Record.

Study Approach

When performing the power system study, the equipment Bill of Material and Engineering / Contractor supplied information was reviewed and entered into the analysis software. By using this information, it was possible to evaluate the system in its truest terms and recommend optimum engineering changes, where necessary.

Before a study of any system can begin, a variety of data must be collected and entered in the analysis software. All protective and impedance elements must be closely inspected to determine their true arrangement sufficient for construction of the single-line model. This includes the true circuit arrangement including all breaker types, ratings, and interrupting capacities. Additional information regarding cable sizes, types, and lengths; transformer sizes and impedances; and utility related data is also entered into the software.

When all necessary electrical system data has been collected from the field, the information is entered into a software database for short-circuit, protective device evaluation, and coordination analysis. The short-circuit program determines the maximum fault current available at each of the pre-selected fault buses as identified on the one-line diagram. The program output shows both the first cycle of fault duty (as needed for momentary

evaluations, fuse and low-voltage breaker interrupting capacity), and interrupting duties for the slower, five-cycle, medium voltage breakers.

The Short-Circuit Device Evaluation Report, found in the *Appendix / Short-Circuit Study - Analysis* section of this report, compares the interrupting capacities of each device with the interrupting duty calculated from this study.

These fault levels are equally important for proper coordination, and it will be noted that each time-current coordination plot uses these values. Advantage is taken of the various line and transformer impedances to set primary instantaneous devices above the level of a secondary transformer fault. For example, it is desired that the secondary instantaneous device operate first to clear the fault without primary interruption. Also, transformer inrush current varies with circuit impedance, and is considered in the calculations to select smaller than normally required fuse or relay setting.

Coordination in practice is generally a compromise between the mutually desirable but somewhat inconsistent goals of maximum protection and maximum service continuity. For this reason, and because of factors such as established system design, there may be combinations of device settings that are classified as acceptable. The settings suggested in this study are based on an exercise of judgment as to the best balance between competing objectives.

SHORT-CIRCUIT STUDY INTRODUCTION

Introduction

A power system short-circuit study is used to check or determine:

1. The calculated fault duty against the rating of circuit interrupting devices, such as circuit breakers and fuses.
2. The selection and rating or setting of short-circuit protective devices such as direct-acting trips, fuses and relays.
3. The calculated fault duty against the short-circuit ratings of non-interrupting equipment such as busway, motor control centers, switchgear, and distribution panels.

General Discussion

The study procedure consists of representing the electrical power system in a software based modeling program. Each of the power system components (utility sources, generators, motors, transformers, cables, etc.) is represented by a resistance value and a reactance value.

Bus IDs are used to assign short-circuit sources, base voltages, and per-unit impedance values to the correct locations within the modeled system. The output data is referenced to these Bus IDs. These buses do not necessarily represent real buses or readily accessible connection points in the actual electrical system. They may identify hypothetical buses that are the junction points of impedance elements in the real system, such as cable and busway with transformers or reactors. Separate Bus IDs facilitate data collection and organization with the operation of the software.

The software places an assumed three-phase fault on each bus located in the system and a set of short-circuit currents is calculated that can be compared with the published short-circuit rating of the actual power system equipment. Any interrupting device must be able to withstand and interrupt the most severe short-circuit current available. Generally, three-phase bolted faults and the maximum utility short-circuit duty result in the greatest required equipment duty ratings.

The calculation techniques used are in accordance with American National Standards C37.13-1981 for low-voltage breakers, C37.010-1979 and C37.5-1979 for medium and high-voltage breakers.

System Impedance Data

The one-line diagrams included in this report represent the modeled electrical power distribution system. Impedance values for this study are listed in the Database Report found in the *Appendix / Database Report* section. The Database Report is a tabulation of all system components relative to the scope of this study. This includes Utility Sources,

Generators, Motors, Transformers, Circuit Breakers, Switches, Fuses, Cables, and Busways.

The voltage bases used in the impedance network generally are those associated with the rated winding voltages of the main transformers and the load-centers on their "flat-tap" positions. Therefore, the system study results typically are based on 12470, 4160, 2400, 480 and 208 Volts as the "system" voltage bases.

The **utility system** is represented as an infinite bus connected to a line whose impedance equals the utility's equivalent source impedance at the facility's incoming service. The other end of this line is connected to the incoming service point. The utility impedance is typically given on the one-line diagram on a 100 MVA base.

The **transformer** nameplate impedances are given in percent, and are based on the self-cooled kVA rating of the transformer. Normally, the X/R ratios of the transformers are derived from the "medium-typical" curves in ANSI C37.010 although specific X/R ratios may also be used for particular applications. Additional transformer data is entered into the software, and may include its type, such as oil, gas, or dry, silicone or vapor. The transformer class may also include various combinations of forced air, water or forced oil. Examples are shown below.

Type	Class
Oil	- OA, OA/FA, FOA, OW, OW/A, FOW, OA/FA/FA, OA/FA/FOA, OA/FOA/FOA
Gas	- VA, VA/FA
Silicon	- SA, SA/FA
VP Dry	- AA, AFA, AAFA
Cast Coil	- AA, AFA, AAFA

Other transformer data parameters include its connection (delta, wye-ungrounded or wye-grounded), its ground impedance (if wye-grounded) and its ANSI temperature rating, as shown below.

ANSI Temperature Ratings

45^{o}C	65^{o}C	80/110^{o}C
55^{o}C	65/80^{o}C	150^{o}C
55/65^{o}C	80^{o}C	150/180^{o}C

A transformer's Load Tap Changer data is also used in the model. Its step size may be defined as either 5/8 or 10/8 percentage steps along with its minimum and maximum tap values. Its control type may be either voltage or MVAR controlled for load-flow analysis. The software does not model single phase or dual single phase transformer secondaries (such as 480V-120/240V), and therefore are modeled at the highest three phase secondary voltage (i.e. 240V) to achieve the proper fault current.

The system's **cable** and **busway** impedances are represented in per unit on the study-base impedance, using typical impedance values for such equipment available in standard references, such as the IEEE "Red Book".

Cables may be defined as one of five different types, 1/C-one conductor, 3/C-three conductor, IAA-interlocked armor aluminum, IAS-interlocked armor steel or MAC-messenger aerial cable. Other variables include material (copper or aluminum), size, length, number of conductors per phase temperature (25ºC to 250ºC) and insulation. Some common insulation abbreviations are shown below:

Low voltage Insulation (1000 volts or less):

THHN	- Heat Resistant Thermoplastic
THWN	- Moisture and Heat Resistant Thermoplastic
THW	- Moisture and Heat Resistant Thermoplastic
RHH	- Heat Resistant Rubber
RHW	- Moisture and Heat Resistant Rubber
XHHW	- Moisture and Heat Resistant Crosslinked Synthetic Polymer (480V equivalent of XLPE)

High Voltage Insulation (Over 1000 volts):

XLPE	- Crosslinked Polyethylene
XLPE-133%	- Crosslinked Polyethylene with 133% insulation
XLPE-NJ	- Non-Jacketed Crosslinked Polyethylene
XLPE-NJ-133%	- Non-Jacketed Crosslinked Polyethylene with 133% insulation
XLPES	- Shielded Crosslinked Polyethylene
XLPES-133%	- Shielded Crosslinked Polyethylene with 133% insulation
EPR	- Ethylene Propylene Rubber
EPR-133%	- Ethylene Propylene Rubber with 133% insulation
EPR -NJ	- Non-Jacketed Ethylene Propylene Rubber
EPR -NJ -133%	- Non-Jacketed Ethylene Propylene Rubber with 133% insulation
EPRS	- Shielded Ethylene Propylene Rubber
EPRS-133%	- Shielded Ethylene Propylene Rubber with 133% insulation
PILC	- Paper Insulated Lead Sheath
PILC-133%	- Paper Insulated Lead Sheath with 133% insulation

Busways are defined by manufacturer, material (copper or aluminum) and length.

The modeling software sometimes requires a zero-impedance branch for certain device configurations. Cables indicated with 10 - 500MCM conductors per phase or a 5000A Copper bus-duct with a length of ten feet is used to represent this requirement. This is used mainly with bifurcated feeder breakers where two conductors are connected to the load terminals of the breaker. A zero-impedance branch is connected through the breaker between its line-side connection to the bus and its load-side cable connections.

The **motors** in each unit substation are grouped (lumped) and a single impedance is determined based on the total connected motor kVA. Typical sub-transient reactance ($X"_d$) or locked rotor (X_{lr}) for each motor within the group is determined and averaged.

The total equivalent kVA and impedance is based on the following assumptions when exact motor impedances are not known.

Table SCI-1

Induction motor	1 hp = 1 kVA
Synchronous motor, 0.8 PF	1 hp = 1 kVA
Synchronous motor, 1.0 PF	1 hp = 0.8 kVA
Induction motor not greater than 600V	X_{lr} = 0.25 per unit
Induction motors greater than 600V	X_{lr} = 0.17 per unit
Synchronous motors not less than 1200 rpm	X''_d = 0.15 per unit
Synchronous motors less than 1200 rpm	X''_d = 0.20 per unit

(The motor impedances are in per unit on the motor kVA rating. These reactances and motor base kVA ratings listed above were taken from data and assumptions in IEEE Publication No. 141, Fourteenth Edition, "IEEE Red Book".)

The sub-transient reactance (X''_d) values listed in the Table SCI-2 are used in first-cycle (momentary) current calculations while a modified sub-transient reactance is used for the interrupting duties for the medium and high-voltage breakers. These values are in accordance with the pertinent circuit breaker application standards.

The ANSI standards for calculating short-circuit duties require that the actual motor or generator reactances be modified under certain conditions. The modification factors are listed in the following table for both momentary (close and latch) and interrupting-duty calculations. Low-Voltage Duty is calculated per ANSI C37.13-1981 while Momentary and Interrupting Duty is calculated per ANSI C37.010-1979 and C37.5-1979.

Table SCI-2

Motor Code	Motor Type	First Cycle - Low Voltage	First Cycle - Momentary Duty for Medium & High Voltage Breakers	1.5-4 Cycles - Interrupting Duty for Medium & High Voltage Breakers
1	Synchronous	1.0 X_d''	1.0 X_d''	1.5 X_d''
2	Induction > 1000HP or > 250HP @3600 RPM	1.0 X_d''	1.0 X_d''	1.5 X_d''
3	Induction Motor Group >= 50 HP	1.2 X_d''	1.2 X_d''	3.0 X_d''
4	Induction Motor Group < 50 HP	1.67 X_d''	1.67 X_d''	Neglect
5	Lumped Induction Motor Group	1.0 X_d''	1.0 X_d'' *	3.0 X_d''

Note- X_d'' for induction motor groups are assumed equal to 0.167. This corresponds to an equivalent motor contribution of 3.6 to 4.8 times the full load current.

* = X_d'' assumed equal to 0.25.

When exact data is not known, the X/R ratios of induction motors and transformers are determined by using the "medium typical" curves from ANSI C37.010-1979. For synchronous motors less than 1000 horsepower, an X/R ratio from the curve of induction motor X/R ratios is determined.

When hand calculations are performed, the above approximations may be used along with the X/R ratios, provided in the next table, unless more accurate calculations are required. Motor code letters are usually listed on the nameplate, and correspond to kilovolt-amperes per horsepower with locked rotor in accordance with Section 430 of the National Electrical Code. The reciprocal of this kVA/horsepower value may be used as the motor impedance on its own kVA base. This is especially desirable for low-voltage motors with two pole or ratings over 250 HP.

Table SCI-3
Table of Typical Induction Motor Short-Circuit X/R Ratios

Nameplate Horsepower	X/R Ratio	Nameplate Horsepower	X/R Ratio	Nameplate Horsepower	X/R Ratio
5	2.5	50	5.7	300	15.0
7.5	2.7	60	6.3	350	16.3
10	3.2	75	7.0	400	17.4
15	3.6	100	8.2	450	18.5
20	3.9	125	9.0	500	19.4
25	4.3	150	10.0	600	20.7
30	4.5	200	11.7	700	22.1
40	5.1	250	13.4	800	23.4

Short-Circuit Calculations

There are four possibilities for a fault in a three-phase system:

1. Three-phase fault - the three-phase conductors are shorted together.
2. Line-to-line fault - any two phase conductors are shorted together.
3. Double line-to-ground fault - any two phase conductors are shorted together and simultaneously to ground.
4. Line-to-ground fault - one phase conductor is shorted to ground.

For a particular location in a power system, the magnitude of fault current is generally the greatest for three-phase faults and least for phase-to-ground faults. However, ground-fault current magnitude can exceed the three-phase fault current under certain conditions. This can occur near (1) solidly grounded synchronous machines, (2) solidly grounded wye connection of a delta-wye transformer of the three-phase core (three leg) design, (3) grounded wye-delta "tertiary" auto-transformers, or (4) grounded wye-grounded wye-delta tertiary three-winding transformers.

The short-circuit study does not include prefault steady-state load currents. The effect of system load currents is usually negligible in short-circuit studies for industrial and commercial power distribution systems.

Bus IDs used on the one-line diagrams are assigned to establish the locations that are faulted, and typically match the system nomenclature on the Design / Construction Drawings. Contributions from sources of short-circuit current such as the electric utility system, generators, and motors are indicated on the Single Line Diagram printout.

Switchgear Ratings

The short-circuit rating assigned to a power circuit breaker design by the manufacturer is significant in two ways. First, the rating represents a conservative statement of the actual capability of the breaker design to close against, to withstand, and to interrupt short-circuit currents. Thus, the rating is the maximum condition under which the breaker design may be safely applied. Secondly, the rating is the maximum condition of application for which the manufacturer guarantees that the breaker will perform satisfactorily. It is essential, then, that a circuit breaker be applied within the rating assigned to its design if the installation is to be safe and if it is to be covered to the full extent of the manufacturer's warranty. One purpose of a short-circuit study is to determine the conditions under which switchgear will be applied in a specific system.

From a series of laboratory tests, the manufacturer determines the actual breaker capability. Then a rating is selected and assigned to the breaker. In the United States the procedures for testing breakers the rating structure, and the listing of preferred ratings are industry standards dictated by the Sectional Committee on Power Switchgear (C37) of the American National Standards Institute.

The short-circuit rating of a circuit breaker is its capability at the maximum voltage at which the breaker may be applied. Therefore, there is a distinction that must be made between the rating of the breaker and its capability in a specific application.

Prior to 1964, breakers were assigned a short-circuit interrupting capacity in asymmetrical MVA, and it was stated that the interrupting capacity was a constant over a defined range of voltages. An equivalent interrupting capacity in amperes could be calculated at each voltage level. This is called a total-current basis for rating breakers. Since 1964, however, breakers have been assigned an interrupting capacity in symmetrical RMS amperes at a specified maximum voltage, and the capacity is said to increase in inverse proportion to voltage up to a specified maximum current. This is the so-called symmetrical current basis of rating. Under the new rating structure, an MVA rating is still assigned to breakers for class distinction, but it is not the interrupting capability of the device in most cases.

Under the symmetrical current basis of rating switchgear, the factor k defines the permissible range of voltage and fault current. The interrupting capabilities of the breaker then fall into one of three categories:

1. Voltage is greater than the rated maximum voltage; the breaker may not be applied.
2. Voltage is between the rated maximum voltage and l/k times the rated voltage; the interrupting capacity is:

$$\frac{\text{(Interrupting capacity at rated voltage)} \quad \text{(Rated voltage)}}{\text{(Actual Voltage)}}$$

3. Voltage is less than l/k times the rated voltage; the interrupting capacity is k times the interrupting capacity at the rated voltage.

The momentary current capability, defined as the fully offset RMS fault current against which the breaker must be able to close and latch its contacts, is 1.5k times the symmetrical RMS interrupting capacity of the breaker at rated maximum voltage and is not a function of the actual voltage of application.

Under the total-current basis of rating switchgear, the breaker is assigned an interrupting MVA and rated voltage from which an interrupting capability in amperes at rated voltage can be calculated. The breaker is also assigned a range of voltages over which the interrupting MVA is a constant number. If the upper limit of voltage can be exceeded in application, the application is not proper. Below the lower limit, the interrupting capability is not proper. Below the lower limit, the interrupting capability in amperes is constant at a value calculated from the interrupting MVA at the lower-limit voltage. Momentary (or first-cycle) current capability is defined as the maximum fully offset RMS current the breaker can withstand for one second and is assigned by the manufacturer.

Low-voltage breakers are tested and applied in accordance with ANSI C37.13. Low-voltage breakers of present and recent manufacture have symmetrical current interrupting ratings. For low-voltage breakers, calculated first-cycle symmetrical short-circuit currents are compared with the manufacturer's symmetrical ratings since these breakers may be operated rapidly enough to part their contacts during the first-cycle of short-circuit current. Low-voltage breakers manufactured prior to 1957 had average symmetrical short-circuit interrupting current ratings which were compared with 1.25 times calculated first-cycle symmetrical short-circuit currents.

Fuses are fast-acting protective devices that operate in the first-cycle of fault and are rated on a total symmetrical or asymmetrical fault current, depending on the fuse type and voltage rating.

Standards for Short-Circuit Duty Calculations

Electrical power system operating conditions change constantly with system loading and operating procedures. The available short-circuit current also changes with system operating conditions. For any operating condition, the short-circuit current decreases from a maximum value at the inception of a fault until the fault is removed. The rate of this short-circuit current decay depends on many factors.

The American National Standards Institute (ANSI) has developed standards to be used by the electrical industry for calculating short-circuit currents to be compared with short-circuit ratings or capabilities of electrical equipment.

Industrial and commercial power system studies are made by calculating short-circuit current values in accordance with these standards.

Duty and Relay Short-Circuit Current Calculations

The following gives a brief description of the type of calculations that can be made:

1. **First-Cycle Duty per ANSI C37.13-1981 (similar to ASA C37.5-1953)**
   The momentary duty calculated by following ANSI C37.13-1981 is used to compare with the interrupting rating for low-voltage breakers and fuses since their interrupting time is within the first-cycle.

   Impedances represent the utility source, generators, motors, transformers and lines. Sub-transient impedances are used for the utility sources, generators, and synchronous motors. Locked rotor impedances are used for induction motors. For a simplified and more conservative answer only reactances need be used.

   Present-day, low-voltage breaker ratings are compared to the symmetrical current obtained by an E/A calculation at the fault point, while some older low-voltage ratings are compared to an average asymmetrical current 1.25 times the symmetrical current. For symmetrically rated low-voltage circuit breakers, when the X/R ratio is greater than 6.6, the calculated duty is multiplied by a number greater than 1.00 as listed in Table 3 of ANSI C37.13-1981 for comparison with breaker rating. If the X/R ratio is not known, the multiplier should be 1.15. Fuse rating are compared to an asymmetrical current equal to 1.6 times the symmetrical currents in some cases. For low-voltage current-limiting fuses the multiplier is 1.0.

2. **First-Cycle Duty per ANSI C37.010-1979 and C37.5-1979**
   Momentary duty calculated by following ANSI C37.010-1979 and C37.5-1979 is compared with the closing and latching capability of medium and high-voltage circuit breakers. Total impedances, or reactance portions of the utility source impedance, generator, motor, transformer and line impedances are used for the momentary current calculations. The reactances used for the utility source, generator, and synchronous machines are sub-transient reactances. The reactances of the induction motors are entered per Table SCI-3. The circuit E/X current at the fault point is the symmetrical momentary (short time) duty for the breakers. The close-and-latch duty is found by multiplying the symmetrical duty by 1.6 or by using the actual X/R ratio multiplier.

   The superseded ASA 37.5-1953 calculating procedure or the procedure given in C37.13-1981 for low-voltage breakers is sometimes used to evaluate the medium and high-voltage breaker first-cycle duties, along with fuses and low-voltage breaker duties. Using either of the above procedures will yield a slightly higher calculated

duty (usually 2%-5%) for medium and high-voltage breakers than ANSI C37.010-1979 because all induction motors are included at their locked rotor impedance.

3. **Interrupting Duty per ANSI C37.010-1979 and C37.5-1981**
   The interrupting duty calculated by following ANSI C37.010-1979 for symmetrical-current-rated breakers and ANSI C37.5-1979 for total current rated circuit breakers is compared with the medium and high-voltage breaker interrupting ratings.

   The interrupting current is lower than the momentary current because it takes into account the short-circuit decrement with respect to time while the power circuit breaker is opening. The interrupting duty is calculated by using the reactances given in Table SC-3 of this introductory section.

   The interrupting duty is found by calculating the short-circuit current (E/X) from the reactance network only and then finding the equivalent resistance for the circuit at the fault point, using a resistance-only network reduction. The breaker interrupting time, electrical distance away from generators (measured by the number of intervening transformers) and X/R ratio at the fault are used to determine a multiplying factor to be applied to the symmetrical current to take into account the appropriate direct-current decrements for breakers rated from two- to eight-cycles interrupting time. The multipliers are taken from curves given in ANSI Standard C37.5-1979 for total-current-rated breakers.

   Frequently, interrupting current calculations are made using IEEE Transactions Paper 60TP146-IGA Sept/Oct 1969, "Interpretation of New American National Standards for Power Circuit Breaker Application" (GER-2550) as a guide. The principal extension of the ANSI standards is that a ratio of remote-generator fault current to the sum of the local-generator fault current and remote-generator fault current is used as a measure of the electrical distance from the fault to the generation. The resulting fault-current multiplier takes into account reactors and line impedances that may be equivalent to transformer impedances, as well as variations in the size of transformers.

4. **Short-Circuit Relay Currents**
   Short-circuit studies are also made to determine the branch current required to determine settings for relays and protective devices in coordination studies. The impedances of generators and motors depend on the time of interest subsequent to the fault. For long time periods after the fault, the utility source and transient impedance of the generators may be the only short-circuit sources in the network.

One-Line Diagram Discussion

All switching devices indicated on the one-line are assumed “closed” unless designated as "open". Unless specifically requested, multiple utility feeders are not faulted together

SHORT CIRCUIT ANALYSIS

Utility Short-Circuit Impedance

The Utility short-circuit contributions used in this study are shown below on a 100 MVA, 4.16kV base. Anil Kar of the San Jose Water Treatment Plant provided these values. The X/R values were chosen as typical values for a delivery system of this size. A sensitivity analysis was performed to verify these X/R values as reasonable by running the Short Circuit Analysis at X/R = 1 and X/R = 100. No equipment was found to fail equipment duty ratings within this range of X/R.

Contribution values given @ 4160V medium voltage distribution gear:

	M2-N	M2
Three Phase Fault	37092 A	24249 A
Three Phase X/R	7	7
Ground Fault	37092	24249 A
Ground Fault X/R	7	7

Database Printout

The first computerized printout represents the equipment database that includes all system components used in generating this report. The utility, generator and motor contributions are detailed first, then transformers, cables, and panels. The output is generally self-explanatory.

Cable sizes were determined from Single Line Diagrams and Tables submitted by the Engineer of Record and/or electrical contractor take-offs used for estimating purposes. When cable lengths were not provided, a value of 11' is used (this is for simplicity in finding such cables in future data reviews). Low-voltage motor speeds were assumed as 1800 RPM.

Short-Circuit Program Output Explanation

ESA's EasyPower Version 7.0 was used to calculate the three-phase fault duties using a nodal admittance network. Pre-fault steady-state load currents are omitted since the effects of system load current through a device during a fault is usually negligible in typical industrial and commercial electrical distribution systems.

This short-circuit program provides full implementation of ANSI Standards C37.010-1979, C37.5-1979 and C37.13-1981.

For **momentary duty** (1/2 cycle) fault calculations, the positive sequence impedance is assumed equal to the negative sequence impedance. X/R ratios are derived from the complex network.

For **interrupting duty** fault calculations, rotating machine subtransient impedances are modified by multipliers outlined in ANSI Standards C37.010-1979, and C37.5-1979.

Negative sequence impedances are modeled using the rotating machine subtransient impedances with no multipliers. A separate "R" (resistance) network is formed for the calculation of the fault point X/R ratio. The X/R ratio used for the calculation of the interrupting duty multipliers is then found from the relationship Z/R. This method fully complies with the ANSI standard and has the advantage of accurate currents and voltages and increased accuracy of a separate X separate R solution technique. NACD (No AC Decrement) ratios are calculated with consideration of generator "Local" and "Remote" contributions as outlined in ANSI Standard C37.010-1979 and Reference 4. Medium and high-voltage interrupting multipliers are also derived from Reference 4.

The first printout is the *Equipment Duty Violation and Warning Report.*

The interrupting duty shown in this device evaluation report is the available fault current taken from the Short-Circuit Reports at the appropriate point in the system minus the contributions generated downstream of that point. The interrupting duty is the symmetrical rating specified by the device manufacturer. The comparison is shown as a percent under-duty (negative percentage) or a percent over-duty (positive number) e.g. (1 - 16.1 kA/37 kA) = 56.6%. Comments indicate whether the equipment is not capable of safely interrupting the available fault current i.e. "VIOLATION".

Devices that are calculated as over-dutied (VIOLATION) should be replaced as indicated in the *Results - Discussion* found at the end of this section. The devices shown with a "WARNING" comment should be replaced if further motor loading or increased incoming capacity is foreseen. A "WARNING" indicates that a device's calculated fault current is within 10% of its rating. The result of a device applied in excess of its rating may be the destruction of the device as well as the load it was supposed to protect in the event of a major fault.

Molded-Case Circuit Breakers

An important consideration in the application of molded-case and insulated case circuit breakers is that often the interrupting rating given to the equipment is higher than its tested interrupting capacity. In testing circuit breakers for short circuit interrupting ratings, Underwriter's Laboratories (UL) uses an additional four feet, ten inches of cable sized to 125% of the trip setting of the breaker. Thus a 15 amp trip circuit breaker is tested with 4'10" of 14 AWG wire between it and the fault point. This added impedance can severely limit the test current actually applied to the device. The above breaker may have an interrupting rating of 14,000 amps symmetrical short-circuit current at 50% power factor but is only tested at 7,353 amps at 77% power factor at the line connections of the breaker. This discrepancy is most significant at lower trip sizes and at higher interrupting ratings. This may mean that the application of a circuit breaker whose interrupting capacity is less than the available fault current is a violation of the NEC even though the interrupting rating is

sufficient. Similar testing procedures and ratings differences also exist for motor starters, enclosures, distribution panels and motor control centers.

Table SCA-1 lists some common interrupting ratings and capacities for smaller breaker sizes at 480 Volts.

Table SCA-1 [6]

Interrupting Rating	Trip Size	Tested Int. Capacity	Interrupting Rating	Trip Size	Tested Int. Capacity
10,000 A	15 A	7,353 A	14,000 A	15 A	9,772 A
10,000 A	20 A	8,203 A	14,000 A	20 A	11,226 A
10,000 A	25&30A	8,882 A	14,000 A	25&30A	12,354 A
10,000 A	40&50A	9,249 A	14,000 A	40&50A	12,926 A
25,000 A	15 A	13,530 A	42,000 A	15 A	15,714 A
25,000 A	20 A	17,037 A	42,000 A	20 A	21,526 A
25,000 A	25&30A	20,248 A	42,000 A	25&30A	28,352 A
25,000 A	40&50A	21,948 A			
25,000 A	60 A	23,104 A			

The next printout is the *Interrupting Breaker Duties Using Interrupting Impedance Circuit*.

The interrupting duty short-circuit program output gives the calculated 1-1/2 to 4 cycle (interrupting) short-circuit currents which are used to determine the interrupting duties for medium and high-voltage circuit breakers. Interrupting-duty currents are calculated using modified subtransient reactances for all sources of short-circuit current, as specified in the appropriate ANSI calculating procedures.[1,2,3,5] The ANSI Standard method uses a separate R network for the interrupting duty network to determine a conservative Z/R ratio. This ratio is used as the Thevenin equivalent fault point X/R ratio for determining the appropriate breaker contact parting time multipliers and NACD (No AC Decrement) ratios.

Up to six of the standard duties are given (3, 5 and 8 cycle on a Total basis and on a Symmetrical basis), along with the multiplying factors. Fault current values based listed with these interrupting times are based on circuit breaker contact parting times of 0.0333, 0.05 and 0.0667 seconds respectively (2, 3 and 4 cycles, for 60 hertz systems). "Total" refers to a circuit breaker rated on a total current basis and the calculated fault duty is based on references 2 and 4. "Symmetrical" refers to a circuit breaker rated on a symmetrical current basis and the calculated fault duty is based on references 1 and 4. The Adj. Factor times the symmetrical current gives the maximum duty level. The Adj. Factor is determined from curves in Reference 1 and 2, the fault point X/R ratio and the ratio of "Remote/Total" currents as given in Reference 4.

The contributions from adjacent buses are also listed.

The next printout from the Short-Circuit Program is the *High Voltage Momentary (First Cycle) Breaker Duties Using Momentary Impedance Circuit*.

Calculated first-cycle (momentary) short-circuit currents are used to evaluate equipment mechanical strength requirements, to determine closing and latching requirement for medium and high-voltage circuit breakers, and interrupting duty for fast-operating interrupters such as fuses and to calculate relay currents used in protective-device coordination studies. First-cycle duty currents are calculated using subtransient or modified subtransient reactance (X"d) for all sources of short-circuit current as specified in the appropriate ANSI calculating procedures. [1,2,3,4,5]

As indicated, the momentary case shows the symmetrical fault current for each non-low voltage bus during the first cycle of fault. Contributions from adjacent buses are also shown.

Medium and High-Voltage Fuses have multiple Test PFs associated with them based on voltage class. Fuse Links and Cutouts have even more Test PFs. Equation SC-E1 applies in calculating the fuse's duty. Several of these fuse duties are given in this Momentary report. For a particular fuse duty versus rating comparison, see the Short-Circuit Device Evaluation Report.

The last printout from the Short-Circuit Program is the *Low Voltage Momentary (First Cycle) Breaker Duties Using Momentary Impedance Circuit*.

Calculated first-cycle (momentary) short-circuit currents are used to evaluate interrupting duty for fast-operating interrupters such as fuses and low-voltage circuit breakers, and to calculate relay currents used in protective-device coordination studies. First-cycle duty currents are calculated using subtransient or modified subtransient reactance (X"d) for all sources of short-circuit current as specified in the appropriate ANSI calculating procedures.[1,2,3,4,5]

As indicated, this printout shows the symmetrical amps and the fault X/R ratio as well as asymmetrical amps for each faulted bus in the system. X/R ratios are derived from the complex network. Contributions from adjacent buses are also shown. The "duty" affecting a protective device is normally defined as the contribution from buses "upstream" of the device in the electrical system.

Power Circuit Breaker Duty is shown under the heading "Symmetrical Amps", while Molded-Case Breakers may be shown with multiple duties. This is because molded-case breakers have different Test Power Factors. If the actual fault PF is less than that at which the device was tested (fault X/R ratio greater than test X/R ratio), the device must be derated

or a multiplier applied to its duty before comparing the duty with the device's rating for interrupting evaluation.

The Test Power Factors for the above devices are listed here at their worst-case, highest values. This means that for a fault PF less than this, a multiplier is applied to the calculated fault current before it is compared to the device's rating. Breakers with interrupting ratings 10kA or less have a Test Power Factor of 0.50. Breakers with interrupting ratings from 10kA to 20kA have a Test Power Factor of 0.30. Breakers with interrupting ratings of 20kA, or greater, have a Test Power Factor of 0.20. Power Circuit Breakers have a Test Power Factor of 0.15. Similarly, Low-Voltage Fuses have Test PF associated with them as well. There are two different Test PFs, 0.20 and 0.50.

The multiplier to increase the calculated fault current so that it may be compared to the device's nameplate interrupting rating may be calculated by equation SC-E1.

Equation SC-E1.

$$\text{Multiplier} = \frac{1 + \in^{\frac{-\Pi}{(X/R)}}}{1 + \in^{\frac{-\Pi}{K}}}$$

where X/R= Fault X/R ratio
$K = \tan \{ \cos^{-1}(PF)\}$
and PF= Test Power Factor (device dependent)

The multiplier to change the calculated symmetrical amperes to asymmetrical amperes is shown in the right half of Equation SC-E2.

Equation SC-E2.

$$\text{Asym} = \text{Sym} * \sqrt{1 + 2 \in^{\frac{-2\pi}{(X/R)}}}$$

where Sym = symmetrical amperes calculated
and Asym = asymmetrical amperes

References

1. "Application Guide for AC High-Voltage Breakers Rated on a Symmetrical Current Basis," ANSI Standard C37.010-1979.

2. "Calculation of Fault Currents for Application of Power Circuit Breakers Rated on a Total-Current Basis," ANSI Standard C37.5-1979.

3. "American National Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures," ANSI Standard C37.13-1981.

4. "Interpretation of New American National Standard for Power Circuit Breakers Applications,", W.C. Huening Jr., IEEE Transaction on Industry and General Applications, Vol. IGA-5, No. 5, Sept./Oct. 1969.

5. "Calculating Short-Circuit Currents With Contributions From Induction Motors," W.C. Huening, Jr., Conference Record Industry Applications Society, IAS-1981: 21A, 81CH1678-2, page 427-33.

6. "Short Circuit Ratings, Labels, and Fault Withstandability of Molded-case and Insulated-case Circuit Breakers and Combination Motor Starters," Arthur J. Smith, Conference Record of the 1989 IEEE Industry Applications Society Annual Meeting, 89CH2792-0.

Results - Discussion

The Equipment Duty Rating printouts indicate that all of the protective devices or panels in the scope of this study were not overdutied (or within 10% of their rating) – except for the following:

No devices were found to be over-dutied.

New protective devices added to the system should be checked per the short circuit levels given in the program to insure adequate interrupting ratings are provided. Any major change or addition to the power system can significantly change the short circuit levels. The program should particularly be re-examined in the event of a change in the utility service, a change of one of the principal transformers, or a significant addition of motor load to the studied electrical system.

in a parallel arrangement. Generally, Main-Tie-Main breaker arrangements incorporate "Krik-Lock" type devices that prevent accidentally paralleling of multiple utility sources.

HARMONIC STUDY INTRODUCTION

Introduction

The purpose of a Harmonic Analysis is to determine the level of Harmonic Current and Voltage Distortion at the Point of Common Coupling per I.E.E.E. 519. The 1992 version of IEEE 519 set forth limits on harmonic distortion for both voltage and current in industrial distribution systems, and their overall impact on the utility's distribution system. Harmonic voltage (distortion) is caused by the flow of harmonic currents through a distribution system's impedance. Therefore, the level of Harmonic Voltage Distortion can be minimized by reducing the industrial system's contribution of current contraining harmonics (or loads that produce harmonics).

Compliance with Codes and Standards

The basis of the harmonics analysis follows the definition of several terms which are described below for clarification:

Point of Common Coupling – is identified as the point of connection (to the utility) as *defined* by the servicing utility, and is highly dependent upon whether it is determined as the high or low side of the service transformer. Location (and selection) of the PCC can adversely affect the desired results or impact of the Harmonic Distortion determination. Generally, the PCC is not considered as the point at which a variable frequency drive is connected to the commercial facility's own system (such as a Motor Control Center).

Total Demand Distortion – is defined as the Total Harmonic Current Distortion at the PCC and is based upon the maximum demand load current. TDD is the ratio of Harmonic Current to the Maximum Cumulative (linear and non-linear) Total Load.

I_{SC} – is the available Short Circuit current at the PCC, and is based upon impedance, available system capacity, and system voltage.

I_L – is the maximum demand load current (fundamental frequency component) as measured at the PCC. For new facilities, this is typically considered as the maximum anticipated load.

Harmonic Order – is described as the frequencies that are multiples of the fundamental frequency. Current magnitudes at these higher frequencies are typically expressed a percentage of the fundamental frequency and is determined through Fast Fourier Transform methods. The columns in the table illustrated on the following page indicate the maximum acceptable values for each range of harmonic order current according to I.E.E.E. 519 at the PCC.

Table 1
Maximum Harmonic Current Distortion in % of I_L

Individual Harmonic Order (Odd only)

I_{SC} / I_L	< 11	11 ≤ h < 17	17 ≤ h < 23	23 ≤ h ≤ 35	35 ≤ h	TDD
< 20*	4.0	2.0	1.5	0.6	0.3	**5.0**
20 < 50	7.0	3.5	2.5	1.0	0.5	**8.0**
50 < 100	10.0	4.5	4.0	1.5	0.7	**12.0**
100 < 1000	12.0	5.5	5.0	2.0	1.0	**15.0**
> 1000	15.0	7.0	6.0	2.5	1.4	**20.0**

Even harmonics are limited to 25% of the odd harmonic limits. TDD refers to Total Demand Distortion and is based on the average maximum demand current at the fundamental frequency, taken at the PCC.

*All power generation equipment is limited to these values of current distortion regardless of I_{SC} / I_L.

I_{SC} = Maximum short circuit current at the PCC
I_L = Maximum demand load current (fundamental at the PCC
h = harmonic number

Procedures

The harmonic analysis is carried out by evaluating the impact of harmonic currents produced by non-linear loads present in the customer's electrical system to the "stiffness" or "softness" of the serving utility's electrical distribution system. Several factors must be considered when evaluating this impact:

1) Level of loading by the non-linear load. For example, the harmonic spectra present for a VFD operating at 50%, 85%, or 100% motor speed varies considerably. Much of this variance is dependent on the size of the DC link filtering capacitor and its level of discharge between each cycle of incoming three phase voltage.

2) The capacity (short circuit and kW demand) of the utility's electrical system. Though these value don't often change (size of the utlity's service transformer), the utility's routing or choice of feeder circuits can affect Short Circuit current. This latter value can greatly impact the utlity's service "stiffness" and the I_{SC} / I_L ratio as used in IEEE 519.

3) The number and size of linear components in the electrical system that is under evaluation. Motors directly connected to the electrical distribution system can be

affected by negative sequence harmonics (5^{th}, 11^{th}, 17^{th}, etc.) causing "cogging" of those motors (creating heat and increasing load). Power Factor correction capacitors are considered low impedance "sinks" of higher frequency harmonics, and switching of these devices "into" the system can change the steady-state operating characteristics of the electrical system considerably.

The drive supplier for this project (General Electric) provided an interactive spreadsheet indicating the harmonic spectra (harmonic orders and their respective magnitudes) for the AF300-G11 / P11 Fuji line of drives. Additionally, an analyzer program by Trans-Coil, Inc. was utilized to confirm the impact of the line-reactors used in this project. Finally, all necessary data was input into the ESA Software for each drive, and the harmonics analysis was conducted.

HARMONIC ANALYSIS

Basis of Analysis

The Harmonic Analysis performed as part of this report was limited to the gear and equipment supplied by General Electric. The manufacturer of the Medium Voltage variable frequency drives performed their own Harmonics Analysis and was provided with their submittal via CD-ROM. As such, the Point of Common Coupling considered in the evaluation of the GE gear was selected as the secondary side of the 1000kVA, 4.16kV /480V transformers serving MCC1A and MCC1B. Choosing the secondary side of the 1000kVA transformers is reasonable as it limits the impact of harmonics produced downstream of this point to the GE 480V drives. Selecting a PCC considerably upstream (in fact, at the 115kV PG & E "service" point) would produce results difficult to interpret, and non-specific to evaluating the GE gear operating in a stand-alone manner.

The Harmonics Analysis was performed using the interactive spreadsheet provided by GE for the Fuji AF300-G11 / P11 line of drives. The interactive spreadsheet provided harmonic spectra for each of the drives (with and without mitigation equipment). Harmonic spectra determined through the use of the GE Spreadsheet were compared to the results of the Trans Coil, Inc. Analyzer software. Using the harmonic spectra data, each of the four GE drives were modeled in the San Jose WPCP Reliability Improvements Project as operating with and without harmonic mitigation equipment. This part of the evaluation considered the drives as operating "stand-alone" devices without any other linear loads.

Next, the harmonics analysis was performed using the full connected load of the 480V MCC loads as modeled on the original single line. This analysis was performed since the required Total Demand Distortion value changes (becomes smaller) as Iload (demand) increases. Refer to Table 1 in the *Harmonics Analysis – Introduction* section for exact values when reviewing the results on the following page.

Results of the Analysis

Calculations and Results of the Harmonics Analysis are summarized in the table found on the following page. Upon review of the table, one will see that as linear loads are added, or when the 3% line reactors are introduced, the Total Harmonic Distortion at the Point of Common Coupling progressively decreases. Use of the 3% line reactors as supplied by GE will achieve the necessary Total Demand Distortion as required at the Point of Common Coupling when 75HP or more of linear load is present when the four drives are in operation. 75HP represents about 12% of the connected linear motor load at 480V.

Recommendations

The Design Engineer of Record for this project should review the operating parameters of the plant to consider whether 12% of the plant's linear load is representative of conditions that are expected for normal operations. It should be noted that under all load

conditions (i.e. from no linear loads to all connected 480V linear loads), the Total Demand Distortion will be met when an 8% Broadband Matrix filter is used on the 45 HP drive (in place of the 3% line reactor for this drive).

The results of this study do not suggest whether or not the 8% Matrix broadband filter should be implemented on the 45HP drive since exact knowledge of how the plant will be operated is unknown. It should be recognized that the harmonic magnitude and content of a 45HP drive (and three 1HP drives) will likely be immeasurable when the Point of Common Coupling is moved to the 115kV PG & E service point, and the rest of the facility's loads are considered during normal operation.

Table 1 – Differing Levels of Plant Loading / Conformance with IEEE 519

Case	Drive HP	Harmonic Mitigation	Drive HP	Harmonic Mitigation	Linear Load (HP)	Total (Iload)		Isc / Iload	Required TDD (%)	Calculated THD (%)	Pass / Fail
						Amps	kW demand				
1	45	None	3 x 1	None	None	58	48	363.19	15	89.88	Fail
2	45	3% line reactor	3 x 1	3% line reactor	None	58	48	363.19	15	42.94	Fail
3	45	8% Matrix BB	3 x 1	3% line reactor	None	58	48	363.19	15	8.76	Pass
4	45	3% line reactor	3 x 1	3% line reactor	75	154	128	136.79	15	15.63	breakpoint
5	45	3% line reactor	3 x 1	3% line reactor	100	182	151	115.74	15	13.12	Pass
6	45	3% line reactor	3 x 1	3% line reactor	585	875	727	24.07	8	4.52	Pass

APPENDIX

Database Report

Project Name: WPCP Reliability Improvements Project
Comment: Equipment Database Report

Summary

1	Base MVA	100
2	Frequency	60
3	Buses	115
4	MCC Schedules	0
5	Panel Schedules	0
6	Utilities	2
7	Generators	0
8	UPS	0
9	Motors	90
10	Capacitors	0
11	Loads	0
12	Shunts	0
13	Filters	0
14	2-Transformers	7
15	3-Transformers	0
16	Zigzags	0
17	Cables	110
18	Busways	0
19	Xmission Lines	0
20	CL Reactors	0
21	HV Breakers	17
22	LV Breakers	93
23	Switches	4
24	Fuses	10
25	ATS	0
26	Meters	0
27	CTs	23
28	Relays	13
29	Notes	47
30	Lines	0

Buses

	ID Name	Status	Base kV	Area	Zone	AF Type	AF Option	Comment
1	05-PMP-201	On	0.48	1	1	Other	Specified	
2	05-PMP-202	On	0.48	1	1	Other	Specified	
3	05-VLV-201	On	0.48	1	1	Other	Specified	
4	05-VLV-217	On	0.48	1	1	Other	Specified	
5	05-VLV-219	On	0.48	1	1	Other	Specified	
6	11-SLG-201	On	0.48	1	1	Other	Specified	
7	11-SLG-202	On	0.48	1	1	Other	Specified	
8	11-SLG-203	On	0.48	1	1	Other	Specified	
9	11-SLG-204	On	0.48	1	1	Other	Specified	
10	11-SLG-205	On	0.48	1	1	Other	Specified	
11	11-SLG-207	On	0.48	1	1	Other	Specified	
12	12-BFG-201	On	0.48	1	1	Other	Specified	
13	12-BFG-202	On	0.48	1	1	Other	Specified	
14	12-BFG-203	On	0.48	1	1	Other	Specified	
15	12-CNV-201	On	0.48	1	1	Other	Specified	
16	12-CNV-202	On	0.48	1	1	Other	Specified	
17	12-FAN-201	On	0.48	1	1	Other	Specified	
18	12-FAN-202	On	0.48	1	1	Other	Specified	
19	12-FAN-204	On	0.48	1	1	Other	Specified	
20	12-FAN-205	On	0.48	1	1	Other	Specified	
21	12-FAN-205A	On	0.48	1	1	Other	Specified	
22	12-FAN-206	On	0.48	1	1	Other	Specified	
23	12-FAN-207	On	0.48	1	1	Other	Specified	
24	12-FAN-208	On	0.48	1	1	Other	Specified	
25	12-GBN-201	On	0.48	1	1	Other	Specified	
26	12-GBN-202	On	0.48	1	1	Other	Specified	
27	12-GBN-203	On	0.48	1	1	Other	Specified	
28	12-GCL-201	On	0.48	1	1	Other	Specified	
29	12-GCL-202	On	0.48	1	1	Other	Specified	
30	12-GCL-203	On	0.48	1	1	Other	Specified	
31	12-HVU-203	On	0.48	1	1	Other	Specified	
32	12-LCP-2001	On	0.48	1	1	Other	Specified	
33	12-LCP-2002	On	0.48	1	1	Other	Specified	
34	12-LCP-2003	On	0.48	1	1	Other	Specified	
35	12-LCP-2004	On	0.48	1	1	Other	Specified	
36	12-LCP-2005	On	0.48	1	1	Other	Specified	
37	12-LCP-2006	On	0.48	1	1	Other	Specified	
38	12-LCP-2007	On	0.48	1	1	Other	Specified	
39	12-MBS-201	On	0.48	1	1	Other	Specified	
40	12-MBS-202	On	0.48	1	1	Other	Specified	
41	12-MBS-203	On	0.48	1	1	Other	Specified	
42	12-PMP-201	On	0.48	1	1	Other	Specified	
43	12-PMP-202	On	0.48	1	1	Other	Specified	
44	12-PMP-203	On	0.48	1	1	Other	Specified	
45	12-PMP-204	On	0.48	1	1	Other	Specified	
46	12-PMP-205	On	0.48	1	1	Other	Specified	
47	12-PMP-206	On	0.48	1	1	Other	Specified	
48	12-PMP-207	On	0.48	1	1	Other	Specified	
49	12-PMP-213	On	0.48	1	1	Other	Specified	
50	12-PMP-214	On	0.48	1	1	Other	Specified	
51	12-SCP-201	On	0.48	1	1	Other	Specified	
52	12-SCP-202	On	0.48	1	1	Other	Specified	
53	12-SDG-201	On	0.48	1	1	Other	Specified	
54	12-SDG-202	On	0.48	1	1	Other	Specified	
55	12-SDG-209	On	0.48	1	1	Other	Specified	
56	12-SDG-210	On	0.48	1	1	Other	Specified	
57	12-SDG-211	On	0.48	1	1	Other	Specified	
58	12-SLG-204	On	0.48	1	1	Other	Specified	
59	12-SLG-205	On	0.48	1	1	Other	Specified	
60	12-SLG-208	On	0.48	1	1	Other	Specified	
61	12-SLG-210	On	0.48	1	1	Other	Specified	
62	12-SLG-211	On	0.48	1	1	Other	Specified	
63	12-SLG-212	On	0.48	1	1	Other	Specified	
64	12-SLG-213	On	0.48	1	1	Other	Specified	
65	12-SLG-214	On	0.48	1	1	Other	Specified	
66	12-SLG-215	On	0.48	1	1	Other	Specified	
67	12-SLG-216	On	0.48	1	1	Other	Specified	
68	12-SLG-217	On	0.48	1	1	Other	Specified	
69	12-VLV-218	On	0.48	1	1	Other	Specified	
70	12-WSC-201	On	0.48	1	1	Other	Specified	
71	12-WSC-202	On	0.48	1	1	Other	Specified	
72	14-HPU-201	On	0.48	1	1	Other	Specified	
73	14-PMP-201	On	0.48	1	1	Other	Specified	
74	14-PMP-202	On	0.48	1	1	Other	Specified	
75	14-PMP-203	On	0.48	1	1	Other	Specified	
76	14-SLG-201	On	0.48	1	1	Other	Specified	
77	14-SLG-202	On	0.48	1	1	Other	Specified	
78	14-SLG-203	On	0.48	1	1	Other	Specified	

Buses

	ID Name	Status	Base kV	Area	Zone	AF Type	AF Option	Comment
79	14-SLG-204	On	0.48	1	1	Other	Specified	
80	LP-1	On	0.208	1	1	Panelboard	Specified	
81	LP-2	On	0.208	1	1	Panelboard	Specified	
82	LP-3	On	0.208	1	1	Panelboard	Specified	
83	LP-4	On	0.208	1	1	Panelboard	Specified	
84	M1	Off	4.16	1	1	Switchgear	Specified	
85	M2	On	4.16	1	1	Switchgear	Specified	
86	M3-N	On	4.16	1	1	Switchgear	Specified	
87	M3-S	Off	4.16	1	1	Switchgear	Specified	
88	M5 A	On	4.16	1	1	Switchgear	Specified	
89	M5 B	On	4.16	1	1	Switchgear	Specified	
90	MCC1-A	On	0.48	1	1	MCC	Specified	
91	MCC1-B	On	0.48	1	1	MCC	Specified	
92	MCC1-SPARE	On	0.48	1	1	Other	Specified	
93	MCC2	On	0.48	1	1	MCC	Specified	
94	MCC5	On	0.48	1	1	MCC	Specified	
95	P0003	On	4.16	1	1	Other	Specified	
96	P0003 MODEL	Off	4.16	1	1	Other	Specified	
97	P0004	On	4.16	1	1	Other	Specified	
98	P0004 MODEL	Off	4.16	1	1	Other	Specified	
99	P0007	On	4.16	1	1	Other	Specified	
100	P0010	On	4.16	1	1	Other	Specified	
101	P0010 MODEL	Off	4.16	1	1	Other	Specified	
102	P0013	On	4.16	1	1	Other	Specified	
103	PGE SUB1 A	Off	115	1	1	Switchgear	Specified	
104	PGE SUB1 B	Off	115	1	1	Other	Specified	
105	RSFDS PMP1	On	0.48	1	1	Other	Specified	
106	RSFDS PMP2	On	0.48	1	1	Other	Specified	
107	TX PGE SUB1	Off	4.16	1	1	Other	Specified	
108	TX PGE SUB1	Off	4.16	1	1	Other	Specified	
109	TX TR-1 H	On	4.16	1	1	Other	Specified	
110	TX TR-1 L	On	0.48	1	1	Other	Specified	
111	TX TR-2 H	On	4.16	1	1	Other	Specified	
112	TX TR-2 L	On	0.48	1	1	Other	Specified	
113	TX-1 H	On	0.48	1	1	Other	Specified	
114	TX-2 H	On	0.48	1	1	Other	Specified	
115	TX-3 H	On	0.48	1	1	Other	Specified	

