ARC FLASH RISK ASSESSMENT
CLAYTON COUNTY WATER AUTHORITY

Blalock Pump Station
W.B. Casey Water Reclamation Facility
Terry R. Hicks Water Production Facility
W.J. Hooper Water Production Facility
RL Jackson Water Reclamation Facility
Jonesboro Pump Station
Noah's Ark Pump Station
Northeast Water Reclamation Facility
Shoal Creek Reservoir Pump Station
Smith Reservoir Pump Station

REVISION 0 JULY 2016

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DISCLAIMER

The following report was prepared by the TRC Engineers utilizing industry-accepted standards and practices.

Data used in this analysis was acquired by TRC Engineers and provided by others, through onsite discovery, published information, equipment nameplates, manufacturer ratings, testing, analysis, or other means. TRC Engineers assumes no responsibility for inaccuracies in data provided by others.

The study is intended for use by qualified individuals to facilitate the installation, operation, maintenance, and safety of the electrical power system depicted. The system changes or lack of changes suggested in this study are intended for the owner or the design engineer to consider for implementation in order to achieve a reasonable degree of selectivity and protection. The decision whether or not to implement any suggestions or proposals in this study should only be made by the owner or the design engineer because of their special knowledge of the operational requirements and environment of the system.

Modification of equipment, changes to system configuration, adjustment of protective device settings, or failure to properly maintain equipment may invalidate these results.

The results of the Arc Flash Risk Assessment and Incident Energy Analysis are not intended to imply that personnel be permitted to work on exposed energized equipment or circuits. OSHA 1910.333(a)(1)™ restricts the situations in which work is to be performed near or on energized equipment or circuits by stating, "Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations."

In the event that work is intentionally performed on or near energized equipment, this Incident Energy Analysis is not intended to prevent all injuries, but to mitigate the injury incurred as a result of the arc-flash.

TRC is not responsible for the misuse or misapplication of the information contained in this analysis.

I. EXECUTIVE SUMMARY

A. OVERVIEW

This report documents the results of an Arc Flash Risk Assessment (aka the study) conducted for the following plants in the Clayton County Water Authority (CCWA) system.

- Blalock Pump Station
- Terry R. Hicks Water Production Facility
- W.J. Hooper Water Production Facility
- Northeast Water Reclamation Facility
- Jonesboro Pump Station
- Shoal Creek Reservoir Pump Station
- RL Jackson Water Reclamation Facility
- W.B. Casey Water Reclamation Facility
- Smith Reservoir Pump Station
- Noah's Ark Pump Station

On-site data collection by TRC Engineers was conducted in late September 2015.

Based on the results of the incident energy analysis, in July 2016 arc-flash hazard warning labels were applied to the electrical distribution equipment at each of the facility's listed above.

A.1 Purpose

Generally speaking, the purpose of an Arc Flash Risk Assessment is to calculate incident energy for the electrical power distribution equipment found within the facility and label the equipment so that electrical workers interacting with the equipment are informed of the potential hazards. This is accomplished by calculating the prospective short-circuit currents at each piece of electrical power distribution equipment in the system, utilizing the settings of protective devices upstream of the equipment, and determining the working distance from the potential hazard. This information is then used to calculate incident energy at each piece of equipment and determine appropriate personal protective equipment (PPE) to be used when a work task involves an arc flash hazard.

A.2 Scope

The scope of this study is the entire electrical power distribution system (aka *the system*) for each facility. The systems for each facility are depicted in the impedance diagrams (or electrical single lines) in Appendix H.

All energy sources are considered in the analysis. For facilities with generators, the utility sources and the generator sources operate in an open transition configuration. This means either one or the other provides power but not both the generator and utility sources at the same time. In emergency conditions – when the utility sources are unavailable – the generator energizes the essential portions of the electrical system via switching of the automatic transfer switches (ATSs) from "normal" sources to the "emergency" source. This switching condition is considered as part of this analysis.

The analysis results and basis of analysis are documented in this report.

B. REVISION HISTORY

This section will document revision history after the initial study has been submitted and reviewed.

C. BASIS OF ANALYSIS

The *Method* sub-sections of this study report detail the discretionary data upon which the analysis for that study type was based.

D. OPERATIONAL CASES ANALYZED

The following are the switching conditions considered in this analysis. Case 2 is applicable for those facilities with a generator or generators.

Case	Description
1	Normal conditions – the utility sources energize the system.
2	Emergency conditions – the generator energizes the essential electrical system

E. SUMMARY OF RESULTS AND RECOMMENDATIONS

The major findings of this study are detailed below.

E.1 Short-Circuit Study

For each facility, the results of the Short-Circuit Study can be found in Appendix D. Section II contains a narrative regarding the purpose of and methodology used in the short-circuit calculations.

The following **recommendations** are made regarding the Short-Circuit Studies:

A revised Short-Circuit Study should be conducted in conjunction with major system upgrades, changes, and revisions and for changes to the feed to the facility.

Per NFPA 70E – 2015 ™, Article 130.5 (2), the Arc Flash Risk Assessment *shall be reviewed periodically, at intervals not to exceed 5 years, to account for changes in the electrical distribution system that could affect the results of the arc flash risk assessment.* This would also require an updated Short-Circuit Study.

E.2 Equipment Evaluation

The Equipment Evaluation process is discussed in Section III of this report and the detailed results are in Appendix E.

In summary, **all breakers and fuses are applied within their interrupting ratings** and all equipment assemblies are applied within their short-circuit or withstand ratings.

E.3 Coordination Study

The breaker settings for each facility, as found and noted during data collection, are documented in Appendix F. The time-current curves which depict breaker settings are also found in Appendix F.

When found to be adequate, existing breaker settings were utilized for this analysis. The following are the instances where changes to the existing settings are recommended:

Hooper

TCC 10SWBD: Recommended settings changes for the main and tie breakers would achieve downstream coordination, which is not present with the existing settings. The existing mis-coordination may result in tripping of the main and/or tie breakers for a very downstream fault. See *TCC 10SWBD – Recommended* in Appendix E for depiction of the recommended settings.

W.B. Casey Water Reclamation Facility

TCC 62SWGR -- HB: Recommended settings changes HB FDR would achieve downstream coordination, which is not present with the existing settings. The existing mis-coordination may result in tripping of the feeder breaker for a very downstream fault. See *TCC 62SWGR -- HB – Recommended* in Appendix E for depiction of the recommended settings.

Terry R. Hicks Water Production Facility

TCC SB-1: The INST pickup setting could be increased to increase coordination with downstream feeder breakers.

The Incident Energy Analysis is based on the settings documented in this report. Any changes to the breaker settings will affect the incident energy calculations and invalidate the data contained on the arc flash hazard warning label.

E.4 Arc Flash Risk Assessment

For each facility, the detailed results of the Incident Energy Analysis can be found in Appendix G and a detailed discussion of the Arc Flash Risk Assessment can be found in Section V.

Equipment labeling was completed in July 2016.

Arc flash hazard warning label information is based on the existing breaker settings which are documented in Appendix E of this report. Any changes to the breaker settings may invalidate the incident energy calculations contained in this study report.

The following **recommendation** is made regarding the arc flash risk assessment:

> Per NFPA 70E – 2015 ™, Article 130.5 (2), the Arc Flash Risk Assessment *shall be reviewed periodically, at intervals not to exceed 5 years, to account for changes in the electrical distribution system that could affect the results of the arc flash risk assessment.*

II. SHORT CIRCUIT STUDY

A. PURPOSE

The purpose of the Short Circuit Study is to calculate the available short circuit currents at all electrical power distribution equipment. The calculated fault currents are then used to: (1) in Equipment Evaluation, determine the ability of the electrical system's protective devices to safely interrupt a destructive current flow and (2) in the Arc Flash Hazard Assessment, calculate incident energy.

B. METHOD

The facility's electrical power distribution system was modeled using SKM's PTW power systems analysis software. As per the project specifications, the method by which the short circuit currents were calculated is as per ANSI-approved standards. The detailed calculation method is discussed thoroughly in IEEE Std 551-2006, specifically Chapter 9, and is not repeated in this report. Additionally, the following are the IEEE standards which also detail the calculation method:

- IEEE Std 141–1993, The Red Book
- IEEE Std 241–1990, The Gray Book
- IEEE Std 242–2001, The Buff Book
- IEEE Std 399-1997, The Brown Book

ANSI C37.13 addresses fault current calculation procedures for low-voltage systems (circuit voltage under 1000 V).

ANSI-based fault calculations utilize specific multipliers to model the ac decrement of motors and generators that are local to the fault point location. This method of calculation is such that the fault duties may be compared to the manufacturer's published ratings, which were determined using ANSI-approved standards also. This comparison is done in the Equipment Evaluation study.

Refer to IEEE Std 551-2006, Chapter 9 for additional details.