Utilities

	ID Name	Status	To bus	Base kV	Util kV	Fault Unit	3Ph SC1	3Ph SC2	SLG SC1	SLG SC2	Model	MW	MVAR	CTL kV pu	MVAR Min	MVAR Max	kV pu Min	kV pu Max
1	CONTRIB M2	On	M2	4.16	4.16	kA	24.249	7	24.249	7	Swing	0	0	1	-100000	100000	0.8	1.2
2	CONTRIB M3-N	On	M3-N	4.16	4.16	kA	37.092	7	37.092	7	Swing	0	0	1	-100000	100000	0.8	1.2

Utilities

	ID Name	Ctl Angle	Ctl Bus	Ctl Base kV	R1 pu	X1 pu	R0 pu	X0 pu	Hrm RC Factor	Hrm RC Value	I Hrm Rating	Comment
1	CONTRIB M2	0	M2	4.16	0.08094	0.56658	0.08094	0.56658	R-EXP	0.5	13878.6	
2	CONTRIB M3-N	0	M3-N	4.16	0.05291	0.37040	0.05291	0.37040	R-EXP	0.5	13878.6	

Motors

	ID Name	Status	To Bus	Base kV	Unit	Model	Motor kV	Hp or kW	Type	Load Class	RPM	FLA	Power Factor	Eff	kVA/Hp	ANSI Code	Connected
1	M 05-PMP-201	On	05-PMP-201	0.48	U.S.	Individual	0.46	4	Induction	Non-essential	1800		0.82	0.91		< 50	100
2	M 05-PMP-202	On	05-PMP-202	0.48	U.S.	Individual	0.46	4	Induction	Non-essential	1800		0.82	0.91		< 50	100
3	M 05-VLV-201	On	05-VLV-201	0.48	U.S.	Individual	0.46	7.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
4	M 05-VLV-217	On	05-VLV-217	0.48	U.S.	Individual	0.46	7.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
5	M 05-VLV-219	On	05-VLV-219	0.48	U.S.	Individual	0.46	7.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
6	M 11-SLG-201	On	11-SLG-201	0.48	U.S.	Individual	0.46	15	Induction	Non-essential	1800		0.82	0.91		< 50	100
7	M 11-SLG-202	On	11-SLG-202	0.48	U.S.	Individual	0.46	15	Induction	Non-essential	1800		0.82	0.91		< 50	100
8	M 11-SLG-203	On	11-SLG-203	0.48	U.S.	Individual	0.46	20	Induction	Non-essential	1800		0.82	0.91		< 50	100
9	M 11-SLG-204	On	11-SLG-204	0.48	U.S.	Individual	0.46	20	Induction	Non-essential	1800		0.82	0.91		< 50	100
10	M 11-SLG-205	On	11-SLG-205	0.48	U.S.	Individual	0.46	15	Induction	Non-essential	1800		0.82	0.91		< 50	100
11	M 11-SLG-207	On	11-SLG-207	0.48	U.S.	Individual	0.46	10	Induction	Non-essential	1800		0.82	0.91		< 50	100
12	M 12-BFG-201	On	12-BFG-201	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
13	M 12-BFG-202	On	12-BFG-202	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
14	M 12-BFG-203	On	12-BFG-203	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
15	M 12-CNV-201	On	12-CNV-201	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
16	M 12-CNV-202	On	12-CNV-202	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
17	M 12-FAN-201	On	12-FAN-201	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
18	M 12-FAN-202	On	12-FAN-202	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
19	M 12-FAN-204	On	12-FAN-204	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
20	M 12-FAN-205	On	12-FAN-205	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
21	M 12-FAN-205A	On	12-FAN-205A	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
22	M 12-FAN-206	On	12-FAN-206	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
23	M 12-FAN-207	On	12-FAN-207	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
24	M 12-FAN-208	On	12-FAN-208	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
25	M 12-GBN-201	On	12-GBN-201	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
26	M 12-GBN-201	Off	12-GBN-201	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
27	M 12-GBN-202	On	12-GBN-202	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
28	M 12-GBN-202	Off	12-GBN-202	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
29	M 12-GBN-203	On	12-GBN-203	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
30	M 12-GBN-203	Off	12-GBN-203	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		???	100
31	M 12-GCL-201	On	12-GCL-201	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
32	M 12-GCL-202	On	12-GCL-202	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
33	M 12-GCL-203	On	12-GCL-203	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
34	M 12-MBS-201	On	12-MBS-201	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
35	M 12-MBS-202	On	12-MBS-202	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
36	M 12-MBS-203	On	12-MBS-203	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
37	M 12-PMP-201	On	12-PMP-201	0.48	U.S.	Individual	0.46	7.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
38	M 12-PMP-202	On	12-PMP-202	0.48	U.S.	Individual	0.46	7.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
39	M 12-PMP-203	On	12-PMP-203	0.48	U.S.	Individual	0.46	70	Induction	Non-essential	1800		0.82	0.91		> 50	100
40	M 12-PMP-204	On	12-PMP-204	0.48	U.S.	Individual	0.46	70	Induction	Non-essential	1800		0.82	0.91		> 50	100
41	M 12-PMP-205	On	12-PMP-205	0.48	U.S.	Individual	0.46	70	Induction	Non-essential	1800		0.82	0.91		> 50	100
42	M 12-PMP-206	On	12-PMP-206	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
43	M 12-PMP-207	On	12-PMP-207	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
44	M 12-PMP-213	On	12-PMP-213	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
45	M 12-PMP-214	On	12-PMP-214	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
46	M 12-SCP-201	On	12-SCP-201	0.48	U.S.	Individual	0.46	2	Induction	Non-essential	1800		0.82	0.91		< 50	100
47	M 12-SCP-202	On	12-SCP-202	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
48	M 12-SDG-201	On	12-SDG-201	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		< 50	100
49	M 12-SDG-202	On	12-SDG-202	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		< 50	100
50	M 12-SDG-209	On	12-SDG-209	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		< 50	100
51	M 12-SDG-210	On	12-SDG-210	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		< 50	100
52	M 12-SDG-211	On	12-SDG-211	0.48	U.S.	Individual	0.46	1	Induction	Non-essential	1800		0.82	0.91		< 50	100
53	M 12-SLG-204	On	12-SLG-204	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
54	M 12-SLG-205	On	12-SLG-205	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
55	M 12-SLG-208	On	12-SLG-208	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
56	M 12-SLG-210	On	12-SLG-210	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
57	M 12-SLG-211	On	12-SLG-211	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
58	M 12-SLG-212	On	12-SLG-212	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
59	M 12-SLG-213	On	12-SLG-213	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
60	M 12-SLG-214	On	12-SLG-214	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
61	M 12-SLG-215	On	12-SLG-215	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
62	M 12-SLG-216	On	12-SLG-216	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
63	M 12-SLG-217	On	12-SLG-217	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
64	M 12-VLV-218	On	12-VLV-218	0.48	U.S.	Individual	0.46	10	Induction	Non-essential	1800		0.82	0.91		< 50	100
65	M 12-WSC-201	On	12-WSC-201	0.48	U.S.	Individual	0.46	18	Induction	Non-essential	1800		0.82	0.91		< 50	100
66	M 12-WSC-202	On	12-WSC-202	0.48	U.S.	Individual	0.46	18	Induction	Non-essential	1800		0.82	0.91		< 50	100
67	M 14-PMP-201	On	14-PMP-201	0.48	U.S.	Individual	0.46	45	Induction	Non-essential	1800		0.82	0.91		???	100
68	M 14-PMP-201	Off	14-PMP-201	0.48	U.S.	Individual	0.46	45	Induction	Non-essential	1800		0.82	0.91		???	100
69	M 14-PMP-202	On	14-PMP-202	0.48	U.S.	Individual	0.46	45	Induction	Non-essential	1800		0.82	0.91		< 50	100
70	M 14-PMP-203	On	14-PMP-203	0.48	U.S.	Individual	0.46	3	Induction	Non-essential	1800		0.82	0.91		< 50	100
71	M 14-SLG-201	On	14-SLG-201	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
72	M 14-SLG-202	On	14-SLG-202	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
73	M 14-SLG-203	On	14-SLG-203	0.48	U.S.	Individual	0.46	10	Induction	Non-essential	1800		0.82	0.91		< 50	100
74	M 14-SLG-204	On	14-SLG-204	0.48	U.S.	Individual	0.46	15	Induction	Non-essential	1800		0.82	0.91		< 50	100
75	M EP0005	Off	M5 A	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
76	M EP0006	Off	M5 A	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
77	M EP0011	Off	M5 B	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100

Motors

	ID Name	X"dv or Xlr	X/R	Load Model	Motor kVA	Load Type	Load Scaling	SCADA kW	SCADA jkVar	SCADA Type	SCADA Scaling	Hrm RC Value	Hrm RC Factor	R1 pu	X1 pu	Int MF	Hrm R1 pu	Hrm X1 pu
1	M 05-PMP-201	16.7	1.79862	Spec	3.99892	kVA	100	0	0	kVA	100	0.5	R-EXP	3112.39	5598.00	10000	1863.70	3352.10
2	M 05-PMP-202	16.7	1.79862	Spec	3.99892	kVA	100	0	0	kVA	100	0.5	R-EXP	3112.39	5598.00	10000	1863.70	3352.10
3	M 05-VLV-201	16.7	2.17837	Spec	7.49799	kVA	100	0	0	kVA	100	0.5	R-EXP	1425.16	3104.53	10000	853.392	1859.00
4	M 05-VLV-217	16.7	2.17837	Spec	7.49799	kVA	100	0	0	kVA	100	0.5	R-EXP	1425.16	3104.53	10000	853.392	1859.00
5	M 05-VLV-219	16.7	2.17837	Spec	7.49799	kVA	100	0	0	kVA	100	0.5	R-EXP	1425.16	3104.53	10000	853.392	1859.00
6	M 11-SLG-201	16.7	2.5971	Spec	14.9959	kVA	100	0	0	kVA	100	0.5	R-EXP	613.737	1593.93	10000	367.507	954.453
7	M 11-SLG-202	16.7	2.5971	Spec	14.9959	kVA	100	0	0	kVA	100	0.5	R-EXP	613.737	1593.93	10000	367.507	954.453
8	M 11-SLG-203	16.7	2.89396	Spec	19.9946	kVA	100	0	0	kVA	100	0.5	R-EXP	418.376	1210.76	10000	250.524	725.008
9	M 11-SLG-204	16.7	2.89396	Spec	19.9946	kVA	100	0	0	kVA	100	0.5	R-EXP	418.376	1210.76	10000	250.524	725.008
10	M 11-SLG-205	16.7	2.5971	Spec	14.9959	kVA	100	0	0	kVA	100	0.5	R-EXP	613.737	1593.93	10000	367.507	954.453
11	M 11-SLG-207	16.7	2.35216	Spec	9.99731	kVA	100	0	0	kVA	100	0.5	R-EXP	1002.39	2357.78	10000	600.234	1411.84
12	M 12-BFG-201	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
13	M 12-BFG-202	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
14	M 12-BFG-203	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
15	M 12-CNV-201	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
16	M 12-CNV-202	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
17	M 12-FAN-201	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
18	M 12-FAN-202	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
19	M 12-FAN-204	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
20	M 12-FAN-205	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
21	M 12-FAN-205A	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
22	M 12-FAN-206	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
23	M 12-FAN-207	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
24	M 12-FAN-208	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
25	M 12-GBN-201	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
26	M 12-GBN-201	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
27	M 12-GBN-202	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
28	M 12-GBN-202	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
29	M 12-GBN-203	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
30	M 12-GBN-203	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	11060.7	10631.0
31	M 12-GCL-201	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
32	M 12-GCL-202	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
33	M 12-GCL-203	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
34	M 12-MBS-201	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
35	M 12-MBS-202	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
36	M 12-MBS-203	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
37	M 12-PMP-201	16.7	2.17837	Spec	7.49799	kVA	100	0	0	kVA	100	0.5	R-EXP	1425.16	3104.53	10000	853.392	1859.00
38	M 12-PMP-202	16.7	2.17837	Spec	7.49799	kVA	100	0	0	kVA	100	0.5	R-EXP	1425.16	3104.53	10000	853.392	1859.00
39	M 12-PMP-203	16.7	6.78092	Spec	69.9812	kVA	100	0	0	kVA	100	0.5	R-EXP	38.3697	260.182	2.5	31.9747	216.818
40	M 12-PMP-204	16.7	6.78092	Spec	69.9812	kVA	100	0	0	kVA	100	0.5	R-EXP	38.3697	260.182	2.5	31.9747	216.818
41	M 12-PMP-205	16.7	6.78092	Spec	69.9812	kVA	100	0	0	kVA	100	0.5	R-EXP	38.3697	260.182	2.5	31.9747	216.818
42	M 12-PMP-206	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
43	M 12-PMP-207	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
44	M 12-PMP-213	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
45	M 12-PMP-214	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
46	M 12-SCP-201	16.7	1.37989	Spec	1.99946	kVA	100	0	0	kVA	100	0.5	R-EXP	7517.04	10372.6	10000	4501.22	6211.19
47	M 12-SCP-202	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
48	M 12-SDG-201	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	18471.4	17753.8	10000	11060.7	10631.0
49	M 12-SDG-202	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	18471.4	17753.8	10000	11060.7	10631.0
50	M 12-SDG-209	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	18471.4	17753.8	10000	11060.7	10631.0
51	M 12-SDG-210	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	18471.4	17753.8	10000	11060.7	10631.0
52	M 12-SDG-211	16.7	0.96115	Spec	0.99973	kVA	100	0	0	kVA	100	0.5	R-EXP	18471.4	17753.8	10000	11060.7	10631.0
53	M 12-SLG-204	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
54	M 12-SLG-205	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
55	M 12-SLG-208	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
56	M 12-SLG-210	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
57	M 12-SLG-211	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
58	M 12-SLG-212	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
59	M 12-SLG-213	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
60	M 12-SLG-214	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
61	M 12-SLG-215	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
62	M 12-SLG-216	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
63	M 12-SLG-217	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
64	M 12-VLV-218	16.7	2.35216	Spec	9.99731	kVA	100	0	0	kVA	100	0.5	R-EXP	1002.39	2357.78	10000	600.234	1411.84
65	M 12-WSC-201	16.7	2.757	Spec	17.9951	kVA	100	0	0	kVA	100	0.5	R-EXP	485.326	1338.04	10000	290.614	801.225
66	M 12-WSC-202	16.7	2.757	Spec	17.9951	kVA	100	0	0	kVA	100	0.5	R-EXP	485.326	1338.04	10000	290.614	801.225
67	M 14-PMP-201	16.7	4.96488	Spec	44.9879	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	67.3146	334.209
68	M 14-PMP-201	16.7	4.96488	Spec	44.9879	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	67.3146	334.209
69	M 14-PMP-202	16.7	4.96488	Spec	44.9879	kVA	100	0	0	kVA	100	0.5	R-EXP	112.415	558.129	10000	67.3146	334.209
70	M 14-PMP-203	16.7	1.62483	Spec	2.99919	kVA	100	0	0	kVA	100	0.5	R-EXP	4476.16	7273.01	10000	2680.34	4355.09
71	M 14-SLG-201	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
72	M 14-SLG-202	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
73	M 14-SLG-203	16.7	2.35216	Spec	9.99731	kVA	100	0	0	kVA	100	0.5	R-EXP	1002.39	2357.78	10000	600.234	1411.84
74	M 14-SLG-204	16.7	2.5971	Spec	14.9959	kVA	100	0	0	kVA	100	0.5	R-EXP	613.737	1593.93	10000	367.507	954.453
75	M EP0005	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
76	M EP0006	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
77	M EP0011	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472

Motors

	ID Name	I Hrm Rating	TCC Starter	Plot TCC	Service Factor	Locked Rotor Mult	Asym Offset	Reduced Inrush Mult	Accel Time	Stall Time	Stall Time To	Largest Motor HP	Comment
1	M 05-PMP-201	4.80996	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
2	M 05-PMP-202	4.80996	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
3	M 05-VLV-201	9.01868	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
4	M 05-VLV-217	9.01868	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
5	M 05-VLV-219	9.01868	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
6	M 11-SLG-201	18.0373	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
7	M 11-SLG-202	18.0373	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
8	M 11-SLG-203	24.0498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
9	M 11-SLG-204	24.0498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
10	M 11-SLG-205	18.0373	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
11	M 11-SLG-207	12.0249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
12	M 12-BFG-201	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
13	M 12-BFG-202	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
14	M 12-BFG-203	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
15	M 12-CNV-201	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
16	M 12-CNV-202	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
17	M 12-FAN-201	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
18	M 12-FAN-202	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
19	M 12-FAN-204	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
20	M 12-FAN-205	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
21	M 12-FAN-205A	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
22	M 12-FAN-206	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
23	M 12-FAN-207	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
24	M 12-FAN-208	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
25	M 12-GBN-201	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
26	M 12-GBN-201	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
27	M 12-GBN-202	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
28	M 12-GBN-202	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
29	M 12-GBN-203	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
30	M 12-GBN-203	1.20249	Reduced		1.15	6	1.6	3	5	6	200	7.5	
31	M 12-GCL-201	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
32	M 12-GCL-202	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
33	M 12-GCL-203	2.40498	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
34	M 12-MBS-201	6.01245	Full Volt		1	6	1.6	100	5	6	200	5	
35	M 12-MBS-202	6.01245	Full Volt		1	6	1.6	100	5	6	200	5	
36	M 12-MBS-203	6.01245	Full Volt		1	6	1.6	100	5	6	200	5	
37	M 12-PMP-201	9.01868	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
38	M 12-PMP-202	9.01868	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
39	M 12-PMP-203	84.1743	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
40	M 12-PMP-204	84.1743	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
41	M 12-PMP-205	84.1743	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
42	M 12-PMP-206	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
43	M 12-PMP-207	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
44	M 12-PMP-213	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
45	M 12-PMP-214	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
46	M 12-SCP-201	2.40498	Full Volt		1	6	1.6	100	5	6	200	5	
47	M 12-SCP-202	6.01245	Full Volt		1	6	1.6	100	5	6	200	5	
48	M 12-SDG-201	1.20249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
49	M 12-SDG-202	1.20249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
50	M 12-SDG-209	1.20249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
51	M 12-SDG-210	1.20249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
52	M 12-SDG-211	1.20249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
53	M 12-SLG-204	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
54	M 12-SLG-205	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
55	M 12-SLG-208	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
56	M 12-SLG-210	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
57	M 12-SLG-211	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
58	M 12-SLG-212	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
59	M 12-SLG-213	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
60	M 12-SLG-214	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
61	M 12-SLG-215	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
62	M 12-SLG-216	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
63	M 12-SLG-217	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
64	M 12-VLV-218	12.0249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
65	M 12-WSC-201	21.6448	Full Volt		1	6	1.6	100	5	6	200	5	
66	M 12-WSC-202	21.6448	Full Volt		1	6	1.6	100	5	6	200	5	
67	M 14-PMP-201	54.1120	Reduced		1.15	6	1.6	3	5	6	200	7.5	
68	M 14-PMP-201	54.1120	Reduced		1.15	6	1.6	3	5	6	200	7.5	
69	M 14-PMP-202	54.1120	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
70	M 14-PMP-203	3.60747	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
71	M 14-SLG-201	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
72	M 14-SLG-202	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
73	M 14-SLG-203	12.0249	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
74	M 14-SLG-204	18.0373	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
75	M EP0005	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
76	M EP0006	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
77	M EP0011	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	

Motors

	ID Name	Status	To Bus	Base kV	Unit	Model	Motor kV	Hp or kW	Type	Load Class	RPM	FLA	Power Factor	Eff	kVA/Hp	ANSI Code	Connected
78	M EP0012	Off	M5 B	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
79	M EP0014	Off	M5 B	4.16	U.S.	Individual	4	400	Induction	Non-essential	1800		0.82	0.91		> 50	100
80	M MCC1-SPAR	On	MCC1-SPARE	0.48	U.S.	Individual	0.46	5	Induction	Non-essential	1800		0.82	0.91		< 50	100
81	M P0003	On	P0003	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		???	100
82	M P0003 MOD	Off	P0003 MODEL	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
83	M P0004	On	P0004	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		???	100
84	M P0004 MOD	Off	P0004 MODEL	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
85	M P0007	On	P0007	4.16	U.S.	Individual	4.16	400	Induction	Non-essential	1800		0.82	0.91		> 50	100
86	M P0010	On	P0010	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		???	100
87	M P0010 MOD	Off	P0010 MODEL	4.16	U.S.	Individual	4	500	Induction	Non-essential	1800		0.82	0.91		> 50	100
88	M P0013	On	P0013	4.16	U.S.	Individual	4.16	400	Induction	Non-essential	1800		0.82	0.91		> 50	100
89	M RSFDS PMP	On	RSFDS PMP1	0.48	U.S.	Individual	0.46	0.5	Induction	Non-essential	1800		0.82	0.91		< 50	100
90	M RSFDS PMP	On	RSFDS PMP2	0.48	U.S.	Individual	0.46	0.5	Induction	Non-essential	1800		0.82	0.91		< 50	100

Motors

	ID Name	X"dv or Xlr	X/R	Load Model	Motor kVA	Load Type	Load Scaling	SCADA kW	SCADA jkVar	SCADA Type	SCADA Scaling	Hrm RC Value	Hrm RC Factor	R1 pu	X1 pu	Int MF	Hrm R1 pu	Hrm X1 pu
78	M EP0012	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
79	M EP0014	16.7	17.6187	Spec	399.892	kVA	100	0	0	kVA	100	0.5	R-EXP	2.62551	46.2582	2.5	2.18793	38.5485
80	M MCC1-SPAR	16.7	1.93342	Spec	4.99866	kVA	100	0	0	kVA	100	0.5	R-EXP	2354.01	4551.30	10000	1409.59	2725.33
81	M P0003	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	1.59569	30.8472
82	M P0003 MOD	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
83	M P0004	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	1.59569	30.8472
84	M P0004 MOD	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
85	M P0007	16.7	17.6187	Spec	399.892	kVA	100	0	0	kVA	100	0.5	R-EXP	2.83976	50.0329	2.5	2.36646	41.6940
86	M P0010	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1e+009	1e+010	10000	1.59569	30.8472
87	M P0010 MOD	16.7	19.3315	Spec	499.866	kVA	100	0	0	kVA	100	0.5	R-EXP	1.91483	37.0166	2.5	1.59569	30.8472
88	M P0013	16.7	17.6187	Spec	399.892	kVA	100	0	0	kVA	100	0.5	R-EXP	2.83976	50.0329	2.5	2.36646	41.6940
89	M RSFDS PMP	16.7	0.54241	Spec	0.49986	kVA	100	0	0	kVA	100	0.5	R-EXP	45041.1	24431.0	10000	26970.7	14629.3
90	M RSFDS PMP	16.7	0.54241	Spec	0.49986	kVA	100	0	0	kVA	100	0.5	R-EXP	45041.1	24431.0	10000	26970.7	14629.3

Motors

	ID Name	I Hrm Rating	TCC Starter	Plot TCC	Service Factor	Locked Rotor Mult	Asym Offset	Reduced Inrush Mult	Accel Time	Stall Time	Stall Time To	Largest Motor HP	Comment
78	M EP0012	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
79	M EP0014	55.4995	Full Volt		1	6	1.6	100	5	6	200	500	
80	M MCC1-SPAR	6.01245	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
81	M P0003	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
82	M P0003 MOD	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
83	M P0004	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
84	M P0004 MOD	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
85	M P0007	55.4995	Reduced		1	6	1.6	3	5	6	200	400	
86	M P0010	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
87	M P0010 MOD	69.3744	Full Volt		1	6	1.6	100	5	6	200	500	
88	M P0013	55.4995	Reduced		1	6	1.6	3	5	6	200	400	
89	M RSFDS PMP	0.60124	Full Volt		1.15	6	1.6	100	5	6	200	7.5	
90	M RSFDS PMP	0.60124	Full Volt		1.15	6	1.6	100	5	6	200	7.5	

2W-Xformers

	ID Name	Status	From bus	From Base kV	From Conn	To Bus	To Base kV	To Conn	Type	Class	Temp	Form	From Nom kV	From Tap kV	From Gnd R	From Gnd jX	To Nom kV
1	TX PGE SUB1	Off	PGE SUB1 A	115	D	TX PGE SUB1	4.16	YG	Oil	OA/FA	55/65	Core	115	115	0	0	4.16
2	TX PGE SUB1	Off	PGE SUB1 B	115	D	TX PGE SUB1	4.16	YG	Oil	OA	65	Core	115	115	0	0	4.16
3	TX TR-1	On	TX TR-1 H	4.16	D	TX TR-1 L	0.48	YG	Oil	OA	55/65	Core	4.16	4.16	0	0	0.48
4	TX TR-2	On	TX TR-2 H	4.16	D	TX TR-2 L	0.48	YG	Oil	OA	55/65	Core	4.16	4.16	0	0	0.48
5	TX-1	On	TX-1 H	0.48	D	LP-1	0.208	YG	Dry	OA	65	Core	0.48	0.48	0	0	0.208
6	TX-2	On	TX-2 H	0.48	D	LP-2	0.208	YG	Dry	OA	115	Core	0.48	0.48	0	0	0.208
7	TX-3	On	TX-3 H	0.48	D	LP-4	0.208	YG	Dry	OA	65	Core	0.48	0.48	0	0	0.208

2W-Xformers

	ID Name	To Tap kV	To Gnd R	To Gnd jX	MVA	MVA O/L	Z	Z0	X/R	LTC Tap	LTC Step	LTC Min Tap	LTC Max Tap	Ctl Type	Ctl Value	Zps R1 pu	Zps X1 pu	Zps R0 pu	Zps X0 pu
1	TX PGE SUB1	4.16	0	0	12	17.92	7.3	6.205	18.0429	None	0.625	0.1	1500	V (PU)	1	0.03366	0.60740	10000	1e+007
2	TX PGE SUB1	4.16	0	0	12	12			18.0429	None	0.625	0.1	1500	V (PU)	1				
3	TX TR-1	0.48	0	0	1	1.12	5.7	4.845	5.67727	None	0.625	0.1	1500	V (PU)	1	0.98878	5.61358	10000	1e+007
4	TX TR-2	0.48	0	0	1	1.12	5.7	4.845	5.67727	None	0.625	0.1	1500	V (PU)	1	0.98878	5.61358	10000	1e+007
5	TX-1	0.208	0	0	0.03	0.03	3.6	3.06	1.60219	None	0.625	0.1	1500	V (PU)	1	63.5373	101.798	10000	1e+007
6	TX-2	0.208	0	0	0.1125	0.1125	4.9	4.165	1.88578	None	0.625	0.1	1500	V (PU)	1	20.4053	38.4799	10000	1e+007
7	TX-3	0.208	0	0	0.015	0.015	3.8	3.23	1.55252	None	0.625	0.1	1500	V (PU)	1	137.181	212.976	10000	1e+007

2W-Xformers

	ID Name	Rps0+3Rpsg	Xps0+3Xpsg	From Gnd R1 pu	From Gnd jX pu	To Gnd R1 pu	To Gnd jX pu	TCC Standard	TCC FLA Based On	Freq Fault Curve	TCC Max Plot Time	TCC Inrush FLA Mult	TCC Inrush Cycles	Hrm RC Factor	Hrm RC Value
1	TX PGE SUB1	0.02861463	0.516291	0	0	0	0	ANSI C57.109	MVA O/L	Yes	500	8	6	R-EXP	0
2	TX PGE SUB1							ANSI C57.109	MVA O/L	Yes	500	8	6	R-EXP	0
3	TX TR-1	0.8404647	4.771545	0	0	0	0	ANSI C57.109	kVA O/L	Yes	500	8	6	R-EXP	0
4	TX TR-2	0.8404647	4.771545	0	0	0	0	ANSI C57.109	kVA O/L	Yes	500	8	6	R-EXP	0
5	TX-1	54.00672	86.52903	0	0	0	0	ANSI C57.12.59	kVA O/L	Yes	500	8	6	R-EXP	0
6	TX-2	17.34454	32.70798	0	0	0	0	ANSI C57.12.59	kVA O/L	Yes	500	8	6	R-EXP	0
7	TX-3	116.6041	181.0302	0	0	0	0	ANSI C57.12.59	kVA O/L	Yes	500	8	6	R-EXP	0

2W-Xformers

	ID Name	Hrm Pec-r %	Hrm From I Rating	Hrm To I Rating	Comment
1	TX PGE SUB1	15	60.2452	1665.43	
2	TX PGE SUB1	15			
3	TX TR-1	15	138.786	1202.81	
4	TX TR-2	15	138.786	1202.81	
5	TX-1	15	36.0844	83.2716	
6	TX-2	15	135.316	312.268	
7	TX-3	15	18.0422	41.6358	

Cables

	ID Name	Status	From Bus ID	From Base kV	To Bus ID	To Base kV	Unit	Type	No/Ph	Size	Length	Temp	Insulation	Rating (A)	Material
1	C 05-PMP-201	On	MCC1-A	0.48	05-PMP-201	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
2	C 05-PMP-202	On	MCC1-B	0.48	05-PMP-202	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
3	C 05-VLV-201	On	MCC2	0.48	05-VLV-201	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
4	C 05-VLV-217	On	MCC2	0.48	05-VLV-217	0.48	U.S.	1/C	1	10	11	50	XHHW	35	Copper
5	C 05-VLV-219	On	MCC2	0.48	05-VLV-219	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
6	C 11-SLG-201	On	MCC2	0.48	11-SLG-201	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
7	C 11-SLG-202	On	MCC2	0.48	11-SLG-202	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
8	C 11-SLG-203	On	MCC2	0.48	11-SLG-203	0.48	U.S.	1/C	1	8	500	50	XHHW	50	Copper
9	C 11-SLG-204	On	MCC2	0.48	11-SLG-204	0.48	U.S.	1/C	1	6	500	50	XHHW	65	Copper
10	C 11-SLG-205	On	MCC2	0.48	11-SLG-205	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
11	C 11-SLG-207	On	MCC2	0.48	11-SLG-207	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
12	C 12-BFG-201	On	MCC2	0.48	12-BFG-201	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
13	C 12-BFG-202	On	MCC2	0.48	12-BFG-202	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
14	C 12-BFG-203	On	MCC2	0.48	12-BFG-203	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
15	C 12-CNV-201	On	MCC1-A	0.48	12-CNV-201	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
16	C 12-CNV-202	On	MCC1-B	0.48	12-CNV-202	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
17	C 12-FAN-201	On	MCC1-A	0.48	12-FAN-201	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
18	C 12-FAN-202	On	MCC1-B	0.48	12-FAN-202	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
19	C 12-FAN-204	On	MCC1-B	0.48	12-FAN-204	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
20	C 12-FAN-205	On	MCC1-A	0.48	12-FAN-205	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
21	C 12-FAN-205A	On	MCC1-A	0.48	12-FAN-205A	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
22	C 12-FAN-206	On	MCC1-B	0.48	12-FAN-206	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
23	C 12-FAN-207	On	MCC1-B	0.48	12-FAN-207	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
24	C 12-FAN-208	On	MCC1-B	0.48	12-FAN-208	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
25	C 12-GBN-201	On	MCC1-A	0.48	12-GBN-201	0.48	U.S.	1/C	1	12	10	50	XHHW	25	Copper
26	C 12-GBN-202	On	MCC1-B	0.48	12-GBN-202	0.48	U.S.	1/C	1	12	10	50	XHHW	25	Copper
27	C 12-GBN-203	On	MCC1-B	0.48	12-GBN-203	0.48	U.S.	1/C	1	12	10	50	XHHW	25	Copper
28	C 12-GCL-201	On	MCC1-A	0.48	12-GCL-201	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
29	C 12-GCL-202	On	MCC1-A	0.48	12-GCL-202	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
30	C 12-GCL-203	On	MCC1-B	0.48	12-GCL-203	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
31	C 12-HVU-203	On	MCC1-A	0.48	12-HVU-203	0.48	U.S.	1/C	1	2	11	50	THWN	115	Copper
32	C 12-LCP-2001	On	MCC1-A	0.48	12-LCP-2001	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
33	C 12-LCP-2002	On	MCC1-B	0.48	12-LCP-2002	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
34	C 12-LCP-2003	On	MCC1-B	0.48	12-LCP-2003	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
35	C 12-LCP-2004	On	MCC1-A	0.48	12-LCP-2004	0.48	U.S.	1/C	1	6	600	50	XHHW	65	Copper
36	C 12-LCP-2005	On	MCC1-B	0.48	12-LCP-2005	0.48	U.S.	1/C	1	6	600	50	XHHW	65	Copper
37	C 12-LCP-2006	On	MCC1-A	0.48	12-LCP-2006	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
38	C 12-LCP-2007	On	MCC1-B	0.48	12-LCP-2007	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
39	C 12-MBS-201	On	12-LCP-2001	0.48	12-MBS-201	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
40	C 12-MBS-202	On	12-LCP-2002	0.48	12-MBS-202	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
41	C 12-MBS-203	On	12-LCP-2003	0.48	12-MBS-203	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
42	C 12-PMP-201	On	MCC1-A	0.48	12-PMP-201	0.48	U.S.	1/C	1	10	11	50	XHHW	35	Copper
43	C 12-PMP-202	On	MCC1-B	0.48	12-PMP-202	0.48	U.S.	1/C	1	10	11	50	XHHW	35	Copper
44	C 12-PMP-203	On	MCC1-A	0.48	12-PMP-203	0.48	U.S.	1/C	1	1/0	500	50	XHHW	150	Copper
45	C 12-PMP-204	On	MCC1-A	0.48	12-PMP-204	0.48	U.S.	1/C	1	1/0	11	50	XHHW	150	Copper
46	C 12-PMP-205	On	MCC1-B	0.48	12-PMP-205	0.48	U.S.	1/C	1	1/0	600	50	XHHW	150	Copper
47	C 12-PMP-206	On	MCC1-A	0.48	12-PMP-206	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
48	C 12-PMP-207	On	MCC1-B	0.48	12-PMP-207	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
49	C 12-PMP-213	On	MCC1-A	0.48	12-PMP-213	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
50	C 12-PMP-214	On	MCC1-B	0.48	12-PMP-214	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
51	C 12-SCP-201	On	12-LCP-2006	0.48	12-SCP-201	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
52	C 12-SCP-202	On	12-LCP-2007	0.48	12-SCP-202	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
53	C 12-SDG-201	On	MCC2	0.48	12-SDG-201	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
54	C 12-SDG-202	On	MCC2	0.48	12-SDG-202	0.48	U.S.	1/C	1	12	600	50	XHHW	25	Copper
55	C 12-SDG-209	On	MCC2	0.48	12-SDG-209	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
56	C 12-SDG-210	On	MCC2	0.48	12-SDG-210	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
57	C 12-SDG-211	On	MCC2	0.48	12-SDG-211	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
58	C 12-SLG-204	On	MCC2	0.48	12-SLG-204	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
59	C 12-SLG-205	On	MCC2	0.48	12-SLG-205	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
60	C 12-SLG-208	On	MCC2	0.48	12-SLG-208	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
61	C 12-SLG-210	On	MCC2	0.48	12-SLG-210	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
62	C 12-SLG-211	On	MCC2	0.48	12-SLG-211	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
63	C 12-SLG-212	On	MCC2	0.48	12-SLG-212	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
64	C 12-SLG-213	On	MCC2	0.48	12-SLG-213	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
65	C 12-SLG-214	On	MCC2	0.48	12-SLG-214	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
66	C 12-SLG-215	On	MCC2	0.48	12-SLG-215	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
67	C 12-SLG-216	On	MCC2	0.48	12-SLG-216	0.48	U.S.	1/C	1	10	500	50	XHHW	35	Copper
68	C 12-SLG-217	On	MCC2	0.48	12-SLG-217	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
69	C 12-VLV-218	On	MCC2	0.48	12-VLV-218	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
70	C 12-WSC-201	On	12-LCP-2004	0.48	12-WSC-201	0.48	U.S.	1/C	1	6	11	50	XHHW	65	Copper
71	C 12-WSC-202	On	12-LCP-2005	0.48	12-WSC-202	0.48	U.S.	1/C	1	6	11	50	XHHW	65	Copper
72	C 14-HPU-201	On	MCC5	0.48	14-HPU-201	0.48	U.S.	1/C	1	4	35	50	THWN	85	Copper
73	C 14-PMP-201	On	MCC5	0.48	14-PMP-201	0.48	U.S.	1/C	1	2	20	50	THWN	115	Copper
74	C 14-PMP-202	On	MCC5	0.48	14-PMP-202	0.48	U.S.	1/C	1	2	20	50	THWN	115	Copper
75	C 14-PMP-203	On	MCC5	0.48	14-PMP-203	0.48	U.S.	1/C	1	12	15	50	THWN	25	Copper
76	C 14-SLG-201	On	MCC5	0.48	14-SLG-201	0.48	U.S.	1/C	1	12	20	50	THWN	25	Copper
77	C 14-SLG-202	On	MCC5	0.48	14-SLG-202	0.48	U.S.	1/C	1	12	20	50	THWN	25	Copper

Cables

	ID Name	Raceway Type	Raceway Mtl	R1	X1	R0	X0	Xc	Xc0	Gnd Num	Gnd Size	Gnd Mtl	Gnd Type	Gnd Insul	Neutral Num	Neutral Size	Neutral Rating
1	C 05-PMP-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
2	C 05-PMP-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
3	C 05-VLV-201	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
4	C 05-VLV-217	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
5	C 05-VLV-219	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
6	C 11-SLG-201	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
7	C 11-SLG-202	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
8	C 11-SLG-203	Conduit	Steel	0.71590	0.04905	2.86363	0.19621	0.01813	0.01813	1	8	Copper	Separate	Yes	1	Other	10
9	C 11-SLG-204	Conduit	Steel	0.45045	0.04622	1.80182	0.18490	0.01503	0.01503	1	8	Copper	Separate	Yes	1	Other	10
10	C 11-SLG-205	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
11	C 11-SLG-207	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
12	C 12-BFG-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
13	C 12-BFG-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
14	C 12-BFG-203	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
15	C 12-CNV-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
16	C 12-CNV-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
17	C 12-FAN-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
18	C 12-FAN-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
19	C 12-FAN-204	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
20	C 12-FAN-205	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
21	C 12-FAN-205A	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
22	C 12-FAN-206	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
23	C 12-FAN-207	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
24	C 12-FAN-208	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
25	C 12-GBN-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
26	C 12-GBN-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
27	C 12-GBN-203	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
28	C 12-GCL-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
29	C 12-GCL-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
30	C 12-GCL-203	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
31	C 12-HVU-203	Conduit	Steel	0.17821	0.04084	0.71283	0.16337	0.00665	0.00665	1	6	Copper	Separate	Yes	1	Other	10
32	C 12-LCP-2001	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
33	C 12-LCP-2002	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
34	C 12-LCP-2003	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
35	C 12-LCP-2004	Conduit	Steel	0.45045	0.04622	1.80182	0.18490	0.01503	0.01503	1	10	Copper	Separate	Yes	1	Other	10
36	C 12-LCP-2005	Conduit	Steel	0.45045	0.04622	1.80182	0.18490	0.01503	0.01503	1	10	Copper	Separate	Yes	1	Other	10
37	C 12-LCP-2006	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
38	C 12-LCP-2007	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
39	C 12-MBS-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
40	C 12-MBS-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
41	C 12-MBS-203	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
42	C 12-PMP-201	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
43	C 12-PMP-202	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
44	C 12-PMP-203	Conduit	Steel	0.11201	0.04140	0.44804	0.16562	0.00976	0.00976	1	6	Copper	Separate	Yes	1	Other	10
45	C 12-PMP-204	Conduit	Steel	0.11201	0.04140	0.44804	0.16562	0.00976	0.00976	1	6	Copper	Separate	Yes	1	Other	10
46	C 12-PMP-205	Conduit	Steel	0.11201	0.04140	0.44804	0.16562	0.00976	0.00976	1	1/0	Copper	Separate	Yes	1	Other	10
47	C 12-PMP-206	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
48	C 12-PMP-207	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
49	C 12-PMP-213	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
50	C 12-PMP-214	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
51	C 12-SCP-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
52	C 12-SCP-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
53	C 12-SDG-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
54	C 12-SDG-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
55	C 12-SDG-209	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
56	C 12-SDG-210	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
57	C 12-SDG-211	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
58	C 12-SLG-204	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
59	C 12-SLG-205	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
60	C 12-SLG-208	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
61	C 12-SLG-210	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
62	C 12-SLG-211	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
63	C 12-SLG-212	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
64	C 12-SLG-213	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
65	C 12-SLG-214	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
66	C 12-SLG-215	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
67	C 12-SLG-216	Conduit	Steel	1.13918	0.04687	4.55673	0.18748	0.01574	0.01574	1	12	Copper	Separate	Yes	1	Other	10
68	C 12-SLG-217	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
69	C 12-VLV-218	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
70	C 12-WSC-201	Conduit	Steel	0.45045	0.04622	1.80182	0.18490	0.01503	0.01503	1	10	Copper	Separate	Yes	1	Other	10
71	C 12-WSC-202	Conduit	Steel	0.45045	0.04622	1.80182	0.18490	0.01503	0.01503	1	10	Copper	Separate	Yes	1	Other	10
72	C 14-HPU-201	Conduit	Steel	0.28320	0.04271	1.13283	0.17084	0.00814	0.00814	1	8	Copper	Separate	Yes	1	Other	10
73	C 14-PMP-201	Conduit	Steel	0.17821	0.04084	0.71283	0.16337	0.00665	0.00665	1	8	Copper	Separate	Yes	1	Other	10
74	C 14-PMP-202	Conduit	Steel	0.17821	0.04084	0.71283	0.16337	0.00665	0.00665	1	8	Copper	Separate	Yes	1	Other	10
75	C 14-PMP-203	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.00776	0.00776	1	12	Copper	Separate	Yes	1	Other	10
76	C 14-SLG-201	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.00776	0.00776	1	12	Copper	Separate	Yes	1	Other	10
77	C 14-SLG-202	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.00776	0.00776	1	12	Copper	Separate	Yes	1	Other	10

Cables

	ID Name	Neutral Mtl	Neutral Insul	Conductor Lay	Conductor Form	Spacing	R1 pu	X1 pu	R0 pu	X0 pu	B1 pu	B0 pu	Hrm RC Factor	Hrm RC Value	I Hrm Rating	Comment
1	C 05-PMP-201	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
2	C 05-PMP-202	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
3	C 05-VLV-201	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
4	C 05-VLV-217	Copper	Yes	Triangle	Round	0	5.43879	0.22377	21.7552	0.89509	1.60965	1.60965	R-EXP	0.5	35	
5	C 05-VLV-219	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
6	C 11-SLG-201	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
7	C 11-SLG-202	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
8	C 11-SLG-203	Copper	Yes	Triangle	Round	0	155.361	10.6453	621.447	42.5816	6.35169	6.35169	R-EXP	0.5	50	
9	C 11-SLG-204	Copper	Yes	Triangle	Round	0	97.7552	10.0315	391.02	40.1260	7.66023	7.66023	R-EXP	0.5	65	
10	C 11-SLG-205	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
11	C 11-SLG-207	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
12	C 12-BFG-201	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
13	C 12-BFG-202	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
14	C 12-BFG-203	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
15	C 12-CNV-201	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
16	C 12-CNV-202	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
17	C 12-FAN-201	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
18	C 12-FAN-202	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
19	C 12-FAN-204	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
20	C 12-FAN-205	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
21	C 12-FAN-205A	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
22	C 12-FAN-206	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
23	C 12-FAN-207	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
24	C 12-FAN-208	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
25	C 12-GBN-201	Copper	Yes	Triangle	Round	0	7.89509	0.29241	31.5803	1.16964	1.21501	1.21501	R-EXP	0.5	25	
26	C 12-GBN-202	Copper	Yes	Triangle	Round	0	7.89509	0.29241	31.5803	1.16964	1.21501	1.21501	R-EXP	0.5	25	
27	C 12-GBN-203	Copper	Yes	Triangle	Round	0	7.89509	0.29241	31.5803	1.16964	1.21501	1.21501	R-EXP	0.5	25	
28	C 12-GCL-201	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
29	C 12-GCL-202	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
30	C 12-GCL-203	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
31	C 12-HVU-203	Copper	Yes	Triangle	Round	0	0.85082	0.19500	3.40330	0.78001	3.80642	3.80642	R-EXP	0.5	115	
32	C 12-LCP-2001	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
33	C 12-LCP-2002	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
34	C 12-LCP-2003	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
35	C 12-LCP-2004	Copper	Yes	Triangle	Round	0	117.306	12.0378	469.224	48.1513	9.19228	9.19228	R-EXP	0.5	65	
36	C 12-LCP-2005	Copper	Yes	Triangle	Round	0	117.306	12.0378	469.224	48.1513	9.19228	9.19228	R-EXP	0.5	65	
37	C 12-LCP-2006	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
38	C 12-LCP-2007	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
39	C 12-MBS-201	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
40	C 12-MBS-202	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
41	C 12-MBS-203	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
42	C 12-PMP-201	Copper	Yes	Triangle	Round	0	5.43879	0.22377	21.7552	0.89509	1.60965	1.60965	R-EXP	0.5	35	
43	C 12-PMP-202	Copper	Yes	Triangle	Round	0	5.43879	0.22377	21.7552	0.89509	1.60965	1.60965	R-EXP	0.5	35	
44	C 12-PMP-203	Copper	Yes	Triangle	Round	0	24.3079	8.98580	97.2319	35.9431	1.18026	1.18026	R-EXP	0.5	150	
45	C 12-PMP-204	Copper	Yes	Triangle	Round	0	0.53477	0.19768	2.13910	0.79074	2.59657	2.59657	R-EXP	0.5	150	
46	C 12-PMP-205	Copper	Yes	Triangle	Round	0	29.1695	10.7829	116.678	43.1317	1.41631	1.41631	R-EXP	0.5	150	
47	C 12-PMP-206	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
48	C 12-PMP-207	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
49	C 12-PMP-213	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
50	C 12-PMP-214	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
51	C 12-SCP-201	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
52	C 12-SCP-202	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
53	C 12-SDG-201	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
54	C 12-SDG-202	Copper	Yes	Triangle	Round	0	473.705	17.5446	1894.82	70.1786	7.29010	7.29010	R-EXP	0.5	25	
55	C 12-SDG-209	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
56	C 12-SDG-210	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
57	C 12-SDG-211	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
58	C 12-SLG-204	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
59	C 12-SLG-205	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
60	C 12-SLG-208	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
61	C 12-SLG-210	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
62	C 12-SLG-211	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
63	C 12-SLG-212	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
64	C 12-SLG-213	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
65	C 12-SLG-214	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
66	C 12-SLG-215	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
67	C 12-SLG-216	Copper	Yes	Triangle	Round	0	247.217	10.1714	988.873	40.6859	7.31660	7.31660	R-EXP	0.5	35	
68	C 12-SLG-217	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
69	C 12-VLV-218	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
70	C 12-WSC-201	Copper	Yes	Triangle	Round	0	2.15061	0.22069	8.60244	0.88277	1.68525	1.68525	R-EXP	0.5	65	
71	C 12-WSC-202	Copper	Yes	Triangle	Round	0	2.15061	0.22069	8.60244	0.88277	1.68525	1.68525	R-EXP	0.5	65	
72	C 14-HPU-201	Copper	Yes	Triangle	Round	0	4.30217	0.64882	17.2087	2.59527	9.89869	9.89869	R-EXP	0.5	85	
73	C 14-PMP-201	Copper	Yes	Triangle	Round	0	1.54696	0.35455	6.18783	1.41821	6.92077	6.92077	R-EXP	0.5	115	
74	C 14-PMP-202	Copper	Yes	Triangle	Round	0	1.54696	0.35455	6.18783	1.41821	6.92077	6.92077	R-EXP	0.5	115	
75	C 14-PMP-203	Copper	Yes	Triangle	Round	0	11.8426	0.43861	47.3705	1.75446	4.45323	4.45323	R-EXP	0.5	25	PO900 & PO900A
76	C 14-SLG-201	Copper	Yes	Triangle	Round	0	15.7901	0.58482	63.1607	2.33928	5.93764	5.93764	R-EXP	0.5	25	PO900 & PO900A
77	C 14-SLG-202	Copper	Yes	Triangle	Round	0	15.7901	0.58482	63.1607	2.33928	5.93764	5.93764	R-EXP	0.5	25	PO900 & PO900A

Cables

	ID Name	Status	From Bus ID	From Base kV	To Bus ID	To Base kV	Unit	Type	No/Ph	Size	Length	Temp	Insulation	Rating (A)	Material
78	C 14-SLG-203	On	MCC5	0.48	14-SLG-203	0.48	U.S.	1/C	1	10	20	50	THWN	35	Copper
79	C 14-SLG-204	On	MCC5	0.48	14-SLG-204	0.48	U.S.	1/C	1	10	25	50	THWN	35	Copper
80	C 1A-MCC2	On	MCC1-A	0.48	MCC2	0.48	U.S.	1/C	2	500	35	50	THWN	760	Copper
81	C 1B-MCC2	On	MCC1-B	0.48	MCC2	0.48	U.S.	1/C	2	500	30	50	THWN	760	Copper
82	C LP-3	On	LP-2	0.208	LP-3	0.208	U.S.	1/C	1	1/0	10	50	THWN	150	Copper
83	C M1	Off	M3-N	4.16	M1	4.16	U.S.	1/C	1	350		25	XLPES_133	385	Copper
84	C M2	Off	M3-S	4.16	M2	4.16	U.S.	1/C	1	350		25	XLPES_133	385	Copper
85	C M3-N	Off	TX PGE SUB1	4.16	M3-N	4.16	U.S.	1/C	1	350		25	XLPES_133	385	Copper
86	C M3-S	Off	TX PGE SUB1	4.16	M3-S	4.16	U.S.	1/C	1	350		25	XLPES_133	385	Copper
87	C M5A	On	M3-N	4.16	M5 A	4.16	U.S.	1/C	2	750	250	25	XLPES_133	1200	Copper
88	C M5B	On	M2	4.16	M5 B	4.16	U.S.	1/C	2	750	250	25	XLPES_133	1200	Copper
89	C MCC1-SPAR	On	MCC1-A	0.48	MCC1-SPARE	0.48	U.S.	1/C	1	12	500	50	XHHW	25	Copper
90	C MCC5	On	MCC2	0.48	MCC5	0.48	U.S.	1/C	4	500	1900	50	XHHW	1520	Copper
91	C P0003	Off	P0003	4.16	P0003 MODEL	4.16	U.S.	1/C	1	2	65	25	XLPES_133	130	Copper
92	C P0003A	On	M5 A	4.16	P0003	4.16	U.S.	1/C	1	2	40	25	XLPES_133	130	Copper
93	C P0003B	Off	M5 A	4.16	P0003	4.16	U.S.	1/C	1	2	40	25	XLPES_133	130	Copper
94	C P0004	Off	P0004	4.16	P0004 MODEL	4.16	U.S.	1/C	1	2	35	25	XLPES_133	130	Copper
95	C P0004A	On	M5 A	4.16	P0004	4.16	U.S.	1/C	1	2	50	25	XLPES_133	130	Copper
96	C P0004B	Off	M5 A	4.16	P0004	4.16	U.S.	1/C	1	2	50	25	XLPES_133	130	Copper
97	C P0007	On	M5 A	4.16	P0007	4.16	U.S.	1/C	1	2	45	25	XLPES_133	130	Copper
98	C P0008	On	M5 A	4.16	TX TR-1 H	4.16	U.S.	1/C	1	1/0	70	25	XLPES_133	180	Copper
99	C P0009	On	M5 B	4.16	TX TR-2 H	4.16	U.S.	1/C	1	1/0	45	25	XLPES_133	180	Copper
100	C P0010	Off	P0010	4.16	P0010 MODEL	4.16	U.S.	1/C	1	2	50	25	XLPES_133	130	Copper
101	C P0010A	On	M5 B	4.16	P0010	4.16	U.S.	1/C	1	2	50	25	XLPES_133	130	Copper
102	C P0010B	Off	M5 B	4.16	P0010	4.16	U.S.	1/C	1	2	50	25	XLPES_133	130	Copper
103	C P0013	On	M5 B	4.16	P0013	4.16	U.S.	1/C	1	2	55	25	XLPES_133	130	Copper
104	C P0801	On	TX TR-1 L	0.48	MCC1-A	0.48	U.S.	1/C	3	500	25	50	THWN	1140	Copper
105	C P0802	On	TX TR-2 L	0.48	MCC1-B	0.48	U.S.	1/C	3	500	35	50	THWN	1140	Copper
106	C RSFDS PMP	On	MCC2	0.48	RSFDS PMP1	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
107	C RSFDS PMP	On	MCC2	0.48	RSFDS PMP2	0.48	U.S.	1/C	1	12	11	50	XHHW	25	Copper
108	C TX-1	On	MCC2	0.48	TX-1 H	0.48	U.S.	1/C	1	8	10	50	THWN	50	Copper
109	C TX-2	On	MCC2	0.48	TX-2 H	0.48	U.S.	1/C	1	2/0	20	50	THWN	175	Copper
110	C TX-3	On	MCC5	0.48	TX-3 H	0.48	U.S.	1/C	1	10	10	50	THWN	35	Copper

Cables

	ID Name	Raceway Type	Raceway Mtl	R1	X1	R0	X0	Xc	Xc0	Gnd Num	Gnd Size	Gnd Mtl	Gnd Type	Gnd Insul	Neutral Num	Neutral Size	Neutral Rating
78	C 14-SLG-203	Conduit	Steel	1.13918	0.04271	4.55673	0.17084	0.00814	0.00814	1	10	Copper	Separate	Yes	1	Other	10
79	C 14-SLG-204	Conduit	Steel	1.13918	0.04271	4.55673	0.17084	0.00814	0.00814	1	10	Copper	Separate	Yes	1	Other	10
80	C 1A-MCC2	Conduit	Steel	0.02613	0.03724	0.10453	0.14897	0.00378	0.00378	2	1	Copper	Separate	Yes	1	Other	10
81	C 1B-MCC2	Conduit	Steel	0.02613	0.03724	0.10453	0.14897	0.00378	0.00378	2	1	Copper	Separate	Yes	1	Other	10
82	C LP-3	Conduit	Steel	0.11201	0.04068	0.44804	0.16274	0.00653	0.00653	1	6	Copper	Separate	Yes	1	Other	10
83	C M1	Conduit	Steel	0.03357	0.05059	0.13428	0.20236	0.01982	0.01982	1	4/0	Copper	Separate	Yes	0	Other	10
84	C M2	Conduit	Steel	0.03357	0.05059	0.13428	0.20236	0.01982	0.01982	1	4/0	Copper	Separate	Yes	0	Other	10
85	C M3-N	Conduit	Steel	0.03357	0.05059	0.13428	0.20236	0.01982	0.01982	1	4/0	Copper	Separate	Yes	0	Other	10
86	C M3-S	Conduit	Steel	0.03357	0.05059	0.13428	0.20236	0.01982	0.01982	1	4/0	Copper	Separate	Yes	0	Other	10
87	C M5A	Conduit	Steel	0.01775	0.04695	0.07100	0.18782	0.01583	0.01583	1	3/0	Copper	Separate	Yes	0	Other	10
88	C M5B	Conduit	Steel	0.01775	0.04695	0.07100	0.18782	0.01583	0.01583	1	3/0	Copper	Separate	Yes	0	Other	10
89	C MCC1-SPAR	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
90	C MCC5	Conduit	Steel	0.02613	0.03761	0.10453	0.15044	0.00560	0.00560	1	1	Copper	Separate	Yes	1	Other	10
91	C P0003	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
92	C P0003A	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
93	C P0003B	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
94	C P0004	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
95	C P0004A	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
96	C P0004B	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
97	C P0007	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
98	C P0008	Conduit	Steel	0.1022	0.05717	0.4088	0.22869	0.02702	0.02702	1	1/0	Copper	Separate	Yes	0	Other	10
99	C P0009	Conduit	Steel	0.1022	0.05717	0.4088	0.22869	0.02702	0.02702	1	1/0	Copper	Separate	Yes	0	Other	10
100	C P0010	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
101	C P0010A	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
102	C P0010B	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
103	C P0013	Conduit	Steel	0.1626	0.06174	0.6504	0.24697	0.03203	0.03203	1	6	Copper	Separate	Yes	0	Other	10
104	C P0801	Conduit	Steel	0.02613	0.03724	0.10453	0.14897	0.00378	0.00378	3	2/0	Copper	Separate	Yes	1	Other	10
105	C P0802	Conduit	Steel	0.02613	0.03724	0.10453	0.14897	0.00378	0.00378	3	2/0	Copper	Separate	Yes	1	Other	10
106	C RSFDS PMP	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
107	C RSFDS PMP	Conduit	Steel	1.81903	0.06737	7.27612	0.26948	0.01896	0.01896	1	12	Copper	Separate	Yes	1	Other	10
108	C TX-1	Conduit	Steel	0.71590	0.04436	2.86363	0.17746	0.00946	0.00946	1	8	Copper	Separate	Yes	1	Other	10
109	C TX-2	Conduit	Steel	0.08883	0.03987	0.35532	0.15950	0.00588	0.00588	1	6	Copper	Separate	Yes	1	Other	10
110	C TX-3	Conduit	Steel	1.13918	0.04271	4.55673	0.17084	0.00814	0.00814	1	12	Copper	Separate	Yes	1	Other	10

Cables

	ID Name	Neutral Mtl	Neutral Insul	Conductor Lay	Conductor Form	Spacing	R1 pu	X1 pu	R0 pu	X0 pu	B1 pu	B0 pu	Hrm RC Factor	Hrm RC Value	I Hrm Rating	Comment
78	C 14-SLG-203	Copper	Yes	Triangle	Round	0	9.88871	0.37075	39.5549	1.48301	5.65639	5.65639	R-EXP	0.5	35	
79	C 14-SLG-204	Copper	Yes	Triangle	Round	0	12.3609	0.46344	49.4436	1.85376	7.07049	7.07049	R-EXP	0.5	35	
80	C 1A-MCC2	Copper	Yes	Triangle	Round	0	0.19850	0.28287	0.79402	1.1315	4.26027	4.26027	R-EXP	0.5	760	
81	C 1B-MCC2	Copper	Yes	Triangle	Round	0	0.17014	0.24246	0.68059	0.96985	3.65166	3.65166	R-EXP	0.5	760	
82	C LP-3	Copper	Yes	Triangle	Round	0	2.58901	0.94039	10.3560	3.76158	6.62431	6.62431	R-EXP	0.5	150	
83	C M1	Copper	Yes	Triangle	Round	0							R-EXP	0.5		
84	C M2	Copper	Yes	Triangle	Round	0							R-EXP	0.5		
85	C M3-N	Copper	Yes	Triangle	Round	0							R-EXP	0.5		
86	C M3-S	Copper	Yes	Triangle	Round	0							R-EXP	0.5		
87	C M5A	Copper	Yes	Triangle	Round	0	0.01282	0.03391	0.05129	0.13566	5.46279	5.46279	R-EXP	0.5	1200	
88	C M5B	Copper	Yes	Triangle	Round	0	0.01282	0.03391	0.05129	0.13566	5.46279	5.46279	R-EXP	0.5	1200	
89	C MCC1-SPAR	Copper	Yes	Triangle	Round	0	394.754	14.6205	1579.01	58.4822	6.07508	6.07508	R-EXP	0.5	25	
90	C MCC5	Copper	Yes	Triangle	Round	0	5.38803	7.75381	21.5521	31.0154	3.12560	3.12560	R-EXP	0.5	1520	
91	C P0003	Copper	Yes	Triangle	Round	0	0.06107	0.02319	0.24429	0.09276	3.51111	3.51111	R-EXP	0.5	130	
92	C P0003A	Copper	Yes	Triangle	Round	0	0.03758	0.01427	0.15033	0.05708	2.16068	2.16068	R-EXP	0.5	130	
93	C P0003B	Copper	Yes	Triangle	Round	0	0.03758	0.01427	0.15033	0.05708	2.16068	2.16068	R-EXP	0.5	130	Bypass
94	C P0004	Copper	Yes	Triangle	Round	0	0.03288	0.01248	0.13154	0.04995	1.89060	1.89060	R-EXP	0.5	130	Bypass
95	C P0004A	Copper	Yes	Triangle	Round	0	0.04697	0.01783	0.18791	0.07135	2.70086	2.70086	R-EXP	0.5	130	
96	C P0004B	Copper	Yes	Triangle	Round	0	0.04697	0.01783	0.18791	0.07135	2.70086	2.70086	R-EXP	0.5	130	Bypass
97	C P0007	Copper	Yes	Triangle	Round	0	0.04228	0.01605	0.16912	0.06422	2.43077	2.43077	R-EXP	0.5	130	
98	C P0008	Copper	Yes	Triangle	Round	0	0.04133	0.02312	0.16535	0.09250	4.48175	4.48175	R-EXP	0.5	180	
99	C P0009	Copper	Yes	Triangle	Round	0	0.02657	0.01486	0.10630	0.05946	2.88112	2.88112	R-EXP	0.5	180	
100	C P0010	Copper	Yes	Triangle	Round	0	0.04697	0.01783	0.18791	0.07135	2.70086	2.70086	R-EXP	0.5	130	Bypass
101	C P0010A	Copper	Yes	Triangle	Round	0	0.04697	0.01783	0.18791	0.07135	2.70086	2.70086	R-EXP	0.5	130	
102	C P0010B	Copper	Yes	Triangle	Round	0	0.04697	0.01783	0.18791	0.07135	2.70086	2.70086	R-EXP	0.5	130	Bypass
103	C P0013	Copper	Yes	Triangle	Round	0	0.05167	0.01962	0.20670	0.07849	2.97094	2.97094	R-EXP	0.5	130	
104	C P0801	Copper	Yes	Triangle	Round	0	0.09452	0.13470	0.37810	0.53880	4.56458	4.56458	R-EXP	0.5	1140	
105	C P0802	Copper	Yes	Triangle	Round	0	0.13233	0.18858	0.52934	0.75433	6.39041	6.39041	R-EXP	0.5	1140	
106	C RSFDS PMP	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
107	C RSFDS PMP	Copper	Yes	Triangle	Round	0	8.68460	0.32165	34.7384	1.28660	1.33651	1.33651	R-EXP	0.5	25	
108	C TX-1	Copper	Yes	Triangle	Round	0	3.10723	0.19256	12.4289	0.77024	2.43384	2.43384	R-EXP	0.5	50	
109	C TX-2	Copper	Yes	Triangle	Round	0	0.77110	0.34614	3.08440	1.38456	7.82962	7.82962	R-EXP	0.5	175	P0809
110	C TX-3	Copper	Yes	Triangle	Round	0	4.94435	0.18537	19.7774	0.74150	2.82819	2.82819	R-EXP	0.5	35	

HV Breakers

	ID Name	Status	On Bus	Base kV	Conn Type	Normal State	Manufacturer	Type	Style	Cont Current (A)	SC Test Std	Cycles	C&L kA	Max kV
1	M1-M2 TIE 52-1	Off	M1	4.16	Bus Tie	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
2	M1-MAIN 52-1	Off	M1	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
3	M2 52-15	On	M2	4.16	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
4	M2-MAIN 52-23	Off	M2	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
5	M3 52-13	Off	M3-S	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
6	M3 N-S TIE 52-	Off	M3-N	4.16	Bus Tie	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
7	M3-N 52-3	Off	M3-N	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
8	M3-N 52-7	On	M3-N	4.16	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
9	M3-N MAIN 52-	Off	M3-N	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
10	M3-S MAIN 52-	Off	M3-S	4.16	Feeder	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
11	M5 A-B TIE 52T	On	M5 A	4.16	Bus Tie	Open	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
12	M5A-MAIN	On	M5 A	4.16	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
13	M5B-MAIN 52-B	On	M5 B	4.16	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
14	PGE SW135	Off	PGE SUB1 A	115	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
15	PGE SW145	Off	PGE SUB1 B	115	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
16	PGE SW176	Off	PGE SUB1 A	115	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0
17	PGE SW186	Off	PGE SUB1 B	115	Feeder	Closed	<None>	<None>	<None>	0	ANSI-SYM	5	0	0

HV Breakers

	ID Name	Rated kA @ Max kV	K-factor	Int kA	kA Min	kA Max	PCC kVA Demand	PCC Isc/ILoad	Comment
1	M1-M2 TIE 52-1	0	1	0	0	0			
2	M1-MAIN 52-1	0	1	0	0	0			
3	M2 52-15	0	1	0	0	0			
4	M2-MAIN 52-23	0	1	0	0	0			
5	M3 52-13	0	1	0	0	0			
6	M3 N-S TIE 52-	0	1	0	0	0			
7	M3-N 52-3	0	1	0	0	0			
8	M3-N 52-7	0	1	0	0	0			
9	M3-N MAIN 52-	0	1	0	0	0			
10	M3-S MAIN 52-	0	1	0	0	0			
11	M5 A-B TIE 52T	0	1	0	0	0			
12	M5A-MAIN	0	1	0	0	0			
13	M5B-MAIN 52-B	0	1	0	0	0			
14	PGE SW135	0	1	0	0	0			
15	PGE SW145	0	1	0	0	0			
16	PGE SW176	0	1	0	0	0			
17	PGE SW186	0	1	0	0	0			

LV Breakers

	ID Name	Status	On Bus	Base kV	Conn Type	Class	Options	Breaker Mfr	Breaker Type	Breaker Style	Cont Current (A)	SC Int kA	SC Test Std
1	B 05-PMP-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
2	B 05-PMP-202	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
3	B 05-VLV-201	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
4	B 05-VLV-217	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
5	B 05-VLV-219	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
6	B 11-SLG-201	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	40	65	ANSI-SYM
7	B 11-SLG-202	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	40	65	ANSI-SYM
8	B 11-SLG-203	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	50	65	ANSI-SYM
9	B 11-SLG-204	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	50	65	ANSI-SYM
10	B 11-SLG-205	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	40	65	ANSI-SYM
11	B 11-SLG-207	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	30	65	ANSI-SYM
12	B 12-BFG-201	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
13	B 12-BFG-202	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
14	B 12-BFG-203	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
15	B 12-CNV-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
16	B 12-CNV-202	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
17	B 12-FAN-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
18	B 12-FAN-202	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
19	B 12-FAN-204	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
20	B 12-FAN-205	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
21	B 12-FAN-205A	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
22	B 12-FAN-206	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
23	B 12-FAN-207	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
24	B 12-FAN-208	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
25	B 12-GBN-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
26	B 12-GBN-202	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
27	B 12-GBN-203	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
28	B 12-GCL-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
29	B 12-GCL-202	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
30	B 12-GCL-203	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
31	B 12-HVU-203	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	90	65	ANSI-SYM
32	B 12-LCP-2001	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
33	B 12-LCP-2002	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
34	B 12-LCP-2003	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
35	B 12-LCP-2004	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	70	65	ANSI-SYM
36	B 12-LCP-2005	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	70	65	ANSI-SYM
37	B 12-LCP-2006	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
38	B 12-LCP-2007	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
39	B 12-PMP-201	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
40	B 12-PMP-202	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
41	B 12-PMP-203	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	150	65	ANSI-SYM
42	B 12-PMP-204	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	150	65	ANSI-SYM
43	B 12-PMP-205	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	150	65	ANSI-SYM
44	B 12-PMP-206	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
45	B 12-PMP-207	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
46	B 12-PMP-213	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
47	B 12-PMP-214	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
48	B 12-SDG-201	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
49	B 12-SDG-202	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
50	B 12-SDG-209	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
51	B 12-SDG-210	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
52	B 12-SDG-211	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
53	B 12-SLG-204	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
54	B 12-SLG-205	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
55	B 12-SLG-208	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
56	B 12-SLG-210	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
57	B 12-SLG-211	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
58	B 12-SLG-212	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
59	B 12-SLG-213	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
60	B 12-SLG-214	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
61	B 12-SLG-215	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
62	B 12-SLG-216	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
63	B 12-SLG-217	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
64	B 12-VLV-218	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	30	65	ANSI-SYM
65	B 14-HPU-201	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	100	65	ANSI-SYM
66	B 14-PMP-201	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	90	65	ANSI-SYM
67	B 14-PMP-202	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	100	65	ANSI-SYM
68	B 14-PMP-203	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	7	65	ANSI-SYM
69	B 14-SLG-201	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
70	B 14-SLG-202	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
71	B 14-SLG-203	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	30	65	ANSI-SYM
72	B 14-SLG-204	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	50	65	ANSI-SYM
73	B 1A-MCC2	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SGL6	600	65	ANSI-SYM
74	B 1B-MCC2	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SGL6	600	65	ANSI-SYM
75	B LP-1 MAIN	On	LP-1	0.208	Feeder	MCCB	Breaker Onl	GE	Q Line	THQD	225	22	ANSI-SYM
76	B LP-2 BRANC	On	LP-2	0.208	Feeder	MCCB	Breaker Onl	GE	Q Line	THHQB	20	22	ANSI-SYM
77	B LP-2 MAIN	On	LP-2	0.208	Feeder	MCCB	Breaker Onl	GE	Q Line	THQD	150	22	ANSI-SYM

LV Breakers

	ID Name	Normal State	Trip	Trip Mfr	Trip Type	Trip Style	Sensor/Frame	Plug/Tap/Trip	LTPU Setting	LTPU Mult	LTPU (A)	LTD Band
1	B 05-PMP-201	Closed	SST	GE	Spectra RMS	MCP SE	30AF(15AT)	15	1		15	1
2	B 05-PMP-202	Closed	SST	GE	Spectra RMS	MCP SE	30AF(15AT)	15	1		15	1
3	B 05-VLV-201	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
4	B 05-VLV-217	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
5	B 05-VLV-219	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
6	B 11-SLG-201	Closed	SST	GE	Spectra RMS	MCCB SE	60A (40AT)	40	1	1	40	Fixed
7	B 11-SLG-202	Closed	SST	GE	Spectra RMS	MCCB SE	60A (40AT)	40	1	1	40	Fixed
8	B 11-SLG-203	Closed	SST	GE	Spectra RMS	MCCB SE	60A (50AT)	50	1	1	50	Fixed
9	B 11-SLG-204	Closed	SST	GE	Spectra RMS	MCCB SE	60A (50AT)	50	1	1	50	Fixed
10	B 11-SLG-205	Closed	SST	GE	Spectra RMS	MCCB SE	60A (40AT)	40	1	1	40	Fixed
11	B 11-SLG-207	Closed	SST	GE	Spectra RMS	MCCB SE	30A (30AT)	30	1	1	30	Fixed
12	B 12-BFG-201	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
13	B 12-BFG-202	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
14	B 12-BFG-203	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
15	B 12-CNV-201	Closed	SST	GE	Spectra RMS	MCP SE	30AF(15AT)	15	1		15	1
16	B 12-CNV-202	Closed	SST	GE	Spectra RMS	MCP SE	30AF(15AT)	15	1		15	1
17	B 12-FAN-201	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
18	B 12-FAN-202	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
19	B 12-FAN-204	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
20	B 12-FAN-205	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
21	B 12-FAN-205A	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
22	B 12-FAN-206	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
23	B 12-FAN-207	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
24	B 12-FAN-208	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
25	B 12-GBN-201	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
26	B 12-GBN-202	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
27	B 12-GBN-203	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
28	B 12-GCL-201	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
29	B 12-GCL-202	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
30	B 12-GCL-203	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
31	B 12-HVU-203	Closed	SST	GE	Spectra RMS	MCCB SE	100A (90AT)	90	1	1	90	Fixed
32	B 12-LCP-2001	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
33	B 12-LCP-2002	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
34	B 12-LCP-2003	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
35	B 12-LCP-2004	Closed	SST	GE	Spectra RMS	MCCB SE	100A (70AT)	70	1	1	70	Fixed
36	B 12-LCP-2005	Closed	SST	GE	Spectra RMS	MCCB SE	100A (70AT)	70	1	1	70	Fixed
37	B 12-LCP-2006	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
38	B 12-LCP-2007	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
39	B 12-PMP-201	Closed	SST	GE	Spectra RMS	MCP SE	30AF(20AT)	20	1		20	1
40	B 12-PMP-202	Closed	SST	GE	Spectra RMS	MCP SE	30AF(20AT)	20	1		20	1
41	B 12-PMP-203	Closed	SST	GE	Spectra RMS	MCP SE	150AF(150AT)	150	1		150	1
42	B 12-PMP-204	Closed	SST	GE	Spectra RMS	MCP SE	150AF(150AT)	150	1		150	1
43	B 12-PMP-205	Closed	SST	GE	Spectra RMS	MCP SE	150AF(150AT)	150	1		150	1
44	B 12-PMP-206	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
45	B 12-PMP-207	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
46	B 12-PMP-213	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
47	B 12-PMP-214	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
48	B 12-SDG-201	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
49	B 12-SDG-202	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
50	B 12-SDG-209	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
51	B 12-SDG-210	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
52	B 12-SDG-211	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
53	B 12-SLG-204	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
54	B 12-SLG-205	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
55	B 12-SLG-208	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
56	B 12-SLG-210	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
57	B 12-SLG-211	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
58	B 12-SLG-212	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
59	B 12-SLG-213	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
60	B 12-SLG-214	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
61	B 12-SLG-215	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
62	B 12-SLG-216	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
63	B 12-SLG-217	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
64	B 12-VLV-218	Closed	SST	GE	Spectra RMS	MCCB SE	30A (30AT)	30	1	1	30	Fixed
65	B 14-HPU-201	Closed	SST	GE	Spectra RMS	MCCB SE	100A (100AT)	100	1	1	100	Fixed
66	B 14-PMP-201	Closed	SST	GE	Spectra RMS	MCP SE	100AF(90AT)	90	1		90	1
67	B 14-PMP-202	Closed	SST	GE	Spectra RMS	MCP SE	100AF(100AT)	100	1		100	1
68	B 14-PMP-203	Closed	SST	GE	Spectra RMS	MCP SE	7AF(7AT)	7	1		7	1
69	B 14-SLG-201	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
70	B 14-SLG-202	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
71	B 14-SLG-203	Closed	SST	GE	Spectra RMS	MCCB SE	30A (30AT)	30	1	1	30	Fixed
72	B 14-SLG-204	Closed	SST	GE	Spectra RMS	MCCB SE	60A (50AT)	50	1	1	50	Fixed
73	B 1A-MCC2	Closed	SST	GE	MVT-Plus	MCCB-SG/SK	600	600	1		600	1
74	B 1B-MCC2	Open	SST	GE	MVT-Plus	MCCB-SG/SK	600	600	1		600	1
75	B LP-1 MAIN	Closed	TMGN	GE	Q Line	THQD	225A(100-225AT)	225				
76	B LP-2 BRANC	Closed	TMGN	GE	Q Line	THHQB	100A (15-50AT)	20				
77	B LP-2 MAIN	Closed	TMGN	GE	Q Line	THQD	225A(100-225AT)	150				

LV Breakers

	ID Name	STPU Setting	STPU Band	STPU I2T	STPU (A)	Inst Setting	Inst Override	Inst (A)	Gnd Pickup	Gnd Delay	Gnd I2T	Gnd (A)	Fuse Mfr	Fuse Type
1	B 05-PMP-201	Max	Fixed	In	112.5	Max	Pickup	181.5			Out		<None>	<None>
2	B 05-PMP-202	Max	Fixed	In	112.5	Max	Pickup	181.5			Out		<None>	<None>
3	B 05-VLV-201	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
4	B 05-VLV-217	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
5	B 05-VLV-219	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
6	B 11-SLG-201	Max	Fixed	In	256	Max	Pickup	500			Out		<None>	<None>
7	B 11-SLG-202	Max	Fixed	In	256	Max	Pickup	500			Out		<None>	<None>
8	B 11-SLG-203	Max	Fixed	In	350	Max	Pickup	625			Out		<None>	<None>
9	B 11-SLG-204	Max	Fixed	In	350	Max	Pickup	625			Out		<None>	<None>
10	B 11-SLG-205	Max	Fixed	In	256	Max	Pickup	500			Out		<None>	<None>
11	B 11-SLG-207	Max	Fixed	In	243	Max	Pickup	375			Out		<None>	<None>
12	B 12-BFG-201	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
13	B 12-BFG-202	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
14	B 12-BFG-203	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
15	B 12-CNV-201	Max	Fixed	In	112.5	Max	Pickup	181.5			Out		<None>	<None>
16	B 12-CNV-202	Max	Fixed	In	112.5	Max	Pickup	181.5			Out		<None>	<None>
17	B 12-FAN-201	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
18	B 12-FAN-202	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
19	B 12-FAN-204	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
20	B 12-FAN-205	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
21	B 12-FAN-205A	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
22	B 12-FAN-206	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
23	B 12-FAN-207	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
24	B 12-FAN-208	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
25	B 12-GBN-201	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
26	B 12-GBN-202	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
27	B 12-GBN-203	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
28	B 12-GCL-201	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
29	B 12-GCL-202	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
30	B 12-GCL-203	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
31	B 12-HVU-203	Max	Fixed	In	585	Max	Pickup	1125			Out		<None>	<None>
32	B 12-LCP-2001	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
33	B 12-LCP-2002	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
34	B 12-LCP-2003	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
35	B 12-LCP-2004	Max	Fixed	In	441	Max	Pickup	875			Out		<None>	<None>
36	B 12-LCP-2005	Max	Fixed	In	441	Max	Pickup	875			Out		<None>	<None>
37	B 12-LCP-2006	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
38	B 12-LCP-2007	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
39	B 12-PMP-201	Max	Fixed	In	172	Max	Pickup	250			Out		<None>	<None>
40	B 12-PMP-202	Max	Fixed	In	172	Max	Pickup	250			Out		<None>	<None>
41	B 12-PMP-203	Max	Fixed	In	1365	Max	Pickup	1972.5			Out		<None>	<None>
42	B 12-PMP-204	Max	Fixed	In	1365	Max	Pickup	1972.5			Out		<None>	<None>
43	B 12-PMP-205	Max	Fixed	In	1365	Max	Pickup	1972.5			Out		<None>	<None>
44	B 12-PMP-206	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
45	B 12-PMP-207	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
46	B 12-PMP-213	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
47	B 12-PMP-214	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
48	B 12-SDG-201	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
49	B 12-SDG-202	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
50	B 12-SDG-209	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
51	B 12-SDG-210	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
52	B 12-SDG-211	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
53	B 12-SLG-204	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
54	B 12-SLG-205	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
55	B 12-SLG-208	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
56	B 12-SLG-210	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
57	B 12-SLG-211	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
58	B 12-SLG-212	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
59	B 12-SLG-213	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
60	B 12-SLG-214	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
61	B 12-SLG-215	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
62	B 12-SLG-216	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
63	B 12-SLG-217	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
64	B 12-VLV-218	Max	Fixed	In	243	Max	Pickup	375			Out		<None>	<None>
65	B 14-HPU-201	Max	Fixed	In	660	Max	Pickup	1250			Out		<None>	<None>
66	B 14-PMP-201	Max	Fixed	In	684	Max	Pickup	1057.5			Out		<None>	<None>
67	B 14-PMP-202	Max	Fixed	In	760	Max	Pickup	1175			Out		<None>	<None>
68	B 14-PMP-203	Max	Fixed	In	55.3	Max	Pickup	89.25			Out		<None>	<None>
69	B 14-SLG-201	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
70	B 14-SLG-202	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
71	B 14-SLG-203	Max	Fixed	In	243	Max	Pickup	375			Out		<None>	<None>
72	B 14-SLG-204	Max	Fixed	In	350	Max	Pickup	625			Out		<None>	<None>
73	B 1A-MCC2			Out		8.5	Pickup	5100			Out		<None>	<None>
74	B 1B-MCC2			Out		8.5	Pickup	5100			Out		<None>	<None>
75	B LP-1 MAIN												<None>	<None>
76	B LP-2 BRANC												<None>	<None>
77	B LP-2 MAIN												<None>	<None>

LV Breakers

	ID Name	Fuse Style	Fuse Size	Mtr O/L Mfr	Mtr O/L Type	Mtr O/L Style	Motor FLA	Service Factor	PCC kVA Demand	PCC Isc/ILoad	Comment
1	B 05-PMP-201	<None>	<None>	GE	CR124	CR124K	6.63	1.15			C695A OL @ 6.63
2	B 05-PMP-202	<None>	<None>	GE	CR124	CR124K	6.63	1.15			C695A OL @ 6.63
3	B 05-VLV-201	<None>	<None>	<None>	<None>	<None>		1			
4	B 05-VLV-217	<None>	<None>	<None>	<None>	<None>		1			
5	B 05-VLV-219	<None>	<None>	<None>	<None>	<None>		1			
6	B 11-SLG-201	<None>	<None>	<None>	<None>	<None>		1			
7	B 11-SLG-202	<None>	<None>	<None>	<None>	<None>		1			
8	B 11-SLG-203	<None>	<None>	<None>	<None>	<None>		1			
9	B 11-SLG-204	<None>	<None>	<None>	<None>	<None>		1			
10	B 11-SLG-205	<None>	<None>	<None>	<None>	<None>		1			
11	B 11-SLG-207	<None>	<None>	<None>	<None>	<None>		1			
12	B 12-BFG-201	<None>	<None>	<None>	<None>	<None>		1			
13	B 12-BFG-202	<None>	<None>	<None>	<None>	<None>		1			
14	B 12-BFG-203	<None>	<None>	<None>	<None>	<None>		1			
15	B 12-CNV-201	<None>	<None>	GE	CR124	CR124K	6.63	1.15			C695A OL @ 6.63
16	B 12-CNV-202	<None>	<None>	GE	CR124	CR124K	6.63	1.15			C695A OL @ 6.63
17	B 12-FAN-201	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
18	B 12-FAN-202	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
19	B 12-FAN-204	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
20	B 12-FAN-205	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
21	B 12-FAN-205A	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
22	B 12-FAN-206	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
23	B 12-FAN-207	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
24	B 12-FAN-208	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
25	B 12-GBN-201	<None>	<None>	<None>	<None>	<None>		1.15			
26	B 12-GBN-202	<None>	<None>	<None>	<None>	<None>		1.15			
27	B 12-GBN-203	<None>	<None>	<None>	<None>	<None>		1.15			
28	B 12-GCL-201	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
29	B 12-GCL-202	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
30	B 12-GCL-203	<None>	<None>	GE	CR124	CR124K	3.32	1.15			C356A OL @ 3.32A
31	B 12-HVU-203	<None>	<None>	<None>	<None>	<None>		1			
32	B 12-LCP-2001	<None>	<None>	<None>	<None>	<None>		1			
33	B 12-LCP-2002	<None>	<None>	<None>	<None>	<None>		1			
34	B 12-LCP-2003	<None>	<None>	<None>	<None>	<None>		1			
35	B 12-LCP-2004	<None>	<None>	<None>	<None>	<None>		1			
36	B 12-LCP-2005	<None>	<None>	<None>	<None>	<None>		1			
37	B 12-LCP-2006	<None>	<None>	<None>	<None>	<None>		1			
38	B 12-LCP-2007	<None>	<None>	<None>	<None>	<None>		1			
39	B 12-PMP-201	<None>	<None>	GE	CR124	CR124K	11.1	1.15			C113B OL @ 11.1A
40	B 12-PMP-202	<None>	<None>	GE	CR124	CR124K	11.1	1.15			C113B OL @ 11.1A
41	B 12-PMP-203	<None>	<None>	GE	CR124	CR124K	130	1.15			F114C OL @ 130A
42	B 12-PMP-204	<None>	<None>	GE	CR124	CR124K	130	1.15			F114C OL @ 130A
43	B 12-PMP-205	<None>	<None>	GE	CR124	CR124K	130	1.15			F114C OL @ 130A
44	B 12-PMP-206	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
45	B 12-PMP-207	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
46	B 12-PMP-213	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
47	B 12-PMP-214	<None>	<None>	GE	CR124	CR124K	4.08	1.15			C419B OL @ 4.08A
48	B 12-SDG-201	<None>	<None>	<None>	<None>	<None>		1			
49	B 12-SDG-202	<None>	<None>	<None>	<None>	<None>		1			
50	B 12-SDG-209	<None>	<None>	<None>	<None>	<None>		1			
51	B 12-SDG-210	<None>	<None>	<None>	<None>	<None>		1			
52	B 12-SDG-211	<None>	<None>	<None>	<None>	<None>		1			
53	B 12-SLG-204	<None>	<None>	<None>	<None>	<None>		1			
54	B 12-SLG-205	<None>	<None>	<None>	<None>	<None>		1			
55	B 12-SLG-208	<None>	<None>	<None>	<None>	<None>		1			
56	B 12-SLG-210	<None>	<None>	<None>	<None>	<None>		1			
57	B 12-SLG-211	<None>	<None>	<None>	<None>	<None>		1			
58	B 12-SLG-212	<None>	<None>	<None>	<None>	<None>		1			
59	B 12-SLG-213	<None>	<None>	<None>	<None>	<None>		1			
60	B 12-SLG-214	<None>	<None>	<None>	<None>	<None>		1			
61	B 12-SLG-215	<None>	<None>	<None>	<None>	<None>		1			
62	B 12-SLG-216	<None>	<None>	<None>	<None>	<None>		1			
63	B 12-SLG-217	<None>	<None>	<None>	<None>	<None>		1			
64	B 12-VLV-218	<None>	<None>	<None>	<None>	<None>		1			
65	B 14-HPU-201	<None>	<None>	<None>	<None>	<None>		1			
66	B 14-PMP-201	<None>	<None>	<None>	<None>	<None>		1.15			
67	B 14-PMP-202	<None>	<None>	GE	CR124	CR124K	78	1.15			F772B OL @ 72.0A
68	B 14-PMP-203	<None>	<None>	<None>	<None>	<None>		1.15			
69	B 14-SLG-201	<None>	<None>	<None>	<None>	<None>		1			
70	B 14-SLG-202	<None>	<None>	<None>	<None>	<None>		1			
71	B 14-SLG-203	<None>	<None>	<None>	<None>	<None>		1			
72	B 14-SLG-204	<None>	<None>	<None>	<None>	<None>		1			
73	B 1A-MCC2	<None>	<None>	<None>	<None>	<None>		1			LI
74	B 1B-MCC2	<None>	<None>	<None>	<None>	<None>		1			LI
75	B LP-1 MAIN	<None>	<None>	<None>	<None>	<None>		1			
76	B LP-2 BRANC	<None>	<None>	<None>	<None>	<None>		1			
77	B LP-2 MAIN	<None>	<None>	<None>	<None>	<None>		1			

LV Breakers

	ID Name	Status	On Bus	Base kV	Conn Type	Class	Options	Breaker Mfr	Breaker Type	Breaker Style	Cont Current (A)	SC Int kA	SC Test Std
78	B LP-3 MAIN	On	LP-3	0.208	Feeder	MCCB	Breaker Onl	GE	Q Line	THHQB	100	22	ANSI-SYM
79	B LP-4 MAIN	On	LP-4	0.208	Feeder	MCCB	Breaker Onl	GE	Q Line	THHQB	100	22	ANSI-SYM
80	B MCC-5	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SGL6	400	65	ANSI-SYM
81	B MCC1 A-B TI	On	MCC1-A	0.48	Bus Tie	ICCB	Breaker Onl	GE	Power Break II	SH-08	800	100	ANSI-SYM
82	B MCC1-A MAI	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	SE150	SKL8	800	65	ANSI-SYM
83	B MCC1-B MAI	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	SE150	SKL8	800	65	ANSI-SYM
84	B MCC1-SPAR	On	MCC1-A	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
85	B MCC1B-SPA	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	40	65	ANSI-SYM
86	B MCC1B-SPA	On	MCC1-B	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	70	65	ANSI-SYM
87	B MCC2-SPAR	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	20	65	ANSI-SYM
88	B MCC5	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SGL6	400	65	ANSI-SYM
89	B RSFDS PMP	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
90	B RSFDS PMP	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	15	65	ANSI-SYM
91	B TX-1	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	70	65	ANSI-SYM
92	B TX-2	On	MCC2	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SFL	175	65	ANSI-SYM
93	B TX-3	On	MCC5	0.48	Feeder	MCCB	Breaker Onl	GE	Spectra	SEL	60	65	ANSI-SYM

LV Breakers

	ID Name	Normal State	Trip	Trip Mfr	Trip Type	Trip Style	Sensor/Frame	Plug/Tap/Trip	LTPU Setting	LTPU Mult	LTPU (A)	LTD Band
78	B LP-3 MAIN	Closed	TMGN	GE	Q Line	THHQB	100A(60-100AT)	100				
79	B LP-4 MAIN	Closed	TMGN	GE	Q Line	THHQB	100A(60-100AT)	100				
80	B MCC-5	Closed	SST	GE	MVT-Plus	MCCB-SG/SK	600	400	1		400	1
81	B MCC1 A-B TI	Closed	SST	GE	MVT-Plus	ICCB (H)	800	800	1		800	1
82	B MCC1-A MAI	Closed	SST	GE	MVT-Plus	MCCB-SG/SK	800	800	1		800	1
83	B MCC1-B MAI	Open	SST	GE	MVT-Plus	MCCB-SG/SK	800	800	1		800	1
84	B MCC1-SPAR	Closed	SST	GE	Spectra RMS	MCP SE	30AF(15AT)	15	1		15	1
85	B MCC1B-SPA	Closed	SST	GE	Spectra RMS	MCCB SE	60A (40AT)	40	1	1	40	Fixed
86	B MCC1B-SPA	Closed	SST	GE	Spectra RMS	MCCB SE	100A (70AT)	70	1	1	70	Fixed
87	B MCC2-SPAR	Closed	SST	GE	Spectra RMS	MCCB SE	30A (20AT)	20	1	1	20	Fixed
88	B MCC5	Closed	SST	GE	Spectra RMS	MCCB SG	600	400	1	1	400	Fixed
89	B RSFDS PMP	Closed	SST	GE	Spectra RMS	MCCB SE	30A (15AT)	15	1	1	15	Fixed
90	B RSFDS PMP	Closed	SST	GE	Spectra RMS	MCCB SE	30A (15AT)	15	1	1	15	Fixed
91	B TX-1	Closed	SST	GE	Spectra RMS	MCCB SE	100A (70AT)	70	1	1	70	Fixed
92	B TX-2	Closed	SST	GE	Spectra RMS	MCCB SF	250	175	1		175	Fixed
93	B TX-3	Closed	SST	GE	Spectra RMS	MCCB SE	60A (60AT)	60	1	1	60	Fixed

LV Breakers

	ID Name	STPU Setting	STPU Band	STPU I2T	STPU (A)	Inst Setting	Inst Override	Inst (A)	Gnd Pickup	Gnd Delay	Gnd I2T	Gnd (A)	Fuse Mfr	Fuse Type
78	B LP-3 MAIN												<None>	<None>
79	B LP-4 MAIN												<None>	<None>
80	B MCC-5	6	3	Out	2400	9	Pickup	3600			Out		<None>	<None>
81	B MCC1 A-B TI	7	Min	Out	5600	1	Pickup	25000			Out		<None>	<None>
82	B MCC1-A MAI	5	1	Out	4000	9	Pickup	7200			Out		<None>	<None>
83	B MCC1-B MAI	5	1	Out	4000	9	Pickup	7200			Out		<None>	<None>
84	B MCC1-SPAR	Max	Fixed	In	112.5	Max	Pickup	181.5			Out		<None>	<None>
85	B MCC1B-SPA	Max	Fixed	In	256	Max	Pickup	500			Out		<None>	<None>
86	B MCC1B-SPA	Max	Fixed	In	441	Max	Pickup	875			Out		<None>	<None>
87	B MCC2-SPAR	Max	Fixed	In	137	Max	Pickup	250			Out		<None>	<None>
88	B MCC5	Max	Fixed	In	2000	Max	Pickup	4048			Out		<None>	<None>
89	B RSFDS PMP	Max	Fixed	In	90	Max	Pickup	187.5			Out		<None>	<None>
90	B RSFDS PMP	Max	Fixed	In	90	Max	Pickup	187.5			Out		<None>	<None>
91	B TX-1	Max	Fixed	In	441	Max	Pickup	875			Out		<None>	<None>
92	B TX-2	Max	Fixed	In	875	Max	Pickup	1750			Out		<None>	<None>
93	B TX-3	Max	Fixed	In	456	Max	Pickup	750			Out		<None>	<None>

LV Breakers

	ID Name	Fuse Style	Fuse Size	Mtr O/L Mfr	Mtr O/L Type	Mtr O/L Style	Motor FLA	Service Factor	PCC kVA Demand	PCC Isc/ILoad	Comment
78	B LP-3 MAIN	<None>	<None>	<None>	<None>	<None>		1			
79	B LP-4 MAIN	<None>	<None>	<None>	<None>	<None>		1			
80	B MCC-5	<None>	<None>	<None>	<None>	<None>		1			LI
81	B MCC1 A-B TI	<None>	<None>	<None>	<None>	<None>		1			LSH
82	B MCC1-A MAI	<None>	<None>	<None>	<None>	<None>		1	727	24.07	LSIT
83	B MCC1-B MAI	<None>	<None>	<None>	<None>	<None>		1			LSIT
84	B MCC1-SPAR	<None>	<None>	GE	CR124	CR124K	6.63	1.15			C695A OL @ 6.63
85	B MCC1B-SPA	<None>	<None>	<None>	<None>	<None>		1			
86	B MCC1B-SPA	<None>	<None>	<None>	<None>	<None>		1			
87	B MCC2-SPAR	<None>	<None>	<None>	<None>	<None>		1			
88	B MCC5	<None>	<None>	<None>	<None>	<None>		1			
89	B RSFDS PMP	<None>	<None>	<None>	<None>	<None>		1			
90	B RSFDS PMP	<None>	<None>	<None>	<None>	<None>		1			
91	B TX-1	<None>	<None>	<None>	<None>	<None>		1			
92	B TX-2	<None>	<None>	<None>	<None>	<None>		1			
93	B TX-3	<None>	<None>	<None>	<None>	<None>		1			

Switches

	ID Name	Status	On Bus	Base kV	Conn Type	Normal State	Manufacturer	Type	Style	Cont Current (A)	SC Mom kA	SC Test Std	PCC kVA Demand
1	PGE SUB1 A-B	Off	PGE SUB1 A	115	Bus Tie	Open	<None>	<None>	<None>	0	0	ANSI-SYM	
2	S P0003	On	P0003	4.16	Feeder	Closed	<None>	<None>	<None>	0	0	ANSI-SYM	
3	S P0004	On	P0004	4.16	Feeder	Closed	<None>	<None>	<None>	0	0	ANSI-SYM	
4	S P0010	On	P0010	4.16	Feeder	Closed	<None>	<None>	<None>	0	0	ANSI-SYM	

Switches

	ID Name	PCC Isc/ILoad	Comment
1	PGE SUB1 A-B		
2	S P0003		
3	S P0004		
4	S P0010		

Fuses

	ID Name	Status	On Bus	Base kV	Conn Type	Normal State	Options	Manufacturer	Type	Style	TCC Model	TCC kV
1	M5-1A1 - P000	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
2	M5-1A2 - P000	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
3	M5-2A1 - P000	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
4	M5-2A2 - P000	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
5	M5-2B1 - P001	On	M5 B	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
6	M5-2B2 - P001	On	M5 B	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
7	M5-5A	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
8	M5-5B	On	M5 B	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
9	M5A 6A2	On	M5 A	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5
10	M5B 1B1	On	M5 B	4.16	Feeder	Closed	Breaker Co	GE	(Std)	VAC LIMITAMP	55A212942P__RB	5.5

Fuses

	ID Name	TCC Size	SC Int kA	SC Test X/R	SC Test Std	TCC Mom kA	TCC Int kA	TCC 30 cyc kA	Mtr O/L Mfr	Mtr O/L Type	Mtr O/L Style	Motor FLA	Service Factor
1	M5-1A1 - P000	3R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
2	M5-1A2 - P000	6R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
3	M5-2A1 - P000	3R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
4	M5-2A2 - P000	6R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
5	M5-2B1 - P001	3R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
6	M5-2B2 - P001	6R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
7	M5-5A	4R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
8	M5-5B	4R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
9	M5A 6A2	9R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1
10	M5B 1B1	9R	52.5	15	ANSI-SYM				<None>	<None>	<None>		1

Fuses

	ID Name	PCC kVA Demand	PCC Isc/ILoad	Comment
1	M5-1A1 - P000			
2	M5-1A2 - P000			
3	M5-2A1 - P000			
4	M5-2A2 - P000			
5	M5-2B1 - P001			
6	M5-2B2 - P001			
7	M5-5A			
8	M5-5B			
9	M5A 6A2			
10	M5B 1B1			

CTs

	ID Name	Status	Item Connection	CT Function	Connected	No. of CTs	Full CT Ratio	Set CT Ratio	One-line Graphics	Comment
1	CT M5 A-B TIE	On	M5 A-B TIE 52TI	Single Ratio	Wye	3	1200/5	1200/5	Positive Sequence	
2	CT M5-1A1	On	C P0003A	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
3	CT M5-1A1 GF	On	C P0003A	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
4	CT M5-1A2	On	C P0003B	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
5	CT M5-1A2 GF	On	C P0003B	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
6	CT M5-2A1	On	C P0004A	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
7	CT M5-2A1 GF	On	C P0004A	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
8	CT M5-2A2	On	C P0004B	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
9	CT M5-2A2 GF	On	C P0004B	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
10	CT M5-2B1	On	C P0010A	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
11	CT M5-2B1 GF	On	C P0010A	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
12	CT M5-2B2	On	C P0010B	Single Ratio	Wye	3	100/5	100/5	Positive Sequence	
13	CT M5-2B2 GF	On	C P0010B	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
14	CT M5-5A	On	C P0007	Single Ratio	Wye	3	75/5	75/5	Positive Sequence	
15	CT M5-5A GF	On	C P0007	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
16	CT M5-5B	On	C P0013	Single Ratio	Wye	3	75/5	75/5	Positive Sequence	
17	CT M5-5B GF	On	C P0013	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
18	CT M5-6A	On	C P0008	Single Ratio	Wye	3	200/5	200/5	Positive Sequence	
19	CT M5-6A GF	On	C P0008	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
20	CT M5A-MAIN	On	C M5A	Single Ratio	Wye	3	1200/5	1200/5	Positive Sequence	
21	CT M5B 1B1	On	C P0009	Single Ratio	Wye	3	200/5	200/5	Positive Sequence	
22	CT M5B 1B1 G	On	C P0009	Single Ratio	Wye	1	50/5	50/5	Zero Sequence	
23	CT M5B-MAIN	On	C M5B	Single Ratio	Wye	3	1200/5	1200/5	Positive Sequence	

Relays

	ID Name	Status	Manufacturer	Type	Function ID	Device Function	CT Bus ID	CT Ratio	Tap Range	Tap Setting	Tap (PA)
1	R M5 A-B TIE	On	GE	SR750	1	51/50	M5 B	1200/5	-		
2	R M5-1A1	On	GE	SR735	1	51/50 ANSI	M5 A	100/5	-		
3	R M5-1A2	On	GE	469	1	51/50 SC	M5 A	100/5	-		
4	R M5-2A1	On	GE	SR735	1	51/50 ANSI	M5 A	100/5	-		
5	R M5-2A2	On	GE	469	1	51/50 SC	M5 A	100/5	-		
6	R M5-2B1	On	GE	SR735	1	51/50 ANSI	M5 B	100/5	-		
7	R M5-2B2	On	GE	469	1	51/50 SC	M5 B	100/5	-		
8	R M5-5A	On	GE	469	1	51/50 SC	M5 A	75/5	-		
9	R M5-5B	On	GE	469	1	51/50 SC	M5 B	75/5	-		
10	R M5-6A	On	GE	SR735	1	51/50 ANSI	M5 A	200/5	-		
11	R M5A-MAIN	On	GE	SR750	1	51/50	M5 A	1200/5	-		
12	R M5B 1B1	On	GE	SR735	1	51/50 ANSI	M5 B	200/5	-		
13	R M5B-MAIN	On	GE	<None>	1		M2	1200/5	-		

Relays

	ID Name	Time Dial Curve Name	Time Dial Shift Mult	Time Dial Range	Time Dial Setting	Inst Range	Inst Setting	Inst (PA)	Delay (s)	Comment
1	R M5 A-B TIE			-		-				
2	R M5-1A1			-		-				
3	R M5-1A2	<None>		-		-				
4	R M5-2A1			-		-				
5	R M5-2A2	<None>		-		-				
6	R M5-2B1			-		-				
7	R M5-2B2	<None>		-		-				
8	R M5-5A	<None>		-		-				
9	R M5-5B	<None>		-		-				
10	R M5-6A			-		-				
11	R M5A-MAIN			-		-				
12	R M5B 1B1			-		-				
13	R M5B-MAIN			-		-				

Three Phase Bolted Fault

Equipment Duty Ratings

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
LP-1 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-1 MAIN	GE	/THQD	ANSI-SYM	22.00			2.18(-90.1%)		
LP-1		/	ANSI-SYM	42.00			2.18(-94.8%)		