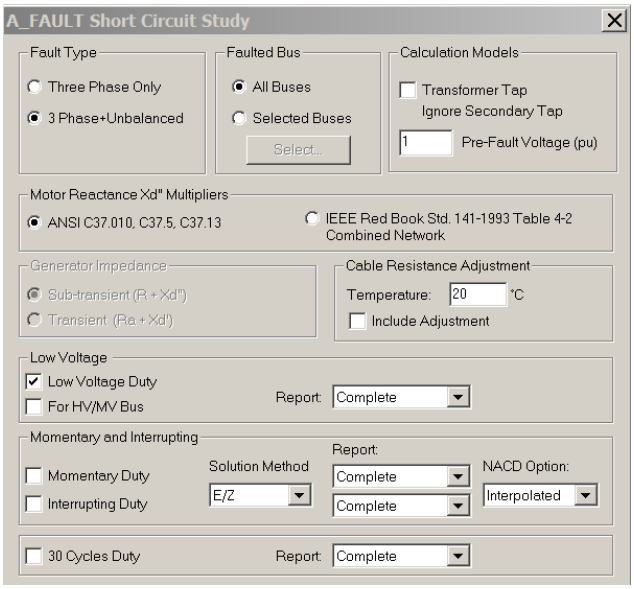
B.1 Basis of Analysis

The following is the discretionary data upon which the Short-Circuit Study was based:

- All motors are assumed to be running.
- Motor subtransient reactance is assumed to be 17%.
- Pre-fault system voltage is modeled at 100% nominal.

B.2 Software Options Used

The following software options were used for fault current calculations in the Short-Circuit Study:



C. RESULTS AND RECOMMENDATIONS

The *Input Data* is reflected on the single lines found in Appendix I. The single lines detail all component data in the system model and is the basis of the short-circuit calculations.

Appendix D.2 contains single lines for each facility which reflect the calculated short-circuit values for all operational conditions analyzed.

The following **recommendations** are made regarding the Short-Circuit Study:

A revised Short-Circuit Study should be conducted in conjunction with major system upgrades, changes, and revisions and for changes to the feed to the facility.

Per NFPA 70E – 2015 ™, Article 130.5 (2), the Arc Flash Risk Assessment *shall be reviewed periodically, at intervals not to exceed five years, to account for changes in the electrical distribution system that could affect the results of the arc flash risk assessment.* This would also require an updated Short-Circuit Study.

III. EQUIPMENT EVALUATION

A. PURPOSE

The purpose of the Equipment Evaluation is to compare the maximum calculated short-circuit currents to the interrupting ratings of protective devices and the withstand or short-circuit ratings of equipment assemblies. The comparison is made in order to determine if the device can interrupt or equipment assembly can withstand the available fault currents of the electrical system to which the device is applied, as required by NEC 110-9 and 110-10.

B. METHOD

The Equipment Evaluation process follows the evaluation procedures outlined in the following standards:

- ANSI C37.13-198
- ANSI C37.010-1979
- ANSI C37.5-1979
- ANSI C37.41-1981
- IEEE Std 1015-2006

Calculated fault currents are compared to protective device interrupting ratings and withstand or short-circuit ratings of assemblies as per the details contained in Section III.B.1 below.

B.1 Basis of Analysis

For Equipment Evaluation purposes the Study's system model contains at least one of each breaker type contained in a panelboard, switchboard, or motor control center. The Study's system model, graphically depicted by the Study single line contained in the Appendix H of this report, may not contain all breakers which are physically present in the equipment. For example, a panel may contain numerous type BAB 20A 3P breakers but the Study system model may depict only one typical type BAB breaker.

B.2 Equipment Evaluation Procedure

The following is information regarding how Equipment Evaluation performs calculations and generates the results found in the Equipment Evaluation tables at the end of this Section.

Low Voltage Breakers

- Equipment Evaluation doesn't use the entered test power factor, but rather the test X/R from the SKM library. For reference, a table of test X/R values can be found in Appendix B.2.

- If the calculated system X/R > test X/R for the device or equipment, Equipment Evaluation calculates the low voltage factor as:

$$LVF = \left(1.0 + e^{(-\pi/(X/Rcal))}\right) \Big/ (1.0 + e^{(-\pi/(X/Rtest))})$$

- Equipment Evaluation compares the ANSI three phase and single line to ground calculated duty after multiplying the low voltage factor (LVF) which is a function of the associated X/R ratio, then uses the larger of the two and its associated X/R ratio.

- Equipment Evaluation multiplies the LVF with the calculated fault current. Device interrupting ratings or equipment withstand and short-circuit ratings are not adjusted.

- No asymmetrical or momentary ratings are considered in the low voltage equipment evaluation. No voltage adjustments for interrupting rating are made. All calculated duties and interrupting ratings are on symmetrical base. All calculated duties and X/R ratios are taken from the ANSI fault calculations.

- For low voltage breakers, if the test X/R is less than 4.9 (this condition will exclude power circuit breakers), and if the series rating is larger than the library Interrupting Rating, Equipment Evaluation uses the Series Rating instead of the Interrupting Rating and uses the Series Rated Test X/R instead of the Test X/R of the current device. Here are the Series Rated Test X/R used:

Series Rating kA	Series Rated Test X/R
> 20 kA	4.899
> 10 kA and <= 20.0 kA	3.1798
< 10 kA	1.7321

Medium Voltage Breakers and Switches

- Equipment Evaluation uses the breaker/switch speed to find the closest and most conservative ANSI interrupting calculated duty. That is:

  - 3PH Device Duty = Min (Interrupting Rating * frame Vrated / Vsys, Interrupting Rating * k).

  - SLG Device Duty = Min (3PH Device Duty *1.15, Interrupting Rating * k).

- If SLG fault current/ SLG Device Duty > 3PH fault current /3PH Device Duty, Equipment Evaluation uses SLG data for comparison, otherwise, it uses 3PH data.

- For breakers that are rated on symmetrical basis:

  If breaker speed < 2 cycles, Equipment Evaluation uses the greater value of (ANSI Sym 3PH INT, ANSI Sym SLG INT)

  If breaker speed < 3 cycles, Equipment Evaluation uses the greater value of (ANSI Sym2 3PH INT, ANSI Sym2 SLG INT)

  If breaker speed < 5 cycles, Equipment Evaluation uses the greater value of (ANSI Sym3 3PH INT, ANSI Sym3 SLG INT)

If breaker speed < 8 cycles, Equipment Evaluation uses the greater value of (ANSI Sym5 3PH INT, ANSI Sym5 SLG INT)

If breaker speed > 8 cycles, Equipment Evaluation uses the greater value of (ANSI Sym8 3PH INT, ANSI Sym8 SLG INT)

- For breakers and fuses that are rated on total basis:

  If breaker speed < 2 cycles, Equipment Evaluation uses the greater value of (ANSI 3PH Mom, ANSI SLG Mom)

  If breaker speed < 3 cycles, Equipment Evaluation uses the greater value of (ANSI Tot2 3PH INT, ANSI Tot2 SLG INT)

  If breaker speed < 5 cycles, Equipment Evaluation uses the greater value of (ANSI Tot3 3PH INT, ANSI Tot3 SLG INT)

  If breaker speed < 8 cycles, Equipment Evaluation uses the greater value of (ANSI Tot5 3PH INT, ANSI Tot5 SLG INT)

  If breaker speed > 8 cycles, Equipment Evaluation uses the greater value of (ANSI Tot8 3PH INT, ANSI Tot8 SLG INT)

- Equipment Evaluation compares the calculated momentary duty with the closing and latching (momentary or asymmetrical) rating. No voltage adjustment is made for momentary rating, no 1.15 multiplier as well.

- If the Series Rating is larger than the library Interrupting Rating, Equipment Evaluation uses the Series Rating instead of the Interrupting Rating. However, it uses the Momentary Rating even if the Series Rating is larger.

Switches

The current rating of a switch refers to the maximum current the switch is designed to carry.

- For Asym RMS rated switches, the interrupting kA is compared with the calculated ANSI Sym MOM value from the study.

- For Asym RMS rated switches, the C/L kA is compared with the calculated ANSI Asym MOM value from the study.

- For Asym peak rated switches, the interrupting kA is compared with the calculated ANSI Sym MOM value from the study.

- For Asym peak rated switches, the C/L kA is compared with the calculated ANSI Crest/Peak value from the study.

Fuses

- No voltage adjustment for fuses is made, since the K factor isn't available.

- Equipment Evaluation doesn't adjust for the calculated duty based on the X/R ratio but puts a note to consult the manufacturer.

- For high voltage fuses, Equipment Evaluation compares the calculated momentary duty with the close and latch (momentary or asymmetrical) rating entered in the library. No voltage adjustment is made for momentary rating.

- If the calculated X/R > test X/R, Equipment Evaluation doesn't use the LVF but puts a note to consult the manufacturer.

- If the Series Rating is larger than the library Interrupting Rating, Equipment Evaluation uses the Series Rating instead of the Interrupting Rating. Equipment Evaluation uses the Asymmetrical Rating in the library even if the Series Rating is larger.