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Equipment Duty Comparison Report For Bus:
LP-2 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-2 MAIN	GE	/THQD	ANSI-SYM	22.00			5.56(-74.7%)		
B LP-2 BRANCH	GE	/THHQB	ANSI-SYM	22.00			5.56(-74.7%)		
LP-2		/	ANSI-SYM	22.00			5.56(-74.7%)		

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Equipment Duty Comparison Report For Bus:
LP-3 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-3 MAIN	GE	/THHQB	ANSI-SYM	22.00			5.34(-75.7%)		
LP-3		/	ANSI-SYM	22.00			5.34(-75.7%)		

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Equipment Duty Comparison Report For Bus:
LP-4 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-4 MAIN	GE	/THHQB	ANSI-SYM	22.00			1.03(-95.3%)		
LP-4		/	ANSI-SYM	14.00			1.03(-92.7%)		

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
M5 A Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
M5-1A2 - P0003	GE /VAC LIMITAMP	ANSI-SYM	52.50			35.52(-32.3%)		
M5-2A2 - P0004	GE /VAC LIMITAMP	ANSI-SYM	52.50			35.52(-32.3%)		
M5-5A	GE /VAC LIMITAMP	ANSI-SYM	52.50			35.61(-32.2%)		
M5A 6A2	GE /VAC LIMITAMP	ANSI-SYM	52.50			35.64(-32.1%)		
M5 A	/	ANSI-TOT	50.00			47.78(-4.4%)		Warning

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Equipment Duty Comparison Report For Bus:
M5 B Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
M5B 1B1	GE /VAC LIMITAMP	ANSI-SYM	52.50			24.53(-53.3%)		
M5-2B2 - P0010	GE /VAC LIMITAMP	ANSI-SYM	52.50			24.23(-53.8%)		
M5-5B	GE /VAC LIMITAMP	ANSI-SYM	52.50			24.33(-53.7%)		
M5 B	/	ANSI-TOT	50.00			33.12(-33.8%)		

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Equipment Duty Comparison Report For Bus:
MCC1-A Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B 12-PMP-201	GE /SEL	ANSI-SYM	65.00			21.52(-66.9%)		
B 05-PMP-201	GE /SEL	ANSI-SYM	65.00			21.54(-66.9%)		
B 12-CNV-201	GE /SEL	ANSI-SYM	65.00			21.54(-66.9%)		
B 12-FAN-201	GE /SEL	ANSI-SYM	65.00			21.55(-66.9%)		
B 12-FAN-205	GE /SEL	ANSI-SYM	65.00			21.55(-66.8%)		
B MCC1-A MAIN	GE /SKL8	ANSI-SYM	65.00			19.19(-70.5%)		
B 1A-MCC2	GE /SGL6	ANSI-SYM	65.00			20.36(-68.7%)		
B 12-PMP-206	GE /SEL	ANSI-SYM	65.00			21.55(-66.9%)		
B 12-LCP-2001	GE /SEL	ANSI-SYM	65.00			21.54(-66.9%)		
B 12-GBN-201	GE /SEL	ANSI-SYM	65.00			21.56(-66.8%)		
B 12-PMP-213	GE /SEL	ANSI-SYM	65.00			21.55(-66.9%)		
B 12-LCP-2004	GE /SEL	ANSI-SYM	65.00			21.48(-67.0%)		
B 12-PMP-203	GE /SEL	ANSI-SYM	65.00			21.12(-67.5%)		
B 12-GCL-201	GE /SEL	ANSI-SYM	65.00			21.55(-66.8%)		
B 12-LCP-2006	GE /SEL	ANSI-SYM	65.00			21.55(-66.8%)		
B 12-HVU-203	GE /SEL	ANSI-SYM	65.00			21.56(-66.8%)		
B 12-PMP-204	GE /SEL	ANSI-SYM	65.00			21.10(-67.5%)		
B 12-GCL-202	GE /SEL	ANSI-SYM	65.00			21.55(-66.8%)		

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-FAN-205A	GE	/SEL	ANSI-SYM	65.00	21.55(-66.9%)	
B MCC1-SPARE	GE	/SEL	ANSI-SYM	65.00	21.54(-66.9%)	
MCC1-A		/	ANSI-SYM	65.00	21.56(-66.8%)	

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Equipment Duty Comparison Report For Bus:
MCC1-B Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings		Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA) Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC1-B MAIN	GE	/SKL8	ANSI-SYM	65.00		18.60(-71.4%)		
B 05-PMP-202	GE	/SEL	ANSI-SYM	65.00		19.31(-70.3%)		
B 12-LCP-2002	GE	/SEL	ANSI-SYM	65.00		19.31(-70.3%)		
B 12-LCP-2003	GE	/SEL	ANSI-SYM	65.00		19.31(-70.3%)		
B 12-LCP-2005	GE	/SEL	ANSI-SYM	65.00		19.25(-70.4%)		
B 12-CNV-202	GE	/SEL	ANSI-SYM	65.00		19.31(-70.3%)		
B MCC1B-SPARE1	GE	/SEL	ANSI-SYM	65.00		19.33(-70.3%)		
B 12-LCP-2007	GE	/SEL	ANSI-SYM	65.00		19.31(-70.3%)		
B 12-PMP-202	GE	/SEL	ANSI-SYM	65.00		19.30(-70.3%)		
B 12-GBN-202	GE	/SEL	ANSI-SYM	65.00		19.33(-70.3%)		
B 12-PMP-205	GE	/SEL	ANSI-SYM	65.00		18.90(-70.9%)		
B MCC1B-SPARE2	GE	/SEL	ANSI-SYM	65.00		19.33(-70.3%)		
B 12-PMP-207	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-FAN-204	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-GBN-203	GE	/SEL	ANSI-SYM	65.00		19.33(-70.3%)		
B 12-GCL-203	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-FAN-207	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-FAN-202	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-PMP-214	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-FAN-206	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
B 12-FAN-208	GE	/SEL	ANSI-SYM	65.00		19.32(-70.3%)		
MCC1-B		/	ANSI-SYM	65.00		19.25(-70.4%)		

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Equipment Duty Comparison Report For Bus:
MCC2 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings		Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA) Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC2-SPARE	GE	/SEL	ANSI-SYM	65.00		20.53(-68.4%)		
B 11-SLG-207	GE	/SEL	ANSI-SYM	65.00		20.49(-68.5%)		
B MCC5	GE	/SGL6	ANSI-SYM	65.00		20.16(-69.0%)		
B 12-SLG-204	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-BFG-203	GE	/SEL	ANSI-SYM	65.00		20.52(-68.4%)		
B 12-SLG-205	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SLG-208	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SLG-211	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SDG-201	GE	/SEL	ANSI-SYM	65.00		20.53(-68.4%)		
B 12-SLG-212	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SLG-213	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SLG-210	GE	/SEL	ANSI-SYM	65.00		20.51(-68.4%)		
B 12-SDG-202	GE	/SEL	ANSI-SYM	65.00		20.53(-68.4%)		

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-BFG-201	GE	/SEL	ANSI-SYM	65.00	20.52(-68.4%)
B 12-BFG-202	GE	/SEL	ANSI-SYM	65.00	20.52(-68.4%)
B 12-SDG-209	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
B 12-SDG-210	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
B 05-VLV-201	GE	/SEL	ANSI-SYM	65.00	20.50(-68.5%)
B 11-SLG-201	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 11-SLG-202	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 12-SDG-211	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
B 11-SLG-205	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 11-SLG-203	GE	/SEL	ANSI-SYM	65.00	20.44(-68.5%)
B 11-SLG-204	GE	/SEL	ANSI-SYM	65.00	20.44(-68.6%)
B 12-SLG-214	GE	/SEL	ANSI-SYM	65.00	20.51(-68.4%)
B 12-SLG-215	GE	/SEL	ANSI-SYM	65.00	20.51(-68.4%)
B 12-SLG-216	GE	/SEL	ANSI-SYM	65.00	20.51(-68.4%)
B 12-SLG-217	GE	/SEL	ANSI-SYM	65.00	20.51(-68.4%)
B 05-VLV-217	GE	/SEL	ANSI-SYM	65.00	20.50(-68.5%)
B 05-VLV-219	GE	/SEL	ANSI-SYM	65.00	20.50(-68.5%)
B 12-VLV-218	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B TX-1	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
B TX-2	GE	/SFL	ANSI-SYM	65.00	20.53(-68.4%)
B RSFDS PMP1	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
B RSFDS PMP2	GE	/SEL	ANSI-SYM	65.00	20.53(-68.4%)
MCC2		/	ANSI-SYM	65.00	20.53(-68.4%)

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Equipment Duty Comparison Report For Bus:
MCC5 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B 14-PMP-203	GE	/SEL	ANSI-SYM	65.00			8.31(-87.2%)		
B MCC-5	GE	/SGL6	ANSI-SYM	65.00			7.94(-87.8%)		
B 14-SLG-201	GE	/SEL	ANSI-SYM	65.00			8.30(-87.2%)		
B TX-3	GE	/SEL	ANSI-SYM	65.00			8.32(-87.2%)		
B 14-SLG-202	GE	/SEL	ANSI-SYM	65.00			8.30(-87.2%)		
B 14-PMP-202	GE	/SEL	ANSI-SYM	65.00			8.12(-87.5%)		
B 14-SLG-203	GE	/SEL	ANSI-SYM	65.00			8.27(-87.3%)		
B 14-HPU-201	GE	/SEL	ANSI-SYM	65.00			8.32(-87.2%)		
B 14-SLG-204	GE	/SEL	ANSI-SYM	65.00			8.25(-87.3%)		
B 14-PMP-201	GE	/SEL	ANSI-SYM	65.00			8.32(-87.2%)		
MCC5		/	ANSI-SYM	65.00			8.32(-87.2%)		

Three Phase Bolted Fault

High Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - High Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus M2 4.160 kV, Zone 1, Area 1
E/Z = 26.015 kA (187.45 MVA) At -82.15DEG, X/R = 7.26
Z1 = 0.072832 +j 0.528490 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 41.624 IASYM Based on X/R ratio = 35.569

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M2		M2	24.25	-81.87	Util	1	1	
M5 B		M2	1.77	-86.04	Branch	1	1	C M5B

*Bus M3-N 4.160 kV, Zone 1, Area 1
E/Z = 39.092 kA (281.67 MVA) At -82.02DEG, X/R = 7.14
Z1 = 0.049276 +j 0.351584 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 62.548 IASYM Based on X/R ratio = 53.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M3-N		M3-N	37.09	-81.87	Util	1	1	
M5 A		M3-N	2.00	-84.83	Branch	1	1	C M5A

*Bus M5 A 4.160 kV, Zone 1, Area 1
E/Z = 35.889 kA (258.59 MVA) At -81.00DEG, X/R = 6.31
Z1 = 0.060509 +j 0.381949 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 57.422 IASYM Based on X/R ratio = 47.781

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0005		M5 A	0.37	-87.04	Motor	1	1	
M EP0006		M5 A	0.37	-87.04	Motor	1	1	
M3-N		M5 A	33.88	-80.77	Branch	1	1	C M5A
P0003		M5 A	0.37	-86.89	Branch	1	1	C P0003B
P0004		M5 A	0.37	-86.92	Branch	1	1	C P0004B
P0007		M5 A	0.28	-86.70	Branch	1	1	C P0007
TX TR-1 H		M5 A	0.25	-70.38	Branch	1	1	C P0008
M5 B		M5 A	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus M5 B 4.160 kV, Zone 1, Area 1
E/Z = 24.607 kA (177.30 MVA) At -81.49DEG, X/R = 6.68
Z1 = 0.083506 +j 0.557796 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 39.371 IASYM Based on X/R ratio = 33.123

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0011		M5 B	0.37	-87.04	Motor	1	1	
M EP0012		M5 B	0.37	-87.04	Motor	1	1	
M EP0014		M5 B	0.30	-86.75	Motor	1	1	
M2		M5 B	22.83	-81.13	Branch	1	1	C M5B
TX TR-2 H		M5 B	0.08	-69.75	Branch	1	1	C P0009
P0010		M5 B	0.37	-86.90	Branch	1	1	C P0010B
P0013		M5 B	0.28	-86.69	Branch	1	1	C P0013
M5 A		M5 B	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus P0003 4.160 kV, Zone 1, Area 1
E/Z = 34.033 kA (245.22 MVA) At -76.20DEG, X/R = 4.07
Z1 = 0.097253 +j 0.396035 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 54.452 IASYM Based on X/R ratio = 41.365

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0003	33.67	-76.08	Branch	1	1	C P0003B
P0003 MODEL		P0003	0.37	-86.95	Branch	1	1	C P0003

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - High Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus P0003 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 31.018 kA (223.49 MVA) At -69.48DEG, X/R = 2.67
Z1 = 0.156831 +j 0.419057 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 49.628 IASYM Based on X/R ratio = 34.569

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0003 MODEL		P0003 MODEL	0.37	-87.04	Motor	1	1	
P0003		P0003 MODEL	30.66	-69.27	Branch	1	1	C P0003

*Bus P0004 4.160 kV, Zone 1, Area 1
E/Z = 33.564 kA (241.84 MVA) At -75.09DEG, X/R = 3.75
Z1 = 0.106428 +j 0.399567 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 53.702 IASYM Based on X/R ratio = 40.093

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0004	33.20	-74.95	Branch	1	1	C P0004B
P0004 MODEL		P0004	0.37	-86.99	Branch	1	1	C P0004

*Bus P0004 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 31.933 kA (230.09 MVA) At -71.42DEG, X/R = 2.97
Z1 = 0.138515 +j 0.411957 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 51.092 IASYM Based on X/R ratio = 36.340

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0004 MODEL		P0004 MODEL	0.37	-87.04	Motor	1	1	
P0004		P0004 MODEL	31.57	-71.23	Branch	1	1	C P0004

*Bus P0007 4.160 kV, Zone 1, Area 1
E/Z = 33.789 kA (243.46 MVA) At -75.61DEG, X/R = 3.90
Z1 = 0.102088 +j 0.397851 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 54.063 IASYM Based on X/R ratio = 40.685

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0007		P0007	0.28	-86.75	Motor	1	1	
M5 A		P0007	33.52	-75.52	Branch	1	1	C P0007

*Bus P0010 4.160 kV, Zone 1, Area 1
E/Z = 23.541 kA (169.62 MVA) At -77.36DEG, X/R = 4.46
Z1 = 0.128965 +j 0.575277 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 37.665 IASYM Based on X/R ratio = 29.176

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 B		P0010	23.17	-77.21	Branch	1	1	C P0010B
P0010 MODEL		P0010	0.37	-86.97	Branch	1	1	C P0010

*Bus P0010 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 22.459 kA (161.82 MVA) At -73.61DEG, X/R = 3.40
Z1 = 0.174329 +j 0.592854 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 35.934 IASYM Based on X/R ratio = 26.272

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0010 MODEL		P0010 MODEL	0.37	-87.04	Motor	1	1	
P0010		P0010 MODEL	22.09	-73.39	Branch	1	1	C P0010

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - High Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus P0013 4.160 kV, Zone 1, Area 1
E/Z = 23.425 kA (168.79 MVA) At -76.93DEG, X/R = 4.31
Z1 = 0.133942 +j 0.577127 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 37.480 IASYM Based on X/R ratio = 28.818

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0013		P0013	0.28	-86.75	Motor	1	1	
M5 B		P0013	23.15	-76.82	Branch	1	1	C P0013

*Bus TX TR-1 H 4.160 kV, Zone 1, Area 1
E/Z = 33.270 kA (239.72 MVA) At -75.95DEG, X/R = 3.99
Z1 = 0.101306 +j 0.404663 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 53.232 IASYM Based on X/R ratio = 40.272

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 L		TX TR-1 H	0.25	-70.41	Branch	1	1	TX TR-1
M5 A		TX TR-1 H	33.02	-75.99	Branch	1	1	C P0008

*Bus TX TR-2 H 4.160 kV, Zone 1, Area 1
E/Z = 23.806 kA (171.53 MVA) At -79.13DEG, X/R = 5.21
Z1 = 0.109922 +j 0.572529 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 38.090 IASYM Based on X/R ratio = 30.485

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 L		TX TR-2 H	0.08	-69.75	Branch	1	1	TX TR-2
M5 B		TX TR-2 H	23.72	-79.16	Branch	1	1	C P0009

Three Phase Bolted Fault

Low Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.314 kA (0.26 MVA) At -5.81DEG, X/R = 0.10
Z1 = 381.372930 +j 38.832586 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 0.502 IASYM Based on X/R ratio = 0.314

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.02	-60.93	Motor	1	1	
MCC1-A		05-PMP-201	0.30	-2.90	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 10.188 kA (8.47 MVA) At -33.13DEG, X/R = 0.65
Z1 = 9.886147 +j 6.452623 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 16.302 IASYM Based on X/R ratio = 10.192

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.02	-60.93	Motor	1	1	
MCC1-B		05-PMP-202	10.17	-33.08	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.501 kA (0.42 MVA) At -7.21DEG, X/R = 0.13
Z1 = 238.379864 +j 30.142864 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.801 IASYM Based on X/R ratio = 0.501

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.04	-65.34	Motor	1	1	
MCC2		05-VLV-201	0.48	-3.66	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 13.379 kA (11.12 MVA) At -41.27DEG, X/R = 0.88
Z1 = 6.757240 +j 5.929869 pu, Z0 = 23.767812 +j 7.336932 pu
1.6*ISYM= 21.407 IASYM Based on X/R ratio = 13.414

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.04	-65.34	Motor	1	1	
MCC2		05-VLV-217	13.35	-41.21	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.321 kA (0.27 MVA) At -8.52DEG, X/R = 0.15
Z1 = 370.462348 +j 55.468661 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.514 IASYM Based on X/R ratio = 0.321

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.04	-65.34	Motor	1	1	
MCC2		05-VLV-219	0.30	-2.94	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.516 kA (0.43 MVA) At -10.78DEG, X/R = 0.19
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.826 IASYM Based on X/R ratio = 0.516

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.07	-68.94	Motor	1	1	
MCC2		11-SLG-201	0.48	-3.66	Branch	1	1	C 11-SLG-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.516 kA (0.43 MVA) At -10.78DEG, X/R = 0.19
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.826 IASYM Based on X/R ratio = 0.516

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.07	-68.94	Motor	1	1	
MCC2		11-SLG-202	0.48	-3.66	Branch	1	1	C 11-SLG-202

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.808 kA (0.67 MVA) At -12.01DEG, X/R = 0.21
Z1 = 145.669227 +j 30.995287 pu, Z0 = 623.460159 +j 49.023445 pu
1.6*ISYM= 1.292 IASYM Based on X/R ratio = 0.808

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.09	-70.94	Motor	1	1	
MCC2		11-SLG-203	0.76	-5.97	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 1.246 kA (1.04 MVA) At -12.85DEG, X/R = 0.23
Z1 = 94.140632 +j 21.473282 pu, Z0 = 393.032607 +j 46.567932 pu
1.6*ISYM= 1.993 IASYM Based on X/R ratio = 1.246

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.09	-70.94	Motor	1	1	
MCC2		11-SLG-204	1.20	-9.04	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.516 kA (0.43 MVA) At -10.78DEG, X/R = 0.19
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.826 IASYM Based on X/R ratio = 0.516

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.07	-68.94	Motor	1	1	
MCC2		11-SLG-205	0.48	-3.66	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.506 kA (0.42 MVA) At -8.41DEG, X/R = 0.15
Z1 = 235.262963 +j 34.801894 pu, Z0 = 2.012588 +j 6.441841 pu
1.6*ISYM= 0.809 IASYM Based on X/R ratio = 0.506

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.05	-66.97	Motor	1	1	
MCC2		11-SLG-207	0.48	-3.66	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.259 kA (0.22 MVA) At -4.42DEG, X/R = 0.08
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.414 IASYM Based on X/R ratio = 0.259

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.01	-54.07	Motor	1	1	
MCC2		12-BFG-201	0.25	-2.80	Branch	1	1	C 12-BFG-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.259 kA (0.22 MVA) At -4.42DEG, X/R = 0.08
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.414 IASYM Based on X/R ratio = 0.259

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.01	-54.07	Motor	1	1	
MCC2		12-BFG-202	0.25	-2.80	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.259 kA (0.22 MVA) At -4.42DEG, X/R = 0.08
Z1 = 463.246723 +j 35.834661 pu, Z0 = 2.012588 +j 6.441841 pu
1.6*ISYM= 0.414 IASYM Based on X/R ratio = 0.259

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.01	-54.07	Motor	1	1	
MCC2		12-BFG-203	0.25	-2.80	Branch	1	1	C 12-BFG-203

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.58DEG, X/R = 0.12
Z1 = 378.250631 +j 43.660466 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.02	-62.65	Motor	1	1	
MCC1-A		12-CNV-201	0.30	-2.90	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.266 kA (0.22 MVA) At -7.24DEG, X/R = 0.13
Z1 = 449.373306 +j 57.056363 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.425 IASYM Based on X/R ratio = 0.266

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.02	-62.65	Motor	1	1	
MCC1-B		12-CNV-202	0.25	-2.85	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.04DEG, X/R = 0.09
Z1 = 384.502474 +j 33.897177 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 0.499 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.01	-58.39	Motor	1	1	
MCC1-A		12-FAN-201	0.30	-2.90	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.13DEG, X/R = 0.09
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.498 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.01	-58.39	Motor	1	1	
MCC1-B		12-FAN-202	0.30	-3.00	Branch	1	1	C 12-FAN-202

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Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.35DEG, X/R = 0.08
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.01	-54.07	Motor	1	1	
MCC1-B		12-FAN-204	0.30	-3.00	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.26DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.01	-54.07	Motor	1	1	
MCC1-A		12-FAN-205	0.30	-2.90	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.04DEG, X/R = 0.09
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.499 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.01	-58.39	Motor	1	1	
MCC1-A		12-FAN-205A	0.30	-2.90	Branch	1	1	C 12-FAN-205A

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.13DEG, X/R = 0.09
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.498 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.01	-58.39	Motor	1	1	
MCC1-B		12-FAN-206	0.30	-3.00	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 10.182 kA (8.47 MVA) At -33.09DEG, X/R = 0.65
Z1 = 9.897180 +j 6.449257 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 16.291 IASYM Based on X/R ratio = 10.186

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.01	-54.07	Motor	1	1	
MCC1-B		12-FAN-207	10.17	-33.07	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.35DEG, X/R = 0.08
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.01	-54.07	Motor	1	1	
MCC1-B		12-FAN-208	0.30	-3.00	Branch	1	1	C 12-FAN-208

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 11.215 kA (9.32 MVA) At -32.42DEG, X/R = 0.64
Z1 = 9.052782 +j 5.750364 pu, Z0 = 32.798952 +j 6.479988 pu
1.6*ISYM= 17.945 IASYM Based on X/R ratio = 11.219

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	11.22	-32.42	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 10.786 kA (8.97 MVA) At -35.14DEG, X/R = 0.70
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 17.257 IASYM Based on X/R ratio = 10.793

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	10.79	-35.14	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 10.786 kA (8.97 MVA) At -35.14DEG, X/R = 0.70
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 17.257 IASYM Based on X/R ratio = 10.793

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	10.79	-35.14	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.26DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.01	-54.07	Motor	1	1	
MCC1-A		12-GCL-201	0.30	-2.90	Branch	1	1	C 12-GCL-201

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.26DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.01	-54.07	Motor	1	1	
MCC1-A		12-GCL-202	0.30	-2.90	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -4.35DEG, X/R = 0.08
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.01	-54.07	Motor	1	1	
MCC1-B		12-GCL-203	0.30	-3.00	Branch	1	1	C 12-GCL-203

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 20.050 kA (16.67 MVA) At -70.44DEG, X/R = 2.81
Z1 = 2.008514 +j 5.652957 pu, Z0 = 4.621874 +j 6.090361 pu
1.6*ISYM= 32.079 IASYM Based on X/R ratio = 22.570

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	20.05	-70.44	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.58DEG, X/R = 0.12
Z1 = 378.234278 +j 43.615388 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.30	-2.90	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.02	-62.57	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.67DEG, X/R = 0.12
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.30	-3.00	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.02	-62.57	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.67DEG, X/R = 0.12
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.30	-3.00	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.02	-62.57	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 1.047 kA (0.87 MVA) At -12.48DEG, X/R = 0.22
Z1 = 112.140733 +j 24.815563 pu, Z0 = 470.442566 +j 53.461650 pu
1.6*ISYM= 1.676 IASYM Based on X/R ratio = 1.047

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	1.00	-8.41	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.08	-69.99	Branch	1	1	C 12-WSC-201

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 1.046 kA (0.87 MVA) At -12.78DEG, X/R = 0.23
Z1 = 112.112816 +j 25.437895 pu, Z0 = 470.593813 +j 53.677182 pu
1.6*ISYM= 1.674 IASYM Based on X/R ratio = 1.046

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	1.00	-8.73	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.08	-69.99	Branch	1	1	C 12-WSC-202

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.259 kA (0.22 MVA) At -4.39DEG, X/R = 0.08
Z1 = 463.083994 +j 35.579672 pu, Z0 = ********** +j 75.489002 pu
1.6*ISYM= 0.414 IASYM Based on X/R ratio = 0.259

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.25	-2.77	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.01	-54.04	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.266 kA (0.22 MVA) At -7.23DEG, X/R = 0.13
Z1 = 449.351620 +j 56.992054 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.425 IASYM Based on X/R ratio = 0.266

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.25	-2.85	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.02	-62.57	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -6.65DEG, X/R = 0.12
Z1 = 386.149800 +j 44.990795 pu, Z0 = ********** +j 65.079169 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.02	-62.65	Motor	1	1	
12-LCP-2001		12-MBS-201	0.30	-2.89	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -6.74DEG, X/R = 0.12
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.02	-62.65	Motor	1	1	
12-LCP-2002		12-MBS-202	0.30	-2.98	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.309 kA (0.26 MVA) At -6.74DEG, X/R = 0.12
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.495 IASYM Based on X/R ratio = 0.309

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.02	-62.65	Motor	1	1	
12-LCP-2003		12-MBS-203	0.30	-2.98	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 13.839 kA (11.51 MVA) At -40.85DEG, X/R = 0.86
Z1 = 6.575074 +j 5.684628 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 22.142 IASYM Based on X/R ratio = 13.872

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.04	-65.34	Motor	1	1	
MCC1-A		12-PMP-201	13.81	-40.79	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 13.090 kA (10.88 MVA) At -43.74DEG, X/R = 0.96
Z1 = 6.639337 +j 6.352815 pu, Z0 = 23.125038 +j 6.420968 pu
1.6*ISYM= 20.943 IASYM Based on X/R ratio = 13.144

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.04	-65.34	Motor	1	1	
MCC1-B		12-PMP-202	13.06	-43.68	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 4.395 kA (3.65 MVA) At -34.43DEG, X/R = 0.69
Z1 = 22.573509 +j 15.472604 pu, Z0 = 98.450562 +j 41.253494 pu
1.6*ISYM= 7.032 IASYM Based on X/R ratio = 4.397

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.46	-81.61	Motor	1	1	
MCC1-A		12-PMP-203	4.10	-29.73	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 20.419 kA (16.98 MVA) At -73.55DEG, X/R = 3.39
Z1 = 1.668413 +j 5.649442 pu, Z0 = 3.357671 +j 6.101093 pu
1.6*ISYM= 32.670 IASYM Based on X/R ratio = 23.864

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.46	-81.61	Motor	1	1	
MCC1-A		12-PMP-204	19.97	-73.36	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 3.747 kA (3.11 MVA) At -34.82DEG, X/R = 0.70
Z1 = 26.355572 +j 18.332175 pu, Z0 = 118.048204 +j 48.657651 pu
1.6*ISYM= 5.995 IASYM Based on X/R ratio = 3.749

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.46	-81.61	Motor	1	1	
MCC1-B		12-PMP-205	3.45	-29.28	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.04DEG, X/R = 0.09
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.499 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.01	-58.39	Motor	1	1	
MCC1-A		12-PMP-206	0.30	-2.90	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 10.185 kA (8.47 MVA) At -33.11DEG, X/R = 0.65
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 16.297 IASYM Based on X/R ratio = 10.189

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.01	-58.39	Motor	1	1	
MCC1-B		12-PMP-207	10.17	-33.08	Branch	1	1	C 12-PMP-207

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.312 kA (0.26 MVA) At -5.04DEG, X/R = 0.09
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.499 IASYM Based on X/R ratio = 0.312

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.01	-58.39	Motor	1	1	
MCC1-A		12-PMP-213	0.30	-2.90	Branch	1	1	C 12-PMP-213

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 10.185 kA (8.47 MVA) At -33.11DEG, X/R = 0.65
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 16.297 IASYM Based on X/R ratio = 10.189

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.01	-58.39	Motor	1	1	
MCC1-B		12-PMP-214	10.17	-33.08	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.254 kA (0.21 MVA) At -4.41DEG, X/R = 0.08
Z1 = 471.339393 +j 36.370216 pu, Z0 = ********** +j 76.775610 pu
1.6*ISYM= 0.407 IASYM Based on X/R ratio = 0.254

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.01	-54.07	Motor	1	1	
12-LCP-2006		12-SCP-201	0.25	-2.76	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.261 kA (0.22 MVA) At -7.30DEG, X/R = 0.13
Z1 = 457.108742 +j 58.554577 pu, Z0 = ********** +j 76.991142 pu
1.6*ISYM= 0.418 IASYM Based on X/R ratio = 0.261

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.02	-62.65	Motor	1	1	
12-LCP-2007		12-SCP-202	0.25	-2.84	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.256 kA (0.21 MVA) At -3.49DEG, X/R = 0.06
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.410 IASYM Based on X/R ratio = 0.256

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	-43.87	Motor	1	1	
MCC2		12-SDG-201	0.25	-2.80	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.256 kA (0.21 MVA) At -3.49DEG, X/R = 0.06
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.410 IASYM Based on X/R ratio = 0.256

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	-43.87	Motor	1	1	
MCC2		12-SDG-202	0.25	-2.80	Branch	1	1	C 12-SDG-202

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.307 kA (0.26 MVA) At -3.51DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.491 IASYM Based on X/R ratio = 0.307

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	-43.87	Motor	1	1	
MCC2		12-SDG-209	0.30	-2.94	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.307 kA (0.26 MVA) At -3.51DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.491 IASYM Based on X/R ratio = 0.307

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	-43.87	Motor	1	1	
MCC2		12-SDG-210	0.30	-2.94	Branch	1	1	C 12-SDG-210

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.307 kA (0.26 MVA) At -3.51DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.491 IASYM Based on X/R ratio = 0.307

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	-43.87	Motor	1	1	
MCC2		12-SDG-211	0.30	-2.94	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-204	0.48	-3.66	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-205	0.48	-3.66	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-208	0.48	-3.66	Branch	1	1	C 12-SLG-208

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-210	0.48	-3.66	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-211	0.48	-3.66	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-212	0.48	-3.66	Branch	1	1	C 12-SLG-212

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-213	0.48	-3.66	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-214	0.48	-3.66	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-215	0.48	-3.66	Branch	1	1	C 12-SLG-215

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.495 kA (0.41 MVA) At -5.98DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.793 IASYM Based on X/R ratio = 0.495

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-216	0.48	-3.66	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.62DEG, X/R = 0.12
Z1 = 378.389323 +j 43.906929 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.02	-62.65	Motor	1	1	
MCC2		12-SLG-217	0.30	-2.94	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.327 kA (0.27 MVA) At -10.36DEG, X/R = 0.18
Z1 = 362.310039 +j 66.267243 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.523 IASYM Based on X/R ratio = 0.327

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.05	-66.97	Motor	1	1	
MCC2		12-VLV-218	0.30	-2.94	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 1.029 kA (0.86 MVA) At -12.51DEG, X/R = 0.22
Z1 = 114.073162 +j 25.312243 pu, Z0 = 479.045007 +j 54.344424 pu
1.6*ISYM= 1.647 IASYM Based on X/R ratio = 1.029

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.08	-70.06	Motor	1	1	
12-LCP-2004		12-WSC-201	0.99	-8.37	Branch	1	1	C 12-WSC-201

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 1.028 kA (0.86 MVA) At -12.81DEG, X/R = 0.23
Z1 = 114.043583 +j 25.933673 pu, Z0 = 479.196253 +j 54.559956 pu
1.6*ISYM= 1.646 IASYM Based on X/R ratio = 1.028

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.08	-70.06	Motor	1	1	
12-LCP-2005		12-WSC-202	0.99	-8.67	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 6.953 kA (5.78 MVA) At -52.03DEG, X/R = 1.28
Z1 = 10.642859 +j 13.638007 pu, Z0 = 40.773303 +j 40.052433 pu
1.6*ISYM= 11.125 IASYM Based on X/R ratio = 7.060

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	6.95	-52.03	Branch	1	1	C 14-HPU-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 7.760 kA (6.45 MVA) At -59.41DEG, X/R = 1.69
Z1 = 7.887646 +j 13.343741 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 12.416 IASYM Based on X/R ratio = 8.065

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	7.76	-59.41	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 7.778 kA (6.47 MVA) At -59.69DEG, X/R = 1.71
Z1 = 7.804547 +j 13.349366 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 12.446 IASYM Based on X/R ratio = 8.094

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.21	-78.61	Motor	1	1	
MCC5		14-PMP-202	7.58	-59.17	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 5.329 kA (4.43 MVA) At -36.54DEG, X/R = 0.74
Z1 = 18.133992 +j 13.435666 pu, Z0 = 70.935090 +j 39.211628 pu
1.6*ISYM= 8.527 IASYM Based on X/R ratio = 5.334

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.01	-58.39	Motor	1	1	
MCC5		14-PMP-203	5.32	-36.48	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 4.647 kA (3.86 MVA) At -31.72DEG, X/R = 0.62
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 7.435 IASYM Based on X/R ratio = 4.648

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.02	-62.65	Motor	1	1	
MCC5		14-SLG-201	4.63	-31.57	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 4.647 kA (3.86 MVA) At -31.72DEG, X/R = 0.62
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 7.435 IASYM Based on X/R ratio = 4.648

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.02	-62.65	Motor	1	1	
MCC5		14-SLG-202	4.63	-31.57	Branch	1	1	C 14-SLG-202

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 5.743 kA (4.77 MVA) At -39.76DEG, X/R = 0.83
Z1 = 16.100388 +j 13.394830 pu, Z0 = 63.119462 +j 38.940173 pu
1.6*ISYM= 9.189 IASYM Based on X/R ratio = 5.754

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.05	-66.97	Motor	1	1	
MCC5		14-SLG-203	5.70	-39.54	Branch	1	1	C 14-SLG-203

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 5.255 kA (4.37 MVA) At -36.27DEG, X/R = 0.73
Z1 = 18.454499 +j 13.541255 pu, Z0 = 73.008199 +j 39.310927 pu
1.6*ISYM= 8.408 IASYM Based on X/R ratio = 5.259

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.07	-68.94	Motor	1	1	
MCC5		14-SLG-204	5.20	-35.85	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.179 kA (0.79 MVA) At -57.74DEG, X/R = 1.58
Z1 = 67.985366 +j 107.694451 pu, Z0 = 54.005787 +j 86.528572 pu
1.6*ISYM= 3.487 IASYM Based on X/R ratio = 2.250

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.18	-57.74	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 5.563 kA (2.00 MVA) At -63.18DEG, X/R = 1.98
Z1 = 22.517248 +j 44.529148 pu, Z0 = 17.344422 +j 32.707900 pu
1.6*ISYM= 8.900 IASYM Based on X/R ratio = 5.896

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	5.56	-63.18	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.344 kA (1.93 MVA) At -61.09DEG, X/R = 1.81
Z1 = 25.106260 +j 45.469542 pu, Z0 = 27.700492 +j 36.469481 pu
1.6*ISYM= 8.550 IASYM Based on X/R ratio = 5.599

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.34	-61.09	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.026 kA (0.37 MVA) At -56.72DEG, X/R = 1.52
Z1 = 148.466332 +j 226.151249 pu, Z0 = 116.599876 +j 181.028260 pu
1.6*ISYM= 1.642 IASYM Based on X/R ratio = 1.055

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.03	-56.72	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 21.558 kA (17.92 MVA) At -78.02DEG, X/R = 4.71
Z1 = 1.157685 +j 5.457953 pu, Z0 = 1.218550 +j 5.310329 pu
1.6*ISYM= 34.493 IASYM Based on X/R ratio = 27.035

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.04	-65.26	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.02	-58.00	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.02	-58.95	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.01	-56.24	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.01	-52.70	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	1.24	-64.45	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.01	-56.24	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.02	-58.87	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.01	-56.24	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.08	-65.87	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.44	-76.89	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.01	-52.70	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.01	-52.41	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.46	-81.50	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.01	-52.70	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.01	-56.24	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.02	-58.95	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	19.19	-79.10	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 19.251 kA (16.01 MVA) At -78.70DEG, X/R = 5.01
Z1 = 1.223940 +j 6.126923 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 30.802 IASYM Based on X/R ratio = 24.449

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.02	-60.86	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.02	-58.87	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.02	-58.87	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.08	-65.87	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.02	-58.25	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.02	-58.17	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.04	-65.26	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.43	-76.00	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.01	-58.34	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.01	-52.70	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.01	-52.70	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.01	-54.04	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.01	-56.24	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.01	-58.34	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.01	-56.24	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.01	-52.70	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	18.52	-79.07	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.316 kA (0.26 MVA) At -6.58DEG, X/R = 0.12
Z1 = 378.250631 +j 43.660466 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.505 IASYM Based on X/R ratio = 0.316

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.02	-62.65	Motor	1	1	
MCC1-A		MCC1-SPARE	0.30	-2.90	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 20.531 kA (17.07 MVA) At -76.77DEG, X/R = 4.25
Z1 = 1.340811 +j 5.703031 pu, Z0 = 2.012568 +j 6.441825 pu
1.6*ISYM= 32.850 IASYM Based on X/R ratio = 25.188

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.04	-62.18	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	19.32	-77.56	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.38	-72.12	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.01	-52.44	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	-43.17	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	-43.17	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.01	-52.44	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.01	-52.44	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	-43.28	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	-43.28	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.03	-61.77	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.07	-61.78	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.07	-61.78	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	-43.28	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.07	-61.78	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.09	-64.84	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.09	-67.08	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.02	-60.31	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.02	-58.95	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.04	-65.26	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.03	-59.74	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.04	-59.51	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	-28.47	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	-28.47	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 8.322 kA (6.92 MVA) At -63.98DEG, X/R = 2.05
Z1 = 6.340684 +j 12.989187 pu, Z0 = 23.564511 +j 37.457161 pu
1.6*ISYM= 13.314 IASYM Based on X/R ratio = 8.865

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	7.94	-63.56	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.01	-58.32	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.02	-62.50	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.02	-62.50	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.21	-78.47	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.05	-66.77	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.07	-68.56	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 10.286 kA (8.55 MVA) At -31.01DEG, X/R = 0.60
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 16.458 IASYM Based on X/R ratio = 10.288

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	-28.48	Motor	1	1	
MCC2		RSFDS PMP1	10.28	-31.01	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 10.286 kA (8.55 MVA) At -31.01DEG, X/R = 0.60
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 16.458 IASYM Based on X/R ratio = 10.288

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	-28.48	Motor	1	1	
MCC2		RSFDS PMP2	10.28	-31.01	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 22.016 kA (18.30 MVA) At -78.61DEG, X/R = 4.96
Z1 = 1.079100 +j 5.355795 pu, Z0 = 0.840447 +j 4.771521 pu
1.6*ISYM= 35.225 IASYM Based on X/R ratio = 27.910

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	19.66	-79.73	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	2.39	-69.33	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 19.866 kA (16.52 MVA) At -79.54DEG, X/R = 5.42
Z1 = 1.099070 +j 5.954104 pu, Z0 = 0.000000 +j 0.000000 pu
1.6*ISYM= 31.785 IASYM Based on X/R ratio = 25.647

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	19.14	-79.93	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.74	-69.40	Branch	1	1	C P0802

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Momentary Report

First Cycle Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 16.287 kA (13.54 MVA) At -52.97DEG, X/R = 1.33
Z1 = 4.448047 +j 5.895592 pu, Z0 = 0.000164 +j -0.000015 pu
1.6*ISYM= 26.058 IASYM Based on X/R ratio = 16.572

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	16.29	-52.97	Branch	1	1	C TX-1

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 18.773 kA (15.61 MVA) At -70.75DEG, X/R = 2.86
Z1 = 2.111912 +j 6.049172 pu, Z0 = 0.000030 +j 0.000017 pu
1.6*ISYM= 30.036 IASYM Based on X/R ratio = 21.205

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	18.77	-70.75	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 6.934 kA (5.76 MVA) At -49.42DEG, X/R = 1.17
Z1 = 11.285042 +j 13.174564 pu, Z0 = 0.001230 +j 0.000187 pu
1.6*ISYM= 11.094 IASYM Based on X/R ratio = 7.007

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	6.93	-49.42	Branch	1	1	C TX-3

Three Phase Bolted Fault

Low Voltage Interrupting Report

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916527 +j 20.676252 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.00	0.00	Motor	1	1	
MCC1-A		05-PMP-201	0.30	-2.99	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 10.074 kA (8.375 MVA) At -33.91DEG, X/R = 1.21
Z1 = 9.909553 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.00	0.00	Motor	1	1	
MCC1-B		05-PMP-202	10.07	-33.91	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578545 +j 16.509582 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.00	0.00	Motor	1	1	
MCC2		05-VLV-201	0.48	-3.80	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 12.730 kA (10.583 MVA) At -43.97DEG, X/R = 1.39
Z1 = 6.800411 +j 6.560332 pu, Z0 = 23.767812 +j 7.336932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.00	0.00	Motor	1	1	
MCC2		05-VLV-217	12.73	-43.97	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.114088 +j 20.961074 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.00	0.00	Motor	1	1	
MCC2		05-VLV-219	0.30	-3.03	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.00	0.00	Motor	1	1	
MCC2		11-SLG-201	0.48	-3.80	Branch	1	1	C 11-SLG-201

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.00	0.00	Motor	1	1	
MCC2		11-SLG-202	0.48	-3.80	Branch	1	1	C 11-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.763 kA (0.634 MVA) At -6.18DEG, X/R = 1.01
Z1 = 156.722379 +j 16.983596 pu, Z0 = 623.460159 +j 49.023445 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.00	0.00	Motor	1	1	
MCC2		11-SLG-203	0.76	-6.18	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 1.197 kA (0.995 MVA) At -9.38DEG, X/R = 1.01
Z1 = 99.116355 +j 16.368718 pu, Z0 = 393.032607 +j 46.567932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.00	0.00	Motor	1	1	
MCC2		11-SLG-204	1.20	-9.38	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.00	0.00	Motor	1	1	
MCC2		11-SLG-205	0.48	-3.80	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578281 +j 16.510131 pu, Z0 = 2.012588 +j 6.441841 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.00	0.00	Motor	1	1	
MCC2		11-SLG-207	0.48	-3.80	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.00	0.00	Motor	1	1	
MCC2		12-BFG-201	0.25	-2.88	Branch	1	1	C 12-BFG-201

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.00	0.00	Motor	1	1	
MCC2		12-BFG-202	0.25	-2.88	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = 2.012588 +j 6.441841 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.00	0.00	Motor	1	1	
MCC2		12-BFG-203	0.25	-2.88	Branch	1	1	C 12-BFG-203

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916251 +j 20.676806 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.00	0.00	Motor	1	1	
MCC1-A		12-CNV-201	0.30	-2.99	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.00	0.00	Motor	1	1	
MCC1-B		12-CNV-202	0.25	-2.88	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-FAN-201	0.30	-2.99	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-FAN-202	0.30	-3.03	Branch	1	1	C 12-FAN-202

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.00	0.00	Motor	1	1	
MCC1-B		12-FAN-204	0.30	-3.03	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.00	0.00	Motor	1	1	
MCC1-A		12-FAN-205	0.30	-2.99	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.00	0.00	Motor	1	1	
MCC1-A		12-FAN-205A	0.30	-2.99	Branch	1	1	C 12-FAN-205A

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.00	0.00	Motor	1	1	
MCC1-B		12-FAN-206	0.30	-3.03	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 10.074 kA (8.375 MVA) At -33.91DEG, X/R = 1.21
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.00	0.00	Motor	1	1	
MCC1-B		12-FAN-207	10.07	-33.91	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.00	0.00	Motor	1	1	
MCC1-B		12-FAN-208	0.30	-3.03	Branch	1	1	C 12-FAN-208

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 10.875 kA (9.042 MVA) At -35.01DEG, X/R = 1.22
Z1 = 9.058211 +j 6.346099 pu, Z0 = 32.798952 +j 6.479988 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	10.88	-35.01	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 10.667 kA (8.868 MVA) At -36.02DEG, X/R = 1.24
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	10.67	-36.02	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 10.667 kA (8.868 MVA) At -36.02DEG, X/R = 1.24
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	10.67	-36.02	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GCL-201	0.30	-2.99	Branch	1	1	C 12-GCL-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.00	0.00	Motor	1	1	
MCC1-A		12-GCL-202	0.30	-2.99	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GCL-203	0.30	-3.03	Branch	1	1	C 12-GCL-203

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 18.321 kA (15.232 MVA) At -72.14DEG, X/R = 3.26
Z1 = 2.013944 +j 6.248693 pu, Z0 = 4.621874 +j 6.090361 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	18.32	-72.14	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.30	-2.99	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.00	0.00	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.30	-3.03	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.00	0.00	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.30	-3.03	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.00	0.00	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 1.004 kA (0.834 MVA) At -8.68DEG, X/R = 1.01
Z1 = 118.468762 +j 18.092332 pu, Z0 = 470.442566 +j 53.461650 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	1.00	-8.68	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.00	0.00	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 1.003 kA (0.834 MVA) At -8.81DEG, X/R = 1.01
Z1 = 118.530592 +j 18.377794 pu, Z0 = 470.593813 +j 53.677182 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	1.00	-8.81	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.00	0.00	Branch	1	1	C 12-WSC-202

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.85DEG, X/R = 1.00
Z1 = 474.867723 +j 23.599672 pu, Z0 = ********** +j 75.489002 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.25	-2.84	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.00	0.00	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.25	-2.88	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.00	0.00	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.297 kA (0.247 MVA) At -2.97DEG, X/R = 1.00
Z1 = 404.600785 +j 20.998573 pu, Z0 = ********** +j 65.079169 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.00	0.00	Motor	1	1	
12-LCP-2001		12-MBS-201	0.30	-2.97	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.297 kA (0.247 MVA) At -3.01DEG, X/R = 1.00
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.00	0.00	Motor	1	1	
12-LCP-2002		12-MBS-202	0.30	-3.01	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.297 kA (0.247 MVA) At -3.01DEG, X/R = 1.00
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.00	0.00	Motor	1	1	
12-LCP-2003		12-MBS-203	0.30	-3.01	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 13.203 kA (10.977 MVA) At -43.56DEG, X/R = 1.38
Z1 = 6.601907 +j 6.277461 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.00	0.00	Motor	1	1	
MCC1-A		12-PMP-201	13.20	-43.56	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 12.860 kA (10.692 MVA) At -44.56DEG, X/R = 1.40
Z1 = 6.663741 +j 6.562924 pu, Z0 = 23.125038 +j 6.420968 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.00	0.00	Motor	1	1	
MCC1-B		12-PMP-202	12.86	-44.56	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 4.179 kA (3.474 MVA) At -32.59DEG, X/R = 1.43
Z1 = 24.251870 +j 15.504387 pu, Z0 = 98.450562 +j 41.253494 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.18	-81.61	Motor	1	1	
MCC1-A		12-PMP-203	4.06	-30.64	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 18.584 kA (15.451 MVA) At -74.89DEG, X/R = 3.85
Z1 = 1.687348 +j 6.248422 pu, Z0 = 3.357671 +j 6.101093 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.18	-81.61	Motor	1	1	
MCC1-A		12-PMP-204	18.40	-74.82	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 3.559 kA (2.959 MVA) At -31.80DEG, X/R = 1.46
Z1 = 28.723316 +j 17.807529 pu, Z0 = 118.048204 +j 48.657651 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.18	-81.61	Motor	1	1	
MCC1-B		12-PMP-205	3.44	-29.47	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.00	0.00	Motor	1	1	
MCC1-A		12-PMP-206	0.30	-2.99	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 10.074 kA (8.375 MVA) At -33.91DEG, X/R = 1.21
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.00	0.00	Motor	1	1	
MCC1-B		12-PMP-207	10.07	-33.91	Branch	1	1	C 12-PMP-207

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.00	0.00	Motor	1	1	
MCC1-A		12-PMP-213	0.30	-2.99	Branch	1	1	C 12-PMP-213

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 10.074 kA (8.375 MVA) At -33.91DEG, X/R = 1.21
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.00	0.00	Motor	1	1	
MCC1-B		12-PMP-214	10.07	-33.91	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.248 kA (0.207 MVA) At -2.83DEG, X/R = 1.00
Z1 = 483.552287 +j 23.921373 pu, Z0 = ********** +j 76.775610 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.00	0.00	Motor	1	1	
12-LCP-2006		12-SCP-201	0.25	-2.83	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.248 kA (0.207 MVA) At -2.87DEG, X/R = 1.00
Z1 = 483.612838 +j 24.209302 pu, Z0 = ********** +j 76.991142 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.00	0.00	Motor	1	1	
12-LCP-2007		12-SCP-202	0.25	-2.87	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	0.00	Motor	1	1	
MCC2		12-SDG-201	0.25	-2.88	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.253 kA (0.210 MVA) At -2.88DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	0.00	Motor	1	1	
MCC2		12-SDG-202	0.25	-2.88	Branch	1	1	C 12-SDG-202

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	0.00	Motor	1	1	
MCC2		12-SDG-209	0.30	-3.03	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	0.00	Motor	1	1	
MCC2		12-SDG-210	0.30	-3.03	Branch	1	1	C 12-SDG-210

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	0.00	Motor	1	1	
MCC2		12-SDG-211	0.30	-3.03	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.00	0.00	Motor	1	1	
MCC2		12-SLG-204	0.48	-3.80	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.00	0.00	Motor	1	1	
MCC2		12-SLG-205	0.48	-3.80	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.00	0.00	Motor	1	1	
MCC2		12-SLG-208	0.48	-3.80	Branch	1	1	C 12-SLG-208

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.00	0.00	Motor	1	1	
MCC2		12-SLG-210	0.48	-3.80	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.00	0.00	Motor	1	1	
MCC2		12-SLG-211	0.48	-3.80	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.00	0.00	Motor	1	1	
MCC2		12-SLG-212	0.48	-3.80	Branch	1	1	C 12-SLG-212

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.00	0.00	Motor	1	1	
MCC2		12-SLG-213	0.48	-3.80	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.00	0.00	Motor	1	1	
MCC2		12-SLG-214	0.48	-3.80	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.00	0.00	Motor	1	1	
MCC2		12-SLG-215	0.48	-3.80	Branch	1	1	C 12-SLG-215

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.483 kA (0.401 MVA) At -3.80DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.00	0.00	Motor	1	1	
MCC2		12-SLG-216	0.48	-3.80	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.114750 +j 20.959677 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.00	0.00	Motor	1	1	
MCC2		12-SLG-217	0.30	-3.03	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -3.03DEG, X/R = 1.00
Z1 = 396.113455 +j 20.962481 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.00	0.00	Motor	1	1	
MCC2		12-VLV-218	0.30	-3.03	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 0.986 kA (0.820 MVA) At -8.63DEG, X/R = 1.01
Z1 = 120.619357 +j 18.313056 pu, Z0 = 479.045007 +j 54.344424 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.00	0.00	Motor	1	1	
12-LCP-2004		12-WSC-201	0.99	-8.63	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 0.985 kA (0.819 MVA) At -8.76DEG, X/R = 1.01
Z1 = 120.681186 +j 18.598518 pu, Z0 = 479.196253 +j 54.559956 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.00	0.00	Motor	1	1	
12-LCP-2005		12-WSC-202	0.99	-8.76	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 6.529 kA (5.428 MVA) At -53.14DEG, X/R = 1.67
Z1 = 11.051787 +j 14.739146 pu, Z0 = 40.773303 +j 40.052433 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	6.53	-53.14	Branch	1	1	C 14-HPU-201

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 7.221 kA (6.003 MVA) At -60.13DEG, X/R = 2.01
Z1 = 8.296574 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	7.22	-60.13	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 7.221 kA (6.003 MVA) At -60.13DEG, X/R = 2.01
Z1 = 8.296565 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.00	0.00	Motor	1	1	
MCC5		14-PMP-202	7.22	-60.13	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 5.098 kA (4.238 MVA) At -38.01DEG, X/R = 1.27
Z1 = 18.592251 +j 14.528943 pu, Z0 = 70.935090 +j 39.211628 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.00	0.00	Motor	1	1	
MCC5		14-PMP-203	5.10	-38.01	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 4.472 kA (3.718 MVA) At -33.07DEG, X/R = 1.19
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.00	0.00	Motor	1	1	
MCC5		14-SLG-201	4.47	-33.07	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 4.472 kA (3.718 MVA) At -33.07DEG, X/R = 1.19
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.00	0.00	Motor	1	1	
MCC5		14-SLG-202	4.47	-33.07	Branch	1	1	C 14-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 5.456 kA (4.536 MVA) At -41.00DEG, X/R = 1.33
Z1 = 16.638314 +j 14.461084 pu, Z0 = 63.119462 +j 38.940173 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.00	0.00	Motor	1	1	
MCC5		14-SLG-203	5.46	-41.00	Branch	1	1	C 14-SLG-203

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 5.007 kA (4.163 MVA) At -37.29DEG, X/R = 1.26
Z1 = 19.110481 +j 14.553778 pu, Z0 = 73.008199 +j 39.310927 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.00	0.00	Motor	1	1	
MCC5		14-SLG-204	5.01	-37.29	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.170 kA (0.782 MVA) At -57.88DEG, X/R = 1.88
Z1 = 68.006174 +j 108.327979 pu, Z0 = 54.005787 +j 86.528572 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.17	-57.88	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 5.499 kA (1.981 MVA) At -63.48DEG, X/R = 2.24
Z1 = 22.538056 +j 45.162676 pu, Z0 = 17.344422 +j 32.707900 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	5.50	-63.48	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.287 kA (1.905 MVA) At -61.41DEG, X/R = 2.09
Z1 = 25.127068 +j 46.103070 pu, Z0 = 27.700492 +j 36.469481 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.29	-61.41	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.022 kA (0.368 MVA) At -56.77DEG, X/R = 1.82
Z1 = 148.875259 +j 227.252388 pu, Z0 = 116.599876 +j 181.028260 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.02	-56.77	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 19.512 kA (16.222 MVA) At -79.12DEG, X/R = 5.31
Z1 = 1.163115 +j 6.053688 pu, Z0 = 1.218550 +j 5.310329 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.00	0.00	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.00	0.00	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	0.00	-67.80	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.00	0.00	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.00	0.00	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.00	0.00	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.00	0.00	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.18	-79.67	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.00	0.00	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.18	-81.57	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.00	0.00	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.00	0.00	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.00	0.00	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	19.15	-79.10	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 18.630 kA (15.488 MVA) At -79.06DEG, X/R = 5.28
Z1 = 1.224949 +j 6.339151 pu, Z0 = 0.000000 +j 0.000000 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.00	0.00	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.00	0.00	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.00	0.00	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.00	0.00	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.00	0.00	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.18	-79.29	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.00	0.00	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.00	0.00	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.00	0.00	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.00	0.00	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.00	0.00	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.00	0.00	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	18.45	-79.06	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.303 kA (0.252 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.00	0.00	Motor	1	1	
MCC1-A		MCC1-SPARE	0.30	-2.99	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 18.558 kA (15.429 MVA) At -77.87DEG, X/R = 4.77
Z1 = 1.361619 +j 6.336559 pu, Z0 = 2.012568 +j 6.441825 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	18.56	-77.87	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.00	0.00	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.00	0.00	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	0.00	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	0.00	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.00	0.00	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.00	0.00	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	0.00	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	0.00	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.00	0.00	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	0.00	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.00	0.00	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.00	0.00	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.00	0.00	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.00	0.00	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.00	0.00	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	0.00	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	0.00	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Three Phase Fault - Low Voltage Interrupting Report

Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 7.699 kA (6.401 MVA) At -64.40DEG, X/R = 2.32
Z1 = 6.749612 +j 14.090326 pu, Z0 = 23.564511 +j 37.457161 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	7.70	-64.40	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.00	0.00	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.00	0.00	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.00	0.00	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.00	0.00	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 9.980 kA (8.297 MVA) At -33.53DEG, X/R = 1.20
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	0.00	Motor	1	1	
MCC2		RSFDS PMP1	9.98	-33.53	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 9.980 kA (8.297 MVA) At -33.53DEG, X/R = 1.20
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	0.00	Motor	1	1	
MCC2		RSFDS PMP2	9.98	-33.53	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 19.980 kA (16.611 MVA) At -79.74DEG, X/R = 5.63
Z1 = 1.072159 +j 5.923857 pu, Z0 = 0.840447 +j 4.771521 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	19.62	-79.73	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	0.36	-80.61	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 19.243 kA (15.998 MVA) At -79.91DEG, X/R = 5.72
Z1 = 1.095098 +j 6.154137 pu, Z0 = 0.000000 +j 0.000000 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	19.06	-79.92	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.18	-79.28	Branch	1	1	C P0802

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 15.202 kA (12.639 MVA) At -55.61DEG, X/R = 1.77
Z1 = 4.468855 +j 6.529120 pu, Z0 = 0.000164 +j -0.000015 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	15.20	-55.61	Branch	1	1	C TX-1

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Interrupting Results 3 PHASE
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 17.147 kA (14.256 MVA) At -72.30DEG, X/R = 3.29
Z1 = 2.132720 +j 6.682699 pu, Z0 = 0.000030 +j 0.000017 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	17.15	-72.30	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 6.518 kA (5.419 MVA) At -50.68DEG, X/R = 1.58
Z1 = 11.693970 +j 14.275703 pu, Z0 = 0.001230 +j 0.000187 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	6.52	-50.68	Branch	1	1	C TX-3

Ground Fault

Equipment Duty Ratings

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
LP-1 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment ID	Manufacturer / Style	Test Standard	1/2 Cycle Interrupting Ratings (kA)	Interrupting Ratings (kA) Cyc	1/2 Cycle Duties kA (%)	Interrupting Duties kA (%)	Comments
B LP-1 MAIN	GE /THQD	ANSI-SYM	22.00		2.33(-89.4%)		
LP-1	/	ANSI-SYM	42.00		2.33(-94.4%)		

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Equipment Duty Comparison Report For Bus:
LP-2 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment ID	Manufacturer / Style	Test Standard	1/2 Cycle Interrupting Ratings (kA)	Interrupting Ratings (kA) Cyc	1/2 Cycle Duties kA (%)	Interrupting Duties kA (%)	Comments
B LP-2 MAIN	GE /THQD	ANSI-SYM	22.00		6.09(-72.3%)		
B LP-2 BRANCH	GE /THHQB	ANSI-SYM	22.00		6.09(-72.3%)		
LP-2	/	ANSI-SYM	22.00		6.09(-72.3%)		

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Equipment Duty Comparison Report For Bus:
LP-3 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment ID	Manufacturer / Style	Test Standard	1/2 Cycle Interrupting Ratings (kA)	Interrupting Ratings (kA) Cyc	1/2 Cycle Duties kA (%)	Interrupting Duties kA (%)	Comments
B LP-3 MAIN	GE /THHQB	ANSI-SYM	22.00		5.58(-74.7%)		
LP-3	/	ANSI-SYM	22.00		5.58(-74.7%)		

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Equipment Duty Comparison Report For Bus:
LP-4 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment ID	Manufacturer / Style	Test Standard	1/2 Cycle Interrupting Ratings (kA)	Interrupting Ratings (kA) Cyc	1/2 Cycle Duties kA (%)	Interrupting Duties kA (%)	Comments
B LP-4 MAIN	GE /THHQB	ANSI-SYM	22.00		1.10(-95.0%)		
LP-4	/	ANSI-SYM	14.00		1.10(-92.1%)		

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
M5 A Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
M5-1A2 - P0003	GE /VAC LIMITAMP	ANSI-SYM	52.50			32.06(-38.9%)		
M5-2A2 - P0004	GE /VAC LIMITAMP	ANSI-SYM	52.50			32.06(-38.9%)		
M5-5A	GE /VAC LIMITAMP	ANSI-SYM	52.50			32.12(-38.8%)		
M5A 6A2	GE /VAC LIMITAMP	ANSI-SYM	52.50			32.13(-38.8%)		
M5 A	/	ANSI-TOT	50.00			42.02(-16.0%)		

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Equipment Duty Comparison Report For Bus:
M5 B Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
M5B 1B1	GE /VAC LIMITAMP	ANSI-SYM	52.50			22.55(-57.0%)		
M5-2B2 - P0010	GE /VAC LIMITAMP	ANSI-SYM	52.50			22.37(-57.4%)		
M5-5B	GE /VAC LIMITAMP	ANSI-SYM	52.50			22.43(-57.3%)		
M5 B	/	ANSI-TOT	50.00			29.86(-40.3%)		

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Equipment Duty Comparison Report For Bus:
MCC1-A Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer / Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B 12-PMP-201	GE /SEL	ANSI-SYM	65.00			21.71(-66.6%)		
B 05-PMP-201	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-CNV-201	GE /SEL	ANSI-SYM	65.00			21.71(-66.6%)		
B 12-FAN-201	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-FAN-205	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B MCC1-A MAIN	GE /SKL8	ANSI-SYM	65.00			20.13(-69.0%)		
B 1A-MCC2	GE /SGL6	ANSI-SYM	65.00			20.92(-67.8%)		
B 12-PMP-206	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-LCP-2001	GE /SEL	ANSI-SYM	65.00			21.71(-66.6%)		
B 12-GBN-201	GE /SEL	ANSI-SYM	65.00			21.73(-66.6%)		
B 12-PMP-213	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-LCP-2004	GE /SEL	ANSI-SYM	65.00			21.68(-66.7%)		
B 12-PMP-203	GE /SEL	ANSI-SYM	65.00			21.44(-67.0%)		
B 12-GCL-201	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-LCP-2006	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		
B 12-HVU-203	GE /SEL	ANSI-SYM	65.00			21.73(-66.6%)		
B 12-PMP-204	GE /SEL	ANSI-SYM	65.00			21.42(-67.0%)		
B 12-GCL-202	GE /SEL	ANSI-SYM	65.00			21.72(-66.6%)		

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-FAN-205A	GE	/SEL	ANSI-SYM	65.00		21.72(-66.6%)	
B MCC1-SPARE	GE	/SEL	ANSI-SYM	65.00		21.71(-66.6%)	
MCC1-A		/	ANSI-SYM	65.00		21.73(-66.6%)	

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Equipment Duty Comparison Report For Bus:
MCC1-B Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC1-B MAIN	GE	/SKL8	ANSI-SYM	65.00			19.34(-70.2%)		
B 05-PMP-202	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-LCP-2002	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-LCP-2003	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-LCP-2005	GE	/SEL	ANSI-SYM	65.00			19.79(-69.6%)		
B 12-CNV-202	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B MCC1B-SPARE1	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-LCP-2007	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-PMP-202	GE	/SEL	ANSI-SYM	65.00			19.82(-69.5%)		
B 12-GBN-202	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-PMP-205	GE	/SEL	ANSI-SYM	65.00			19.55(-69.9%)		
B MCC1B-SPARE2	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-PMP-207	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-FAN-204	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-GBN-203	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-GCL-203	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-FAN-207	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
B 12-FAN-202	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-PMP-214	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-FAN-206	GE	/SEL	ANSI-SYM	65.00			19.83(-69.5%)		
B 12-FAN-208	GE	/SEL	ANSI-SYM	65.00			19.84(-69.5%)		
MCC1-B		/	ANSI-SYM	65.00			19.84(-69.5%)		

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Equipment Duty Comparison Report For Bus:
MCC2 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC2-SPARE	GE	/SEL	ANSI-SYM	65.00			19.55(-69.9%)		
B 11-SLG-207	GE	/SEL	ANSI-SYM	65.00			19.53(-70.0%)		
B MCC5	GE	/SGL6	ANSI-SYM	65.00			19.32(-70.3%)		
B 12-SLG-204	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-BFG-203	GE	/SEL	ANSI-SYM	65.00			19.55(-69.9%)		
B 12-SLG-205	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SLG-208	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SLG-211	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SDG-201	GE	/SEL	ANSI-SYM	65.00			19.55(-69.9%)		
B 12-SLG-212	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SLG-213	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SLG-210	GE	/SEL	ANSI-SYM	65.00			19.54(-69.9%)		
B 12-SDG-202	GE	/SEL	ANSI-SYM	65.00			19.55(-69.9%)		

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-BFG-201	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B 12-BFG-202	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B 12-SDG-209	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B 12-SDG-210	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B 05-VLV-201	GE	/SEL	ANSI-SYM	65.00	19.53(-70.0%)
B 11-SLG-201	GE	/SEL	ANSI-SYM	65.00	19.51(-70.0%)
B 11-SLG-202	GE	/SEL	ANSI-SYM	65.00	19.51(-70.0%)
B 12-SDG-211	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B 11-SLG-205	GE	/SEL	ANSI-SYM	65.00	19.51(-70.0%)
B 11-SLG-203	GE	/SEL	ANSI-SYM	65.00	19.50(-70.0%)
B 11-SLG-204	GE	/SEL	ANSI-SYM	65.00	19.50(-70.0%)
B 12-SLG-214	GE	/SEL	ANSI-SYM	65.00	19.54(-69.9%)
B 12-SLG-215	GE	/SEL	ANSI-SYM	65.00	19.54(-69.9%)
B 12-SLG-216	GE	/SEL	ANSI-SYM	65.00	19.54(-69.9%)
B 12-SLG-217	GE	/SEL	ANSI-SYM	65.00	19.54(-69.9%)
B 05-VLV-217	GE	/SEL	ANSI-SYM	65.00	19.53(-70.0%)
B 05-VLV-219	GE	/SEL	ANSI-SYM	65.00	19.53(-69.9%)
B 12-VLV-218	GE	/SEL	ANSI-SYM	65.00	19.53(-70.0%)
B TX-1	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B TX-2	GE	/SFL	ANSI-SYM	65.00	19.55(-69.9%)
B RSFDS PMP1	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
B RSFDS PMP2	GE	/SEL	ANSI-SYM	65.00	19.55(-69.9%)
MCC2		/	ANSI-SYM	65.00	19.55(-69.9%)

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Equipment Duty Comparison Report For Bus:
MCC5 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B 14-PMP-203	GE	/SEL	ANSI-SYM	65.00			4.93(-92.4%)		
B MCC-5	GE	/SGL6	ANSI-SYM	65.00			4.79(-92.6%)		
B 14-SLG-201	GE	/SEL	ANSI-SYM	65.00			4.93(-92.4%)		
B TX-3	GE	/SEL	ANSI-SYM	65.00			4.94(-92.4%)		
B 14-SLG-202	GE	/SEL	ANSI-SYM	65.00			4.93(-92.4%)		
B 14-PMP-202	GE	/SEL	ANSI-SYM	65.00			4.86(-92.5%)		
B 14-SLG-203	GE	/SEL	ANSI-SYM	65.00			4.92(-92.4%)		
B 14-HPU-201	GE	/SEL	ANSI-SYM	65.00			4.94(-92.4%)		
B 14-SLG-204	GE	/SEL	ANSI-SYM	65.00			4.91(-92.4%)		
B 14-PMP-201	GE	/SEL	ANSI-SYM	65.00			4.94(-92.4%)		
MCC5		/	ANSI-SYM	65.00			4.94(-92.4%)		

Ground Fault

High Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - High Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus M2 4.160 kV, Zone 1, Area 1
E/Z = 25.398 kA (183.00 MVA) At -82.05DEG, X/R = 7.16
Z1 = 0.072832 +j 0.528490 pu, Z0 = 0.080941 +j 0.566585 pu
1.6*ISYM= 40.638 IASYM Based on X/R ratio = 34.644

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M2		M2	24.25	-81.87	Util	1	1	
M5 B		M2	1.15	-85.94	Branch	1	1	C M5B

*Bus M3-N 4.160 kV, Zone 1, Area 1
E/Z = 38.402 kA (276.70 MVA) At -81.97DEG, X/R = 7.09
Z1 = 0.049276 +j 0.351584 pu, Z0 = 0.052915 +j 0.370407 pu
1.6*ISYM= 61.443 IASYM Based on X/R ratio = 52.276

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M3-N		M3-N	37.09	-81.87	Util	1	1	
M5 A		M3-N	1.31	-84.78	Branch	1	1	C M5A

*Bus M5 A 4.160 kV, Zone 1, Area 1
E/Z = 32.281 kA (232.60 MVA) At -79.94DEG, X/R = 5.64
Z1 = 0.060509 +j 0.381949 pu, Z0 = 0.104205 +j 0.506075 pu
1.6*ISYM= 51.650 IASYM Based on X/R ratio = 42.019

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0005		M5 A	0.22	-85.98	Motor	1	1	
M EP0006		M5 A	0.22	-85.98	Motor	1	1	
M3-N		M5 A	31.08	-79.79	Branch	1	1	C M5A
P0003		M5 A	0.22	-85.84	Branch	1	1	C P0003B
P0004		M5 A	0.22	-85.86	Branch	1	1	C P0004B
P0007		M5 A	0.17	-85.65	Branch	1	1	C P0007
TX TR-1 H		M5 A	0.15	-69.33	Branch	1	1	C P0008
M5 B		M5 A	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus M5 B 4.160 kV, Zone 1, Area 1
E/Z = 22.600 kA (162.84 MVA) At -80.65DEG, X/R = 6.07
Z1 = 0.083506 +j 0.557796 pu, Z0 = 0.132231 +j 0.702254 pu
1.6*ISYM= 36.160 IASYM Based on X/R ratio = 29.862

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0011		M5 B	0.23	-86.21	Motor	1	1	
M EP0012		M5 B	0.23	-86.21	Motor	1	1	
M EP0014		M5 B	0.18	-85.92	Motor	1	1	
M2		M5 B	21.51	-80.42	Branch	1	1	C M5B
TX TR-2 H		M5 B	0.05	-68.91	Branch	1	1	C P0009
P0010		M5 B	0.23	-86.06	Branch	1	1	C P0010B
P0013		M5 B	0.17	-85.86	Branch	1	1	C P0013
M5 A		M5 B	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus P0003 4.160 kV, Zone 1, Area 1
E/Z = 29.163 kA (210.13 MVA) At -71.67DEG, X/R = 3.02
Z1 = 0.097253 +j 0.396035 pu, Z0 = 0.254538 +j 0.563161 pu
1.6*ISYM= 46.661 IASYM Based on X/R ratio = 33.286

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0003	28.95	-71.59	Branch	1	1	C P0003B
P0003 MODEL		P0003	0.21	-82.41	Branch	1	1	C P0003

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - High Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus P0003 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 24.482 kA (176.40 MVA) At -61.46DEG, X/R = 1.84
Z1 = 0.156831 +j 0.419057 pu, Z0 = 0.498829 +j 0.655927 pu
1.6*ISYM= 39.171 IASYM Based on X/R ratio = 25.697

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0003 MODEL		P0003 MODEL	0.20	-79.02	Motor	1	1	
P0003		P0003 MODEL	24.29	-61.32	Branch	1	1	C P0003

*Bus P0004 4.160 kV, Zone 1, Area 1
E/Z = 28.396 kA (204.60 MVA) At -69.86DEG, X/R = 2.73
Z1 = 0.106428 +j 0.399567 pu, Z0 = 0.292121 +j 0.577433 pu
1.6*ISYM= 45.433 IASYM Based on X/R ratio = 31.768

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0004	28.19	-69.77	Branch	1	1	C P0004B
P0004 MODEL		P0004	0.21	-81.76	Branch	1	1	C P0004

*Bus P0004 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 25.835 kA (186.15 MVA) At -64.23DEG, X/R = 2.07
Z1 = 0.138515 +j 0.411957 pu, Z0 = 0.423663 +j 0.627383 pu
1.6*ISYM= 41.336 IASYM Based on X/R ratio = 27.569

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0004 MODEL		P0004 MODEL	0.20	-79.85	Motor	1	1	
P0004		P0004 MODEL	25.64	-64.11	Branch	1	1	C P0004

*Bus P0007 4.160 kV, Zone 1, Area 1
E/Z = 28.773 kA (207.32 MVA) At -70.73DEG, X/R = 2.86
Z1 = 0.102088 +j 0.397851 pu, Z0 = 0.273330 +j 0.570297 pu
1.6*ISYM= 46.037 IASYM Based on X/R ratio = 32.492

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0007		P0007	0.16	-81.88	Motor	1	1	
M5 A		P0007	28.62	-70.67	Branch	1	1	C P0007

*Bus P0010 4.160 kV, Zone 1, Area 1
E/Z = 20.723 kA (149.32 MVA) At -73.28DEG, X/R = 3.33
Z1 = 0.128965 +j 0.575277 pu, Z0 = 0.320147 +j 0.773611 pu
1.6*ISYM= 33.157 IASYM Based on X/R ratio = 24.134

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 B		P0010	20.51	-73.18	Branch	1	1	C P0010B
P0010 MODEL		P0010	0.22	-82.88	Branch	1	1	C P0010

*Bus P0010 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 18.891 kA (136.12 MVA) At -67.13DEG, X/R = 2.37
Z1 = 0.174329 +j 0.592854 pu, Z0 = 0.508063 +j 0.844969 pu
1.6*ISYM= 30.226 IASYM Based on X/R ratio = 20.602

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0010 MODEL		P0010 MODEL	0.21	-80.55	Motor	1	1	
P0010		P0010 MODEL	18.69	-66.98	Branch	1	1	C P0010

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - High Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus P0013 4.160 kV, Zone 1, Area 1
E/Z = 20.531 kA (147.93 MVA) At -72.59DEG, X/R = 3.19
Z1 = 0.133942 +j 0.577127 pu, Z0 = 0.338938 +j 0.780747 pu
1.6*ISYM= 32.850 IASYM Based on X/R ratio = 23.698

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0013		P0013	0.16	-82.41	Motor	1	1	
M5 B		P0013	20.37	-72.51	Branch	1	1	C P0013

*Bus TX TR-1 H 4.160 kV, Zone 1, Area 1
E/Z = 28.038 kA (202.02 MVA) At -71.46DEG, X/R = 2.98
Z1 = 0.101306 +j 0.404663 pu, Z0 = 0.269562 +j 0.598579 pu
1.6*ISYM= 44.861 IASYM Based on X/R ratio = 31.924

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 L		TX TR-1 H	0.14	-65.93	Branch	1	1	TX TR-1
M5 A		TX TR-1 H	27.90	-71.49	Branch	1	1	C P0008

*Bus TX TR-2 H 4.160 kV, Zone 1, Area 1
E/Z = 21.231 kA (152.98 MVA) At -76.48DEG, X/R = 4.16
Z1 = 0.109922 +j 0.572529 pu, Z0 = 0.238532 +j 0.761720 pu
1.6*ISYM= 33.969 IASYM Based on X/R ratio = 25.923

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 L		TX TR-2 H	0.05	-67.10	Branch	1	1	TX TR-2
M5 B		TX TR-2 H	21.18	-76.50	Branch	1	1	C P0009

Ground Fault

Low Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.46DEG, X/R = 0.06
Z1 = 381.372930 +j 38.832586 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.246 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.01	-58.57	Motor	1	1	
MCC1-A		05-PMP-201	0.15	-1.54	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 6.089 kA (5.06 MVA) At -19.44DEG, X/R = 0.35
Z1 = 9.886147 +j 6.452623 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 9.743 IASYM Based on X/R ratio = 6.089

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.01	-47.23	Motor	1	1	
MCC1-B		05-PMP-202	6.08	-19.40	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.245 kA (0.20 MVA) At -4.19DEG, X/R = 0.07
Z1 = 238.379864 +j 30.142864 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.392 IASYM Based on X/R ratio = 0.245

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.01	-62.32	Motor	1	1	
MCC2		05-VLV-201	0.24	-1.85	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 8.605 kA (7.15 MVA) At -27.24DEG, X/R = 0.51
Z1 = 6.757240 +j 5.929869 pu, Z0 = 23.767812 +j 7.336932 pu
1.6*ISYM= 13.768 IASYM Based on X/R ratio = 8.605

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.02	-51.32	Motor	1	1	
MCC2		05-VLV-217	8.59	-27.20	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.155 kA (0.13 MVA) At -4.33DEG, X/R = 0.08
Z1 = 370.462348 +j 55.468661 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.248 IASYM Based on X/R ratio = 0.155

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.01	-61.16	Motor	1	1	
MCC2		05-VLV-219	0.15	-0.68	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.248 kA (0.21 MVA) At -5.29DEG, X/R = 0.09
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.397 IASYM Based on X/R ratio = 0.248

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.02	-63.46	Motor	1	1	
MCC2		11-SLG-201	0.24	-0.66	Branch	1	1	C 11-SLG-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.248 kA (0.21 MVA) At -5.29DEG, X/R = 0.09
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.397 IASYM Based on X/R ratio = 0.248

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.02	-63.46	Motor	1	1	
MCC2		11-SLG-202	0.24	-0.66	Branch	1	1	C 11-SLG-202

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.392 kA (0.33 MVA) At -6.92DEG, X/R = 0.12
Z1 = 145.669227 +j 30.995287 pu, Z0 = 623.460159 +j 49.023445 pu
1.6*ISYM= 0.627 IASYM Based on X/R ratio = 0.392

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.03	-65.84	Motor	1	1	
MCC2		11-SLG-203	0.38	-2.96	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.614 kA (0.51 MVA) At -8.75DEG, X/R = 0.15
Z1 = 94.140632 +j 21.473282 pu, Z0 = 393.032607 +j 46.567932 pu
1.6*ISYM= 0.982 IASYM Based on X/R ratio = 0.614

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.03	-66.84	Motor	1	1	
MCC2		11-SLG-204	0.60	-6.24	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.248 kA (0.21 MVA) At -5.29DEG, X/R = 0.09
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.397 IASYM Based on X/R ratio = 0.248

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.02	-63.46	Motor	1	1	
MCC2		11-SLG-205	0.24	-0.66	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.246 kA (0.20 MVA) At -4.57DEG, X/R = 0.08
Z1 = 235.262963 +j 34.801894 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.394 IASYM Based on X/R ratio = 0.246

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.02	-63.12	Motor	1	1	
MCC2		11-SLG-207	0.24	-1.44	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.11 MVA) At -3.01DEG, X/R = 0.05
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.128

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.00	-52.65	Motor	1	1	
MCC2		12-BFG-201	0.13	-1.93	Branch	1	1	C 12-BFG-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.11 MVA) At -3.01DEG, X/R = 0.05
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.128

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.00	-52.65	Motor	1	1	
MCC2		12-BFG-202	0.13	-1.93	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.11 MVA) At -3.01DEG, X/R = 0.05
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.128

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.00	-52.65	Motor	1	1	
MCC2		12-BFG-203	0.13	-1.93	Branch	1	1	C 12-BFG-203

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.70DEG, X/R = 0.06
Z1 = 378.250631 +j 43.660466 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.247 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.01	-59.77	Motor	1	1	
MCC1-A		12-CNV-201	0.15	-1.28	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.129 kA (0.11 MVA) At -3.89DEG, X/R = 0.07
Z1 = 449.373306 +j 57.056363 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.206 IASYM Based on X/R ratio = 0.129

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.01	-59.30	Motor	1	1	
MCC1-B		12-CNV-202	0.12	-1.01	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.21DEG, X/R = 0.06
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.00	-56.56	Motor	1	1	
MCC1-A		12-FAN-201	0.15	-1.80	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.24DEG, X/R = 0.06
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.00	-56.50	Motor	1	1	
MCC1-B		12-FAN-202	0.15	-1.83	Branch	1	1	C 12-FAN-202

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.99DEG, X/R = 0.05
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.00	-52.71	Motor	1	1	
MCC1-B		12-FAN-204	0.15	-2.09	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.95DEG, X/R = 0.05
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.00	-52.76	Motor	1	1	
MCC1-A		12-FAN-205	0.15	-2.06	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.21DEG, X/R = 0.06
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.00	-56.56	Motor	1	1	
MCC1-A		12-FAN-205A	0.15	-1.80	Branch	1	1	C 12-FAN-205A

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.24DEG, X/R = 0.06
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.00	-56.50	Motor	1	1	
MCC1-B		12-FAN-206	0.15	-1.83	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 6.088 kA (5.06 MVA) At -19.42DEG, X/R = 0.35
Z1 = 9.897180 +j 6.449257 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 9.740 IASYM Based on X/R ratio = 6.088

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.00	-40.40	Motor	1	1	
MCC1-B		12-FAN-207	6.08	-19.41	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.99DEG, X/R = 0.05
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.00	-52.71	Motor	1	1	
MCC1-B		12-FAN-208	0.15	-2.09	Branch	1	1	C 12-FAN-208

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 6.684 kA (5.56 MVA) At -19.45DEG, X/R = 0.35
Z1 = 9.052782 +j 5.750364 pu, Z0 = 32.798952 +j 6.479988 pu
1.6*ISYM= 10.694 IASYM Based on X/R ratio = 6.684

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	6.68	-19.45	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 6.586 kA (5.48 MVA) At -20.89DEG, X/R = 0.38
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 10.538 IASYM Based on X/R ratio = 6.586

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	6.59	-20.89	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 6.586 kA (5.48 MVA) At -20.89DEG, X/R = 0.38
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 10.538 IASYM Based on X/R ratio = 6.586

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	6.59	-20.89	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.95DEG, X/R = 0.05
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.00	-52.76	Motor	1	1	
MCC1-A		12-GCL-201	0.15	-2.06	Branch	1	1	C 12-GCL-201

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.95DEG, X/R = 0.05
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.00	-52.76	Motor	1	1	
MCC1-A		12-GCL-202	0.15	-2.06	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -2.99DEG, X/R = 0.05
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.00	-52.71	Motor	1	1	
MCC1-B		12-GCL-203	0.15	-2.09	Branch	1	1	C 12-GCL-203

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 18.578 kA (15.45 MVA) At -63.59DEG, X/R = 2.01
Z1 = 2.008514 +j 5.652957 pu, Z0 = 4.621874 +j 6.090361 pu
1.6*ISYM= 29.725 IASYM Based on X/R ratio = 19.742

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	18.58	-63.59	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.70DEG, X/R = 0.06
Z1 = 378.234278 +j 43.615388 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.247 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.15	-1.28	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.01	-59.69	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.73DEG, X/R = 0.07
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.247 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.15	-1.32	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.01	-59.63	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.73DEG, X/R = 0.07
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.247 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.15	-1.32	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.01	-59.63	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 0.514 kA (0.43 MVA) At -8.44DEG, X/R = 0.15
Z1 = 112.140733 +j 24.815563 pu, Z0 = 470.442566 +j 53.461650 pu
1.6*ISYM= 0.822 IASYM Based on X/R ratio = 0.514

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	0.50	-5.77	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.03	-65.95	Branch	1	1	C 12-WSC-201

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 0.514 kA (0.43 MVA) At -8.56DEG, X/R = 0.15
Z1 = 112.112816 +j 25.437895 pu, Z0 = 470.593813 +j 53.677182 pu
1.6*ISYM= 0.822 IASYM Based on X/R ratio = 0.514

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	0.50	-5.89	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.03	-65.76	Branch	1	1	C 12-WSC-202

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.11 MVA) At -2.97DEG, X/R = 0.05
Z1 = 463.083994 +j 35.579672 pu, Z0 = ********** +j 75.489002 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.128

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.13	-1.90	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.00	-52.62	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.129 kA (0.11 MVA) At -3.88DEG, X/R = 0.07
Z1 = 449.351620 +j 56.992054 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.206 IASYM Based on X/R ratio = 0.129

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.12	-1.01	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.01	-59.22	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.151 kA (0.13 MVA) At -3.72DEG, X/R = 0.06
Z1 = 386.149800 +j 44.990795 pu, Z0 = ********** +j 65.079169 pu
1.6*ISYM= 0.241 IASYM Based on X/R ratio = 0.151

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.01	-59.72	Motor	1	1	
12-LCP-2001		12-MBS-201	0.15	-1.25	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.151 kA (0.13 MVA) At -3.75DEG, X/R = 0.07
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.241 IASYM Based on X/R ratio = 0.151

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.01	-59.67	Motor	1	1	
12-LCP-2002		12-MBS-202	0.15	-1.28	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.151 kA (0.13 MVA) At -3.75DEG, X/R = 0.07
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.241 IASYM Based on X/R ratio = 0.151

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.01	-59.67	Motor	1	1	
12-LCP-2003		12-MBS-203	0.15	-1.28	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 8.982 kA (7.47 MVA) At -25.94DEG, X/R = 0.49
Z1 = 6.575074 +j 5.684628 pu, Z0 = 22.973791 +j 6.205436 pu
1.6*ISYM= 14.372 IASYM Based on X/R ratio = 8.983

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.02	-50.44	Motor	1	1	
MCC1-A		12-PMP-201	8.97	-25.90	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 8.775 kA (7.30 MVA) At -27.72DEG, X/R = 0.53
Z1 = 6.639337 +j 6.352815 pu, Z0 = 23.125038 +j 6.420968 pu
1.6*ISYM= 14.040 IASYM Based on X/R ratio = 8.775

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.02	-49.32	Motor	1	1	
MCC1-B		12-PMP-202	8.76	-27.68	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 2.245 kA (1.87 MVA) At -26.69DEG, X/R = 0.50
Z1 = 22.573509 +j 15.472604 pu, Z0 = 98.450562 +j 41.253494 pu
1.6*ISYM= 3.592 IASYM Based on X/R ratio = 2.245

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.16	-73.88	Motor	1	1	
MCC1-A		12-PMP-203	2.14	-23.64	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 19.355 kA (16.09 MVA) At -68.96DEG, X/R = 2.60
Z1 = 1.668413 +j 5.649442 pu, Z0 = 3.357671 +j 6.101093 pu
1.6*ISYM= 30.968 IASYM Based on X/R ratio = 21.460

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.29	-77.02	Motor	1	1	
MCC1-A		12-PMP-204	19.07	-68.83	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 1.890 kA (1.57 MVA) At -26.55DEG, X/R = 0.50
Z1 = 26.355572 +j 18.332175 pu, Z0 = 118.048204 +j 48.657651 pu
1.6*ISYM= 3.025 IASYM Based on X/R ratio = 1.890

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.15	-73.34	Motor	1	1	
MCC1-B		12-PMP-205	1.79	-22.96	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.21DEG, X/R = 0.06
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.00	-56.56	Motor	1	1	
MCC1-A		12-PMP-206	0.15	-1.80	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 6.089 kA (5.06 MVA) At -19.43DEG, X/R = 0.35
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 9.742 IASYM Based on X/R ratio = 6.089

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.01	-44.71	Motor	1	1	
MCC1-B		12-PMP-207	6.08	-19.41	Branch	1	1	C 12-PMP-207

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.13 MVA) At -3.21DEG, X/R = 0.06
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.245 IASYM Based on X/R ratio = 0.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.00	-56.56	Motor	1	1	
MCC1-A		12-PMP-213	0.15	-1.80	Branch	1	1	C 12-PMP-213

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 6.089 kA (5.06 MVA) At -19.43DEG, X/R = 0.35
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 9.742 IASYM Based on X/R ratio = 6.089

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.01	-44.71	Motor	1	1	
MCC1-B		12-PMP-214	6.08	-19.41	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.125 kA (0.10 MVA) At -2.98DEG, X/R = 0.05
Z1 = 471.339393 +j 36.370216 pu, Z0 = ********** +j 76.775610 pu
1.6*ISYM= 0.201 IASYM Based on X/R ratio = 0.125

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.00	-52.64	Motor	1	1	
12-LCP-2006		12-SCP-201	0.12	-1.89	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.11 MVA) At -3.90DEG, X/R = 0.07
Z1 = 457.108742 +j 58.554577 pu, Z0 = ********** +j 76.991142 pu
1.6*ISYM= 0.202 IASYM Based on X/R ratio = 0.127

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.01	-59.25	Motor	1	1	
12-LCP-2007		12-SCP-202	0.12	-0.98	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.11 MVA) At -2.70DEG, X/R = 0.05
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.127

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	-43.08	Motor	1	1	
MCC2		12-SDG-201	0.13	-2.25	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.11 MVA) At -2.70DEG, X/R = 0.05
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.204 IASYM Based on X/R ratio = 0.127

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	-43.08	Motor	1	1	
MCC2		12-SDG-202	0.13	-2.25	Branch	1	1	C 12-SDG-202

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.13 MVA) At -2.74DEG, X/R = 0.05
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.244 IASYM Based on X/R ratio = 0.152

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	-43.09	Motor	1	1	
MCC2		12-SDG-209	0.15	-2.35	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.13 MVA) At -2.74DEG, X/R = 0.05
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.244 IASYM Based on X/R ratio = 0.152

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	-43.09	Motor	1	1	
MCC2		12-SDG-210	0.15	-2.35	Branch	1	1	C 12-SDG-210

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.13 MVA) At -2.74DEG, X/R = 0.05
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.244 IASYM Based on X/R ratio = 0.152

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	-43.09	Motor	1	1	
MCC2		12-SDG-211	0.15	-2.35	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-204	0.24	-2.26	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-205	0.24	-2.26	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-208	0.24	-2.26	Branch	1	1	C 12-SLG-208

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-210	0.24	-2.26	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-211	0.24	-2.26	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-212	0.24	-2.26	Branch	1	1	C 12-SLG-212

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-213	0.24	-2.26	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-214	0.24	-2.26	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-215	0.24	-2.26	Branch	1	1	C 12-SLG-215

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.20 MVA) At -3.79DEG, X/R = 0.07
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.391 IASYM Based on X/R ratio = 0.244

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.01	-60.46	Motor	1	1	
MCC2		12-SLG-216	0.24	-2.26	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.74DEG, X/R = 0.07
Z1 = 378.389323 +j 43.906929 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.246 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.01	-59.77	Motor	1	1	
MCC2		12-SLG-217	0.15	-1.32	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.156 kA (0.13 MVA) At -4.89DEG, X/R = 0.09
Z1 = 362.310039 +j 66.267243 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.249 IASYM Based on X/R ratio = 0.156

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.01	-61.50	Motor	1	1	
MCC2		12-VLV-218	0.15	-0.07	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 0.505 kA (0.42 MVA) At -8.44DEG, X/R = 0.15
Z1 = 114.073162 +j 25.312243 pu, Z0 = 479.045007 +j 54.344424 pu
1.6*ISYM= 0.808 IASYM Based on X/R ratio = 0.505

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.03	-66.00	Motor	1	1	
12-LCP-2004		12-WSC-201	0.49	-5.72	Branch	1	1	C 12-WSC-201

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 0.505 kA (0.42 MVA) At -8.56DEG, X/R = 0.15
Z1 = 114.043583 +j 25.933673 pu, Z0 = 479.196253 +j 54.559956 pu
1.6*ISYM= 0.807 IASYM Based on X/R ratio = 0.505

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.03	-65.81	Motor	1	1	
12-LCP-2005		12-WSC-202	0.49	-5.84	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 3.941 kA (3.28 MVA) At -47.33DEG, X/R = 1.08
Z1 = 10.642859 +j 13.638007 pu, Z0 = 40.773303 +j 40.052433 pu
1.6*ISYM= 6.305 IASYM Based on X/R ratio = 3.971

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	3.94	-47.33	Branch	1	1	C 14-HPU-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 4.521 kA (3.76 MVA) At -55.22DEG, X/R = 1.44
Z1 = 7.887646 +j 13.343741 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 7.233 IASYM Based on X/R ratio = 4.627

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	4.52	-55.22	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 4.526 kA (3.76 MVA) At -55.33DEG, X/R = 1.45
Z1 = 7.804547 +j 13.349366 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 7.241 IASYM Based on X/R ratio = 4.634

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.08	-74.25	Motor	1	1	
MCC5		14-PMP-202	4.45	-54.98	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 2.865 kA (2.38 MVA) At -31.65DEG, X/R = 0.62
Z1 = 18.133992 +j 13.435666 pu, Z0 = 70.935090 +j 39.211628 pu
1.6*ISYM= 4.585 IASYM Based on X/R ratio = 2.866

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.01	-53.51	Motor	1	1	
MCC5		14-PMP-203	2.86	-31.61	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 2.456 kA (2.04 MVA) At -27.14DEG, X/R = 0.51
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 3.929 IASYM Based on X/R ratio = 2.456

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.01	-58.06	Motor	1	1	
MCC5		14-SLG-201	2.45	-27.04	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 2.456 kA (2.04 MVA) At -27.14DEG, X/R = 0.51
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 3.929 IASYM Based on X/R ratio = 2.456

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.01	-58.06	Motor	1	1	
MCC5		14-SLG-202	2.45	-27.04	Branch	1	1	C 14-SLG-202

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 3.116 kA (2.59 MVA) At -34.59DEG, X/R = 0.69
Z1 = 16.100388 +j 13.394830 pu, Z0 = 63.119462 +j 38.940173 pu
1.6*ISYM= 4.986 IASYM Based on X/R ratio = 3.118

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.02	-61.80	Motor	1	1	
MCC5		14-SLG-203	3.10	-34.45	Branch	1	1	C 14-SLG-203

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 2.810 kA (2.34 MVA) At -31.13DEG, X/R = 0.60
Z1 = 18.454499 +j 13.541255 pu, Z0 = 73.008199 +j 39.310927 pu
1.6*ISYM= 4.496 IASYM Based on X/R ratio = 2.811

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.03	-63.80	Motor	1	1	
MCC5		14-SLG-204	2.79	-30.85	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.334 kA (0.84 MVA) At -57.82DEG, X/R = 1.59
Z1 = 67.985366 +j 107.694451 pu, Z0 = 54.005787 +j 86.528572 pu
1.6*ISYM= 3.735 IASYM Based on X/R ratio = 2.410

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.33	-57.82	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 6.086 kA (2.19 MVA) At -62.87DEG, X/R = 1.95
Z1 = 22.517248 +j 44.529148 pu, Z0 = 17.344422 +j 32.707900 pu
1.6*ISYM= 9.738 IASYM Based on X/R ratio = 6.440

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	6.09	-62.87	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.576 kA (2.01 MVA) At -58.55DEG, X/R = 1.64
Z1 = 25.106260 +j 45.469542 pu, Z0 = 27.700492 +j 36.469481 pu
1.6*ISYM= 8.921 IASYM Based on X/R ratio = 5.774

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.58	-58.55	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.101 kA (0.40 MVA) At -56.86DEG, X/R = 1.53
Z1 = 148.466332 +j 226.151249 pu, Z0 = 116.599876 +j 181.028260 pu
1.6*ISYM= 1.761 IASYM Based on X/R ratio = 1.133

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.10	-56.86	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 21.729 kA (18.07 MVA) At -77.71DEG, X/R = 4.59
Z1 = 1.157685 +j 5.457953 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 34.766 IASYM Based on X/R ratio = 27.096

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.02	-64.95	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.01	-57.69	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.02	-58.64	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.01	-55.93	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.01	-52.39	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	0.83	-64.14	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.01	-55.93	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.02	-58.56	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.01	-55.93	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.05	-65.56	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.29	-76.58	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.01	-52.39	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.01	-52.10	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.31	-81.19	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.01	-52.39	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.01	-55.93	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.02	-58.64	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	20.13	-78.40	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 19.843 kA (16.50 MVA) At -77.88DEG, X/R = 4.66
Z1 = 1.223940 +j 6.126923 pu, Z0 = 1.369814 +j 5.525876 pu
1.6*ISYM= 31.749 IASYM Based on X/R ratio = 24.819

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.01	-60.04	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.02	-58.05	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.02	-58.05	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.06	-65.05	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.02	-57.42	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.02	-57.35	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.02	-64.44	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.30	-75.18	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.01	-57.52	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.01	-51.88	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.01	-51.88	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.01	-53.22	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.01	-55.42	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.01	-57.52	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.01	-55.42	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.01	-51.88	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	19.34	-78.12	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.13 MVA) At -3.70DEG, X/R = 0.06
Z1 = 378.250631 +j 43.660466 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.247 IASYM Based on X/R ratio = 0.154

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.01	-59.77	Motor	1	1	
MCC1-A		MCC1-SPARE	0.15	-1.28	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 19.553 kA (16.26 MVA) At -75.26DEG, X/R = 3.80
Z1 = 1.340811 +j 5.703031 pu, Z0 = 2.012588 +j 6.441841 pu
1.6*ISYM= 31.284 IASYM Based on X/R ratio = 23.419

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.03	-60.67	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	18.78	-75.78	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.24	-70.61	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.01	-50.93	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	-41.66	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	-41.66	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.01	-50.93	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.01	-50.93	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	-41.78	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	-41.78	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.02	-60.26	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.04	-60.27	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.04	-60.27	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	-41.78	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.04	-60.27	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.06	-63.33	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.06	-65.58	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.01	-58.80	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.01	-57.45	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.02	-63.76	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.02	-58.23	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.03	-58.00	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	-26.97	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	-26.97	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 4.939 kA (4.11 MVA) At -60.26DEG, X/R = 1.75
Z1 = 6.340684 +j 12.989187 pu, Z0 = 23.564511 +j 37.457161 pu
1.6*ISYM= 7.902 IASYM Based on X/R ratio = 5.153

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	4.79	-59.98	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.01	-54.60	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.01	-58.77	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.01	-58.77	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.08	-74.74	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.02	-63.04	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.03	-64.84	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 6.000 kA (4.99 MVA) At -19.20DEG, X/R = 0.35
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 9.600 IASYM Based on X/R ratio = 6.000

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	-16.67	Motor	1	1	
MCC2		RSFDS PMP1	6.00	-19.20	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 6.000 kA (4.99 MVA) At -19.20DEG, X/R = 0.35
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 9.600 IASYM Based on X/R ratio = 6.000

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	-16.67	Motor	1	1	
MCC2		RSFDS PMP2	6.00	-19.20	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 22.880 kA (19.02 MVA) At -79.04DEG, X/R = 5.16
Z1 = 1.079100 +j 5.355795 pu, Z0 = 0.840462 +j 4.771536 pu
1.6*ISYM= 36.609 IASYM Based on X/R ratio = 29.247

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	21.24	-79.76	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	1.66	-69.76	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 21.283 kA (17.69 MVA) At -79.68DEG, X/R = 5.49
Z1 = 1.099070 +j 5.954104 pu, Z0 = 0.840464 +j 4.771543 pu
1.6*ISYM= 34.053 IASYM Based on X/R ratio = 27.552

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	20.76	-79.93	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.53	-69.53	Branch	1	1	C P0802

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Momentary Report

First Cycle Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 11.990 kA (9.97 MVA) At -39.16DEG, X/R = 0.81
Z1 = 4.448047 +j 5.895592 pu, Z0 = 14.441521 +j 7.212103 pu
1.6*ISYM= 19.184 IASYM Based on X/R ratio = 12.010

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	11.99	-39.16	Branch	1	1	C TX-1

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 16.404 kA (13.64 MVA) At -64.93DEG, X/R = 2.14
Z1 = 2.111912 +j 6.049172 pu, Z0 = 5.096984 +j 7.826407 pu
1.6*ISYM= 26.247 IASYM Based on X/R ratio = 17.589

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	16.40	-64.93	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 3.911 kA (3.25 MVA) At -44.40DEG, X/R = 0.98
Z1 = 11.285042 +j 13.174564 pu, Z0 = 43.341832 +j 38.198794 pu
1.6*ISYM= 6.258 IASYM Based on X/R ratio = 3.930

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	3.91	-44.40	Branch	1	1	C TX-3

Ground Fault

Low Voltage Interrupting Report

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.99DEG, X/R = 1.00
Z1 = 395.916527 +j 20.676252 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.00	-58.11	Motor	1	1	
MCC1-A		05-PMP-201	0.15	-2.05	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 6.080 kA (5.055 MVA) At -19.62DEG, X/R = 1.08
Z1 = 9.909553 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.00	-47.41	Motor	1	1	
MCC1-B		05-PMP-202	6.08	-19.60	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.203 MVA) At -3.63DEG, X/R = 1.00
Z1 = 248.578545 +j 16.509582 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.01	-61.77	Motor	1	1	
MCC2		05-VLV-201	0.24	-2.48	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 8.538 kA (7.098 MVA) At -27.98DEG, X/R = 1.16
Z1 = 6.800411 +j 6.560332 pu, Z0 = 23.767812 +j 7.336932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.01	-52.05	Motor	1	1	
MCC2		05-VLV-217	8.53	-27.96	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.128 MVA) At -3.45DEG, X/R = 0.99
Z1 = 396.114088 +j 20.961074 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.01	-60.27	Motor	1	1	
MCC2		05-VLV-219	0.15	-1.66	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.245 kA (0.204 MVA) At -4.18DEG, X/R = 0.99
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.01	-62.34	Motor	1	1	
MCC2		11-SLG-201	0.24	-1.91	Branch	1	1	C 11-SLG-201