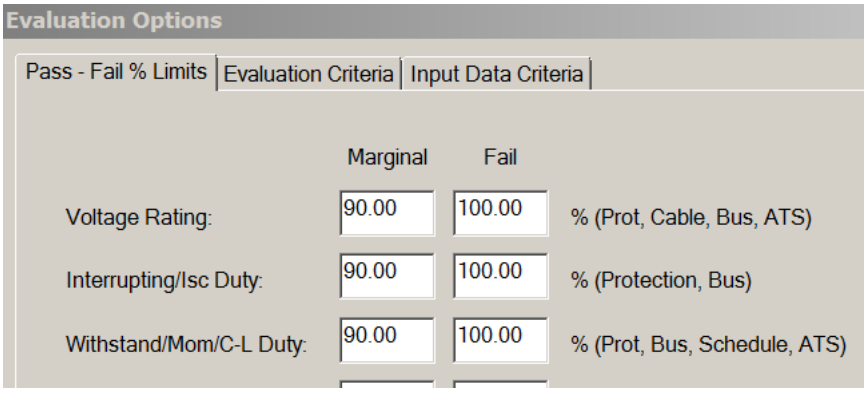
- For low voltage fuses, if the test X/R is less than 4.9 (this condition will exclude power circuit breakers), and if the Series Rating is larger than the library Interrupting Rating, Equipment Evaluation uses the Series Rating instead of the Interrupting Rating and uses the Series Rated test X/R instead of the test X/R of the current device. Here are the Series Rated Test X/R used:

Series Rating kA	Series Rated Test X/R
> 20 kA	4.899
> 10 kA and <= 20.0 kA	3.1798
< 10 kA	1.7321

- In summary,
  - For low voltage fuses, Equipment Evaluation compares the interrupting rating with the greater calculated value (ANSI 3PH LOW VOLTAGE or ANSI SLG LOW VOLTAGE).
  - For medium and high voltage fuses, Equipment Evaluation compares the interrupting rating with the greater calculated value (ANSI 3PH LV or ANSI SLG LV) and the asymmetrical rating with the greater calculated value of (ANSI 3PH MOMENTRARY, ANSI SLG MOMENTARY).

B.3. Software Options Used

The following software options were used to produce the Equipment Evaluation:



C. RESULTS AND RECOMMENDATIONS

In summary, **all breakers and fuses are applied within their interrupting ratings and all equipment assemblies are applied within their short-circuit or withstand ratings**.

For future additions of breakers, fuses, panels, and switchgear it is **recommended** the interrupting and short-circuit ratings must be greater than the calculated fault currents at the system location of interest and shown in the equipment evaluation information found in Appendix E.

IV. COORDINATION STUDY

A. PURPOSE

The purpose of the Coordination Study is to determine the ability of the electrical system protective devices to safely interrupt a destructive current flow caused by overloads or short-circuits on the electrical system with a minimum amount of power interruption to uninvolved. This is accomplished by calculating the magnitudes of prospective short-circuit currents at necessary locations in the system and determining the settings of protective devices which would achieve the best selectivity between those.

This Study analyzes short-circuit fault current levels, relay and breaker settings needed to achieve best coordination and protection.

B. METHOD

The portion of the facility's electrical power distribution system within the scope of this Study was modeled using SKM's PTW power systems analysis software. As per the project specifications, overcurrent coordination of the system's overcurrent protective devices is conducted in this portion of the Study.

Overcurrent coordination is discussed thoroughly in IEEE Std 242 – 2001™, specifically Chapter 15, and is not repeated in this Study report. However, many aspects of coordination require discretion. As such, the following sub-sections present Std 242 information to the extent necessary to explain the basis for the settings and coordination choices made in this Coordination Study.

B.1. Selective Coordination Definition

Maximum service continuity, the goal of a Coordination Study, requires that the overcurrent protective devices be rated, selected, and adjusted so that only the overcurrent protective device nearest the fault opens, isolating the faulted circuit from the system and permitting the rest of the system to remain in operation. Protective devices farther from the fault location should therefore essentially act as backup protection for the devices nearer to the fault, allowing the fault to be cleared with a minimum of disruption to the system. This is referred to as "selective coordination" or "selectivity" between the protective devices.

The following narrative regarding selectivity is from IEEE Std 242-1986™:

> *The object in coordinating protective devices is to make them selective in their operation with respect to each other. In so doing, the effects of short-circuits on a system are reduced to a minimum by disconnecting only the affected part of the system. Stated another way, only the protective device nearest the short-circuit should open, leaving the rest of the system intact and able to supply power to the unaffected parts.*
>
> *Generally, coordination is demonstrated by plotting the time-current characteristic curves of the circuit breakers involved and by making sure that no overlapping occurs between the curves of adjacent circuit breakers. Often coordination is possible only when circuit breakers with short-time time-delay characteristics are used in all circuit positions except the one closest to the load. This is particularly true when there is little or no circuit impedance between successive circuit breakers. This condition often exists in a main switchboard or load center unit substation between the main and feeder circuit breakers. Here, to be selective for all levels of possible*

short-circuit current beyond the load terminals of the feeder circuit breakers requires that the main circuit breaker be equipped with a combination of long-time-delay and short-time-delay trip characteristics. The withstand rating of associated circuit components and assemblies should not be exceeded. Moving downstream, on many feeder circuits there is sufficient impedance in the distribution system to appreciably lower the available short-circuit current at the next downstream circuit breaker. If the available short-circuit current at this next circuit breaker is less than the instantaneous trip setting of the feeder circuit breaker, selectivity is possible.

The preceding forms the basis for judging selectivity between two circuit breakers in series. If the fault current being interrupted by the downstream circuit breaker flows through the upstream circuit breaker for a period of time equal to or greater than its response time, the upstream circuit breaker will trip. Under these conditions the circuit breakers will not be selective. However, if because of impedance between the circuit breakers the maximum current that can flow during short-circuit conditions is insufficient to initiate a tripping response in the upstream circuit breaker, selectivity will exist.

The preceding explanation of coordination and selectivity applies to all overcurrent protective devices. To obtain selective coordination of relays, the relay trip curves should not overlap and should also maintain time intervals between trip curves at maximum fault current. Recommended time intervals, known as CTIs, are found in IEEE Std 242-2001™.

NEC Article 100 defines selective coordination as follows:

Localization of an overcurrent condition to restrict outage to the circuit or equipment affected, accomplished by the selection and installation of overcurrent protective devices and their ratings or settings for the full range of available overcurrents, from overload to the maximum available fault current, and for the full range of overcurrent protective device opening times associated with those currents.

Considering the operating time of overcurrent devices and as a matter of practicality, time-current curves should illustrate coordination at times equal to and greater than one cycle, or 0.01 seconds. Many manufacturer-published trip curves contain no information at times less than one cycle, making futile any attempt to analyze coordination at times less than one cycle.

The trip curves of redundant overcurrent devices may overlap without adversely affecting coordination. Redundant overcurrent devices are exclusively in series with one another, meaning the tripping of either would result in the same extent of power outage.

B.2. Equipment Protection

Protective device trip curves must also be set to provide protection of system components such as transformers, motors, and conductors. Trip curves must be set to allow for normal operational conditions, such as transformer or motor inrush.

B.2.1 Transformer Protection

Transformer Through-Fault Current Withstand

ANSI/IEEE Appendix to Standard C37.91-1985 "Application of the Transformer Through-Fault Current Duration Guide to the Protection of Power Transformers", requires that transformers be designed for thermal and mechanical endurance under through-fault short-circuit conditions in accordance with the equation [$t = 1250/(I^2)$], where t equals the time in seconds and I equals the transformer base current

in per unit on its own base kVA. This equation is plotted in this Study on all coordination sheets and is known as the "100% ANSI" curve.

For transformers with a delta-wye connection, the ANSI curve is also plotted at a current shifted 58% to the left so that primary over-current protective devices can be coordinated with the transformer damage curve to protect the transformer from secondary line-to-neutral or line-to ground fault currents. This curve is known as the 58% ANSI curve. The damage curve for line to line faults falls between the 100% ANSI and the 58% ANSI curves (86%).

It is desirable to have the transformer protective device time-current curve below and to the left of the transformer ANSI curve. This assures that a through-fault current is interrupted before there is damage to the transformer. Fault currents on the load side of the secondary protective device can be protected against by having the secondary protective device time-current curve below and to the left of the transformer ANSI curve.

Transformer Inrush Current

The magnitude and duration of transformer inrush current are not capable of being accurately predicted. The magnitude and duration are both determined by the transformer design, its magnetic history, the exact instant of prior de-energization and the exact instant of energization. Therefore, only inrush current probabilities can be dealt with. A multiplier of eight to twelve times full load current rating for inrush current is considered to be valid by many engineers. The inrush point is shown on the coordination sheets as a point at the intersection of the inrush current magnitude and the 0.1 second time line.

It is desirable that transformer primary protective device time-current curves be above and to the right of the transformer inrush point in order to avoid nuisance tripping upon energizing of the transformer.

NEC Transformer Protection Requirements

The following tables summarize the NEC protection requirements for transformers. Refer to the NEC table for numerous table notes.

NEC Table 450.3(A) Maximum Ratings or Settings of Overcurrent Protection for Transformers Over 600 Volts (as a Percentage of Transformer-Rated Current)

Transformer Impedance	Primary Side		Secondary Side		
			Over 600 Volts		600 Volts or Less
	Breaker	Fuse	Breaker	Fuse	Breaker or Fuse
< 6%	600%	300%	300%	250%	125%
>6% <10%	400%	300%	250%	225%	125%

NEC Table 450.3(B) Maximum Ratings or Settings of Overcurrent Protection for Transformers 600 Volts and Less (as a Percentage of Transformer-Rated Current)

Protection Method	Primary Protection			Secondary Protection	
	Currents of 9 amperes or more	Currents less than 9 amperes	Currents less than 2 Amperes	Currents of 9 amperes or more	Currents less than 9 amperes
Primary only protection	125%	167%	300%	Not Required	Not Required
Primary and secondary protection	250%	250%	250%	125%	167%

B.2.2 Conductor Protection

Power cables require overload and short-circuit protection in order to meet the requirements stated in NEC, Article 240 and IEEE Standard 242-2001, Chapter 9. The TCCs depict the cable damage curve and the cable ampacity.