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.245 kA (0.204 MVA) At -4.18DEG, X/R = 0.99
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.01	-62.34	Motor	1	1	
MCC2		11-SLG-202	0.24	-1.91	Branch	1	1	C 11-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.388 kA (0.322 MVA) At -5.98DEG, X/R = 0.99
Z1 = 156.722379 +j 16.983596 pu, Z0 = 623.460159 +j 49.023445 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.02	-64.91	Motor	1	1	
MCC2		11-SLG-203	0.38	-4.04	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.609 kA (0.506 MVA) At -8.19DEG, X/R = 1.00
Z1 = 99.116355 +j 16.368718 pu, Z0 = 393.032607 +j 46.567932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.02	-66.28	Motor	1	1	
MCC2		11-SLG-204	0.60	-6.95	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.245 kA (0.204 MVA) At -4.18DEG, X/R = 0.99
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.01	-62.34	Motor	1	1	
MCC2		11-SLG-205	0.24	-1.91	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.244 kA (0.203 MVA) At -3.82DEG, X/R = 0.99
Z1 = 248.578281 +j 16.510131 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.01	-62.37	Motor	1	1	
MCC2		11-SLG-207	0.24	-2.28	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.75DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.00	-52.40	Motor	1	1	
MCC2		12-BFG-201	0.13	-2.22	Branch	1	1	C 12-BFG-201

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.75DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.00	-52.40	Motor	1	1	
MCC2		12-BFG-202	0.13	-2.22	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.75DEG, X/R = 1.00
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.00	-52.40	Motor	1	1	
MCC2		12-BFG-203	0.13	-2.22	Branch	1	1	C 12-BFG-203

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.12DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.00	-59.18	Motor	1	1	
MCC1-A		12-CNV-201	0.15	-1.92	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.106 MVA) At -3.18DEG, X/R = 0.99
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.00	-58.59	Motor	1	1	
MCC1-B		12-CNV-202	0.13	-1.77	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.87DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.00	-56.22	Motor	1	1	
MCC1-A		12-FAN-201	0.15	-2.17	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.90DEG, X/R = 1.00
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.00	-56.16	Motor	1	1	
MCC1-B		12-FAN-202	0.15	-2.20	Branch	1	1	C 12-FAN-202

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.77DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.00	-52.49	Motor	1	1	
MCC1-B		12-FAN-204	0.15	-2.33	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.74DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.00	-52.56	Motor	1	1	
MCC1-A		12-FAN-205	0.15	-2.30	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.87DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.00	-56.22	Motor	1	1	
MCC1-A		12-FAN-205A	0.15	-2.17	Branch	1	1	C 12-FAN-205A

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.90DEG, X/R = 1.00
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.00	-56.16	Motor	1	1	
MCC1-B		12-FAN-206	0.15	-2.20	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 6.079 kA (5.054 MVA) At -19.61DEG, X/R = 1.08
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.00	-40.59	Motor	1	1	
MCC1-B		12-FAN-207	6.08	-19.60	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.77DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.00	-52.49	Motor	1	1	
MCC1-B		12-FAN-208	0.15	-2.33	Branch	1	1	C 12-FAN-208

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 6.658 kA (5.536 MVA) At -20.05DEG, X/R = 1.08
Z1 = 9.058211 +j 6.346099 pu, Z0 = 32.798952 +j 6.479988 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	6.66	-20.05	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 6.577 kA (5.468 MVA) At -21.09DEG, X/R = 1.10
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	6.58	-21.09	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 6.577 kA (5.468 MVA) At -21.09DEG, X/R = 1.10
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	6.58	-21.09	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.74DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.00	-52.56	Motor	1	1	
MCC1-A		12-GCL-201	0.15	-2.30	Branch	1	1	C 12-GCL-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.74DEG, X/R = 1.00
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.00	-52.56	Motor	1	1	
MCC1-A		12-GCL-202	0.15	-2.30	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.77DEG, X/R = 1.00
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.00	-52.49	Motor	1	1	
MCC1-B		12-GCL-203	0.15	-2.33	Branch	1	1	C 12-GCL-203

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 18.078 kA (15.029 MVA) At -64.34DEG, X/R = 2.34
Z1 = 2.013944 +j 6.248693 pu, Z0 = 4.621874 +j 6.090361 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	18.08	-64.34	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.11DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.15	-1.92	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.00	-59.10	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.14DEG, X/R = 0.99
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.15	-1.95	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.00	-59.04	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.14DEG, X/R = 0.99
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.15	-1.95	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.00	-59.04	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 0.510 kA (0.424 MVA) At -7.83DEG, X/R = 1.00
Z1 = 118.468762 +j 18.092332 pu, Z0 = 470.442566 +j 53.461650 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	0.50	-6.51	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.01	-65.33	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 0.510 kA (0.424 MVA) At -7.92DEG, X/R = 1.00
Z1 = 118.530592 +j 18.377794 pu, Z0 = 470.593813 +j 53.677182 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	0.50	-6.60	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.01	-65.12	Branch	1	1	C 12-WSC-202

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.72DEG, X/R = 1.00
Z1 = 474.867723 +j 23.599672 pu, Z0 = ********** +j 75.489002 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.13	-2.19	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.00	-52.37	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.128 kA (0.106 MVA) At -3.18DEG, X/R = 0.99
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.13	-1.77	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.00	-58.52	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.150 kA (0.125 MVA) At -3.12DEG, X/R = 0.99
Z1 = 404.600785 +j 20.998573 pu, Z0 = ********** +j 65.079169 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.00	-59.12	Motor	1	1	
12-LCP-2001		12-MBS-201	0.15	-1.90	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.150 kA (0.125 MVA) At -3.14DEG, X/R = 0.99
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.00	-59.06	Motor	1	1	
12-LCP-2002		12-MBS-202	0.15	-1.93	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.150 kA (0.125 MVA) At -3.14DEG, X/R = 0.99
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.00	-59.06	Motor	1	1	
12-LCP-2003		12-MBS-203	0.15	-1.93	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 8.919 kA (7.415 MVA) At -26.68DEG, X/R = 1.15
Z1 = 6.601907 +j 6.277461 pu, Z0 = 22.973791 +j 6.205436 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.01	-51.18	Motor	1	1	
MCC1-A		12-PMP-201	8.91	-26.66	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 8.749 kA (7.274 MVA) At -27.96DEG, X/R = 1.17
Z1 = 6.663741 +j 6.562924 pu, Z0 = 23.125038 +j 6.420968 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.01	-49.57	Motor	1	1	
MCC1-B		12-PMP-202	8.74	-27.94	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 2.224 kA (1.849 MVA) At -26.44DEG, X/R = 1.17
Z1 = 24.251870 +j 15.504387 pu, Z0 = 98.450562 +j 41.253494 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.11	-74.16	Motor	1	1	
MCC1-A		12-PMP-203	2.15	-24.28	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 18.784 kA (15.617 MVA) At -69.54DEG, X/R = 2.88
Z1 = 1.687348 +j 6.248422 pu, Z0 = 3.357671 +j 6.101093 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.20	-77.20	Motor	1	1	
MCC1-A		12-PMP-204	18.58	-69.46	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 1.872 kA (1.556 MVA) At -26.10DEG, X/R = 1.18
Z1 = 28.723316 +j 17.807529 pu, Z0 = 118.048204 +j 48.657651 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.11	-73.78	Motor	1	1	
MCC1-B		12-PMP-205	1.80	-23.55	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.87DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.00	-56.22	Motor	1	1	
MCC1-A		12-PMP-206	0.15	-2.17	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 6.080 kA (5.054 MVA) At -19.61DEG, X/R = 1.08
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.00	-44.89	Motor	1	1	
MCC1-B		12-PMP-207	6.08	-19.60	Branch	1	1	C 12-PMP-207

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -2.87DEG, X/R = 1.00
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.00	-56.22	Motor	1	1	
MCC1-A		12-PMP-213	0.15	-2.17	Branch	1	1	C 12-PMP-213

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 6.080 kA (5.054 MVA) At -19.61DEG, X/R = 1.08
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.00	-44.89	Motor	1	1	
MCC1-B		12-PMP-214	6.08	-19.60	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.125 kA (0.104 MVA) At -2.72DEG, X/R = 1.00
Z1 = 483.552287 +j 23.921373 pu, Z0 = ********** +j 76.775610 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.00	-52.38	Motor	1	1	
12-LCP-2006		12-SCP-201	0.12	-2.18	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.125 kA (0.104 MVA) At -3.18DEG, X/R = 0.99
Z1 = 483.612838 +j 24.209302 pu, Z0 = ********** +j 76.991142 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.00	-58.54	Motor	1	1	
12-LCP-2007		12-SCP-202	0.12	-1.75	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.60DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	-42.98	Motor	1	1	
MCC2		12-SDG-201	0.13	-2.37	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.127 kA (0.106 MVA) At -2.60DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	-42.98	Motor	1	1	
MCC2		12-SDG-202	0.13	-2.37	Branch	1	1	C 12-SDG-202

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.66DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	-43.01	Motor	1	1	
MCC2		12-SDG-209	0.15	-2.47	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.66DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	-43.01	Motor	1	1	
MCC2		12-SDG-210	0.15	-2.47	Branch	1	1	C 12-SDG-210

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.152 kA (0.127 MVA) At -2.66DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	-43.01	Motor	1	1	
MCC2		12-SDG-211	0.15	-2.47	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-204	0.24	-2.67	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-205	0.24	-2.67	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-208	0.24	-2.67	Branch	1	1	C 12-SLG-208

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-210	0.24	-2.67	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-211	0.24	-2.67	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-212	0.24	-2.67	Branch	1	1	C 12-SLG-212

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-213	0.24	-2.67	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-214	0.24	-2.67	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-215	0.24	-2.67	Branch	1	1	C 12-SLG-215

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.243 kA (0.202 MVA) At -3.44DEG, X/R = 1.00
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.00	-60.10	Motor	1	1	
MCC2		12-SLG-216	0.24	-2.67	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.15DEG, X/R = 0.99
Z1 = 396.114750 +j 20.959677 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.00	-59.19	Motor	1	1	
MCC2		12-SLG-217	0.15	-1.96	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.154 kA (0.128 MVA) At -3.72DEG, X/R = 0.99
Z1 = 396.113455 +j 20.962481 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.01	-60.32	Motor	1	1	
MCC2		12-VLV-218	0.15	-1.37	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 0.501 kA (0.416 MVA) At -7.82DEG, X/R = 1.00
Z1 = 120.619357 +j 18.313056 pu, Z0 = 479.045007 +j 54.344424 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.01	-65.37	Motor	1	1	
12-LCP-2004		12-WSC-201	0.49	-6.47	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 0.501 kA (0.416 MVA) At -7.90DEG, X/R = 1.00
Z1 = 120.681186 +j 18.598518 pu, Z0 = 479.196253 +j 54.559956 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.01	-65.15	Motor	1	1	
12-LCP-2005		12-WSC-202	0.49	-6.56	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 3.895 kA (3.238 MVA) At -47.61DEG, X/R = 1.48
Z1 = 11.051787 +j 14.739146 pu, Z0 = 40.773303 +j 40.052433 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	3.89	-47.61	Branch	1	1	C 14-HPU-201

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 4.457 kA (3.706 MVA) At -55.43DEG, X/R = 1.75
Z1 = 8.296574 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	4.46	-55.43	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 4.459 kA (3.708 MVA) At -55.48DEG, X/R = 1.75
Z1 = 8.296565 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.04	-74.41	Motor	1	1	
MCC5		14-PMP-202	4.42	-55.31	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 2.844 kA (2.364 MVA) At -31.96DEG, X/R = 1.18
Z1 = 18.592251 +j 14.528943 pu, Z0 = 70.935090 +j 39.211628 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.00	-53.82	Motor	1	1	
MCC5		14-PMP-203	2.84	-31.94	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 2.440 kA (2.029 MVA) At -27.41DEG, X/R = 1.12
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.00	-58.34	Motor	1	1	
MCC5		14-SLG-201	2.44	-27.36	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 2.440 kA (2.029 MVA) At -27.41DEG, X/R = 1.12
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.00	-58.34	Motor	1	1	
MCC5		14-SLG-202	2.44	-27.36	Branch	1	1	C 14-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 3.088 kA (2.568 MVA) At -34.87DEG, X/R = 1.22
Z1 = 16.638314 +j 14.461084 pu, Z0 = 63.119462 +j 38.940173 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.01	-62.08	Motor	1	1	
MCC5		14-SLG-203	3.08	-34.80	Branch	1	1	C 14-SLG-203

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 2.786 kA (2.317 MVA) At -31.37DEG, X/R = 1.17
Z1 = 19.110481 +j 14.553778 pu, Z0 = 73.008199 +j 39.310927 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.01	-64.04	Motor	1	1	
MCC5		14-SLG-204	2.78	-31.23	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.331 kA (0.840 MVA) At -57.87DEG, X/R = 1.88
Z1 = 68.006174 +j 108.327979 pu, Z0 = 54.005787 +j 86.528572 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.33	-57.87	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 6.061 kA (2.184 MVA) At -62.99DEG, X/R = 2.20
Z1 = 22.538056 +j 45.162676 pu, Z0 = 17.344422 +j 32.707900 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	6.06	-62.99	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.555 kA (2.001 MVA) At -58.67DEG, X/R = 1.93
Z1 = 25.127068 +j 46.103070 pu, Z0 = 27.700492 +j 36.469481 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.56	-58.67	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.099 kA (0.396 MVA) At -56.88DEG, X/R = 1.83
Z1 = 148.875259 +j 227.252388 pu, Z0 = 116.599876 +j 181.028260 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.10	-56.88	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 20.991 kA (17.452 MVA) At -78.12DEG, X/R = 4.86
Z1 = 1.163115 +j 6.053688 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.01	-65.35	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.01	-58.09	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.01	-59.05	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.00	-56.34	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.00	-52.80	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	0.40	-64.54	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.00	-56.34	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.01	-58.97	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.00	-56.34	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.03	-65.97	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.21	-77.51	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.00	-52.80	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.00	-52.50	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.21	-81.28	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.00	-52.80	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.00	-56.34	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.01	-59.05	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	20.09	-78.44	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 19.619 kA (16.311 MVA) At -78.02DEG, X/R = 4.82
Z1 = 1.224949 +j 6.339151 pu, Z0 = 1.369814 +j 5.525876 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.01	-60.17	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.01	-58.19	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.01	-58.19	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.03	-65.19	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.01	-57.56	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.01	-57.48	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.01	-64.57	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.21	-76.20	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.00	-57.66	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.00	-52.02	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.00	-52.02	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.00	-53.35	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.00	-55.56	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.00	-57.66	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.00	-55.56	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.00	-52.02	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	19.31	-78.14	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.153 kA (0.127 MVA) At -3.12DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.00	-59.18	Motor	1	1	
MCC1-A		MCC1-SPARE	0.15	-1.92	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 18.919 kA (15.729 MVA) At -75.69DEG, X/R = 4.04
Z1 = 1.361619 +j 6.336559 pu, Z0 = 2.012588 +j 6.441841 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.01	-61.10	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	18.55	-75.94	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.12	-71.04	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.00	-51.36	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	-42.09	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	-42.09	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.00	-51.36	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.00	-51.36	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	-42.20	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	-42.20	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.01	-60.69	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.02	-60.70	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.02	-60.70	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	-42.20	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.02	-60.70	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.03	-63.76	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.03	-66.00	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.01	-59.22	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.01	-57.87	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.01	-64.18	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.01	-58.66	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.01	-58.42	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	-27.39	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	-27.39	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 4.862 kA (4.042 MVA) At -60.40DEG, X/R = 2.01
Z1 = 6.749612 +j 14.090326 pu, Z0 = 23.564511 +j 37.457161 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	4.79	-60.27	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.00	-54.75	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.00	-58.92	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.00	-58.92	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.04	-74.89	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.01	-63.19	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.01	-64.98	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 5.977 kA (4.969 MVA) At -19.76DEG, X/R = 1.08
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	-17.23	Motor	1	1	
MCC2		RSFDS PMP1	5.98	-19.76	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 5.977 kA (4.969 MVA) At -19.76DEG, X/R = 1.08
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	-17.23	Motor	1	1	
MCC2		RSFDS PMP2	5.98	-19.76	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 22.100 kA (18.374 MVA) At -79.44DEG, X/R = 5.48
Z1 = 1.072159 +j 5.923857 pu, Z0 = 0.840462 +j 4.771536 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	21.18	-79.79	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	0.93	-71.61	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 21.040 kA (17.492 MVA) At -79.81DEG, X/R = 5.67
Z1 = 1.095098 +j 6.154137 pu, Z0 = 0.840464 +j 4.771543 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	20.72	-79.94	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.33	-71.56	Branch	1	1	C P0802

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 11.825 kA (9.831 MVA) At -40.05DEG, X/R = 1.35
Z1 = 4.468855 +j 6.529120 pu, Z0 = 14.441521 +j 7.212103 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	11.82	-40.05	Branch	1	1	C TX-1

(Serial #34798)
Project Name: WPCP Reliability Improvements Project
Comment: Ground Fault - Low Voltage Interrupting Report

Interrupting Results S L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 15.980 kA (13.285 MVA) At -65.56DEG, X/R = 2.43
Z1 = 2.132720 +j 6.682699 pu, Z0 = 5.096984 +j 7.826407 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	15.98	-65.56	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 3.867 kA (3.215 MVA) At -44.71DEG, X/R = 1.41
Z1 = 11.693970 +j 14.275703 pu, Z0 = 43.341832 +j 38.198794 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	3.87	-44.71	Branch	1	1	C TX-3

Double Line to Ground Fault

Equipment Duty Ratings

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
LP-1 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	Interrupting (kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-1 MAIN	GE	/THQD	ANSI-SYM	22.00			2.27(-89.7%)		
LP-1		/	ANSI-SYM	42.00			2.27(-94.6%)		

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Equipment Duty Comparison Report For Bus:
LP-2 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	Interrupting (kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-2 MAIN	GE	/THQD	ANSI-SYM	22.00			5.90(-73.2%)		
B LP-2 BRANCH	GE	/THHQB	ANSI-SYM	22.00			5.90(-73.2%)		
LP-2		/	ANSI-SYM	22.00			5.90(-73.2%)		

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Equipment Duty Comparison Report For Bus:
LP-3 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	Interrupting (kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-3 MAIN	GE	/THHQB	ANSI-SYM	22.00			5.69(-74.1%)		
LP-3		/	ANSI-SYM	22.00			5.69(-74.1%)		

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Equipment Duty Comparison Report For Bus:
LP-4 Area: 1 Zone: 1 Bus kV: 0.21 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	Interrupting (kA)	Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B LP-4 MAIN	GE	/THHQB	ANSI-SYM	22.00			1.07(-95.1%)		
LP-4		/	ANSI-SYM	14.00			1.07(-92.3%)		

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

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Equipment Duty Comparison Report For Bus:
M5 A Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
M5-1A2 - P0003	GE	/VAC LIMITAMP	ANSI-SYM	52.50		34.48(-34.3%)		
M5-2A2 - P0004	GE	/VAC LIMITAMP	ANSI-SYM	52.50		34.48(-34.3%)		
M5-5A	GE	/VAC LIMITAMP	ANSI-SYM	52.50		34.57(-34.2%)		
M5A 6A2	GE	/VAC LIMITAMP	ANSI-SYM	52.50		34.61(-34.1%)		
M5 A		/	ANSI-TOT	50.00		45.93(-8.1%)		Warning

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Equipment Duty Comparison Report For Bus:
M5 B Area: 1 Zone: 1 Bus kV: 4.16 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
M5B 1B1	GE	/VAC LIMITAMP	ANSI-SYM	52.50		23.92(-54.4%)		
M5-2B2 - P0010	GE	/VAC LIMITAMP	ANSI-SYM	52.50		23.66(-54.9%)		
M5-5B	GE	/VAC LIMITAMP	ANSI-SYM	52.50		23.74(-54.8%)		
M5 B		/	ANSI-TOT	50.00		32.04(-35.9%)		

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Equipment Duty Comparison Report For Bus:
MCC1-A Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment			Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc	1/2 Cycle kA (%)	Interrupting kA (%)	
B 12-PMP-201	GE	/SEL	ANSI-SYM	65.00		21.72(-66.6%)		
B 05-PMP-201	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-CNV-201	GE	/SEL	ANSI-SYM	65.00		21.73(-66.6%)		
B 12-FAN-201	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-FAN-205	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B MCC1-A MAIN	GE	/SKL8	ANSI-SYM	65.00		19.89(-69.4%)		
B 1A-MCC2	GE	/SGL6	ANSI-SYM	65.00		20.83(-67.9%)		
B 12-PMP-206	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-LCP-2001	GE	/SEL	ANSI-SYM	65.00		21.73(-66.6%)		
B 12-GBN-201	GE	/SEL	ANSI-SYM	65.00		21.75(-66.5%)		
B 12-PMP-213	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-LCP-2004	GE	/SEL	ANSI-SYM	65.00		21.69(-66.6%)		
B 12-PMP-203	GE	/SEL	ANSI-SYM	65.00		21.39(-67.1%)		
B 12-GCL-201	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-LCP-2006	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B 12-HVU-203	GE	/SEL	ANSI-SYM	65.00		21.75(-66.5%)		
B 12-PMP-204	GE	/SEL	ANSI-SYM	65.00		21.36(-67.1%)		
B 12-GCL-202	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-FAN-205A	GE	/SEL	ANSI-SYM	65.00		21.74(-66.6%)		
B MCC1-SPARE	GE	/SEL	ANSI-SYM	65.00		21.73(-66.6%)		
MCC1-A		/	ANSI-SYM	65.00		21.75(-66.5%)		

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Equipment Duty Comparison Report For Bus:
MCC1-B Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC1-B MAIN	GE	/SKL8	ANSI-SYM	65.00			19.24(-70.4%)		
B 05-PMP-202	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-LCP-2002	GE	/SEL	ANSI-SYM	65.00			19.80(-69.5%)		
B 12-LCP-2003	GE	/SEL	ANSI-SYM	65.00			19.80(-69.5%)		
B 12-LCP-2005	GE	/SEL	ANSI-SYM	65.00			19.76(-69.6%)		
B 12-CNV-202	GE	/SEL	ANSI-SYM	65.00			19.80(-69.5%)		
B MCC1B-SPARE1	GE	/SEL	ANSI-SYM	65.00			19.82(-69.5%)		
B 12-LCP-2007	GE	/SEL	ANSI-SYM	65.00			19.80(-69.5%)		
B 12-PMP-202	GE	/SEL	ANSI-SYM	65.00			19.79(-69.5%)		
B 12-GBN-202	GE	/SEL	ANSI-SYM	65.00			19.82(-69.5%)		
B 12-PMP-205	GE	/SEL	ANSI-SYM	65.00			19.46(-70.1%)		
B MCC1B-SPARE2	GE	/SEL	ANSI-SYM	65.00			19.82(-69.5%)		
B 12-PMP-207	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-FAN-204	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-GBN-203	GE	/SEL	ANSI-SYM	65.00			19.82(-69.5%)		
B 12-GCL-203	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-FAN-207	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-FAN-202	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-PMP-214	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-FAN-206	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
B 12-FAN-208	GE	/SEL	ANSI-SYM	65.00			19.81(-69.5%)		
MCC1-B		/	ANSI-SYM	65.00			19.82(-69.5%)		

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Equipment Duty Comparison Report For Bus:
MCC2 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle Interrupting (kA)	(kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B MCC2-SPARE	GE	/SEL	ANSI-SYM	65.00			20.49(-68.5%)		
B 11-SLG-207	GE	/SEL	ANSI-SYM	65.00			20.45(-68.5%)		
B MCC5	GE	/SGL6	ANSI-SYM	65.00			20.18(-69.0%)		
B 12-SLG-204	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-BFG-203	GE	/SEL	ANSI-SYM	65.00			20.48(-68.5%)		
B 12-SLG-205	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SLG-208	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SLG-211	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SDG-201	GE	/SEL	ANSI-SYM	65.00			20.49(-68.5%)		
B 12-SLG-212	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SLG-213	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SLG-210	GE	/SEL	ANSI-SYM	65.00			20.47(-68.5%)		
B 12-SDG-202	GE	/SEL	ANSI-SYM	65.00			20.49(-68.5%)		

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Equipment Duty Report

EQUIPMENT DUTY VIOLATION AND WARNING DETAILED REPORTS
Driving Point Voltage (P.U.) = 1.00000

B 12-BFG-201	GE	/SEL	ANSI-SYM	65.00	20.48(-68.5%)
B 12-BFG-202	GE	/SEL	ANSI-SYM	65.00	20.48(-68.5%)
B 12-SDG-209	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B 12-SDG-210	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B 05-VLV-201	GE	/SEL	ANSI-SYM	65.00	20.46(-68.5%)
B 11-SLG-201	GE	/SEL	ANSI-SYM	65.00	20.44(-68.6%)
B 11-SLG-202	GE	/SEL	ANSI-SYM	65.00	20.44(-68.6%)
B 12-SDG-211	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B 11-SLG-205	GE	/SEL	ANSI-SYM	65.00	20.44(-68.6%)
B 11-SLG-203	GE	/SEL	ANSI-SYM	65.00	20.42(-68.6%)
B 11-SLG-204	GE	/SEL	ANSI-SYM	65.00	20.42(-68.6%)
B 12-SLG-214	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 12-SLG-215	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 12-SLG-216	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 12-SLG-217	GE	/SEL	ANSI-SYM	65.00	20.47(-68.5%)
B 05-VLV-217	GE	/SEL	ANSI-SYM	65.00	20.46(-68.5%)
B 05-VLV-219	GE	/SEL	ANSI-SYM	65.00	20.46(-68.5%)
B 12-VLV-218	GE	/SEL	ANSI-SYM	65.00	20.46(-68.5%)
B TX-1	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B TX-2	GE	/SFL	ANSI-SYM	65.00	20.49(-68.5%)
B RSFDS PMP1	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
B RSFDS PMP2	GE	/SEL	ANSI-SYM	65.00	20.49(-68.5%)
MCC2		/	ANSI-SYM	65.00	20.49(-68.5%)

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Equipment Duty Comparison Report For Bus:
MCC5 Area: 1 Zone: 1 Bus kV: 0.48 kV

Equipment				Ratings			Duties		Comments
ID	Manufacturer	/ Style	Test Standard	1/2 Cycle (kA)	Interrupting (kA) Cyc		1/2 Cycle kA (%)	Interrupting kA (%)	
B 14-PMP-203	GE	/SEL	ANSI-SYM	65.00			7.56(-88.4%)		
B MCC-5	GE	/SGL6	ANSI-SYM	65.00			7.23(-88.9%)		
B 14-SLG-201	GE	/SEL	ANSI-SYM	65.00			7.55(-88.4%)		
B TX-3	GE	/SEL	ANSI-SYM	65.00			7.57(-88.4%)		
B 14-SLG-202	GE	/SEL	ANSI-SYM	65.00			7.55(-88.4%)		
B 14-PMP-202	GE	/SEL	ANSI-SYM	65.00			7.39(-88.6%)		
B 14-SLG-203	GE	/SEL	ANSI-SYM	65.00			7.53(-88.4%)		
B 14-HPU-201	GE	/SEL	ANSI-SYM	65.00			7.57(-88.4%)		
B 14-SLG-204	GE	/SEL	ANSI-SYM	65.00			7.51(-88.4%)		
B 14-PMP-201	GE	/SEL	ANSI-SYM	65.00			7.57(-88.4%)		
MCC5		/	ANSI-SYM	65.00			7.57(-88.4%)		

Double Line to Ground Fault

High Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - High Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus M2 4.160 kV, Zone 1, Area 1
E/Z = 25.756 kA (185.58 MVA) At 159.05DEG, X/R = 7.21
Z1 = 0.072832 +j 0.528490 pu, Z0 = 0.080941 +j 0.566585 pu
1.6*ISYM= 41.209 IASYM Based on X/R ratio = 35.175

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M2		M2	24.25	158.13	Util	1	1	
M5 B		M2	1.56	173.57	Branch	1	1	C M5B

*Bus M3-N 4.160 kV, Zone 1, Area 1
E/Z = 38.787 kA (279.48 MVA) At 158.87DEG, X/R = 7.11
Z1 = 0.049276 +j 0.351584 pu, Z0 = 0.052915 +j 0.370407 pu
1.6*ISYM= 62.060 IASYM Based on X/R ratio = 52.834

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
CONTRIB M3-N		M3-N	37.09	158.13	Util	1	1	
M5 A		M3-N	1.76	174.64	Branch	1	1	C M5A

*Bus M5 A 4.160 kV, Zone 1, Area 1
E/Z = 34.806 kA (250.79 MVA) At 164.10DEG, X/R = 6.03
Z1 = 0.060509 +j 0.381949 pu, Z0 = 0.104205 +j 0.506075 pu
1.6*ISYM= 55.690 IASYM Based on X/R ratio = 45.926

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0005		M5 A	0.33	174.08	Motor	1	1	
M EP0006		M5 A	0.33	174.08	Motor	1	1	
M3-N		M5 A	33.07	163.46	Branch	1	1	C M5A
P0003		M5 A	0.33	174.22	Branch	1	1	C P0003B
P0004		M5 A	0.33	174.20	Branch	1	1	C P0004B
P0007		M5 A	0.24	174.41	Branch	1	1	C P0007
TX TR-1 H		M5 A	0.22	-169.27	Branch	1	1	C P0008
M5 B		M5 A	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus M5 B 4.160 kV, Zone 1, Area 1
E/Z = 23.984 kA (172.81 MVA) At 162.70DEG, X/R = 6.42
Z1 = 0.083506 +j 0.557796 pu, Z0 = 0.132231 +j 0.702254 pu
1.6*ISYM= 38.374 IASYM Based on X/R ratio = 32.036

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M EP0011		M5 B	0.33	173.72	Motor	1	1	
M EP0012		M5 B	0.33	173.72	Motor	1	1	
M EP0014		M5 B	0.26	174.01	Motor	1	1	
M2		M5 B	22.45	161.88	Branch	1	1	C M5B
TX TR-2 H		M5 B	0.07	-168.98	Branch	1	1	C P0009
P0010		M5 B	0.33	173.87	Branch	1	1	C P0010B
P0013		M5 B	0.24	174.07	Branch	1	1	C P0013
M5 A		M5 B	0.00	0.00	Branch	1	1	M5 A-B TIE 52TIE

*Bus P0003 4.160 kV, Zone 1, Area 1
E/Z = 33.664 kA (242.56 MVA) At 171.85DEG, X/R = 3.64
Z1 = 0.097253 +j 0.396035 pu, Z0 = 0.254538 +j 0.563161 pu
1.6*ISYM= 53.862 IASYM Based on X/R ratio = 39.942

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0003	33.33	171.81	Branch	1	1	C P0003B
P0003 MODEL		P0003	0.33	175.11	Branch	1	1	C P0003

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - High Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus P0003 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 30.729 kA (221.42 MVA) At -177.96DEG, X/R = 2.37
Z1 = 0.156831 +j 0.419057 pu, Z0 = 0.498829 +j 0.655927 pu
1.6*ISYM= 49.167 IASYM Based on X/R ratio = 33.522

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0003 MODEL		P0003 MODEL	0.34	176.26	Motor	1	1	
P0003		P0003 MODEL	30.40	-177.90	Branch	1	1	C P0003

*Bus P0004 4.160 kV, Zone 1, Area 1
E/Z = 33.264 kA (239.68 MVA) At 173.61DEG, X/R = 3.34
Z1 = 0.106428 +j 0.399567 pu, Z0 = 0.292121 +j 0.577433 pu
1.6*ISYM= 53.223 IASYM Based on X/R ratio = 38.760

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 A		P0004	32.93	173.59	Branch	1	1	C P0004B
P0004 MODEL		P0004	0.33	175.29	Branch	1	1	C P0004

*Bus P0004 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 31.689 kA (228.33 MVA) At 179.21DEG, X/R = 2.64
Z1 = 0.138515 +j 0.411957 pu, Z0 = 0.423663 +j 0.627383 pu
1.6*ISYM= 50.702 IASYM Based on X/R ratio = 35.225

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0004 MODEL		P0004 MODEL	0.34	175.93	Motor	1	1	
P0004		P0004 MODEL	31.35	179.24	Branch	1	1	C P0004

*Bus P0007 4.160 kV, Zone 1, Area 1
E/Z = 33.455 kA (241.06 MVA) At 172.76DEG, X/R = 3.47
Z1 = 0.102088 +j 0.397851 pu, Z0 = 0.273330 +j 0.570297 pu
1.6*ISYM= 53.529 IASYM Based on X/R ratio = 39.310

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0007		P0007	0.25	175.41	Motor	1	1	
M5 A		P0007	33.21	172.74	Branch	1	1	C P0007

*Bus P0010 4.160 kV, Zone 1, Area 1
E/Z = 23.417 kA (168.73 MVA) At 169.64DEG, X/R = 3.97
Z1 = 0.128965 +j 0.575277 pu, Z0 = 0.320147 +j 0.773611 pu
1.6*ISYM= 37.467 IASYM Based on X/R ratio = 28.306

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M5 B		P0010	23.08	169.57	Branch	1	1	C P0010B
P0010 MODEL		P0010	0.33	174.68	Branch	1	1	C P0010

*Bus P0010 MODEL 4.160 kV, Zone 1, Area 1
E/Z = 22.462 kA (161.85 MVA) At 175.70DEG, X/R = 2.98
Z1 = 0.174329 +j 0.592854 pu, Z0 = 0.508063 +j 0.844969 pu
1.6*ISYM= 35.939 IASYM Based on X/R ratio = 25.576

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0010 MODEL		P0010 MODEL	0.34	175.42	Motor	1	1	
P0010		P0010 MODEL	22.13	175.71	Branch	1	1	C P0010

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - High Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus P0013 4.160 kV, Zone 1, Area 1
E/Z = 23.323 kA (168.05 MVA) At 170.32DEG, X/R = 3.82
Z1 = 0.133942 +j 0.577127 pu, Z0 = 0.338938 +j 0.780747 pu
1.6*ISYM= 37.317 IASYM Based on X/R ratio = 27.971

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M P0013		P0013	0.25	174.98	Motor	1	1	
M5 B		P0013	23.08	170.27	Branch	1	1	C P0013

*Bus TX TR-1 H 4.160 kV, Zone 1, Area 1
E/Z = 32.702 kA (235.63 MVA) At 172.61DEG, X/R = 3.59
Z1 = 0.101306 +j 0.404663 pu, Z0 = 0.269562 +j 0.598579 pu
1.6*ISYM= 52.323 IASYM Based on X/R ratio = 38.697

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 L		TX TR-1 H	0.22	-168.15	Branch	1	1	TX TR-1
M5 A		TX TR-1 H	32.49	172.48	Branch	1	1	C P0008

*Bus TX TR-2 H 4.160 kV, Zone 1, Area 1
E/Z = 23.439 kA (168.88 MVA) At 166.87DEG, X/R = 4.75
Z1 = 0.109922 +j 0.572529 pu, Z0 = 0.238532 +j 0.761720 pu
1.6*ISYM= 37.502 IASYM Based on X/R ratio = 29.446

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 L		TX TR-2 H	0.07	-168.40	Branch	1	1	TX TR-2
M5 B		TX TR-2 H	23.37	166.80	Branch	1	1	C P0009

Double Line to Ground Fault

Low Voltage Momentary Report

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.279 kA (0.23 MVA) At -106.30DEG, X/R = 0.10
Z1 = 381.372930 +j 38.832586 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.447 IASYM Based on X/R ratio = 0.279

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.02	-154.48	Motor	1	1	
MCC1-A		05-PMP-201	0.27	-103.70	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 9.743 kA (8.10 MVA) At -135.06DEG, X/R = 0.60
Z1 = 9.886147 +j 6.452623 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 15.588 IASYM Based on X/R ratio = 9.744

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.02	-155.16	Motor	1	1	
MCC1-B		05-PMP-202	9.73	-135.03	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.447 kA (0.37 MVA) At -107.65DEG, X/R = 0.12
Z1 = 238.379864 +j 30.142864 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.715 IASYM Based on X/R ratio = 0.447

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.03	-158.89	Motor	1	1	
MCC2		05-VLV-201	0.43	-104.44	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 13.004 kA (10.81 MVA) At -144.20DEG, X/R = 0.80
Z1 = 6.757240 +j 5.929869 pu, Z0 = 23.767812 +j 7.336932 pu
1.6*ISYM= 20.806 IASYM Based on X/R ratio = 13.023

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.03	-159.98	Motor	1	1	
MCC2		05-VLV-217	12.97	-144.16	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.287 kA (0.24 MVA) At -108.69DEG, X/R = 0.14
Z1 = 370.462348 +j 55.468661 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.460 IASYM Based on X/R ratio = 0.287

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.03	-158.80	Motor	1	1	
MCC2		05-VLV-219	0.27	-103.65	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.464 kA (0.39 MVA) At -110.79DEG, X/R = 0.18
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.743 IASYM Based on X/R ratio = 0.464

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.06	-162.36	Motor	1	1	
MCC2		11-SLG-201	0.43	-104.34	Branch	1	1	C 11-SLG-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.464 kA (0.39 MVA) At -110.79DEG, X/R = 0.18
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.743 IASYM Based on X/R ratio = 0.464

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.06	-162.36	Motor	1	1	
MCC2		11-SLG-202	0.43	-104.34	Branch	1	1	C 11-SLG-202

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.726 kA (0.60 MVA) At -112.18DEG, X/R = 0.20
Z1 = 145.669227 +j 30.995287 pu, Z0 = 623.460159 +j 49.023445 pu
1.6*ISYM= 1.161 IASYM Based on X/R ratio = 0.726

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.08	-164.41	Motor	1	1	
MCC2		11-SLG-203	0.68	-106.69	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 1.117 kA (0.93 MVA) At -113.29DEG, X/R = 0.22
Z1 = 94.140632 +j 21.473282 pu, Z0 = 393.032607 +j 46.567932 pu
1.6*ISYM= 1.786 IASYM Based on X/R ratio = 1.117

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.08	-164.49	Motor	1	1	
MCC2		11-SLG-204	1.07	-109.86	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.464 kA (0.39 MVA) At -110.79DEG, X/R = 0.18
Z1 = 228.836160 +j 43.549978 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.743 IASYM Based on X/R ratio = 0.464

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.06	-162.36	Motor	1	1	
MCC2		11-SLG-205	0.43	-104.34	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.452 kA (0.38 MVA) At -108.72DEG, X/R = 0.14
Z1 = 235.262963 +j 34.801894 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.724 IASYM Based on X/R ratio = 0.452

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.04	-160.47	Motor	1	1	
MCC2		11-SLG-207	0.43	-104.41	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.230 kA (0.19 MVA) At -105.05DEG, X/R = 0.07
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.367 IASYM Based on X/R ratio = 0.230

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.01	-147.66	Motor	1	1	
MCC2		12-BFG-201	0.22	-103.63	Branch	1	1	C 12-BFG-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.230 kA (0.19 MVA) At -105.05DEG, X/R = 0.07
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.367 IASYM Based on X/R ratio = 0.230

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.01	-147.66	Motor	1	1	
MCC2		12-BFG-202	0.22	-103.63	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.230 kA (0.19 MVA) At -105.05DEG, X/R = 0.07
Z1 = 463.246723 +j 35.834661 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.367 IASYM Based on X/R ratio = 0.230

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.01	-147.66	Motor	1	1	
MCC2		12-BFG-203	0.22	-103.63	Branch	1	1	C 12-BFG-203

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.23 MVA) At -106.98DEG, X/R = 0.11
Z1 = 378.250631 +j 43.660466 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.451 IASYM Based on X/R ratio = 0.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.02	-156.18	Motor	1	1	
MCC1-A		12-CNV-201	0.27	-103.68	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.237 kA (0.20 MVA) At -107.53DEG, X/R = 0.12
Z1 = 449.373306 +j 57.056363 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.379 IASYM Based on X/R ratio = 0.237

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.02	-156.15	Motor	1	1	
MCC1-B		12-CNV-202	0.22	-103.60	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.62DEG, X/R = 0.08
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.01	-151.97	Motor	1	1	
MCC1-A		12-FAN-201	0.27	-103.72	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.71DEG, X/R = 0.09
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.01	-151.97	Motor	1	1	
MCC1-B		12-FAN-202	0.27	-103.82	Branch	1	1	C 12-FAN-202

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -105.02DEG, X/R = 0.07
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.01	-147.68	Motor	1	1	
MCC1-B		12-FAN-204	0.27	-103.84	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -104.93DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.01	-147.68	Motor	1	1	
MCC1-A		12-FAN-205	0.27	-103.75	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.62DEG, X/R = 0.08
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.01	-151.97	Motor	1	1	
MCC1-A		12-FAN-205A	0.27	-103.72	Branch	1	1	C 12-FAN-205A

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.71DEG, X/R = 0.09
Z1 = 384.517623 +j 34.535095 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.01	-151.97	Motor	1	1	
MCC1-B		12-FAN-206	0.27	-103.82	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 9.736 kA (8.09 MVA) At -135.03DEG, X/R = 0.59
Z1 = 9.897180 +j 6.449257 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 15.577 IASYM Based on X/R ratio = 9.738

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.01	-148.31	Motor	1	1	
MCC1-B		12-FAN-207	9.73	-135.02	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -105.02DEG, X/R = 0.07
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.01	-147.68	Motor	1	1	
MCC1-B		12-FAN-208	0.27	-103.84	Branch	1	1	C 12-FAN-208

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 10.685 kA (8.88 MVA) At -134.44DEG, X/R = 0.58
Z1 = 9.052782 +j 5.750364 pu, Z0 = 32.798952 +j 6.479988 pu
1.6*ISYM= 17.096 IASYM Based on X/R ratio = 10.687

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	10.69	-134.44	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 10.381 kA (8.63 MVA) At -137.27DEG, X/R = 0.64
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 16.609 IASYM Based on X/R ratio = 10.384

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	10.38	-137.27	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 10.381 kA (8.63 MVA) At -137.27DEG, X/R = 0.64
Z1 = 9.119036 +j 6.419334 pu, Z0 = 32.950199 +j 6.695520 pu
1.6*ISYM= 16.609 IASYM Based on X/R ratio = 10.384

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	10.38	-137.27	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -104.93DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.01	-147.68	Motor	1	1	
MCC1-A		12-GCL-201	0.27	-103.75	Branch	1	1	C 12-GCL-201

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -104.93DEG, X/R = 0.07
Z1 = 387.692827 +j 28.866301 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.01	-147.68	Motor	1	1	
MCC1-A		12-GCL-202	0.27	-103.75	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.23 MVA) At -105.02DEG, X/R = 0.07
Z1 = 387.725855 +j 29.512490 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.439 IASYM Based on X/R ratio = 0.274

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.01	-147.68	Motor	1	1	
MCC1-B		12-GCL-203	0.27	-103.84	Branch	1	1	C 12-GCL-203

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 20.975 kA (17.44 MVA) At 176.11DEG, X/R = 2.43
Z1 = 2.008514 +j 5.652957 pu, Z0 = 4.621874 +j 6.090361 pu
1.6*ISYM= 33.561 IASYM Based on X/R ratio = 22.976

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	20.98	176.11	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.23 MVA) At -106.97DEG, X/R = 0.11
Z1 = 378.234278 +j 43.615388 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.451 IASYM Based on X/R ratio = 0.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.27	-103.68	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.02	-156.09	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.23 MVA) At -107.06DEG, X/R = 0.11
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.451 IASYM Based on X/R ratio = 0.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.27	-103.77	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.02	-156.09	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.23 MVA) At -107.06DEG, X/R = 0.11
Z1 = 378.215510 +j 44.236446 pu, Z0 = ********** +j 64.008092 pu
1.6*ISYM= 0.451 IASYM Based on X/R ratio = 0.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.27	-103.77	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.02	-156.09	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 0.938 kA (0.78 MVA) At -112.87DEG, X/R = 0.21
Z1 = 112.140733 +j 24.815563 pu, Z0 = 470.442566 +j 53.461650 pu
1.6*ISYM= 1.501 IASYM Based on X/R ratio = 0.938

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	0.89	-109.21	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.07	-163.52	Branch	1	1	C 12-WSC-201

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 0.938 kA (0.78 MVA) At -113.17DEG, X/R = 0.22
Z1 = 112.112816 +j 25.437895 pu, Z0 = 470.593813 +j 53.677182 pu
1.6*ISYM= 1.501 IASYM Based on X/R ratio = 0.938

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	0.89	-109.53	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.07	-163.52	Branch	1	1	C 12-WSC-202

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.230 kA (0.19 MVA) At -105.02DEG, X/R = 0.07
Z1 = 463.083994 +j 35.579672 pu, Z0 = ********** +j 75.489002 pu
1.6*ISYM= 0.367 IASYM Based on X/R ratio = 0.230

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.22	-103.60	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.01	-147.63	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.237 kA (0.20 MVA) At -107.52DEG, X/R = 0.12
Z1 = 449.351620 +j 56.992054 pu, Z0 = ********** +j 75.704533 pu
1.6*ISYM= 0.379 IASYM Based on X/R ratio = 0.237

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.22	-103.60	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.02	-156.06	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.276 kA (0.23 MVA) At -107.03DEG, X/R = 0.11
Z1 = 386.149800 +j 44.990795 pu, Z0 = ********** +j 65.079169 pu
1.6*ISYM= 0.441 IASYM Based on X/R ratio = 0.276

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.02	-156.18	Motor	1	1	
12-LCP-2001		12-MBS-201	0.26	-103.66	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.276 kA (0.23 MVA) At -107.12DEG, X/R = 0.11
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.441 IASYM Based on X/R ratio = 0.276

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.02	-156.18	Motor	1	1	
12-LCP-2002		12-MBS-202	0.26	-103.75	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.276 kA (0.23 MVA) At -107.12DEG, X/R = 0.11
Z1 = 386.129234 +j 45.610759 pu, Z0 = ********** +j 65.294700 pu
1.6*ISYM= 0.441 IASYM Based on X/R ratio = 0.276

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.02	-156.18	Motor	1	1	
12-LCP-2003		12-MBS-203	0.26	-103.75	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 13.533 kA (11.25 MVA) At -143.72DEG, X/R = 0.78
Z1 = 6.575074 +j 5.684628 pu, Z0 = 22.973791 +j 6.205436 pu
1.6*ISYM= 21.652 IASYM Based on X/R ratio = 13.550

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.03	-159.98	Motor	1	1	
MCC1-A		12-PMP-201	13.50	-143.68	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 12.966 kA (10.78 MVA) At -146.82DEG, X/R = 0.85
Z1 = 6.639337 +j 6.352815 pu, Z0 = 23.125038 +j 6.420968 pu
1.6*ISYM= 20.745 IASYM Based on X/R ratio = 12.995

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.03	-160.09	Motor	1	1	
MCC1-B		12-PMP-202	12.93	-146.78	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 4.010 kA (3.33 MVA) At -135.04DEG, X/R = 0.66
Z1 = 22.573509 +j 15.472604 pu, Z0 = 98.450562 +j 41.253494 pu
1.6*ISYM= 6.416 IASYM Based on X/R ratio = 4.012

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.40	-175.27	Motor	1	1	
MCC1-A		12-PMP-203	3.71	-131.03	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 21.103 kA (17.54 MVA) At 171.08DEG, X/R = 3.00
Z1 = 1.668413 +j 5.649442 pu, Z0 = 3.357671 +j 6.101093 pu
1.6*ISYM= 33.765 IASYM Based on X/R ratio = 24.053

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.41	178.96	Motor	1	1	
MCC1-A		12-PMP-204	20.70	170.92	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 3.421 kA (2.84 MVA) At -135.22DEG, X/R = 0.67
Z1 = 26.355572 +j 18.332175 pu, Z0 = 118.048204 +j 48.657651 pu
1.6*ISYM= 5.474 IASYM Based on X/R ratio = 3.423

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.40	-175.20	Motor	1	1	
MCC1-B		12-PMP-205	3.12	-130.48	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.62DEG, X/R = 0.08
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.01	-151.97	Motor	1	1	
MCC1-A		12-PMP-206	0.27	-103.72	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 9.739 kA (8.10 MVA) At -135.04DEG, X/R = 0.60
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 15.583 IASYM Based on X/R ratio = 9.741

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.01	-152.63	Motor	1	1	
MCC1-B		12-PMP-207	9.73	-135.02	Branch	1	1	C 12-PMP-207

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.277 kA (0.23 MVA) At -105.62DEG, X/R = 0.08
Z1 = 384.502474 +j 33.897177 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.443 IASYM Based on X/R ratio = 0.277

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.01	-151.97	Motor	1	1	
MCC1-A		12-PMP-213	0.27	-103.72	Branch	1	1	C 12-PMP-213

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 9.739 kA (8.10 MVA) At -135.04DEG, X/R = 0.60
Z1 = 9.891626 +j 6.450872 pu, Z0 = 36.108240 +j 6.812485 pu
1.6*ISYM= 15.583 IASYM Based on X/R ratio = 9.741

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.01	-152.63	Motor	1	1	
MCC1-B		12-PMP-214	9.73	-135.02	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.226 kA (0.19 MVA) At -105.03DEG, X/R = 0.07
Z1 = 471.339393 +j 36.370216 pu, Z0 = ********** +j 76.775610 pu
1.6*ISYM= 0.361 IASYM Based on X/R ratio = 0.226

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.01	-147.66	Motor	1	1	
12-LCP-2006		12-SCP-201	0.22	-103.59	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.233 kA (0.19 MVA) At -107.58DEG, X/R = 0.12
Z1 = 457.108742 +j 58.554577 pu, Z0 = ********** +j 76.991142 pu
1.6*ISYM= 0.373 IASYM Based on X/R ratio = 0.233

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.02	-156.14	Motor	1	1	
12-LCP-2007		12-SCP-202	0.22	-103.58	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.19 MVA) At -104.23DEG, X/R = 0.06
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.363 IASYM Based on X/R ratio = 0.227

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	-137.49	Motor	1	1	
MCC2		12-SDG-201	0.22	-103.66	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.19 MVA) At -104.23DEG, X/R = 0.06
Z1 = 468.145252 +j 28.558049 pu, Z0 = ********** +j 76.620498 pu
1.6*ISYM= 0.363 IASYM Based on X/R ratio = 0.227

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	-137.49	Motor	1	1	
MCC2		12-SDG-202	0.22	-103.66	Branch	1	1	C 12-SDG-202

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.23 MVA) At -104.28DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.434 IASYM Based on X/R ratio = 0.271

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	-137.50	Motor	1	1	
MCC2		12-SDG-209	0.27	-103.80	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.23 MVA) At -104.28DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.434 IASYM Based on X/R ratio = 0.271