Transformer Secondary Conductors

According to NEC Article 240.4(F) transformer secondary conductors must be protected by the use of overcurrent devices because the primary overcurrent devices do not provide such protection. Additionally, NEC Article 240.21(C) states the transformer secondary conductors are permitted without an overcurrent protective device at the point the secondary conductors receive their supply under any of the following five conditions:

- The primary overcurrent protective device, as described in 240.21(C)(1), can protect single-phase (2-wire) and 3-phase (delta-delta) transformer secondary conductors.
- The transformer secondary conductors do not exceed ten feet.
- The transformer secondary conductors do not exceed 25 feet for two applications described.
- The transformer primary plus the secondary conductors do not exceed 25 feet.
- The transformer secondary conductors are located outdoors.

Low Voltage Cables

NEC, Article 240 and IEEE Standard 242-2001, Chapter 9 require the pick-up settings of the protective devices feeding low voltage cables be equal to or less than the ampacity of the cables.

The cable's upstream protective device short time and instantaneous settings should always be set to the left and below the maximum short-circuit current-time curve of the cable. Under short-circuit conditions, all fault current is assumed to flow through a single conductor when multiconductor feeders are utilized and therefore IEEE Standard 242-2001, Chapter 9.4.4 directs that the cable damage curve for a single conductor, not parallel conductors should be shown on the TCC. Where possible, that approach to conductor protection has been used in this Study. Where this approach to cable protection would likely result in breaker settings that might result in nuisance tripping, the cable damage curve reflected on the TCC represents N-1 parallel conductors.

Medium Voltage Cables

Medium voltage cable ampacity is defined by NEC 240.101(A) and 310.60. The NEC allows the long time pick-up (or overload) protective device settings to be much higher than the cable ampacity for medium voltage cable. In this Study, where possible, the protective device pickup settings providing cable protection are equal to or less than the ampacity of the cables.

The cable's upstream protective device short time and instantaneous settings should be set to the left and below the cable damage curve. Under short-circuit conditions, all fault current is assumed to flow through a single conductor when multiconductor feeders are utilized and therefore IEEE Standard 242-2001, Chapter 9.4.4 directs that the cable damage curve for a single conductor, not parallel conductors should be shown on the TCC. Where possible, that approach to conductor protection has been used in this Study. Where this approach to cable protection would likely result in breaker settings that might result in nuisance tripping, the cable damage curve reflected on the TCC represents N-1 parallel conductors.

B.2.3 Motor Protection

The motors should have appropriate protective devices to meet the basic protection requirements for overloads and fault current withstand values. In addition, the motor short-circuit and ground fault protective devices should be set to ride through motor starting current.

The TCCs depict the motor starting curve, the over load relay, the motor circuit protector or breaker, and associated conductors.

B.2.4 Generator Protection

Generator Operations

IEEE Std 446-1995, Section 6.4.2.1 provides information regarding overcurrent protection of generators, some of which is summarized in the following paragraphs.

The initial per-unit fault current of a generator is 1/ x"d, where x"d is the subtransient reactance of the generator and is determined from a short-circuit test of the generator.

For the mechanical strength of a generator ANSI/NEMA MG 1 specifies that a generator be capable of withstanding without injury a three-phase fault at its terminals for 30 s when operating at rated kVA and power factor with field excitation for 5% overvoltage. The sustained current in this case is typically less than rated current. Requirements are also given for unbalanced fault conditions. The sustained fault current is represented by the ***generator decrement curve***. A common specification for a generator set is that it sustains 3 pu fault current for 10 seconds ($I^2 t = 90$)

With fault-sustaining capability, the possibility exists for damage to the generator windings (and possibly to the prime mover) if the fault condition is allowed to exist too long. A ***generator capability curv***e, based on the 90 I^2t thermal limit, has been developed to represent the generator damage points.

Overcurrent Protection of Generators

The pickup of the generator's overcurrent protective device should be set to 125 – 130% of the rated full load amps of the generator to avoid nuisance tripping during normal temporary overload conditions.

Other tripping functions of the generator's overcurrent protective device should be set so that the generator is removed from service in the event of a damaging fault.

B.3. Software Options Used

The following options were used to produce the results for the Coordination Study:

- TCCs reflect maximum fault current and, where a significant impact to coordination result would occur, an additional TCC is produced which reflects minimum fault current,

C. RESULTS AND RECOMMENDATIONS

The results of the Coordination Study – the breaker and relay settings – are in Appendix F. Appendix F also contains the time-current curves, which depict the settings and provide a commentary on the settings.

When found to be adequate, existing breaker settings were utilized for this analysis. The following are the instances where changes to the existing settings are recommended:

Hooper

TCC 10SWBD: Recommended settings changes for the main and tie breakers would achieve downstream coordination, which is not present with the existing settings. The existing mis-coordination may result in tripping of the main and/or tie breakers for a very downstream fault. See *TCC 10SWBD – Recommended* in Appendix E for depiction of the recommended settings.

W.B. Casey Water Reclamation Facility

TCC 62SWGR -- HB: Recommended settings changes HB FDR would achieve downstream coordination, which is not present with the existing settings. The existing mis-coordination may result in tripping of the feeder breaker for a very downstream fault. See *TCC 62SWGR -- HB – Recommended* in Appendix E for depiction of the recommended settings.

Terry R. Hicks Water Production Facility

TCC SB-1: The INST pickup setting could be increased to increase coordination with downstream feeder breakers.

III. ARC FLASH RISK ASSESSMENT

A. PURPOSE

The purpose of an arc flash risk assessment is to determine appropriate personal protective equipment (PPE) for electrical workers engaged in energized work.

As defined by NFPA 70E–2015 ™, a **risk assessment** *is an overall process that identifies hazards, estimates the potential severity of injury or damage to health, estimates the likelihood of occurrence of injury or damage to health, and determines if protective measures are required*.

An arc flash risk assessment is a type of risk assessment, the requirements for which are detailed in Article 130.5 of NFPA 70E–2015 ™.

B. METHOD

Article 130.5 of NFPA 70E–2015 ™ states *the arc flash risk assessment shall be performed and shall:*

(1) Determine if an arc flash hazard exists.
Use Table 130.7(C)(15(A)(a), *Arc Flash Hazard Identification,* to determine if an arc flash hazard exists for the task in question. *If an arc flash hazard exists, the risk assessment shall determine:*

(a) Appropriate safety-related work practices.
Refer to Article 120 for details on establishing an electrically safe work condition.

(b) The arc flash boundary.
Refer to Article 130.5.B of NFPA 70E–2015 ™ for details regarding the arc flash boundary.

The **arc flash boundary** is defined as follows: *when an arc flash hazard exists, an approach limit at a distance from a prospective arc source with which a person could receive a second degree burn if an electrical arc flash were to occur. A second degree burn is possible by an exposure of unprotected skin to an electric arc flash above the incident energy level of (1.2 cal/cm^2).*

The arc flash boundary is calculated based on data contained in Informative Annex D.4.5 of NFPA 70E-2015 and Section 5.5 of IEEE Std 1584™ – 2002.

(c) The personal protective equipment (PPE) to be used within the arc flash boundary.
The term ***PPE*** (personal protective equipment) as used in this study report is arc flash PPE. NFPA 70E–2015 ™, Table H.3(b), *Guidance on Selections of Arc-Rated Clothing and Other PPE for Use When Incident Energy Exposure is Determined*, provides details regarding the specific protective clothing and other equipment to be used when the incident energy has been calculated for a specific piece of equipment.

Article 130.5.C of NFPA 70E–2015 ™ states: one of the following methods shall be used for the selection of PPE. Either, but not both, methods shall be permitted to be used on the same piece of equipment. The results of an incident energy analysis to specify an arc flash PPE Category in Table 130.7(C)(16) shall **not** be permitted.

(i) Incident Energy Method

Incident Energy, expressed in cal/cm^2, is defined as the amount of thermal energy impressed on a surface, a certain distance from the source, generated during an electrical arc event.

The Incident Energy Method is utilized for this arc flash risk assessment and is discussed in detail in the following sub-section.

(ii) Arc Flash PPE Categories Method
Tables 130.7(C)(15) and 130.7(C)(16) are used to determine arc flash PPE.

This method of determining arc flash PPE is not addressed in this document.

B.1 Incident Energy Analysis

Arc fault currents for all electrical power distribution equipment are calculated and the clearing time is determined for the overcurrent protective device protecting the equipment. This information along with the working distance is used to determine the incident energy and identify appropriate PPE for each piece electrical power distribution equipment. From the calculated incident

The incident energy analysis contained in this study report is based on the calculation methods detailed in IEEE Std 1584b™ – 2011, Section 4 and NFPA 70E™ – 2015, Appendix D.4.

B.1.1 IEEE Std 1584bTM - 2011

IEEE 1584, Section 4 provides the calculations for determining the incident energy and the arc-flash boundary for each equipment location in the system.

Below is a summary of analysis considerations as they relate to information contained in IEEE Std 1584b™ – 2011.

Consideration	IEEE Std 1584b ™ – 2011 reference	General Comment
IEEE 1584 scope is three phase ac systems.	Section 1.2	IEEE 1584 equations are not applicable to single phase and dc systems.
IEEE 1584 scope is 208 V to 15 kV.	Section 1.2	See comments below for Section 5.1.
Arc-flash hazard analysis should be a continuation of short-circuit study and protective device coordination study.	Section 4	The calculated three phase bolted fault and the protective device's fault clearing time are required for Arc-Flash Hazard Analysis. This data is obtained from the Short-Circuit Study and the Protective Device Coordination Study, respectively.