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	-137.50	Motor	1	1	
MCC2		12-SDG-210	0.27	-103.80	Branch	1	1	C 12-SDG-210

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.23 MVA) At -104.28DEG, X/R = 0.06
Z1 = 391.275239 +j 24.012077 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.434 IASYM Based on X/R ratio = 0.271

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	-137.50	Motor	1	1	
MCC2		12-SDG-211	0.27	-103.80	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-204	0.43	-104.48	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-205	0.43	-104.48	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-208	0.43	-104.48	Branch	1	1	C 12-SLG-208

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-210	0.43	-104.48	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-211	0.43	-104.48	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-212	0.43	-104.48	Branch	1	1	C 12-SLG-212

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-213	0.43	-104.48	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-214	0.43	-104.48	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-215	0.43	-104.48	Branch	1	1	C 12-SLG-215

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.37 MVA) At -106.57DEG, X/R = 0.10
Z1 = 241.458361 +j 25.307160 pu, Z0 = 990.886367 +j 47.127826 pu
1.6*ISYM= 0.705 IASYM Based on X/R ratio = 0.441

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.02	-156.24	Motor	1	1	
MCC2		12-SLG-216	0.43	-104.48	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.281 kA (0.23 MVA) At -107.01DEG, X/R = 0.11
Z1 = 378.389323 +j 43.906929 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.450 IASYM Based on X/R ratio = 0.281

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.02	-156.18	Motor	1	1	
MCC2		12-SLG-217	0.27	-103.71	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.294 kA (0.24 MVA) At -110.31DEG, X/R = 0.17
Z1 = 362.310039 +j 66.267243 pu, Z0 = ********** +j 64.924056 pu
1.6*ISYM= 0.470 IASYM Based on X/R ratio = 0.294

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.04	-160.36	Motor	1	1	
MCC2		12-VLV-218	0.27	-103.60	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 0.922 kA (0.77 MVA) At -112.90DEG, X/R = 0.21
Z1 = 114.073162 +j 25.312243 pu, Z0 = 479.045007 +j 54.344424 pu
1.6*ISYM= 1.476 IASYM Based on X/R ratio = 0.922

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.07	-163.60	Motor	1	1	
12-LCP-2004		12-WSC-201	0.88	-109.17	Branch	1	1	C 12-WSC-201

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 0.922 kA (0.77 MVA) At -113.19DEG, X/R = 0.22
Z1 = 114.043583 +j 25.933673 pu, Z0 = 479.196253 +j 54.559956 pu
1.6*ISYM= 1.475 IASYM Based on X/R ratio = 0.922

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.07	-163.60	Motor	1	1	
12-LCP-2005		12-WSC-202	0.88	-109.47	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 6.327 kA (5.26 MVA) At -154.48DEG, X/R = 1.25
Z1 = 10.642859 +j 13.638007 pu, Z0 = 40.773303 +j 40.052433 pu
1.6*ISYM= 10.123 IASYM Based on X/R ratio = 6.414

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	6.33	-154.48	Branch	1	1	C 14-HPU-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 7.064 kA (5.87 MVA) At -162.37DEG, X/R = 1.64
Z1 = 7.887646 +j 13.343741 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 11.302 IASYM Based on X/R ratio = 7.319

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	7.06	-162.37	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 7.086 kA (5.89 MVA) At -162.60DEG, X/R = 1.66
Z1 = 7.804547 +j 13.349366 pu, Z0 = 29.752342 +j 38.875373 pu
1.6*ISYM= 11.338 IASYM Based on X/R ratio = 7.350

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.19	-173.06	Motor	1	1	
MCC5		14-PMP-202	6.90	-162.32	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 4.828 kA (4.01 MVA) At -138.14DEG, X/R = 0.72
Z1 = 18.133992 +j 13.435666 pu, Z0 = 70.935090 +j 39.211628 pu
1.6*ISYM= 7.725 IASYM Based on X/R ratio = 4.832

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.01	-152.37	Motor	1	1	
MCC5		14-PMP-203	4.82	-138.11	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 4.197 kA (3.49 MVA) At -133.10DEG, X/R = 0.60
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 6.716 IASYM Based on X/R ratio = 4.198

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.02	-156.55	Motor	1	1	
MCC5		14-SLG-201	4.18	-132.99	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 4.197 kA (3.49 MVA) At -133.10DEG, X/R = 0.60
Z1 = 22.016521 +j 13.609673 pu, Z0 = 86.725282 +j 39.796450 pu
1.6*ISYM= 6.716 IASYM Based on X/R ratio = 4.198

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.02	-156.55	Motor	1	1	
MCC5		14-SLG-202	4.18	-132.99	Branch	1	1	C 14-SLG-202

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 5.214 kA (4.33 MVA) At -141.48DEG, X/R = 0.81
Z1 = 16.100388 +j 13.394830 pu, Z0 = 63.119462 +j 38.940173 pu
1.6*ISYM= 8.342 IASYM Based on X/R ratio = 5.222

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.04	-160.99	Motor	1	1	
MCC5		14-SLG-203	5.18	-141.32	Branch	1	1	C 14-SLG-203

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 4.763 kA (3.96 MVA) At -137.77DEG, X/R = 0.71
Z1 = 18.454499 +j 13.541255 pu, Z0 = 73.008199 +j 39.310927 pu
1.6*ISYM= 7.621 IASYM Based on X/R ratio = 4.767

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.06	-162.89	Motor	1	1	
MCC5		14-SLG-204	4.71	-137.45	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.264 kA (0.82 MVA) At 178.56DEG, X/R = 1.59
Z1 = 67.985366 +j 107.694451 pu, Z0 = 54.005787 +j 86.528572 pu
1.6*ISYM= 3.623 IASYM Based on X/R ratio = 2.338

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.26	178.56	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 5.905 kA (2.13 MVA) At 172.15DEG, X/R = 1.96
Z1 = 22.517248 +j 44.529148 pu, Z0 = 17.344422 +j 32.707900 pu
1.6*ISYM= 9.448 IASYM Based on X/R ratio = 6.252

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	5.90	172.15	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.689 kA (2.05 MVA) At 178.31DEG, X/R = 1.71
Z1 = 25.106260 +j 45.469542 pu, Z0 = 27.700492 +j 36.469481 pu
1.6*ISYM= 9.102 IASYM Based on X/R ratio = 5.920

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.69	178.31	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.066 kA (0.38 MVA) At 179.44DEG, X/R = 1.53
Z1 = 148.466332 +j 226.151249 pu, Z0 = 116.599876 +j 181.028260 pu
1.6*ISYM= 1.706 IASYM Based on X/R ratio = 1.097

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.07	179.44	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 21.748 kA (18.08 MVA) At 161.74DEG, X/R = 4.65
Z1 = 1.157685 +j 5.457953 pu, Z0 = 1.218567 +j 5.310344 pu
1.6*ISYM= 34.796 IASYM Based on X/R ratio = 27.194

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.03	-166.30	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.02	-159.04	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.02	-159.99	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.01	-157.28	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.01	-153.74	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	1.10	-165.49	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.01	-157.28	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.02	-159.91	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.01	-157.28	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.07	-166.91	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.38	-177.93	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.01	-153.74	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.01	-153.45	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.40	177.46	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.01	-153.74	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.01	-157.28	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.02	-159.99	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	19.89	158.88	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 19.819 kA (16.48 MVA) At 160.22DEG, X/R = 4.81
Z1 = 1.223940 +j 6.126923 pu, Z0 = 1.369814 +j 5.525876 pu
1.6*ISYM= 31.710 IASYM Based on X/R ratio = 24.961

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.02	-162.35	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.02	-160.36	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.02	-160.36	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.07	-167.36	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.02	-159.74	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.02	-159.66	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.03	-166.75	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.38	-177.50	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.01	-159.83	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.01	-154.20	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.01	-154.20	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.01	-155.53	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.01	-157.73	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.01	-159.83	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.01	-157.73	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.01	-154.20	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	19.24	159.28	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.23 MVA) At -106.98DEG, X/R = 0.11
Z1 = 378.250631 +j 43.660466 pu, Z0 = ********** +j 63.792560 pu
1.6*ISYM= 0.451 IASYM Based on X/R ratio = 0.282

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.02	-156.18	Motor	1	1	
MCC1-A		MCC1-SPARE	0.27	-103.68	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 20.488 kA (17.03 MVA) At 166.19DEG, X/R = 4.04
Z1 = 1.340811 +j 5.703031 pu, Z0 = 2.012588 +j 6.441841 pu
1.6*ISYM= 32.780 IASYM Based on X/R ratio = 24.861

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.04	-162.00	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	19.54	164.60	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.33	-171.94	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.01	-152.26	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	-142.99	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	-142.99	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.01	-152.26	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.01	-152.26	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	-143.10	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	-143.10	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.03	-161.59	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.06	-161.60	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.06	-161.60	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	-143.10	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.06	-161.60	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.08	-164.66	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.08	-166.90	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.02	-160.13	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.02	-158.77	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.03	-165.08	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.03	-159.56	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.04	-159.33	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	-128.29	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	-128.29	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 7.572 kA (6.30 MVA) At -167.31DEG, X/R = 1.99
Z1 = 6.340684 +j 12.989187 pu, Z0 = 23.564511 +j 37.457161 pu
1.6*ISYM= 12.116 IASYM Based on X/R ratio = 8.034

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	7.23	-167.32	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.01	-152.91	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.02	-157.08	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.02	-157.08	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.18	-173.05	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.04	-161.35	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.06	-163.14	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 9.714 kA (8.08 MVA) At -132.92DEG, X/R = 0.56
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 15.543 IASYM Based on X/R ratio = 9.715

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	-122.67	Motor	1	1	
MCC2		RSFDS PMP1	9.71	-132.92	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 9.714 kA (8.08 MVA) At -132.92DEG, X/R = 0.56
Z1 = 10.022808 +j 6.023757 pu, Z0 = 36.751014 +j 7.728449 pu
1.6*ISYM= 15.543 IASYM Based on X/R ratio = 9.715

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	-122.67	Motor	1	1	
MCC2		RSFDS PMP2	9.71	-132.92	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 22.320 kA (18.56 MVA) At 159.16DEG, X/R = 5.07
Z1 = 1.079100 +j 5.355795 pu, Z0 = 0.840462 +j 4.771536 pu
1.6*ISYM= 35.713 IASYM Based on X/R ratio = 28.424

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	20.51	156.23	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	2.11	-171.12	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 20.623 kA (17.15 MVA) At 156.70DEG, X/R = 5.46
Z1 = 1.099070 +j 5.954104 pu, Z0 = 0.840464 +j 4.771543 pu
1.6*ISYM= 32.997 IASYM Based on X/R ratio = 26.668

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	20.07	155.73	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.66	-171.93	Branch	1	1	C P0802

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Momentary Report

First Cycle Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 16.380 kA (13.62 MVA) At -158.18DEG, X/R = 1.17
Z1 = 4.448047 +j 5.895592 pu, Z0 = 14.441521 +j 7.212103 pu
1.6*ISYM= 26.207 IASYM Based on X/R ratio = 16.557

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	16.38	-158.18	Branch	1	1	C TX-1

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 18.939 kA (15.75 MVA) At 177.18DEG, X/R = 2.56
Z1 = 2.111912 +j 6.049172 pu, Z0 = 5.096984 +j 7.826407 pu
1.6*ISYM= 30.303 IASYM Based on X/R ratio = 20.938

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	18.94	177.18	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 6.316 kA (5.25 MVA) At -151.75DEG, X/R = 1.13
Z1 = 11.285042 +j 13.174564 pu, Z0 = 43.341832 +j 38.198794 pu
1.6*ISYM= 10.105 IASYM Based on X/R ratio = 6.375

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	6.32	-151.75	Branch	1	1	C TX-3

Double Line to Ground Fault

Low Voltage Interrupting Report

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 05-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.274 kA (0.228 MVA) At -104.72DEG, X/R = 0.99
Z1 = 395.916527 +j 20.676252 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-201		05-PMP-201	0.01	-119.73	Motor	1	1	
MCC1-A		05-PMP-201	0.27	-104.26	Branch	1	1	C 05-PMP-201

*Bus 05-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 9.683 kA (8.051 MVA) At -135.52DEG, X/R = 1.18
Z1 = 9.909553 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-PMP-202		05-PMP-202	0.01	-124.45	Motor	1	1	
MCC1-B		05-PMP-202	9.68	-135.52	Branch	1	1	C 05-PMP-202

*Bus 05-VLV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.438 kA (0.364 MVA) At -105.74DEG, X/R = 0.99
Z1 = 248.578545 +j 16.509582 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-201		05-VLV-201	0.02	-123.92	Motor	1	1	
MCC2		05-VLV-201	0.42	-105.09	Branch	1	1	C 05-VLV-201

*Bus 05-VLV-217 0.480 kV, Zone 1, Area 1
E/Z = 12.654 kA (10.521 MVA) At -145.86DEG, X/R = 1.33
Z1 = 6.800411 +j 6.560332 pu, Z0 = 23.767812 +j 7.336932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-217		05-VLV-217	0.01	-130.63	Motor	1	1	
MCC2		05-VLV-217	12.64	-145.88	Branch	1	1	C 05-VLV-217

*Bus 05-VLV-219 0.480 kV, Zone 1, Area 1
E/Z = 0.279 kA (0.232 MVA) At -105.59DEG, X/R = 0.98
Z1 = 396.114088 +j 20.961074 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 05-VLV-219		05-VLV-219	0.02	-122.91	Motor	1	1	
MCC2		05-VLV-219	0.26	-104.61	Branch	1	1	C 05-VLV-219

*Bus 11-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.448 kA (0.372 MVA) At -106.85DEG, X/R = 0.98
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-201		11-SLG-201	0.03	-125.85	Motor	1	1	
MCC2		11-SLG-201	0.42	-105.50	Branch	1	1	C 11-SLG-201

*Bus 11-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.448 kA (0.372 MVA) At -106.85DEG, X/R = 0.98
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-202		11-SLG-202	0.03	-125.85	Motor	1	1	
MCC2		11-SLG-202	0.42	-105.50	Branch	1	1	C 11-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 11-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.704 kA (0.585 MVA) At -108.89DEG, X/R = 0.99
Z1 = 156.722379 +j 16.983596 pu, Z0 = 623.460159 +j 49.023445 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-203		11-SLG-203	0.04	-128.46	Motor	1	1	
MCC2		11-SLG-203	0.67	-107.72	Branch	1	1	C 11-SLG-203

*Bus 11-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 1.092 kA (0.908 MVA) At -111.34DEG, X/R = 1.00
Z1 = 99.116355 +j 16.368718 pu, Z0 = 393.032607 +j 46.567932 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-204		11-SLG-204	0.04	-129.66	Motor	1	1	
MCC2		11-SLG-204	1.05	-110.64	Branch	1	1	C 11-SLG-204

*Bus 11-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.448 kA (0.372 MVA) At -106.85DEG, X/R = 0.98
Z1 = 248.577772 +j 16.511236 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-205		11-SLG-205	0.03	-125.85	Motor	1	1	
MCC2		11-SLG-205	0.42	-105.50	Branch	1	1	C 11-SLG-205

*Bus 11-SLG-207 0.480 kV, Zone 1, Area 1
E/Z = 0.441 kA (0.367 MVA) At -106.12DEG, X/R = 0.99
Z1 = 248.578281 +j 16.510131 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 11-SLG-207		11-SLG-207	0.02	-124.99	Motor	1	1	
MCC2		11-SLG-207	0.42	-105.22	Branch	1	1	C 11-SLG-207

*Bus 12-BFG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.188 MVA) At -104.18DEG, X/R = 0.99
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-201		12-BFG-201	0.00	-113.44	Motor	1	1	
MCC2		12-BFG-201	0.22	-104.01	Branch	1	1	C 12-BFG-201

*Bus 12-BFG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.188 MVA) At -104.18DEG, X/R = 0.99
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-202		12-BFG-202	0.00	-113.44	Motor	1	1	
MCC2		12-BFG-202	0.22	-104.01	Branch	1	1	C 12-BFG-202

*Bus 12-BFG-203 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.188 MVA) At -104.18DEG, X/R = 0.99
Z1 = 475.066225 +j 23.882542 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-BFG-203		12-BFG-203	0.00	-113.44	Motor	1	1	
MCC2		12-BFG-203	0.22	-104.01	Branch	1	1	C 12-BFG-203

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-CNV-201 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -104.96DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-201		12-CNV-201	0.01	-121.10	Motor	1	1	
MCC1-A		12-CNV-201	0.27	-104.35	Branch	1	1	C 12-CNV-201

*Bus 12-CNV-202 0.480 kV, Zone 1, Area 1
E/Z = 0.231 kA (0.192 MVA) At -105.08DEG, X/R = 0.98
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-CNV-202		12-CNV-202	0.01	-120.73	Motor	1	1	
MCC1-B		12-CNV-202	0.22	-104.36	Branch	1	1	C 12-CNV-202

*Bus 12-FAN-201 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.47DEG, X/R = 0.99
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-201		12-FAN-201	0.01	-117.55	Motor	1	1	
MCC1-A		12-FAN-201	0.27	-104.17	Branch	1	1	C 12-FAN-201

*Bus 12-FAN-202 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.53DEG, X/R = 0.99
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-202		12-FAN-202	0.01	-117.53	Motor	1	1	
MCC1-B		12-FAN-202	0.27	-104.23	Branch	1	1	C 12-FAN-202

*Bus 12-FAN-204 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.28DEG, X/R = 0.99
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-204		12-FAN-204	0.00	-113.56	Motor	1	1	
MCC1-B		12-FAN-204	0.27	-104.14	Branch	1	1	C 12-FAN-204

*Bus 12-FAN-205 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.22DEG, X/R = 0.99
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205		12-FAN-205	0.00	-113.58	Motor	1	1	
MCC1-A		12-FAN-205	0.27	-104.08	Branch	1	1	C 12-FAN-205

*Bus 12-FAN-205A 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.47DEG, X/R = 0.99
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-205A		12-FAN-205A	0.01	-117.55	Motor	1	1	
MCC1-A		12-FAN-205A	0.27	-104.17	Branch	1	1	C 12-FAN-205A

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-FAN-206 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.53DEG, X/R = 0.99
Z1 = 395.978645 +j 20.961162 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-206		12-FAN-206	0.01	-117.53	Motor	1	1	
MCC1-B		12-FAN-206	0.27	-104.23	Branch	1	1	C 12-FAN-206

*Bus 12-FAN-207 0.480 kV, Zone 1, Area 1
E/Z = 9.680 kA (8.048 MVA) At -135.51DEG, X/R = 1.18
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-207		12-FAN-207	0.00	-117.61	Motor	1	1	
MCC1-B		12-FAN-207	9.68	-135.51	Branch	1	1	C 12-FAN-207

*Bus 12-FAN-208 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.28DEG, X/R = 0.99
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-FAN-208		12-FAN-208	0.00	-113.56	Motor	1	1	
MCC1-B		12-FAN-208	0.27	-104.14	Branch	1	1	C 12-FAN-208

*Bus 12-GBN-201 0.480 kV, Zone 1, Area 1
E/Z = 10.512 kA (8.740 MVA) At -135.97DEG, X/R = 1.19
Z1 = 9.058211 +j 6.346099 pu, Z0 = 32.798952 +j 6.479988 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-201		12-GBN-201	0.00	0.00	Motor	1	1	
MCC1-A		12-GBN-201	10.51	-135.97	Branch	1	1	C 12-GBN-201

*Bus 12-GBN-202 0.480 kV, Zone 1, Area 1
E/Z = 10.320 kA (8.580 MVA) At -137.78DEG, X/R = 1.21
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-202		12-GBN-202	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-202	10.32	-137.78	Branch	1	1	C 12-GBN-202

*Bus 12-GBN-203 0.480 kV, Zone 1, Area 1
E/Z = 10.320 kA (8.580 MVA) At -137.78DEG, X/R = 1.21
Z1 = 9.120045 +j 6.631562 pu, Z0 = 32.950199 +j 6.695520 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GBN-203		12-GBN-203	0.00	0.00	Motor	1	1	
MCC1-B		12-GBN-203	10.32	-137.78	Branch	1	1	C 12-GBN-203

*Bus 12-GCL-201 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.22DEG, X/R = 0.99
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-201		12-GCL-201	0.00	-113.58	Motor	1	1	
MCC1-A		12-GCL-201	0.27	-104.08	Branch	1	1	C 12-GCL-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-GCL-202 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.22DEG, X/R = 0.99
Z1 = 395.917117 +j 20.675155 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-202		12-GCL-202	0.00	-113.58	Motor	1	1	
MCC1-A		12-GCL-202	0.27	-104.08	Branch	1	1	C 12-GCL-202

*Bus 12-GCL-203 0.480 kV, Zone 1, Area 1
E/Z = 0.271 kA (0.226 MVA) At -104.28DEG, X/R = 0.99
Z1 = 395.978949 +j 20.960617 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-GCL-203		12-GCL-203	0.00	-113.56	Motor	1	1	
MCC1-B		12-GCL-203	0.27	-104.14	Branch	1	1	C 12-GCL-203

*Bus 12-HVU-203 0.480 kV, Zone 1, Area 1
E/Z = 19.803 kA (16.464 MVA) At 174.83DEG, X/R = 2.84
Z1 = 2.013944 +j 6.248693 pu, Z0 = 4.621874 +j 6.090361 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-HVU-203	19.80	174.83	Branch	1	1	C 12-HVU-203

*Bus 12-LCP-2001 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -104.96DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2001	0.27	-104.35	Branch	1	1	C 12-LCP-2001
12-MBS-201		12-LCP-2001	0.01	-121.02	Branch	1	1	C 12-MBS-201

*Bus 12-LCP-2002 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -105.02DEG, X/R = 0.99
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2002	0.27	-104.41	Branch	1	1	C 12-LCP-2002
12-MBS-202		12-LCP-2002	0.01	-121.00	Branch	1	1	C 12-MBS-202

*Bus 12-LCP-2003 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -105.02DEG, X/R = 0.99
Z1 = 395.978081 +j 20.962267 pu, Z0 = ********** +j 64.008092 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2003	0.27	-104.41	Branch	1	1	C 12-LCP-2003
12-MBS-203		12-LCP-2003	0.01	-121.00	Branch	1	1	C 12-MBS-203

*Bus 12-LCP-2004 0.480 kV, Zone 1, Area 1
E/Z = 0.916 kA (0.762 MVA) At -110.74DEG, X/R = 1.00
Z1 = 118.468762 +j 18.092332 pu, Z0 = 470.442566 +j 53.461650 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2004	0.88	-110.01	Branch	1	1	C 12-LCP-2004
12-WSC-201		12-LCP-2004	0.04	-128.51	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-LCP-2005 0.480 kV, Zone 1, Area 1
E/Z = 0.916 kA (0.762 MVA) At -110.94DEG, X/R = 1.00
Z1 = 118.530592 +j 18.377794 pu, Z0 = 470.593813 +j 53.677182 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2005	0.88	-110.22	Branch	1	1	C 12-LCP-2005
12-WSC-202		12-LCP-2005	0.04	-128.44	Branch	1	1	C 12-WSC-202

*Bus 12-LCP-2006 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.188 MVA) At -104.15DEG, X/R = 0.99
Z1 = 474.867723 +j 23.599672 pu, Z0 = ********** +j 75.489002 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-A		12-LCP-2006	0.22	-103.98	Branch	1	1	C 12-LCP-2006
12-SCP-201		12-LCP-2006	0.00	-113.41	Branch	1	1	C 12-SCP-201

*Bus 12-LCP-2007 0.480 kV, Zone 1, Area 1
E/Z = 0.231 kA (0.192 MVA) At -105.07DEG, X/R = 0.98
Z1 = 474.928318 +j 23.887512 pu, Z0 = ********** +j 75.704533 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC1-B		12-LCP-2007	0.22	-104.36	Branch	1	1	C 12-LCP-2007
12-SCP-202		12-LCP-2007	0.01	-120.65	Branch	1	1	C 12-SCP-202

*Bus 12-MBS-201 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -104.97DEG, X/R = 0.99
Z1 = 404.600785 +j 20.998573 pu, Z0 = ********** +j 65.079169 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-201		12-MBS-201	0.01	-121.06	Motor	1	1	
12-LCP-2001		12-MBS-201	0.26	-104.34	Branch	1	1	C 12-MBS-201

*Bus 12-MBS-202 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -105.03DEG, X/R = 0.99
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-202		12-MBS-202	0.01	-121.04	Motor	1	1	
12-LCP-2002		12-MBS-202	0.26	-104.40	Branch	1	1	C 12-MBS-202

*Bus 12-MBS-203 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -105.03DEG, X/R = 0.99
Z1 = 404.662614 +j 21.284034 pu, Z0 = ********** +j 65.294700 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-MBS-203		12-MBS-203	0.01	-121.04	Motor	1	1	
12-LCP-2003		12-MBS-203	0.26	-104.40	Branch	1	1	C 12-MBS-203

*Bus 12-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 13.191 kA (10.967 MVA) At -145.38DEG, X/R = 1.32
Z1 = 6.601907 +j 6.277461 pu, Z0 = 22.973791 +j 6.205436 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-201		12-PMP-201	0.01	-130.91	Motor	1	1	
MCC1-A		12-PMP-201	13.18	-145.40	Branch	1	1	C 12-PMP-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 12.841 kA (10.676 MVA) At -147.33DEG, X/R = 1.35
Z1 = 6.663741 +j 6.562924 pu, Z0 = 23.125038 +j 6.420968 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-202		12-PMP-202	0.01	-130.29	Motor	1	1	
MCC1-B		12-PMP-202	12.83	-147.35	Branch	1	1	C 12-PMP-202

*Bus 12-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 3.897 kA (3.240 MVA) At -134.02DEG, X/R = 1.37
Z1 = 24.251870 +j 15.504387 pu, Z0 = 98.450562 +j 41.253494 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-203		12-PMP-203	0.27	-161.61	Motor	1	1	
MCC1-A		12-PMP-203	3.66	-132.10	Branch	1	1	C 12-PMP-203

*Bus 12-PMP-204 0.480 kV, Zone 1, Area 1
E/Z = 19.846 kA (16.500 MVA) At 170.06DEG, X/R = 3.38
Z1 = 1.687348 +j 6.248422 pu, Z0 = 3.357671 +j 6.101093 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-204		12-PMP-204	0.25	-169.74	Motor	1	1	
MCC1-A		12-PMP-204	19.62	169.82	Branch	1	1	C 12-PMP-204

*Bus 12-PMP-205 0.480 kV, Zone 1, Area 1
E/Z = 3.323 kA (2.763 MVA) At -133.53DEG, X/R = 1.40
Z1 = 28.723316 +j 17.807529 pu, Z0 = 118.048204 +j 48.657651 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-205		12-PMP-205	0.26	-161.27	Motor	1	1	
MCC1-B		12-PMP-205	3.09	-131.25	Branch	1	1	C 12-PMP-205

*Bus 12-PMP-206 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.47DEG, X/R = 0.99
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-206		12-PMP-206	0.01	-117.55	Motor	1	1	
MCC1-A		12-PMP-206	0.27	-104.17	Branch	1	1	C 12-PMP-206

*Bus 12-PMP-207 0.480 kV, Zone 1, Area 1
E/Z = 9.682 kA (8.049 MVA) At -135.51DEG, X/R = 1.18
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-207		12-PMP-207	0.01	-121.92	Motor	1	1	
MCC1-B		12-PMP-207	9.68	-135.52	Branch	1	1	C 12-PMP-207

*Bus 12-PMP-213 0.480 kV, Zone 1, Area 1
E/Z = 0.273 kA (0.227 MVA) At -104.47DEG, X/R = 0.99
Z1 = 395.916814 +j 20.675701 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-213		12-PMP-213	0.01	-117.55	Motor	1	1	
MCC1-A		12-PMP-213	0.27	-104.17	Branch	1	1	C 12-PMP-213

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-PMP-214 0.480 kV, Zone 1, Area 1
E/Z = 9.682 kA (8.049 MVA) At -135.51DEG, X/R = 1.18
Z1 = 9.909554 +j 6.660803 pu, Z0 = 36.108240 +j 6.812485 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-PMP-214		12-PMP-214	0.01	-121.92	Motor	1	1	
MCC1-B		12-PMP-214	9.68	-135.52	Branch	1	1	C 12-PMP-214

*Bus 12-SCP-201 0.480 kV, Zone 1, Area 1
E/Z = 0.223 kA (0.185 MVA) At -104.15DEG, X/R = 0.99
Z1 = 483.552287 +j 23.921373 pu, Z0 = ********** +j 76.775610 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-201		12-SCP-201	0.00	-113.43	Motor	1	1	
12-LCP-2006		12-SCP-201	0.22	-103.98	Branch	1	1	C 12-SCP-201

*Bus 12-SCP-202 0.480 kV, Zone 1, Area 1
E/Z = 0.227 kA (0.189 MVA) At -105.09DEG, X/R = 0.98
Z1 = 483.612838 +j 24.209302 pu, Z0 = ********** +j 76.991142 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SCP-202		12-SCP-202	0.01	-120.70	Motor	1	1	
12-LCP-2007		12-SCP-202	0.22	-104.36	Branch	1	1	C 12-SCP-202

*Bus 12-SDG-201 0.480 kV, Zone 1, Area 1
E/Z = 0.225 kA (0.187 MVA) At -103.89DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-201		12-SDG-201	0.00	-103.66	Motor	1	1	
MCC2		12-SDG-201	0.22	-103.90	Branch	1	1	C 12-SDG-201

*Bus 12-SDG-202 0.480 kV, Zone 1, Area 1
E/Z = 0.225 kA (0.187 MVA) At -103.89DEG, X/R = 1.00
Z1 = 475.066704 +j 23.881768 pu, Z0 = ********** +j 76.620498 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-202		12-SDG-202	0.00	-103.66	Motor	1	1	
MCC2		12-SDG-202	0.22	-103.90	Branch	1	1	C 12-SDG-202

*Bus 12-SDG-209 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -104.01DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-209		12-SDG-209	0.00	-103.73	Motor	1	1	
MCC2		12-SDG-209	0.27	-104.02	Branch	1	1	C 12-SDG-209

*Bus 12-SDG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -104.01DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-210		12-SDG-210	0.00	-103.73	Motor	1	1	
MCC2		12-SDG-210	0.27	-104.02	Branch	1	1	C 12-SDG-210

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SDG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.270 kA (0.224 MVA) At -104.01DEG, X/R = 1.00
Z1 = 396.115956 +j 20.957489 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SDG-211		12-SDG-211	0.00	-103.73	Motor	1	1	
MCC2		12-SDG-211	0.27	-104.02	Branch	1	1	C 12-SDG-211

*Bus 12-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-204		12-SLG-204	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-204	0.42	-104.95	Branch	1	1	C 12-SLG-204

*Bus 12-SLG-205 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-205		12-SLG-205	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-205	0.42	-104.95	Branch	1	1	C 12-SLG-205

*Bus 12-SLG-208 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-208		12-SLG-208	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-208	0.42	-104.95	Branch	1	1	C 12-SLG-208

*Bus 12-SLG-210 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-210		12-SLG-210	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-210	0.42	-104.95	Branch	1	1	C 12-SLG-210

*Bus 12-SLG-211 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-211		12-SLG-211	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-211	0.42	-104.95	Branch	1	1	C 12-SLG-211

*Bus 12-SLG-212 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-212		12-SLG-212	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-212	0.42	-104.95	Branch	1	1	C 12-SLG-212

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-SLG-213 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-213		12-SLG-213	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-213	0.42	-104.95	Branch	1	1	C 12-SLG-213

*Bus 12-SLG-214 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-214		12-SLG-214	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-214	0.42	-104.95	Branch	1	1	C 12-SLG-214

*Bus 12-SLG-215 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-215		12-SLG-215	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-215	0.42	-104.95	Branch	1	1	C 12-SLG-215

*Bus 12-SLG-216 0.480 kV, Zone 1, Area 1
E/Z = 0.434 kA (0.361 MVA) At -105.35DEG, X/R = 0.99
Z1 = 248.578821 +j 16.509038 pu, Z0 = 990.886367 +j 47.127826 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-216		12-SLG-216	0.01	-121.79	Motor	1	1	
MCC2		12-SLG-216	0.42	-104.95	Branch	1	1	C 12-SLG-216

*Bus 12-SLG-217 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -105.00DEG, X/R = 0.99
Z1 = 396.114750 +j 20.959677 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-SLG-217		12-SLG-217	0.01	-121.10	Motor	1	1	
MCC2		12-SLG-217	0.27	-104.39	Branch	1	1	C 12-SLG-217

*Bus 12-VLV-218 0.480 kV, Zone 1, Area 1
E/Z = 0.282 kA (0.234 MVA) At -106.16DEG, X/R = 0.98
Z1 = 396.113455 +j 20.962481 pu, Z0 = ********** +j 64.924056 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-VLV-218		12-VLV-218	0.02	-123.65	Motor	1	1	
MCC2		12-VLV-218	0.26	-104.83	Branch	1	1	C 12-VLV-218

*Bus 12-WSC-201 0.480 kV, Zone 1, Area 1
E/Z = 0.900 kA (0.749 MVA) At -110.72DEG, X/R = 1.00
Z1 = 120.619357 +j 18.313056 pu, Z0 = 479.045007 +j 54.344424 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-201		12-WSC-201	0.04	-128.55	Motor	1	1	
12-LCP-2004		12-WSC-201	0.87	-109.97	Branch	1	1	C 12-WSC-201

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 12-WSC-202 0.480 kV, Zone 1, Area 1
E/Z = 0.900 kA (0.749 MVA) At -110.92DEG, X/R = 1.00
Z1 = 120.681186 +j 18.598518 pu, Z0 = 479.196253 +j 54.559956 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 12-WSC-202		12-WSC-202	0.04	-128.48	Motor	1	1	
12-LCP-2005		12-WSC-202	0.87	-110.18	Branch	1	1	C 12-WSC-202

*Bus 14-HPU-201 0.480 kV, Zone 1, Area 1
E/Z = 6.104 kA (5.075 MVA) At -155.14DEG, X/R = 1.61
Z1 = 11.051787 +j 14.739146 pu, Z0 = 40.773303 +j 40.052433 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC5		14-HPU-201	6.10	-155.14	Branch	1	1	C 14-HPU-201

*Bus 14-PMP-201 0.480 kV, Zone 1, Area 1
E/Z = 6.777 kA (5.634 MVA) At -162.82DEG, X/R = 1.92
Z1 = 8.296574 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-201		14-PMP-201	0.00	0.00	Motor	1	1	
MCC5		14-PMP-201	6.78	-162.82	Branch	1	1	C 14-PMP-201

*Bus 14-PMP-202 0.480 kV, Zone 1, Area 1
E/Z = 6.789 kA (5.644 MVA) At -162.89DEG, X/R = 1.92
Z1 = 8.296565 +j 14.444880 pu, Z0 = 29.752342 +j 38.875373 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-202		14-PMP-202	0.09	-139.88	Motor	1	1	
MCC5		14-PMP-202	6.71	-163.18	Branch	1	1	C 14-PMP-202

*Bus 14-PMP-203 0.480 kV, Zone 1, Area 1
E/Z = 4.709 kA (3.915 MVA) At -139.00DEG, X/R = 1.24
Z1 = 18.592251 +j 14.528943 pu, Z0 = 70.935090 +j 39.211628 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-PMP-203		14-PMP-203	0.01	-120.18	Motor	1	1	
MCC5		14-PMP-203	4.70	-139.02	Branch	1	1	C 14-PMP-203

*Bus 14-SLG-201 0.480 kV, Zone 1, Area 1
E/Z = 4.108 kA (3.416 MVA) At -133.88DEG, X/R = 1.17
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-201		14-SLG-201	0.01	-124.28	Motor	1	1	
MCC5		14-SLG-201	4.10	-133.91	Branch	1	1	C 14-SLG-201

*Bus 14-SLG-202 0.480 kV, Zone 1, Area 1
E/Z = 4.108 kA (3.416 MVA) At -133.88DEG, X/R = 1.17
Z1 = 22.539792 +j 14.675152 pu, Z0 = 86.725282 +j 39.796450 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-202		14-SLG-202	0.01	-124.28	Motor	1	1	
MCC5		14-SLG-202	4.10	-133.91	Branch	1	1	C 14-SLG-202

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus 14-SLG-203 0.480 kV, Zone 1, Area 1
E/Z = 5.066 kA (4.211 MVA) At -142.21DEG, X/R = 1.29
Z1 = 16.638314 +j 14.461084 pu, Z0 = 63.119462 +j 38.940173 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-203		14-SLG-203	0.02	-128.70	Motor	1	1	
MCC5		14-SLG-203	5.05	-142.26	Branch	1	1	C 14-SLG-203

*Bus 14-SLG-204 0.480 kV, Zone 1, Area 1
E/Z = 4.636 kA (3.854 MVA) At -138.38DEG, X/R = 1.23
Z1 = 19.110481 +j 14.553778 pu, Z0 = 73.008199 +j 39.310927 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M 14-SLG-204		14-SLG-204	0.03	-130.52	Motor	1	1	
MCC5		14-SLG-204	4.61	-138.43	Branch	1	1	C 14-SLG-204

*Bus LP-1 0.208 kV, Zone 1, Area 1
E/Z = 2.257 kA (0.813 MVA) At 178.46DEG, X/R = 1.88
Z1 = 68.006174 +j 108.327979 pu, Z0 = 54.005787 +j 86.528572 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-1 H		LP-1	2.26	178.46	Branch	1	1	TX-1

*Bus LP-2 0.208 kV, Zone 1, Area 1
E/Z = 5.858 kA (2.110 MVA) At 171.94DEG, X/R = 2.22
Z1 = 22.538056 +j 45.162676 pu, Z0 = 17.344422 +j 32.707900 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-2 H		LP-2	5.86	171.94	Branch	1	1	TX-2
LP-3		LP-2	0.00	0.00	Branch	1	1	C LP-3

*Bus LP-3 0.208 kV, Zone 1, Area 1
E/Z = 5.648 kA (2.035 MVA) At 178.09DEG, X/R = 2.00
Z1 = 25.127068 +j 46.103070 pu, Z0 = 27.700492 +j 36.469481 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		LP-3	5.65	178.09	Branch	1	1	C LP-3

*Bus LP-4 0.208 kV, Zone 1, Area 1
E/Z = 1.063 kA (0.383 MVA) At 179.40DEG, X/R = 1.83
Z1 = 148.875259 +j 227.252388 pu, Z0 = 116.599876 +j 181.028260 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX-3 H		LP-4	1.06	179.40	Branch	1	1	TX-3

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-A 0.480 kV, Zone 1, Area 1
E/Z = 20.323 kA (16.896 MVA) At 160.97DEG, X/R = 5.08
Z1 = 1.163115 +j 6.053688 pu, Z0 = 1.218567 +j 5.310344 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
12-PMP-201		MCC1-A	0.01	-126.36	Branch	1	1	C 12-PMP-201
05-PMP-201		MCC1-A	0.01	-119.10	Branch	1	1	C 05-PMP-201
12-CNV-201		MCC1-A	0.01	-120.05	Branch	1	1	C 12-CNV-201
12-FAN-201		MCC1-A	0.00	-117.34	Branch	1	1	C 12-FAN-201
12-FAN-205		MCC1-A	0.00	-113.81	Branch	1	1	C 12-FAN-205
MCC2		MCC1-A	0.38	-125.55	Branch	1	1	C 1A-MCC2
12-PMP-206		MCC1-A	0.00	-117.34	Branch	1	1	C 12-PMP-206
12-LCP-2001		MCC1-A	0.01	-119.98	Branch	1	1	C 12-LCP-2001
12-GBN-201		MCC1-A	0.00	0.00	Branch	1	1	C 12-GBN-201
12-PMP-213		MCC1-A	0.00	-117.34	Branch	1	1	C 12-PMP-213
12-LCP-2004		MCC1-A	0.03	-126.98	Branch	1	1	C 12-LCP-2004
12-PMP-203		MCC1-A	0.22	-167.21	Branch	1	1	C 12-PMP-203
12-GCL-201		MCC1-A	0.00	-113.81	Branch	1	1	C 12-GCL-201
12-LCP-2006		MCC1-A	0.00	-113.51	Branch	1	1	C 12-LCP-2006
12-HVU-203		MCC1-A	0.00	0.00	Branch	1	1	C 12-HVU-203
12-PMP-204		MCC1-A	0.23	-170.06	Branch	1	1	C 12-PMP-204
12-GCL-202		MCC1-A	0.00	-113.81	Branch	1	1	C 12-GCL-202
12-FAN-205A		MCC1-A	0.00	-117.34	Branch	1	1	C 12-FAN-205A
MCC1-SPARE		MCC1-A	0.01	-120.05	Branch	1	1	C MCC1-SPARE
TX TR-1 L		MCC1-A	19.81	158.99	Branch	1	1	C P0801
MCC1-B		MCC1-A	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

*Bus MCC1-B 0.480 kV, Zone 1, Area 1
E/Z = 19.382 kA (16.114 MVA) At 159.97DEG, X/R = 5.03
Z1 = 1.224949 +j 6.339151 pu, Z0 = 1.369814 +j 5.525876 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC1-B	0.00	0.00	Branch	1	1	C 1B-MCC2
05-PMP-202		MCC1-B	0.01	-122.06	Branch	1	1	C 05-PMP-202
12-LCP-2002		MCC1-B	0.01	-120.07	Branch	1	1	C 12-LCP-2002
12-LCP-2003		MCC1-B	0.01	-120.07	Branch	1	1	C 12-LCP-2003
12-LCP-2005		MCC1-B	0.03	-127.07	Branch	1	1	C 12-LCP-2005
12-CNV-202		MCC1-B	0.01	-119.44	Branch	1	1	C 12-CNV-202
12-LCP-2007		MCC1-B	0.01	-119.37	Branch	1	1	C 12-LCP-2007
12-PMP-202		MCC1-B	0.01	-126.46	Branch	1	1	C 12-PMP-202
12-GBN-202		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-202
12-PMP-205		MCC1-B	0.22	-166.15	Branch	1	1	C 12-PMP-205
12-PMP-207		MCC1-B	0.00	-119.54	Branch	1	1	C 12-PMP-207
12-FAN-204		MCC1-B	0.00	-113.90	Branch	1	1	C 12-FAN-204
12-GBN-203		MCC1-B	0.00	0.00	Branch	1	1	C 12-GBN-203
12-GCL-203		MCC1-B	0.00	-113.90	Branch	1	1	C 12-GCL-203
12-FAN-207		MCC1-B	0.00	-115.24	Branch	1	1	C 12-FAN-207
12-FAN-202		MCC1-B	0.00	-117.44	Branch	1	1	C 12-FAN-202
12-PMP-214		MCC1-B	0.00	-119.54	Branch	1	1	C 12-PMP-214
12-FAN-206		MCC1-B	0.00	-117.44	Branch	1	1	C 12-FAN-206
12-FAN-208		MCC1-B	0.00	-113.90	Branch	1	1	C 12-FAN-208
TX TR-2 L		MCC1-B	19.18	159.30	Branch	1	1	C P0802
MCC1-A		MCC1-B	0.00	0.00	Branch	1	1	B MCC1 A-B TIE

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC1-SPARE 0.480 kV, Zone 1, Area 1
E/Z = 0.275 kA (0.229 MVA) At -104.96DEG, X/R = 0.99
Z1 = 395.916251 +j 20.676806 pu, Z0 = ********** +j 63.792560 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M MCC1-SPARE		MCC1-SPARE	0.01	-121.10	Motor	1	1	
MCC1-A		MCC1-SPARE	0.27	-104.35	Branch	1	1	C MCC1-SPARE

*Bus MCC2 0.480 kV, Zone 1, Area 1
E/Z = 19.165 kA (15.933 MVA) At 165.40DEG, X/R = 4.41
Z1 = 1.361619 +j 6.336559 pu, Z0 = 2.012588 +j 6.441841 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
11-SLG-207		MCC2	0.01	-124.22	Branch	1	1	C 11-SLG-207
MCC1-A		MCC2	19.02	164.27	Branch	1	1	C 1A-MCC2
MCC1-B		MCC2	0.00	0.00	Branch	1	1	C 1B-MCC2
MCC5		MCC2	0.12	-134.16	Branch	1	1	C MCC5
12-SLG-204		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-204
12-BFG-203		MCC2	0.00	-114.48	Branch	1	1	C 12-BFG-203
12-SLG-205		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-205
12-SLG-208		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-208
12-SLG-211		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-211
12-SDG-201		MCC2	0.00	-105.21	Branch	1	1	C 12-SDG-201
12-SLG-212		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-212
12-SLG-213		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-213
12-SLG-210		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-210
12-SDG-202		MCC2	0.00	-105.21	Branch	1	1	C 12-SDG-202
12-BFG-201		MCC2	0.00	-114.48	Branch	1	1	C 12-BFG-201
12-BFG-202		MCC2	0.00	-114.48	Branch	1	1	C 12-BFG-202
12-SDG-209		MCC2	0.00	-105.33	Branch	1	1	C 12-SDG-209
12-SDG-210		MCC2	0.00	-105.33	Branch	1	1	C 12-SDG-210
05-VLV-201		MCC2	0.01	-123.81	Branch	1	1	C 05-VLV-201
11-SLG-201		MCC2	0.02	-123.82	Branch	1	1	C 11-SLG-201
11-SLG-202		MCC2	0.02	-123.82	Branch	1	1	C 11-SLG-202
12-SDG-211		MCC2	0.00	-105.33	Branch	1	1	C 12-SDG-211
11-SLG-205		MCC2	0.02	-123.82	Branch	1	1	C 11-SLG-205
11-SLG-203		MCC2	0.03	-126.88	Branch	1	1	C 11-SLG-203
11-SLG-204		MCC2	0.03	-129.13	Branch	1	1	C 11-SLG-204
12-SLG-214		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-214
12-SLG-215		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-215
12-SLG-216		MCC2	0.01	-122.35	Branch	1	1	C 12-SLG-216
12-SLG-217		MCC2	0.01	-120.99	Branch	1	1	C 12-SLG-217
05-VLV-217		MCC2	0.01	-127.30	Branch	1	1	C 05-VLV-217
05-VLV-219		MCC2	0.01	-121.78	Branch	1	1	C 05-VLV-219
12-VLV-218		MCC2	0.01	-121.55	Branch	1	1	C 12-VLV-218
TX-1 H		MCC2	0.00	0.00	Branch	1	1	C TX-1
TX-2 H		MCC2	0.00	0.00	Branch	1	1	C TX-2
RSFDS PMP1		MCC2	0.00	-90.51	Branch	1	1	C RSFDS PMP1
RSFDS PMP2		MCC2	0.00	-90.51	Branch	1	1	C RSFDS PMP2

Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus MCC5 0.480 kV, Zone 1, Area 1
E/Z = 7.239 kA (6.018 MVA) At -167.59DEG, X/R = 2.21
Z1 = 6.749612 +j 14.090326 pu, Z0 = 23.564511 +j 37.457161 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
MCC2		MCC5	7.11	-168.30	Branch	1	1	C MCC5
14-PMP-203		MCC5	0.01	-119.47	Branch	1	1	C 14-PMP-203
14-SLG-201		MCC5	0.01	-123.65	Branch	1	1	C 14-SLG-201
TX-3 H		MCC5	0.00	0.00	Branch	1	1	C TX-3
14-SLG-202		MCC5	0.01	-123.65	Branch	1	1	C 14-SLG-202
14-PMP-202		MCC5	0.09	-139.62	Branch	1	1	C 14-PMP-202
14-SLG-203		MCC5	0.02	-127.92	Branch	1	1	C 14-SLG-203
14-HPU-201		MCC5	0.00	0.00	Branch	1	1	C 14-HPU-201
14-SLG-204		MCC5	0.03	-129.71	Branch	1	1	C 14-SLG-204
14-PMP-201		MCC5	0.00	0.00	Branch	1	1	C 14-PMP-201

*Bus RSFDS PMP1 0.480 kV, Zone 1, Area 1
E/Z = 9.559 kA (7.947 MVA) At -134.40DEG, X/R = 1.17
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP1		RSFDS PMP1	0.00	-92.51	Motor	1	1	
MCC2		RSFDS PMP1	9.56	-134.40	Branch	1	1	C RSFDS PMP1

*Bus RSFDS PMP2 0.480 kV, Zone 1, Area 1
E/Z = 9.559 kA (7.947 MVA) At -134.40DEG, X/R = 1.17
Z1 = 10.046226 +j 6.658211 pu, Z0 = 36.751014 +j 7.728449 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
M RSFDS PMP2		RSFDS PMP2	0.00	-92.51	Motor	1	1	
MCC2		RSFDS PMP2	9.56	-134.40	Branch	1	1	C RSFDS PMP2

*Bus TX TR-1 L 0.480 kV, Zone 1, Area 1
E/Z = 20.873 kA (17.354 MVA) At 158.38DEG, X/R = 5.57
Z1 = 1.072159 +j 5.923857 pu, Z0 = 0.840462 +j 4.771536 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-1 H		TX TR-1 L	20.41	156.45	Branch	1	1	TX TR-1
MCC1-A		TX TR-1 L	0.83	-146.31	Branch	1	1	C P0801

*Bus TX TR-2 L 0.480 kV, Zone 1, Area 1
E/Z = 20.171 kA (16.770 MVA) At 156.45DEG, X/R = 5.71
Z1 = 1.095098 +j 6.154137 pu, Z0 = 0.840464 +j 4.771543 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
TX TR-2 H		TX TR-2 L	19.99	155.81	Branch	1	1	TX TR-2
MCC1-B		TX TR-2 L	0.29	-153.27	Branch	1	1	C P0802

*Bus TX-1 H 0.480 kV, Zone 1, Area 1
E/Z = 15.749 kA (13.094 MVA) At -159.91DEG, X/R = 1.64
Z1 = 4.468855 +j 6.529120 pu, Z0 = 14.441521 +j 7.212103 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-1		TX-1 H	0.00	0.00	Branch	1	1	TX-1
MCC2		TX-1 H	15.75	-159.91	Branch	1	1	C TX-1

(Serial #34798)
Project Name: WPCP Reliability Improvements Project
Comment: Double Line to Line Fault - Low Voltage Interrupting Report

Interrupting Results D L-GND
Driving Point Voltage (P.U.) = 1.00000

*Bus TX-2 H 0.480 kV, Zone 1, Area 1
E/Z = 17.890 kA (14.873 MVA) At 176.06DEG, X/R = 2.93
Z1 = 2.132720 +j 6.682699 pu, Z0 = 5.096984 +j 7.826407 pu

Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-2		TX-2 H	0.00	0.00	Branch	1	1	TX-2
MCC2		TX-2 H	17.89	176.06	Branch	1	1	C TX-2