Consideration	IEEE Std 1584b™ – 2011 reference	General Comment
Do not use overly conservative fault values.	Section 4.1, 4.2	It is no longer appropriate to assume short conductor lengths so that the fault calculations result in maximum fault current. Often lower fault currents result in higher calculated incident energy.
Consider all modes of operation that provide both maximum and minimum short-circuit current.	Section 4.3	See comments for Section 4.4.
Lower fault currents often persist longer than higher fault currents.	Section 4.4	It is imperative that maximum and minimum fault current be considered at every location in the system. If there is no means of locking out automated switching, then all operational conditions must be examined even if one condition is the normal operating condition.
Arcing fault current is less than short-circuit current.	Section 4.5	Incident energy is determined by the fault clearing time at the arcing fault current.
Duration of arc must take into account clearing times. For relay operated breakers, this includes relay operating time and circuit breaker opening time.	Section 4.6	The Arc-Flash Hazard Analysis must accurately reflect the breaker and relay settings as fault clearing time is dependent upon this data.
Ranges of empirically derived model: —Voltages in the range of 208 V–15 kV, three-phase. — Frequencies of 50 Hz or 60 Hz. — Bolted fault current in the range of 700 A–106 000 A. — Grounding of all types and ungrounded. — Equipment enclosures of commonly available sizes. — Gaps between conductors of 13 mm–152 mm. — Faults involving three phases.	Section 5.1	The calculations arising from the empirically derived model are applicable for systems within this range. Otherwise, a theoretically derived model, based on Lee's paper, is used.
Arcing current equations	Section 5.2 Section 9.10.4	Bolted three-phase fault current is a significant factor in determining results for Arc-Flash Hazard Analysis. Arcing fault current is used to determine protective device clearing time. Because of the inverse time current characteristic of protective device tripping and clearing curves, a small change in arc current could result in significant changes in clearing times. Therefore, for applications with a system voltage under 1000 V two arcing fault currents and incident energy calculation are made:

		one using the calculated expected arcing fault current and one using a reduced arcing fault current that is 15% lower.
Consideration	**IEEE Std 1584b™ – 2011 reference**	**General Comment**
Incident Energy equations	Section 5.3	Arcing time and distance from the arc point are significant factors. Arcing time is determined by breaker and relay settings and therefore the analysis must be based on the implemented settings. Distance from the arc point is determined by working distances. Typical working distance are provided in Table 3 of IEEE 1584 and are repeated below in subsection B.3. These should be reviewed to ensure they are applicable for the specific facility being analyzed.
Flash Protection Boundary	Section 5.5	Now known at the Arc Flash Boundary, this is the distance from the arc source at which the incident energy equals 1.2 cal/cm^2.

B.1.2 NFPA 70E–2015 TM

Below is a summary of the significant data contained in NFPA 70E–2015™ as it relates to Incident Energy Analysis.

Consideration	**NFPA 70E - 2015™ reference**	**General Comment**
Informational Note 1 that interaction with equipment is required, that under normal operating conditions enclosed equipment is unlikely to pose an arc flash hazard, and provides table references for activities that could pose an arc flash hazard. Information Note 2 refers to Table 130.7(C)(15)(A)(a) for assistance in identifying arc flash hazards	Article 100, *Arc Flash Hazard* definition	It is unlikely that enclosed equipment with covers and doors closed will pose an arc-flash hazard.
Two categories of *working on*: (1) diagnostic (testing), in which no physical changes are made to the equipment and (2) repair, which results in a physical alteration.	Article 100, *Working On* definition	Activities involving physical alteration to the equipment are likely to pose more risk of arc-flash hazard.

Consideration	NFPA 70E - 2015 TM reference	General Comment
Training and establishment of a Safety Program are required.	Article 110	Hazard identification and Risk Assessment are required. Arc-flash hazard warning labels, a part of the Arc-Flash Hazard Analysis, provides the information needed for these tasks.
Establishes when and Energized Electrical Work Permit is required and the information needed for the permit.	Article 130.2(B)	Data from the arc-flash hazard analysis (ref Article 130.5) is required for the permit.
The Arc-Flash Hazard Analysis shall be updated when there is a system modification and shall be reviewed periodically, not to exceed five years.	Article 130.5	Facility owners or their agents should maintain up-to-date system analysis data base files so that study updates can be accomplished with consistent results and at minimum costs.
Selection of PPE can be accomplished by (1) Incident Energy Analysis Method or (2) Arc Flash PPE Categories Method.	Article 130.5(C)	This report addresses only the Incident Energy Analysis Method, which is part of the Arc-Flash Hazard Analysis results contained in this report.
References IEEE 1584 TM equations for incident energy and arc-flash boundary calculations.	Annex D.4	
Provides guidance on the selection of Arc-Rated Clothing and Other PPE for Use When Incident Exposure is Determined by an Incident Energy Analysis.	Annex H, Table H.3(b)	This is a simplified table and it is used in the Incident Energy Analysis results contained in this report.
Requirements for equipment labeling are specified.	Article 130.5(D)	A requirement is documentation of the method of calculating and data to support the label data. Therefore, the report should contain documentation of the options used to produce the label.
PPE by Hazard/Risk Category	Table 130.7(C)(16)	Per Article 100 definitions and Informational Notes, FR clothing without an arc rating has not been tested for exposure to an electric arc and is, therefore, not appropriate for meeting the PPE requirements for NFPA 70E – 2015.

B.2 Basis of Analysis

The following is the discretionary data upon which the Incident Energy Analysis was based:

- Existing settings of breakers and relays were used for Incident Energy Analysis.
- The analysis contained in this report assumes all overcurrent protective devices operate as per the manufacturer published tripping and/or clearing curves.

- The analysis contained in this report assumes the interrupting ratings of all over-current protective devices are greater than the calculated arcing fault current for that device.
- As per IEEE 1584-2011b™, Part 4.2 in the Arc-Flash Hazard Analysis the hazard risk category is reported as Category 0 on the secondary side of transformers less than 125 kVA and a voltage of less than 240 volts.

  NOTE: The 2015 Edition of NFPA 70E eliminated hazard risk category 0 and revised the name of the analysis to Incident Energy Analysis. Therefore, at these locations the Incident Energy Analysis results specify protective clothing and other PPE of ≤ 1.2 cal/cm^2.
- As per IEEE 1584b-2011™, Part 4.6 the arcing time is capped at two seconds for all locations where it is possible to move away quickly from the arc flash.
- As per IEEE 1584b-2011™, Part 4.9 for equipment containing a main protective device the Incident Energy Analysis results are based on an arcing fault being initiated on the line side of the main protective device within an enclosure.
- After comparing incident energy values for each operational scenario considered, worst case results are adopted as the final Incident Energy Analysis results.
- As per IEEE 1584b-2011™, Part 4.9, Table 1 the following bus gaps are used for Incident Energy Analysis:

Classes of Equipment	Typical Bus Gaps (in)
Cable	0.5
5 kV switchgear	4
Low voltage switchgear	1.25
Low-voltage switchboards, MCCs, and panelboards	1

- As per IEEE 1584b-2011™, Part 4.9, Table 2 the following working distances are used for Incident Energy Analysis:

Classes of Equipment	Typical Working Distance (in)
Cable	18
Low-voltage switchboard, MCCs, and panelboards	18
Low voltage switchgear	24
5 kV and 15 kV switchgear	36

B.3 Operational Cases Analyzed

Refer to Section I.F for a description of the operational cases considered for Incident Energy Analysis.

B.4 Software Options Used

The following software options were used in the Incident Energy Analysis.

Option Description	Option Setting
Standard	NFPA 70E – 2015, Annex D.4 and IEEE Std 1584 < 240 V, Report as Category 0 if fed by transformer < 125 kVA
Flash Boundary Calculation Adjustments	Use 1.2 cal/cm^2
Max Arcing Duration	2.0 sec
Arcing Tolerances	Low = -15%, High = 10% (LV in Box)
NFPA 70E – Calculate a second IE at	LV = 38%, M/HV Equip = 100%
Pre-Vault Voltage	1pu
Utility and Impedance Tolerance	Regular
Include Transformer Tap	Yes
Define Grounded as SLG/3P Fault	5.0%
Reduce Gen and Syn Mtr Fault Cont to:	300% of Gen and Synch Motor Rated Current Reduce After 10 cycles Apply to Gens Recalculate Trip Time Using Reduced Current
Induction Motor Fault Contribution	Include for 6.0 cycles
Treat Fuses As:	Specified in Library
Report Options	Bus + Protective Device Line Side, Worst Case Only Line + Load Side Contributions Main Device Check Upstream device for 80% mis-coordination

C. RESULTS AND RECOMMENDATIONS

Detailed results of the Incident Energy Analysis can be found in Appendix F.

While incident energy calculations for other than three phase AC equipment is beyond the scope of IEEE 1584, for this study single phase and two phase panels are labeled according to the information contained in NFPA 70E – 2015, Table 130.7(C)(A)(b).

The following **cautions** must be adhered to for arc flash hazard warning label results to remain valid:

a. Breaker settings must NOT be increased.

b. The working distance form energized parts must not be less than that noted on the arc flash hazard warning label.

c. Do not add a panel breaker with interrupting ratings less than those of the breakers already in the panel. This may result in the under-rated breakers being installed in panel. Under-rated breakers may not open properly during a fault.

The following **recommendations** are made in reference to the Incident Energy Analysis results:

a. Each location where the incident energy is determined to be *unacceptable* by the facility owner or facility representatives must be individually evaluated to determine the most effective means of reducing the incident energy while maintaining the highest degree of reliability. This process is known as *mitigation* and, while not within the scope of this study, it can be addressed after locations are identified.

b. Only qualified electricians who are familiar with the installation and maintenance of electrical distribution equipment should perform work associated with such equipment. All recommendations of the manufacturer, warnings and cautions relating to the safety of personnel and equipment should be followed. All applicable health and safety laws, codes, standards and procedures should be adhered to.

c. All equipment should be de-energized prior to any maintenance or service. OSHA 1910.333™ requirements should be adhered to. All guidelines of NFPA 70E - 2015™ should be followed, and, in particular, appropriate personal protective equipment must be provided and worn.

APPENDIX A: REPORT ABBREVIATIONS

Organizations and Standards

ANSI	American National Standards Institute
IEEE	Institute of Electrical and Electronics Engineers
IPCEA	Insulated Power Cable Engineers Association
NEC	National Electrical Code (NFPA No. 70)
NEMA	National Electrical Manufacturers Association
UL	Underwriter's Laboratories, Inc.

Other Abbreviations

A	Amperes
AF	Amps Frame
AIC	Amperes Interrupting Capacity
AP	Amps Plug
AS	Amps Sensor
ASD	Adjustable Speed AC Drive
Asym	Asymmetrical
AT	Amps Trip
ATS	Automatic Transfer Switch
C	Capacitance
CB	Circuit Breaker
CL	Close and Latch Rating
CT	Current Transformer
FLA	Full Load Amperes
HP	Horsepower
I	Instantaneous
kA	Kilo-Amperes
kVA	Kilovolt-Amperes
kW	Kilowatt%
L	Inductance
LL	Line-to-Line
LRA	Locked Rotor Amperes
LTD	Long Time Delay
LTPU	Long Time Pick Up
LV	Low Voltage
LVB	Low Voltage Breaker
LVF	Low Voltage Fuse
LVPCB	Low Voltage Power Circuit Breaker
MCC	Motor Control Center
MCS	Molded Case Switch
MCB	Molded Case Breaker
MCCB	Molded Case Circuit Breaker
MV	Medium Voltage
MVB	Medium Voltage Breaker
MVF	Medium Voltage Fuse
OCPD	Overcurrent Protective Device
OL	Overload
PCC	Point of Common Coupling
PD	Protective Device
PF	Power Factor
PPE	Personal Protective Equipment
PWM	Pulse Width Modulated
R	Resistance
RMS	Root Means Square
SCA	Short-Circuit Amperes
SF	Service Factor
SLG	Single-Line-to-Ground
Sym	Symmetrical
TCC	Time Current Curves
TDD	Total Demand Distortion
THD	Total Harmonic Distortion
V	Volts
VFD	Variable Frequency Drive
VSD	Variable Speed Drive
WCR	Withstand Current Rating
X	Reactance
Z	Impedance
%Z	Percent Impedance

APPENDIX B: RESOURCES

B.1 INDUSTRY STANDARDS

The following industry standards were utilized in the compilation of this report:

- IEEE Std 141 — IEEE Recommended Practice for Electric Power Distribution for Industrial Plants - Red Book
- IEEE Std 241 — IEEE Recommended Practice for Electric Power Systems in Commercial Buildings - Gray Book
- IEEE Std 242 — IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems - Buff Book
- IEEE Std 399 — IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis - Brown Book
- IEEE Std 446 — IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications – Orange Book
- IEEE Std 551 — IEEE Recommended Practice for Calculating Short Circuit Currents in Industrial and Commercial Power Systems - Violet Book
- IEEE Std 602 — IEEE Recommended Practice for Electric Systems in Health Care Facilities – White Book
- IEEE Std 1015 — IEEE Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems- Blue Book
- IEEE 1584 — IEEE Guide for Performing Arc-Flash Hazard Calculations
- NFPA 70 — National Electrical Code
- NFPA 70E — Standard for Electrical Safety in the Workplace

B.2 TEST X/R RATIOS FOR ELECTRICAL DISTRIBUTION EQUIPMENT

Equipment	Test PF	Test X/R	Standard
Panelboards ≤ 10 kA	0.5	1.732	UL 67
10 kA < Panelboards ≤ 20 kA	0.3	3.18	UL 67
Panelboards > 20kA	0.2	4.899	UL 67
Motor Control Centers ≤ 10 kA	0.5	1.732	UL 845
10 kA < Motor Control Centers ≤ 20 kA	0.3	3.18	UL 845
Motor Control Centers > 20kA	0.2	4.899	UL 845
Switchboards < 10 kA	0.5	1.732	UL 891
10 kA < Switchboards < 20 kA	0.3	3.18	UL 891
Switchboards > 20kA	0.2	4.899	UL 891
Transfer Switches ≤ 10 kA	0.5	1.732	UL 1008
10 kA < Transfer Switches ≤ 20 kA	0.3	3.18	UL 1008
Transfer Switches > 20kA	0.2	4.899	UL 1008
Switchgear	0.15	6.591	ANSI C37.50, UL 1558
Molded Case Circuit Breakers ≤ 10 kA	0.5	1.732	UL 489
10 kA < Molded Case Circuit Breakers ≤ 20 kA	0.3	3.18	UL 489
Molded Case Circuit Breakers > 20kA	0.2	4.899	UL 489
Insulated Case Circuit Breakers ≤ 10 kA	0.5	1.732	UL 489
10 kA < Insulated Case Circuit Breakers ≤ 20 kA	0.3	3.18	UL 489
Insulated Case Circuit Breakers > 20kA	0.2	4.899	UL 489
Power Circuit Breakers	0.15	6.591	UL 1066
Power Circuit Breakers (Fused)	0.2	4.899	UL 1066
Fuses ≤ 10 kA	0.5	1.732	UL 248-1
Fuses > 10 kA	0.2	4.899	UL 248-1
HV/MV Switchgear (kA Rating Basis)	0.0587	17	ANSI C37.09-1999
HV/MV Switchgear (MVA Rating Basis)	0.0665	15	ANSI C37.010-1979
MV E2 Motor Starter	0.0665	15	UL 347
HV/MV Power Fuses	0.0665	15	ANSI C37.41

B.3 SYSTEM ANALYSIS SOFTWARE

Power Tools, Version 7.0.4.1, by SKM Systems Analysis, Inc., Manhattan Beach, California, has been used to perform the Incident Energy Analysis.

A *Backup* (accomplished by choosing Project – Backup from the PTW menu) of the study data file is included with the final version of the study. Opening these files requires a 1000 bus limit version of the Power Tools software. Upon opening the Study in Power Tools, the Project-Options-Library tabs should be used to re-direct the libraries to the ones contained in the backed up Study files.

B.4 PROJECT DOCUMENTS

The following documentation was used to model system data for this Study:

- System model and details for the system are based on the facility single lines provided to TRC by CCWA and the on-site data collection conducted by TRC Engineers during September 2015.

APPENDIX C: UTILITY SOURCE DATA

The following pages detail the utility source contributions provided by utility power providers.

Arc Flash Analysis Report

Customer Name: Clayton Co. Water

Customer Address: 1545 Pates Creek Rd

Date: 10/1/2015

Station Number:

Meter Number:

Account Number:

Utility Data

Three Phase Utility Contribution (MVA)	360.54
Line to Ground Utility Contribution (MVA)	370.87
System Impedance R1 +jX1 - per unit, 100 mVA base	0.0120+0.2771j
X/R - Three Phase	23.09
Three Phase Fault Current - Amps	8346
System Impedance R0 +jX0 - per unit, 100 mVA base	0.0099+0.2540j
X/R - Line-Ground	23.84
Line to Ground Fault Current - Amps	8585
System Voltage - Line-Line kV	24.94

Transformer Fuse

Fuse Manufacturer	Cooper Power/RTE or equivalent
Amp Rating	30A
Cooper/RTE Catalog No.	4038108C09B
Type	DUAL ELEMENT

Transformer Data

KVA Bank Rating	1000
Phases (3 phase, single phase or open delta)	3
Primary Voltage (kV)	24.94
Primary Connection	Wye-grounded
Secondary Voltage	480
Secondary Connection	Wye-grounded
Impedance (%Z)	5.90
Typical X/R	9.04

Service Data

Length (feet)	0
R (Ohms)	0
X (Ohms)	0
Three Phase Utility Contribution (MVA)	16.19
X/R - Three Phase	9.30
Three Phase Utility Contribution (Amps)	19473

Socket Version: 3.2

Database Revision Date: 8/4/2015

Arc Flash Analysis Report

Customer Name: Clayton Co. Water

Customer Address: 1693 Freeman Road

Date: 10/1/2015

Station Number:

Meter Number:

Account Number:

Utility Data

Three Phase Utility Contribution (MVA)	32.21
Line to Ground Utility Contribution (MVA)	35.96
System Impedance R1 +jX1 - per unit, 100 mVA base	0.4036+3.0779j
X/R - Three Phase	7.63
Three Phase Fault Current - Amps	38747
System Impedance R0 +jX0 - per unit, 100 mVA base	0.2163+2.1235j
X/R - Line-Ground	8.09
Line to Ground Fault Current - Amps	43255
System Voltage - Line-Line kV	0.48

Transformer Fuse

Fuse Manufacturer	Cooper Power/RTE or equivalent
Amp Rating	40A
Cooper/RTE Catalog No.	4038108C11B
Type	DUAL ELEMENT

Transformer Data

KVA Bank Rating	1500
Phases (3 phase, single phase or open delta)	3
Primary Voltage (kV)	0.48
Primary Connection	Wye-grounded
Secondary Voltage	480
Secondary Connection	Wye-grounded
Impedance (%Z)	5.80
Typical X/R	8.27

Service Data

Length (feet)	0
R (Ohms)	0
X (Ohms)	0
Three Phase Utility Contribution (MVA)	14.35
X/R - Three Phase	7.97
Three Phase Utility Contribution (Amps)	17255

Socket Version: 3.2

Database Revision Date: 8/4/2015

688 Flint River Rd Jonesboro, Ga - Casey	
Primary/Sec Voltage	25KV – 12KV
Z1	0.1042+0.6999j
Z0	0.2148+1.0090J
Transformer size	5000
Transformer Conn	WYE
Upstream fuse	100A
Transformer %Z	6.48

Arc Flash Analysis Report

Customer Name: Clayton Co. Water

Customer Address: 1693 Freeman Road

Date: 10/1/2015

Station Number:

Meter Number:

Account Number:

Utility Data

Three Phase Utility Contribution (MVA)	32.21
Line to Ground Utility Contribution (MVA)	35.96
System Impedance R1 +jX1 - per unit, 100 mVA base	0.4036+3.0779j
X/R - Three Phase	7.63
Three Phase Fault Current - Amps	38747
System Impedance R0 +jX0 - per unit, 100 mVA base	0.2163+2.1235j
X/R - Line-Ground	8.09
Line to Ground Fault Current - Amps	43255
System Voltage - Line-Line kV	0.48

Transformer Fuse

Fuse Manufacturer	Cooper Power/RTE or equivalent
Amp Rating	40A
Cooper/RTE Catalog No.	4038108C11B
Type	DUAL ELEMENT

Transformer Data

KVA Bank Rating	1500
Phases (3 phase, single phase or open delta)	3
Primary Voltage (kV)	0.48
Primary Connection	Wye-grounded
Secondary Voltage	480
Secondary Connection	Wye-grounded
Impedance (%Z)	5.80
Typical X/R	8.27

Service Data

Length (feet)	0
R (Ohms)	0
X (Ohms)	0
Three Phase Utility Contribution (MVA)	14.35
X/R - Three Phase	7.97
Three Phase Utility Contribution (Amps)	17255

Socket Version: 3.2

Database Revision Date: 8/4/2015

Dwane Williams
1704 Noahs Ark Rd
Jonesboro Rd, GA 30236
(770) 603-5436
Oct 12, 2015

GEORGIA POWER
A SOUTHERN COMPANY

Bonita Martin
2976 Chapel Hill Rd
Douglasville, GA 30135

Dear Ms. Martin:

The following information concerning available fault current is furnished at your request:

Location: CCWA W J HOOPER WTP
70 Oakdale Dr
Stockbridge, GA 30281

Available fault current at Customer's Service entrance is 4,036 amperes, which does not include any contribution from motor load.

Primary Voltage: 25KV
System Impedance: Z1- 0.1446+0.5547, Z0- 0.3278+1.0127
Protective Device: Recloser 630a,
Phase Trip 400a, Curve 106
Ground Trip 200a, Curve 133

A change in transformer size, transformer impedance, service size, or service length will result in a change to the fault current listed above.

If additional information or assistance is required, please contact me at 770-603-5436.

Sincerely,

Dwane Williams
Engineer
Noah's Ark Engineering

Job Number: 1

7700 Old Morrow Rd Jonesboro, Ga – Jonesboro Pumping Station	
Primary/Sec Voltage	25KV – 120/240V
Z1	0.1815+0.18119j
Z0	0.3885+1.3942J
Transformer size	34.64
Transformer Conn	Open Delta
Transformer %Z	1.4
Fuse size	10

Arc Flash Analysis Report

Customer Name: Clayton Co. Water

Customer Address: 1865 Noah's Ark Rd.

Date: 10/1/2015

Station Number:

Meter Number:

Account Number:

Utility Data

Three Phase Utility Contribution (MVA)	32.21
Line to Ground Utility Contribution (MVA)	35.96
System Impedance R1 +jX1 - per unit, 100 mVA base	0.4036+3.0779j
X/R - Three Phase	7.63
Three Phase Fault Current - Amps	38747
System Impedance R0 +jX0 - per unit, 100 mVA base	0.2163+2.1235j
X/R - Line-Ground	8.09
Line to Ground Fault Current - Amps	43255
System Voltage - Line-Line kV	0.48

Transformer Fuse

Fuse Manufacturer	Cooper Power/RTE or equivalent
Amp Rating	40A
Cooper/RTE Catalog No.	4038108C11B
Type	DUAL ELEMENT

Transformer Data

KVA Bank Rating	1500
Phases (3 phase, single phase or open delta)	3
Primary Voltage (kV)	0.48
Primary Connection	Wye-grounded
Secondary Voltage	480
Secondary Connection	Wye-grounded
Impedance (%Z)	5.80
Typical X/R	8.27

Service Data

Length (feet)	0
R (Ohms)	0
X (Ohms)	0
Three Phase Utility Contribution (MVA)	14.35
X/R - Three Phase	7.97
Three Phase Utility Contribution (Amps)	17255

Socket Version: 3.2

Database Revision Date: 8/4/2015

Curt Long
112 Lake Mirror Road
Forest Park, GA 30297
(404) 608-5042
Oct 7, 2015

GEORGIA POWER
A SOUTHERN COMPANY

Brent Taylor
6900 Old Macon Hwy
Stockbridge, GA 30281

Dear Brent:

The following information concerning available fault current is furnished at your request:

Location: Brent Taylor
6900 Old Macon Hwy
Stockbridge, GA 30281

Available fault current at Customer's Service entrance is 3,090 amperes, which does not include any contribution from motor load.

The system primary voltage at the service point is 12kV three phase. The system impedance up to the service point is: Z1 – 0.1921+1.4862j and Z0 – 0.2962+1.7504j. The first protective device from the service point back is an electronic recloser. Electronic reclosers do not have sizes as the conventional hydraulic reclosers. The trip setting is set at: phase trip – 360amps with a curve of 133 and ground trip setting at 200amps with a curve of 151.

A change in transformer size, transformer impedance, service size, or service length will result in a change to the fault current listed above.

If additional information or assistance is required, please contact Curt Long at 404-608-5042.