*Bus TX-3 H 0.480 kV, Zone 1, Area 1
E/Z = 6.098 kA (5.069 MVA) At -152.51DEG, X/R = 1.52
Z1 = 11.693970 +j 14.275703 pu, Z0 = 43.341832 +j 38.198794 pu

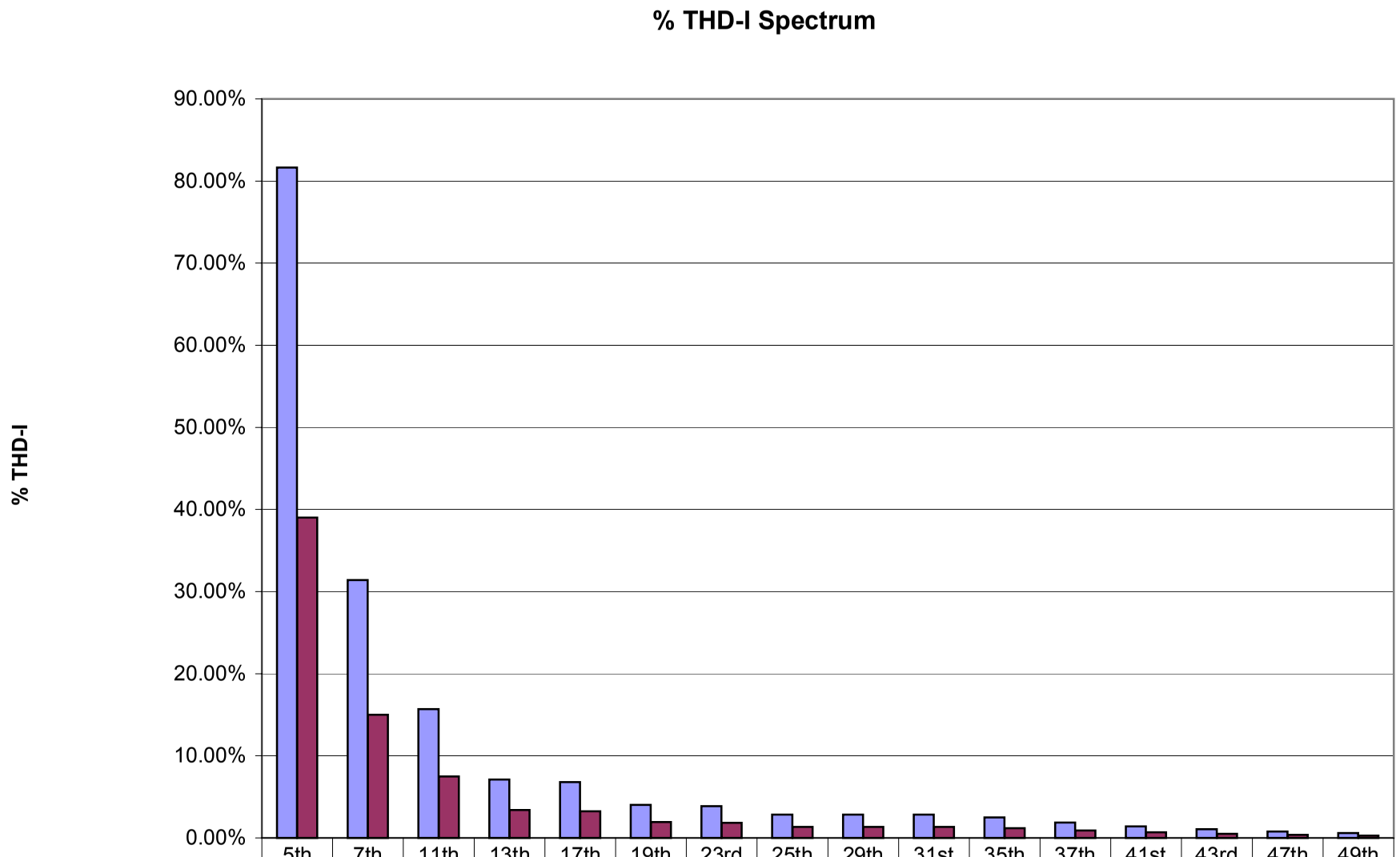
Contributions In kA

Bus	to	Bus	kA	Angle	Device	Zone	Area	Branch
LP-4		TX-3 H	0.00	0.00	Branch	1	1	TX-3
MCC5		TX-3 H	6.10	-152.51	Branch	1	1	C TX-3

Harmonics Analysis

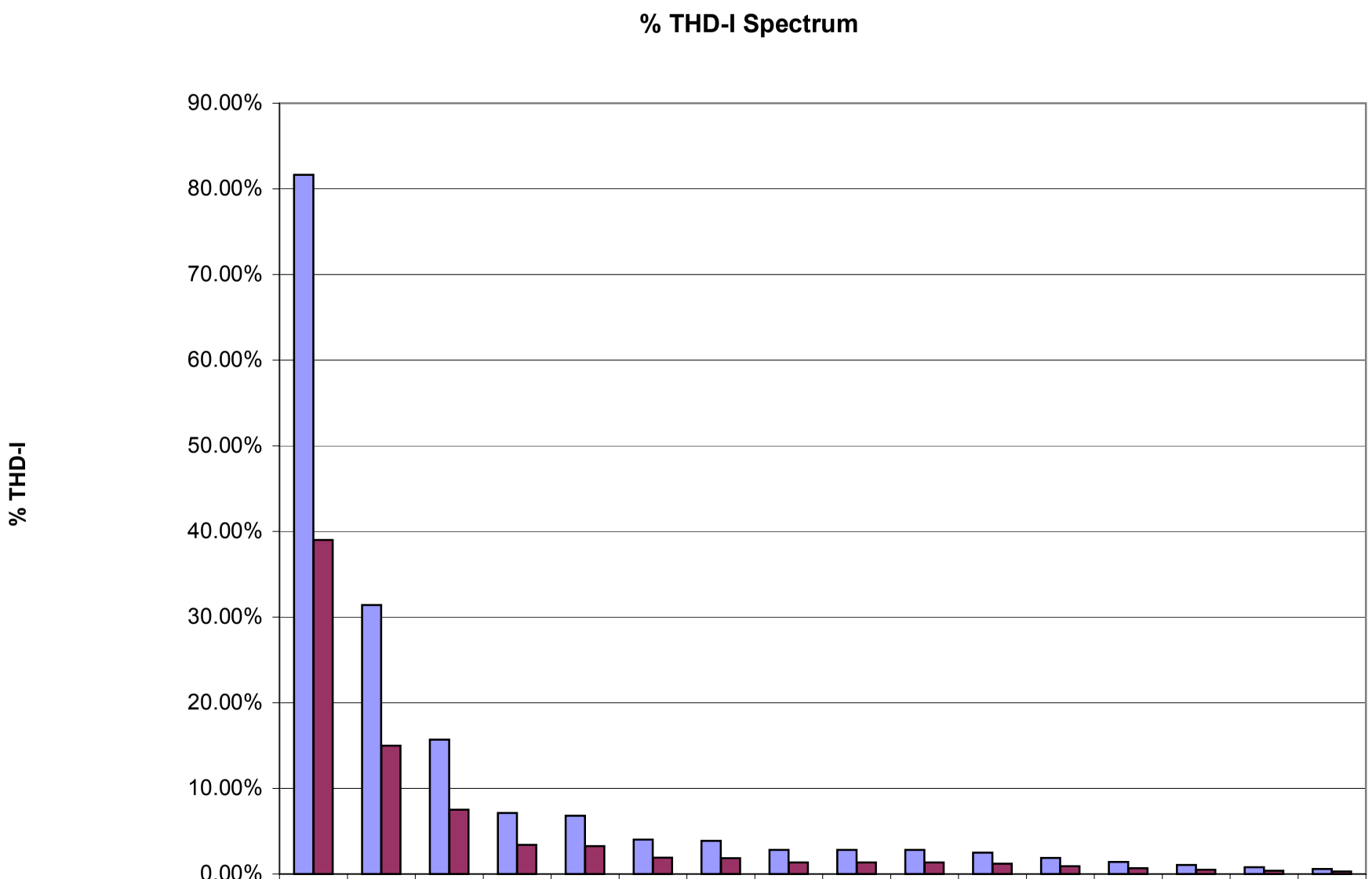
Drive Characteristics

45HP Drive using 3% Line-Side Filter



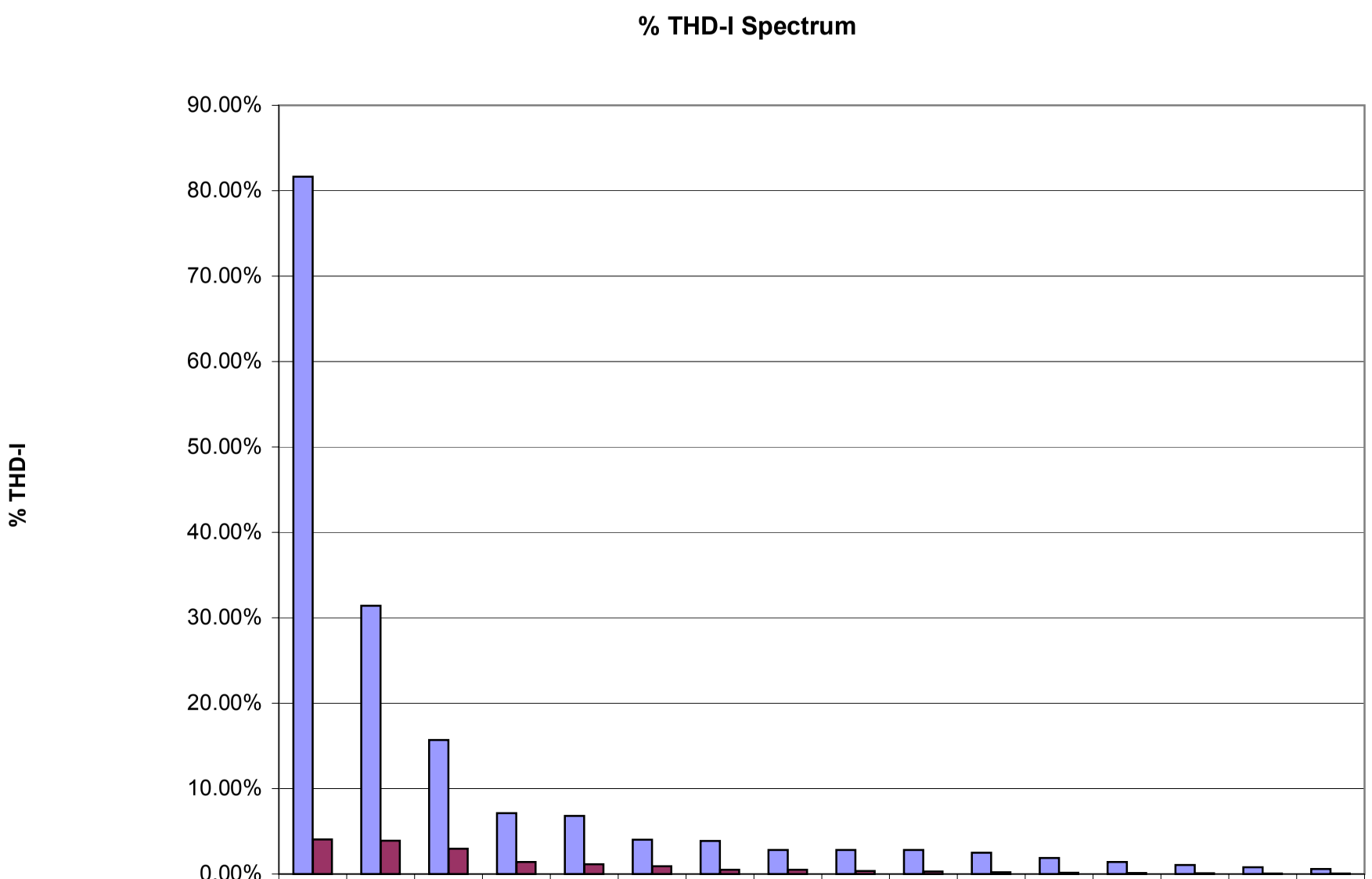
	5th	7th	11th	13th	17th	19th	23rd	25th	29th	31st	35th	37th	41st	43rd	47th	49th
Harmonic Spectrum Without Mitigation	81.63	31.40	15.70	7.12%	6.80%	4.02%	3.87%	2.83%	2.83%	2.83%	2.51%	1.88%	1.41%	1.06%	0.79%	0.59%
With Mitigation Solution	39.00	15.00	7.50%	3.40%	3.25%	1.92%	1.85%	1.35%	1.35%	1.35%	1.20%	0.90%	0.67%	0.51%	0.38%	0.28%

1HP Drive using 3% Line-Side Filter



	5th	7th	11th	13th	17th	19th	23rd	25th	29th	31st	35th	37th	41st	43rd	47th	49th
Harmonic Spectrum Without Mitigation	81.63	31.40	15.70	7.12%	6.80%	4.02%	3.87%	2.83%	2.83%	2.83%	2.51%	1.88%	1.41%	1.06%	0.79%	0.59%
With Mitigation Solution	39.00	15.00	7.50%	3.40%	3.25%	1.92%	1.85%	1.35%	1.35%	1.35%	1.20%	0.90%	0.67%	0.51%	0.38%	0.28%

45HP Motor with 8% Matrix Broadband Filter



	5th	7th	11th	13th	17th	19th	23rd	25th	29th	31st	35th	37th	41st	43rd	47th	49th
Harmonic Spectrum Without Mitigation	81.63	31.40	15.70	7.12%	6.80%	4.02%	3.87%	2.83%	2.83%	2.83%	2.51%	1.88%	1.41%	1.06%	0.79%	0.59%
With Mitigation Solution	4.05%	3.90%	2.95%	1.40%	1.15%	0.90%	0.51%	0.51%	0.34%	0.28%	0.21%	0.16%	0.12%	0.09%	0.07%	0.05%

Harmonics Analysis

Point of Common Coupling Calculations

Project Name:
Comment: Case 1 - 48HP Drive(s) no mitigation / no linear load

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 48.000
PCC ISC/ILOAD = 363.190

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	81.67	15.76	6.86	3.94	2.61	89.88
IEEE LIMITS	12.00	5.50	5.00	2.00	1.00	15.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	3.00	1.38	1.25	0.50	0.25	3.75

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	1.212	1.690
IEEE LIMITS	3.000	5.000

Project Name:
Comment: Case 2 - 48HP Drive(s) 3% Line Reactors / no linear load

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 48.000
PCC ISC/ILOAD = 363.190

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	39.02	7.53	3.28	1.88	1.25	42.94
IEEE LIMITS	12.00	5.50	5.00	2.00	1.00	15.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	3.00	1.38	1.25	0.50	0.25	3.75

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	0.579	0.807
IEEE LIMITS	3.000	5.000

Project Name:
Comment: Case 3 - 45HP Drive w/ 8% MBB / 3HP Drive w/ 3% LR / no linear loads

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 48.000
PCC ISC/ILOAD = 363.190

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	6.24	3.25	1.29	0.60	0.28	8.76
IEEE LIMITS	12.00	5.50	5.00	2.00	1.00	15.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	3.00	1.38	1.25	0.50	0.25	3.75

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	0.106	0.219
IEEE LIMITS	3.000	5.000

Project Name:
Comment: Case 4 - 48HP Drive(s) 3% Line Reactors / 75 HP Linear Load

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 128.000
PCC ISC/ILOAD = 136.790

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	14.20	2.74	1.19	0.68	0.45	15.63
IEEE LIMITS	12.00	5.50	5.00	2.00	1.00	15.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	3.00	1.38	1.25	0.50	0.25	3.75

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	0.562	0.783
IEEE LIMITS	3.000	5.000

Project Name:
Comment: Case 5 - 48HP Drive(s) w/ 3% Line Reactors / 100HP Linear Load

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 151.000
PCC ISC/ILOAD = 115.740

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	11.92	2.30	1.00	0.57	0.38	13.12
IEEE LIMITS	12.00	5.50	5.00	2.00	1.00	15.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	3.00	1.38	1.25	0.50	0.25	3.75

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	0.556	0.776
IEEE LIMITS	3.000	5.000

Project Name: WPCP Reliability Improvements Project
Comment: Case 6 - 48HP Drive(s) w/ 3% Line Reactors / Full 480V Plant Load

IEEE 519-1992 Summary Report

Breaker/Switch Name	From Bus Name	To Equipment Name
B MCC1-A MAIN	MCC1-A	C P0801

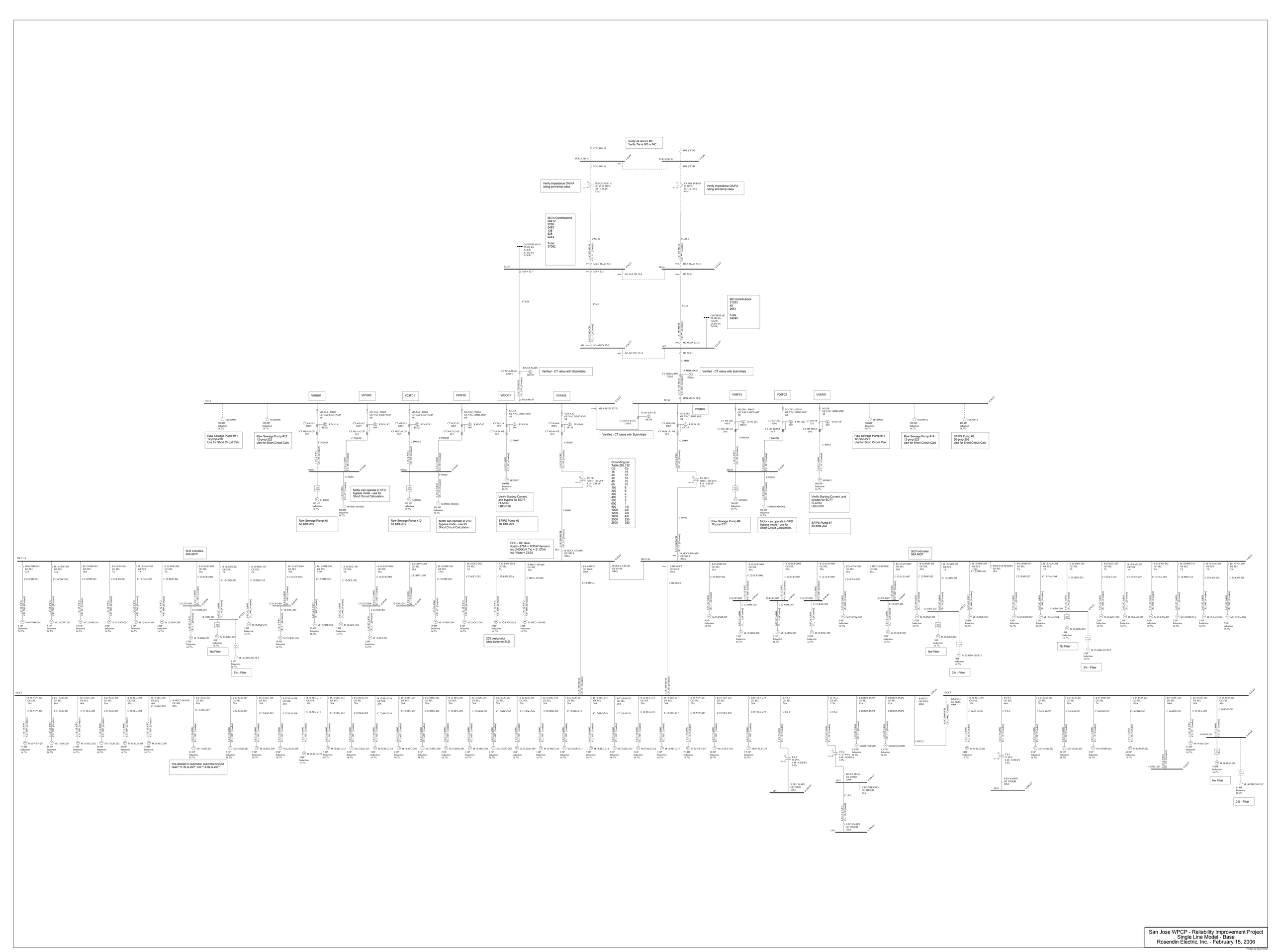
HARMONIC CURRENT DISTORTION IN PERCENT OF PLANT LOADING
PLANT LOAD KVA = 727.000
PCC ISC/ILOAD = 24.070

HARM NUMBER	<11	11 to 16	17 to 22	23 to 34	>34	ITDD(%)
ODD HARM	4.11	0.79	0.34	0.20	0.13	4.52
IEEE LIMITS	7.00	3.50	2.50	1.00	0.50	8.00
EVEN HARM	0.00	0.00	0.00	0.00	0.00	0.00
IEEE LIMITS	1.75	0.88	0.63	0.25	0.13	2.00

HARMONIC VOLTAGE DISTORTION IN PERCENT OF PCC BASE VOLTAGE
PCC BASE kV = 0.480

	MAX INDIVIDUAL	VTHD(%)
PCC BUS	0.923	1.288
IEEE LIMITS	3.000	5.000

Single Line Diagrams



San Jose WPCP - Reliability Improvement Project
Single Line Model - Base
Rosendin Electric, Inc. - February 15, 2006

Printed by EasyPower

Verify all device #'s
Verify Tie is NO or NC

PGE SW135
PGE SW145
PGE SUB1 A
PGE SUB1 B
PGE SW176
PGE SW186
TX PGE SUB1 A
TX PGE SUB1 B

Verify impedance OA/FA rating and temp class

Verify impedance OA/FA rating and temp class

M3-N Contributions
25412
2280
5492
136
76
2244

Total
37092

C M3-N
C M3-S
CONTRIB M3-N
M3-N
M3-N MAIN 52-1
M3-S MAIN 52-15
M3-N 52-7
M3-N 52-3
M3-N-S TIE 52-8
M3-S
M3 52-13
C M3A
C M1
C M2
M2 Contributions
21253
45
2951

Total
24249

CONTRIB M2
M1
M1-MAIN 52-1
M2-MAIN 52-21
M1-M2 TIE 52-12
M2
M2 52-15
C MSB

Verified - CT ratios with Submittals

Verified - CT ratios with Submittals

M3 A
M3A-MAIN
M3 B
MSB-MAIN 52-B
M1 A-B TIE 52TIE
MSB 1B1

Verified - CT ratios with Submittals

M 1 EP0005
M 1 EP0006
M 2 EP0011
M 2 EP0012
M 2 EP0014

Raw Sewage Pump #11
12-pmp-220
Use for Short Circuit Calc

Raw Sewage Pump #12
12-pmp-222
Use for Short Circuit Calc

Raw Sewage Pump #13
12-pmp-223
Use for Short Circuit Calc

Raw Sewage Pump #14
12-pmp-223
Use for Short Circuit Calc

SFIPS Pump #8
50-pmp-203
Use for Short Circuit Calc

V01B01
V01B02
V03F01
V03F02
V03G01
V01A02
V05B02
V06F01
V06F02
V05A01

M3-1A1 - P0003
M3-1A2 - P0003
M3-2A1 - P0004
M3-2A2 - P0004
M3-5A
M3A 6A2
M3-2B1 - P0010
M3-2B2 - P0010
M3-5B

C P0003A
C P0003B
C P0004A
C P0004B
C P0007
C P0008
C P0009
C P0010A
C P0010B
C P0013

P0003
C P0003
P0004
C P0004
M P0007
TX TR-1
TX TR-2
P0010
C P0010
M P0013

M P0003
M P0003 MODEL
M P0004
M P0004 MODEL
M P0010
M P0010 MODEL

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

Verify Starting Current, and bypass for SC??
FLA=53
LRC=318

Verify Starting Current, and bypass for SC??
FLA=53
LRC=318

Grounding per Table 250.122
CB Cu
15 14
20 12
30 10
40 10
60 10
100 8
150 6
300 4
400 3
500 2
600 1
800 1/0
1000 2/0
1200 3/0
1600 4/0
2000 250
2500 350

C P0001
C P0002
B MCC1-A MAIN
B MCC1-B MAIN

Raw Sewage Pump #8
12-pmp-210

Raw Sewage Pump #10
12-pmp-212

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #6
50-pmp-201

Raw Sewage Pump #9
12-pmp-211

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #7
50-pmp-202

SLD indicates 50A MCP

SLD indicates 50A MCP

MCC1-A
MCC1-B
B 1A-MCC2
B MCC1 A-B TIE
B 1B-MCC2
C 1A-MCC2
C 1B-MCC2
B 05-PMP-201
C 05-PMP-201
M 05-PMP-201
B 12-CNV-201
C 12-CNV-201
M 12-CNV-201
B 12-PMP-201
C 12-PMP-201
M 12-PMP-201
B 12-FAN-201
C 12-FAN-201
M 12-FAN-201
B 12-FAN-205
C 12-FAN-205
M 12-FAN-205
B 12-PMP-206
C 12-PMP-206
M 12-PMP-206
B 12-LCP-2001
C 12-LCP-2001
12-LCP-2001
C 12-MBS-201
M 12-MBS-201
B 12-GBN-201
C 12-GBN-201
M 12-GBN-201
B 12-PMP-213
C 12-PMP-213
M 12-PMP-213
B 12-LCP-2004
C 12-LCP-2004
12-LCP-2004
C 12-WSC-201
M 12-WSC-201
B 12-PMP-203
C 12-PMP-203
M 12-PMP-203
B 12-GCL-201
C 12-GCL-201
M 12-GCL-201
B 12-LCP-2006
C 12-LCP-2006
12-LCP-2006
C 12-SCP-201
M 12-SCP-201
B 12-HVU-203
C 12-HVU-203
12-HVU-203
M 12-PMP-204
C 12-PMP-204
M 12-PMP-204
B 12-GCL-202
C 12-GCL-202
M 12-GCL-202
B 12-FAN-205A
C 12-FAN-205A
M 12-FAN-205A
B MCC1-SPARE
C MCC1-SPARE
M MCC1-SPARE

205 designator used twice on SLD

B 05-PMP-202
C 05-PMP-202
M 05-PMP-202
B 12-LCP-2002
C 12-LCP-2002
12-LCP-2002
C 12-MBS-202
M 12-MBS-202
B 12-LCP-2003
C 12-LCP-2003
12-LCP-2003
C 12-MBS-203
M 12-MBS-203
B 12-LCP-2005
C 12-LCP-2005
12-LCP-2005
C 12-WSC-202
M 12-WSC-202
B 12-CNV-202
C 12-CNV-202
M 12-CNV-202
B MCC1B-SPARE1
B 12-LCP-2007
C 12-LCP-2007
12-LCP-2007
C 12-SCP-202
M 12-SCP-202
B 12-PMP-202
C 12-PMP-202
M 12-PMP-202
B 12-GBN-202
C 12-GBN-202
M 12-GBN-202
B 12-PMP-205
C 12-PMP-205
M 12-PMP-205
B MCC1B-SPARE2
B 12-PMP-207
C 12-PMP-207
M 12-PMP-207
B 12-FAN-204
C 12-FAN-204
M 12-FAN-204
B 12-GBN-203
C 12-GBN-203
M 12-GBN-203
B 12-GCL-203
C 12-GCL-203
M 12-GCL-203
B 12-FAN-207
C 12-FAN-207
M 12-FAN-207
B 12-FAN-202
C 12-FAN-202
M 12-FAN-202
B 12-PMP-214
C 12-PMP-214
M 12-PMP-214
B 12-FAN-206
C 12-FAN-206
M 12-FAN-206
B 12-FAN-208
C 12-FAN-208
M 12-FAN-208

MCC2
B MCC2-SPARE
B 05-VLV-201
C 05-VLV-201
M 05-VLV-201
B 11-SLG-201
C 11-SLG-201
M 11-SLG-201
B 11-SLG-202
C 11-SLG-202
M 11-SLG-202
B 11-SLG-203
C 11-SLG-203
M 11-SLG-203
B 11-SLG-204
C 11-SLG-204
M 11-SLG-204
B 11-SLG-205
C 11-SLG-205
M 11-SLG-205
B 11-SLG-207
C 11-SLG-207
M 11-SLG-207
B 12-SLG-204
C 12-SLG-204
M 12-SLG-204
B 12-SLG-205
C 12-SLG-205
M 12-SLG-205
B 12-SLG-208
C 12-SLG-208
M 12-SLG-208
B 12-SLG-211
C 12-SLG-211
M 12-SLG-211
B 12-SLG-212
C 12-SLG-212
M 12-SLG-212
B 12-SLG-213
C 12-SLG-213
M 12-SLG-213
B 12-SLG-219
C 12-SLG-219
M 12-SLG-219
B 12-BFG-201
C 12-BFG-201
M 12-BFG-201
B 12-BFG-202
C 12-BFG-202
M 12-BFG-202
B 12-BFG-203
C 12-BFG-203
M 12-BFG-203
B 12-SDG-201
C 12-SDG-201
M 12-SDG-201
B 12-SDG-202
C 12-SDG-202
M 12-SDG-202
B 12-SDG-209
C 12-SDG-209
M 12-SDG-209
B 12-SDG-210
C 12-SDG-210
M 12-SDG-210
B 12-SDG-211
C 12-SDG-211
M 12-SDG-211
B 12-SLG-214
C 12-SLG-214
M 12-SLG-214
B 12-SLG-215
C 12-SLG-215
M 12-SLG-215
B 12-SLG-216
C 12-SLG-216
M 12-SLG-216
B 12-SLG-217
C 12-SLG-217
M 12-SLG-217
B 05-VLV-217
C 05-VLV-217
M 05-VLV-217
B 12-VLV-218
C 12-VLV-218
M 12-VLV-218
B 05-VLV-219
C 05-VLV-219
M 05-VLV-219
B TX-1
C TX-1
TX-1
B 1P-1 MAIN
LP-1
B TX-2
C TX-2
TX-2
B RSFDS PMP1
C RSFDS PMP1
M RSFDS PMP1
B RSFDS PMP2
C RSFDS PMP2
M RSFDS PMP2
B MCC5
C MCC5
B LP-2 MAIN
B LP-2 BRANCH
C LP-3
B LP-3 MAIN
LP-3
MCC5
B MCC-4
C 14-SLG-201
M 14-SLG-201
B TX-3
C TX-3
TX-3
B LP-4 MAIN
LP-4
B 14-SLG-202
C 14-SLG-202
M 14-SLG-202
B 14-SLG-203
C 14-SLG-203
M 14-SLG-203
B 14-PMP-203
C 14-PMP-203
M 14-PMP-203
B 14-PMP-202
C 14-PMP-202
M 14-PMP-202
B 14-HPU-201
C 14-HPU-201
14-HPU-201
B 14-SLG-204
C 14-SLG-204
M 14-SLG-204
B 14-PMP-201
C 14-PMP-201
M 14-PMP-201

mis-labeled in submittal, submittal should read "11-SLG-207", not "12-SLG-207".

San Jose WPCP - Reliability Improvement Project
Single Line Model - Three Phase Fault
Rosendin Electric, Inc. - February 15, 2006

Printed by EasyTrace

Verify all device #'s
Verify Tie is NO or NC

PGE SW135
PGE SW145
PGE SUB1 A
PGE SUB1 B
PGE SW176
PGE SW186
TX PGE SUB1 A
TX PGE SUB1 B
Verify impedance OA/FA rating and temp class
Verify impedance OA/FA rating and temp class

M3-N Contributions
25412
2280
5492
136
108
2244

Total
37092

C M3-N
C M3-S
CONTRIB M3-N
M3-N MAIN 52-1
M3-S MAIN 52-15
M3-N 52-7
M3-N 52-3
M3 N-S TIE 52-8
M3 52-13
C M3A
C M1
C M2
M2 Contributions
21253
45
2951

Total
24249
CONTRIB M2
M1-MAIN 52-1
M2-MAIN 52-21
M1-M2 TIE 52-12
M2 52-15
C M1B
Verified - CT ratios with Submittals
Verified - CT ratios with Submittals

M3 A
M3A-MAIN
M3 B
M1B-MAIN 52-B
V01B01
V01B02
V03F01
V03F02
V03G01
V01A02
V06F01
V06F02
V05A01
M1 A-B TIE 52TIE
V05B02
Verified - CT ratios with Submittals

M 12-P0005
M 12-P0006
M1-1A1 - P0003
M1-1A2 - P0003
M1-2A1 - P0004
M1-2A2 - P0004
M1-5A
M1A 6A2
M1-2B1 - P0010
M1-2B2 - P0010
M1-5B
M 12-EP0011
M 12-EP0012
M 12-EP0014
C P0003A
C P0003B
C P0004A
C P0004B
C P0007
C P0008
C P0009
C P0010A
C P0010B
C P0013
P0003
P0004
P0010
C P0003
C P0004
M 12-P0003
M 12-P0004
M 12-P0003 MODEL
M 12-P0004 MODEL
M 12-P0007
TX TR-1
C P0801
M 12-P0010
M 12-P0010 MODEL
M 12-P0013
TX TR-2
C P0802
MSB 1B1

Raw Sewage Pump #11
12-pmp-220
Use for Short Circuit Calc

Raw Sewage Pump #12
12-pmp-222
Use for Short Circuit Calc

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

Verify Starting Current, and bypass for SC??
FLA=53
LRC=318

Verify Starting Current, and bypass for SC??
FLA=53
LRC=318

Raw Sewage Pump #13
12-pmp-223
Use for Short Circuit Calc

Raw Sewage Pump #14
12-pmp-223
Use for Short Circuit Calc

SFIPS Pump #8
50-pmp-203
Use for Short Circuit Calc

Grounding per Table 250.122

CB	Cu
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0
1000	2/0
1200	3/0
1600	4/0
2000	250
2500	350

Raw Sewage Pump #6
12-pmp-210

Raw Sewage Pump #10
12-pmp-212

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #6
50-pmp-201

Raw Sewage Pump #9
12-pmp-211

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #7
50-pmp-202

SLD indicates 50A MCP

SLD indicates 50A MCP

MCC1-A
MCC1-A MAIN
MCC1-A MAIN TIE
MCC1-B
MCC1-B MAIN
B 1A-MCC2
B 1B-MCC2
C 1A-MCC2
C 1B-MCC2
B 05-PMP-201
C 05-PMP-201
M 05-PMP-201
B 12-CNV-201
C 12-CNV-201
M 12-CNV-201
B 12-PMP-201
C 12-PMP-201
M 12-PMP-201
B 12-FAN-201
C 12-FAN-201
M 12-FAN-201
B 12-FAN-205
C 12-FAN-205
M 12-FAN-205
B 12-PMP-206
C 12-PMP-206
M 12-PMP-206
B 12-LCP-2001
C 12-LCP-2001
12-LCP-2001
C 12-MBS-201
M 12-MBS-201
B 12-GBN-201
C 12-GBN-201
M 12-GBN-201
B 12-PMP-213
C 12-PMP-213
M 12-PMP-213
B 12-LCP-2004
C 12-LCP-2004
12-LCP-2004
C 12-WSC-201
M 12-WSC-201
B 12-PMP-203
C 12-PMP-203
M 12-PMP-203
B 12-GCL-201
C 12-GCL-201
M 12-GCL-201
B 12-LCP-2006
C 12-LCP-2006
12-LCP-2006
C 12-SCP-201
M 12-SCP-201
B 12-HVU-203
C 12-HVU-203
12-HVU-203
M 12-PMP-204
B 12-PMP-204
C 12-PMP-204
B 12-GCL-202
C 12-GCL-202
M 12-GCL-202
B 12-FAN-205A
C 12-FAN-205A
M 12-FAN-205A
B MCC1-SPARE
C MCC1-SPARE
M MCC1-SPARE

205 designator used twice on SLD

B 05-PMP-202
C 05-PMP-202
M 05-PMP-202
B 12-LCP-2002
C 12-LCP-2002
12-LCP-2002
C 12-MBS-202
M 12-MBS-202
B 12-LCP-2003
C 12-LCP-2003
12-LCP-2003
C 12-MBS-203
M 12-MBS-203
B 12-LCP-2005
C 12-LCP-2005
C 12-WSC-202
M 12-WSC-202
B 12-CNV-202
C 12-CNV-202
M 12-CNV-202
B MCC1B-SPARE1
B 12-LCP-2007
C 12-LCP-2007
12-LCP-2007
C 12-SCP-202
M 12-SCP-202
B 12-PMP-202
C 12-PMP-202
M 12-PMP-202
B 12-GBN-202
C 12-GBN-202
M 12-GBN-202
B 12-PMP-205
C 12-PMP-205
M 12-PMP-205
B MCC1B-SPARE2
B 12-PMP-207
C 12-PMP-207
M 12-PMP-207
B 12-FAN-204
C 12-FAN-204
M 12-FAN-204
B 12-GBN-203
C 12-GBN-203
M 12-GBN-203
B 12-GCL-203
C 12-GCL-203
M 12-GCL-203
B 12-FAN-207
C 12-FAN-207
M 12-FAN-207
B 12-FAN-202
C 12-FAN-202
M 12-FAN-202
B 12-PMP-214
C 12-PMP-214
M 12-PMP-214
B 12-FAN-206
C 12-FAN-206
M 12-FAN-206
B 12-FAN-208
C 12-FAN-208
M 12-FAN-208

MCC2
B 05-VLV-201
C 05-VLV-201
M 05-VLV-201
B 11-SLG-201
C 11-SLG-201
M 11-SLG-201
B 11-SLG-202
C 11-SLG-202
M 11-SLG-202
B 11-SLG-203
C 11-SLG-203
M 11-SLG-203
B 11-SLG-204
C 11-SLG-204
M 11-SLG-204
B 11-SLG-205
C 11-SLG-205
M 11-SLG-205
B MCC2-SPARE
B 11-SLG-207
C 11-SLG-207
M 11-SLG-207
B 12-SLG-204
C 12-SLG-204
M 12-SLG-204
B 12-SLG-205
C 12-SLG-205
M 12-SLG-205
B 12-SLG-208
C 12-SLG-208
M 12-SLG-208
B 12-SLG-211
C 12-SLG-211
M 12-SLG-211
B 12-SLG-212
C 12-SLG-212
M 12-SLG-212
B 12-SLG-213
C 12-SLG-213
M 12-SLG-213
B 12-SLG-219
C 12-SLG-219
M 12-SLG-219
B 12-BFG-201
C 12-BFG-201
M 12-BFG-201
B 12-BFG-202
C 12-BFG-202
M 12-BFG-202
B 12-BFG-203
C 12-BFG-203
M 12-BFG-203
B 12-SDG-201
C 12-SDG-201
M 12-SDG-201
B 12-SDG-202
C 12-SDG-202
M 12-SDG-202
B 12-SDG-209
C 12-SDG-209
M 12-SDG-209
B 12-SDG-210
C 12-SDG-210
M 12-SDG-210
B 12-SDG-211
C 12-SDG-211
M 12-SDG-211
B 12-SLG-214
C 12-SLG-214
M 12-SLG-214
B 12-SLG-215
C 12-SLG-215
M 12-SLG-215
B 12-SLG-216
C 12-SLG-216
M 12-SLG-216
B 12-SLG-217
C 12-SLG-217
M 12-SLG-217
B 05-VLV-217
C 05-VLV-217
M 05-VLV-217
B 12-VLV-218
C 12-VLV-218
M 12-VLV-218
B 05-VLV-219
C 05-VLV-219
M 05-VLV-219
B TX-1
C TX-1
TX-1
B 1P-1 MAIN
1P-1
B TX-2
C TX-2
TX-2
B 1P-2 MAIN
1P-2
B 1P-2 BRANCH
C 1P-3
B 1P-3 MAIN
1P-3
B RSFDS PMP1
C RSFDS PMP1
M RSFDS PMP1
B RSFDS PMP2
C RSFDS PMP2
M RSFDS PMP2
B MCC5
C MCC5

mis-labeled in submittal, submittal should read "11-SLG-207", not "12-SLG-207".

MCC5
B MCC-5
C 14-SLG-201
M 14-SLG-201
B TX-3
C TX-3
TX-3
B 1P-4 MAIN
1P-4
C 14-SLG-202
M 14-SLG-202
C 14-SLG-203
M 14-SLG-203
C 14-PMP-203
M 14-PMP-203
B 14-PMP-202
C 14-PMP-202
M 14-PMP-202
B 14-HPU-201
C 14-HPU-201
14-HPU-201
B 14-SLG-204
C 14-SLG-204
M 14-SLG-204
B 14-PMP-201
C 14-PMP-201
M 14-PMP-201

San Jose WPCP - Reliability Improvement Project
Single Line Model - Ground Fault
Rosendin Electric, Inc. - February 15, 2006

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Verify all device #'s
Verify Tie is NO or NC

PGE SW135
PGE SW145
PGE SUB1 A
PGE SUB1 B
PGE SW176
PGE SW186

Verify impedance OA/FA rating and temp class

TX PGE SUB1 A
TX PGE SUB1 B

Verify impedance OA/FA rating and temp class

M3-N Contributions
25412
2280
5492
136
16
2244

Total
37092

C M3-N
C M3-S
CONTRIB M3-N
M3-N MAIN 52-1
M3-S MAIN 52-15
M3-N
M3-S
M3-N 52-7
M3-N 52-3
M3 N-S TIE 52-8
M3 52-13
C M3A
C M1
C M2
M2 Contributions
21253
45
2951

Total
24249

CONTRIB M2
M1
M1-MAIN 52-1
M2
M2-MAIN 52-21
M1-M2 TIE 52-12
M2 52-15
C MSB

Verified - CT ratios with Submittals
Verified - CT ratios with Submittals

M3 A
M3A-MAIN
M3 B
MSB-MAIN 52-B
M1 A-B TIE 52TIE
MSB 1B1
M 1 P0005
M 1 P0006
M 1 EP0011
M 1 EP0012
M 1 EP0014
M 1 P0003
M 1 P0004
M 1 P0007
M 1 P0008
M 1 P0009
M 1 P0010
M 1 P0013
M 1 P0003 MODEL
M 1 P0004 MODEL
M 1 P0010 MODEL
M 1 P0001
M 1 P0002
M 12-MBS-201
M 12-GBN-201
M 12-WSC-201
M 12-SCP-201
M 12-MBS-202
M 12-GBN-202
M 12-WSC-202
M 12-SCP-202
M 12-MBS-203
M 12-GBN-203
M 12-WSC-203
M 12-SCP-203
M 12-MBS-204
M 12-GBN-204
M 12-WSC-204
M 12-SCP-204
M 12-MBS-205
M 12-GBN-205
M 12-WSC-205
M 12-SCP-205
M 12-MBS-206
M 12-GBN-206
M 12-WSC-206
M 12-SCP-206
M 12-MBS-207
M 12-GBN-207
M 12-WSC-207
M 12-SCP-207
M 12-MBS-208
M 12-GBN-208
M 12-WSC-208
M 12-SCP-208

V01B01
V01B02
V03F01
V03F02
V03G01
V01A02
V05B02
V06F01
V06F02
V05A01

M3-1A1 - P0003
M3-1A2 - P0003
M3-2A1 - P0004
M3-2A2 - P0004
M3-5A
M3A 6A2
M3-2B1 - P0010
M3-2B2 - P0010
M3-5B
C P0003A
C P0003B
C P0004A
C P0004B
C P0007
C P0008
C P0009
C P0010A
C P0010B
C P0013
P0003
P0004
P0010
C P0003
C P0004
TX TR-1
TX TR-2
C P0001
C P0002

Raw Sewage Pump #11
12-pmp-220
Use for Short Circuit Calc

Raw Sewage Pump #12
12-pmp-222
Use for Short Circuit Calc

Raw Sewage Pump #13
12-pmp-223
Use for Short Circuit Calc

Raw Sewage Pump #14
12-pmp-223
Use for Short Circuit Calc

SFIPS Pump #8
50-pmp-203
Use for Short Circuit Calc

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

Verify Starting Current, and bypass for SC??
FLA=53
LRC=318

Grounding per Table 250.122
CB Cu
15 14
20 12
30 10
40 10
60 10
100 8
150 6
300 4
400 3
500 2
600 1
800 1/0
1000 2/0
1200 3/0
1600 4/0
2000 250
2500 350

Raw Sewage Pump #8
12-pmp-210

Raw Sewage Pump #10
12-pmp-212

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #6
50-pmp-201

Raw Sewage Pump #9
12-pmp-211

Motor can operate in VFD bypass mode - use for Short Circuit Calculation.

SFIPS Pump #7
50-pmp-202

SLD indicates 50A MCP

SLD indicates 50A MCP

MCC1-A
B MCC1-A MAIN
B MCC1 A-B TIE
MCC1-B
B MCC1-B MAIN
C 1A-MCC2
C 1B-MCC2
B 1A-MCC2
B 1B-MCC2

B 05-PMP-201
B 12-CNV-201
B 12-PMP-201
B 12-FAN-201
B 12-FAN-205
B 12-PMP-206
B 12-LCP-2001
B 12-GBN-201
B 12-PMP-213
B 12-LCP-2004
B 12-PMP-203
B 12-GCL-201
B 12-LCP-2006
B 12-HVU-203
B 12-PMP-204
B 12-GCL-202
B 12-FAN-205A
B MCC1-SPARE
C 05-PMP-201
C 12-CNV-201
C 12-PMP-201
C 12-FAN-201
C 12-FAN-205
C 12-PMP-206
C 12-LCP-2001
C 12-GBN-201
C 12-PMP-213
C 12-LCP-2004
C 12-PMP-203
C 12-GCL-201
C 12-LCP-2006
C 12-HVU-203
C 12-PMP-204
C 12-GCL-202
C 12-FAN-205A
C MCC1-SPARE
M 05-PMP-201
M 12-CNV-201
M 12-PMP-201
M 12-FAN-201
M 12-FAN-205
M 12-PMP-206
M 12-MBS-201
M 12-GBN-201
M 12-PMP-213
M 12-WSC-201
M 12-PMP-203
M 12-GCL-201
M 12-SCP-201
M 12-PMP-204
M 12-GCL-202
M 12-FAN-205A
M MCC1-SPARE

205 designator used twice on SLD

B 05-PMP-202
B 12-CNV-202
B 12-LCP-2002
B 12-LCP-2003
B 12-LCP-2005
B MCC1B-SPARE1
B 12-LCP-2007
B 12-PMP-202
B 12-GBN-202
B 12-PMP-205
B MCC1B-SPARE2
B 12-PMP-207
B 12-FAN-204
B 12-GBN-203
B 12-GCL-203
B 12-FAN-207
B 12-FAN-202
B 12-PMP-214
B 12-FAN-206
B 12-FAN-208
C 05-PMP-202
C 12-CNV-202
C 12-LCP-2002
C 12-LCP-2003
C 12-LCP-2005
C 12-LCP-2007
C 12-PMP-202
C 12-GBN-202
C 12-PMP-205
C 12-PMP-207
C 12-FAN-204
C 12-GBN-203
C 12-GCL-203
C 12-FAN-207
C 12-FAN-202
C 12-PMP-214
C 12-FAN-206
C 12-FAN-208
M 05-PMP-202
M 12-CNV-202
M 12-PMP-202
M 12-GBN-202
M 12-PMP-205
M 12-PMP-207
M 12-FAN-204
M 12-GBN-203
M 12-GCL-203
M 12-FAN-207
M 12-FAN-202
M 12-PMP-214
M 12-FAN-206
M 12-FAN-208

MCC2
B MCC2-SPARE
B 05-VLV-201
B 11-SLG-201
B 11-SLG-202
B 11-SLG-203
B 11-SLG-204
B 11-SLG-205
B 11-SLG-207
C 05-VLV-201
C 11-SLG-201
C 11-SLG-202
C 11-SLG-203
C 11-SLG-204
C 11-SLG-205
C 11-SLG-207
M 05-VLV-201
M 11-SLG-201
M 11-SLG-202
M 11-SLG-203
M 11-SLG-204
M 11-SLG-205
M 11-SLG-207

mis-labeled in submittal, submittal should read "11-SLG-207", not "12-SLG-207".

B 12-SLG-204
B 12-SLG-205
B 12-SLG-208
B 12-SLG-211
B 12-SLG-212
B 12-SLG-213
B 12-SLG-219
B 12-BFG-201
B 12-BFG-202
B 12-BFG-203
B 12-SDG-201
B 12-SDG-202
B 12-SDG-209
B 12-SDG-210
B 12-SDG-211
B 12-SLG-214
B 12-SLG-215
B 12-SLG-216
B 12-SLG-217
B 05-VLV-217
B 12-VLV-218
B 05-VLV-219
C 12-SLG-204
C 12-SLG-205
C 12-SLG-208
C 12-SLG-211
C 12-SLG-212
C 12-SLG-213
C 12-SLG-219
C 12-BFG-201
C 12-BFG-202
C 12-BFG-203
C 12-SDG-201
C 12-SDG-202
C 12-SDG-209
C 12-SDG-210
C 12-SDG-211
C 12-SLG-214
C 12-SLG-215
C 12-SLG-216
C 12-SLG-217
C 05-VLV-217
C 12-VLV-218
C 05-VLV-219
M 12-SLG-204
M 12-SLG-205
M 12-SLG-208
M 12-SLG-211
M 12-SLG-212
M 12-SLG-213
M 12-SLG-219
M 12-BFG-201
M 12-BFG-202
M 12-BFG-203
M 1-SDG-201
M 12-SDG-202
M 12-SDG-209
M 12-SDG-210
M 12-SDG-211
M 12-SLG-214
M 12-SLG-215
M 12-SLG-216
M 12-SLG-217
M 05-VLV-217
M 12-VLV-218
M 05-VLV-219

B TX-1
C TX-1
TX-1
LP-1
B LP-1 MAIN

B TX-2
C TX-2
TX-2
LP-2
B LP-2 MAIN
B LP-2 BRANCH
C LP-3
B LP-3 MAIN
LP-3

B RSFDS PMP1
B RSFDS PMP2
C RSFDS PMP1
C RSFDS PMP2
M RSFDS PMP1
M RSFDS PMP2

B MCC5
C MCC5

MCC5
B MCC-5
B 14-SLG-201
B 14-SLG-202
B 14-SLG-203
B 14-PMP-203
B 14-PMP-202
B 14-HPU-201
B 14-SLG-204
B 14-PMP-201
C 14-SLG-201
C 14-SLG-202
C 14-SLG-203
C 14-PMP-203
C 14-PMP-202
C 14-HPU-201
C 14-SLG-204
C 14-PMP-201
M 14-SLG-201
M 14-SLG-202
M 14-SLG-203
M 14-PMP-203
M 14-PMP-202
14-HPU-201
M 14-SLG-204
M 14-PMP-201

TX-3
B LP-4 MAIN
LP-4

San Jose WPCP - Reliability Improvement Project
Single Line Model - Double Line to Ground Fault
Rosendin Electric, Inc. - February 15, 2006

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