Sincerely,

Curt Long
Engineering Rep.
Engineering

Job Number: N/A

APPENDIX D: SHORT-CIRCUIT CALCULATION REPORTS

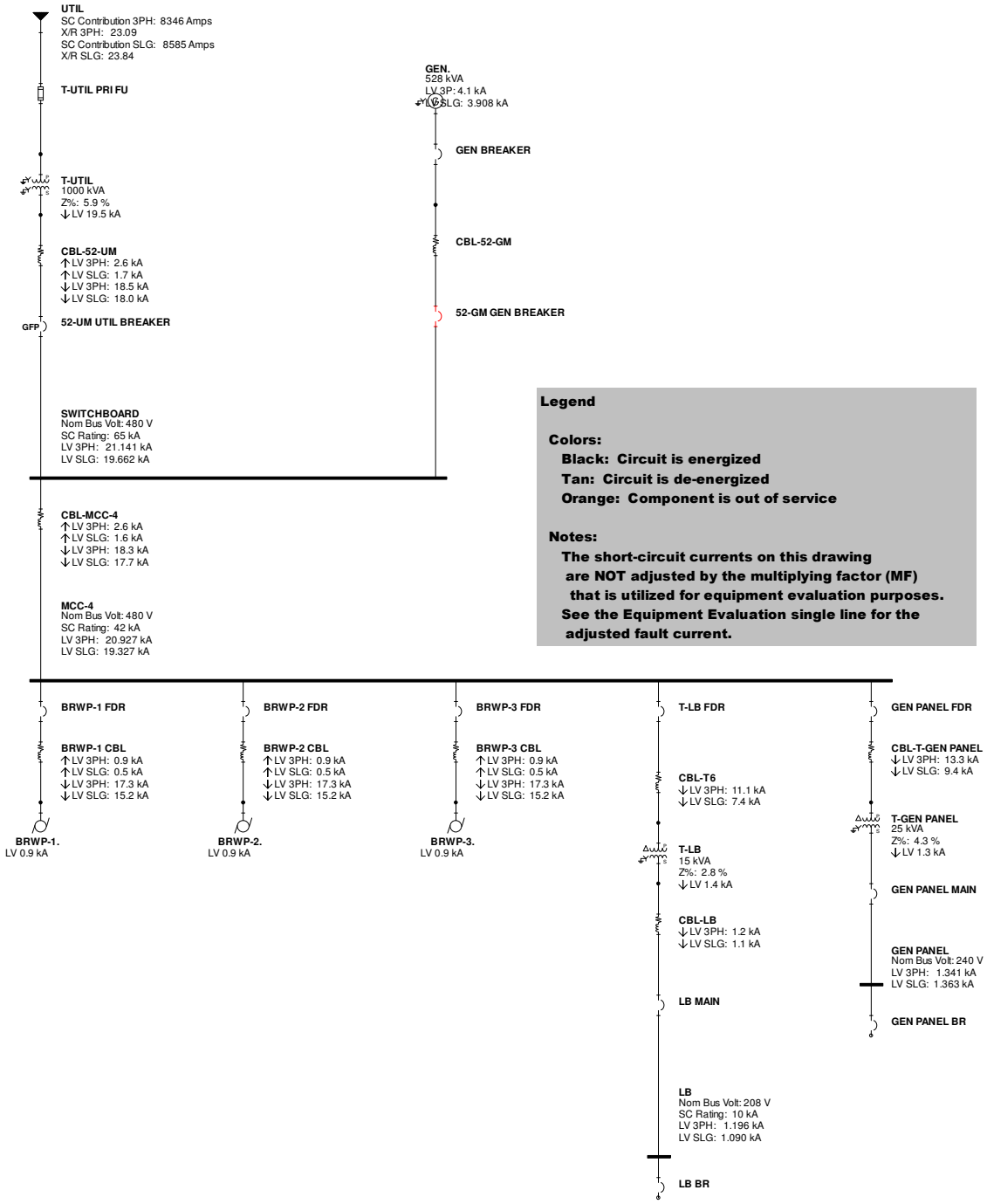
D.1. INPUT DATA REPORT

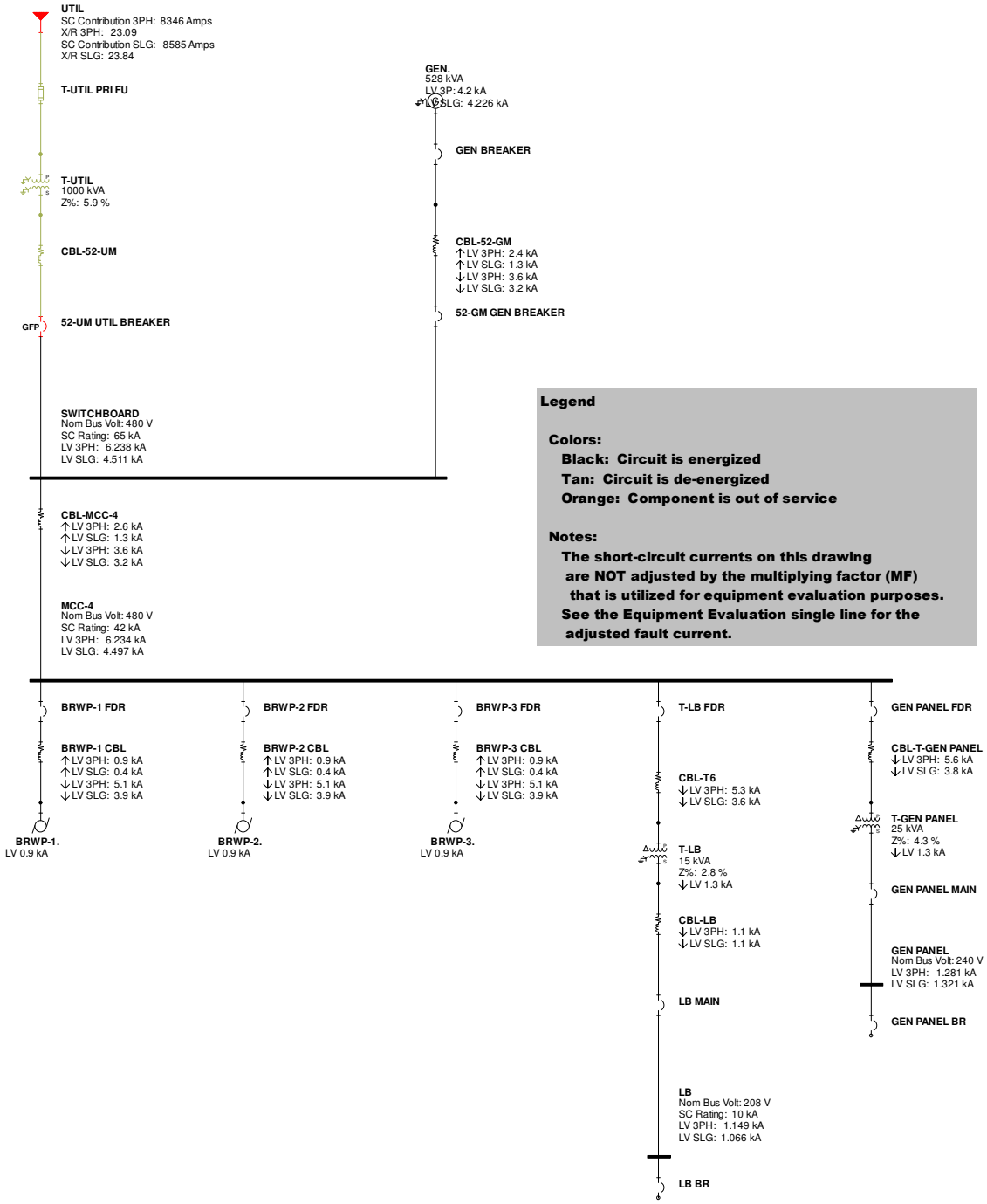
See the study electrical single line in Appendix H for the input data for the system model.

D.2. SHORT-CIRCUIT CALCULATIONS

The calculated short-circuit currents for each facility are shown on the following pages. For facilities with generators, the short-circuit currents are shown for normal operating conditions (when energized by the utility source) and for emergency operating conditions (when energized by the generator sources).

Note: These faults current values are NOT adjusted for equipment evaluation purposes. Refer to Section III for a discussion regarding how to adjust calculated fault current values so they may be used in the equipment evaluation process.


UTIL
SC Contribution 3PH: 8346 Amps
X/R 3PH: 23.09
SC Contribution SLG: 8585 Amps
X/R SLG: 23.84
T-UTIL PRI FU
T-UTIL
1000 kVA
Z%: 5.9 %
LV 19.5 kA
CBL-52-UM
LV 3PH: 2.6 kA
LV SLG: 1.7 kA
LV 3PH: 18.5 kA
LV SLG: 18.0 kA
GFP
52-UM UTIL BREAKER
GEN.
528 kVA
LV 3P: 4.1 kA
LV SLG: 3.908 kA
GEN BREAKER
CBL-52-GM
52-GM GEN BREAKER
SWITCHBOARD
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 21.141 kA
LV SLG: 19.662 kA
CBL-MCC-4
LV 3PH: 2.6 kA
LV SLG: 1.6 kA
LV 3PH: 18.3 kA
LV SLG: 17.7 kA
MCC-4
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 20.927 kA
LV SLG: 19.327 kA
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation single line for the adjusted fault current.
BRWP-1 FDR
BRWP-1 CBL
LV 3PH: 0.9 kA
LV SLG: 0.5 kA
LV 3PH: 17.3 kA
LV SLG: 15.2 kA
BRWP-1.
LV 0.9 kA
BRWP-2 FDR
BRWP-2 CBL
LV 3PH: 0.9 kA
LV SLG: 0.5 kA
LV 3PH: 17.3 kA
LV SLG: 15.2 kA
BRWP-2.
LV 0.9 kA
BRWP-3 FDR
BRWP-3 CBL
LV 3PH: 0.9 kA
LV SLG: 0.5 kA
LV 3PH: 17.3 kA
LV SLG: 15.2 kA
BRWP-3.
LV 0.9 kA
T-LB FDR
CBL-T6
LV 3PH: 11.1 kA
LV SLG: 7.4 kA
T-LB
15 kVA
Z%: 2.8 %
LV 1.4 kA
CBL-LB
LV 3PH: 1.2 kA
LV SLG: 1.1 kA
LB MAIN
LB
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 1.196 kA
LV SLG: 1.090 kA
LB BR
GEN PANEL FDR
CBL-T-GEN PANEL
LV 3PH: 13.3 kA
LV SLG: 9.4 kA
T-GEN PANEL
25 kVA
Z%: 4.3 %
LV 1.3 kA
GEN PANEL MAIN
GEN PANEL
Nom Bus Volt: 240 V
LV 3PH: 1.341 kA
LV SLG: 1.363 kA
GEN PANEL BR


UTIL
SC Contribution 3PH: 8346 Amps
X/R 3PH: 23.09
SC Contribution SLG: 8585 Amps
X/R SLG: 23.84
T-UTIL PRI FU
T-UTIL
1000 kVA
Z%: 5.9 %
CBL-52-UM
GFP
52-UM UTIL BREAKER
SWITCHBOARD
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 6.238 kA
LV SLG: 4.511 kA
CBL-MCC-4
↑LV 3PH: 2.6 kA
↑LV SLG: 1.3 kA
↓LV 3PH: 3.6 kA
↓LV SLG: 3.2 kA
MCC-4
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 6.234 kA
LV SLG: 4.497 kA
GEN.
528 kVA
LV 3P: 4.2 kA
LV SLG: 4.226 kA
GEN BREAKER
CBL-52-GM
↑LV 3PH: 2.4 kA
↑LV SLG: 1.3 kA
↓LV 3PH: 3.6 kA
↓LV SLG: 3.2 kA
52-GM GEN BREAKER
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation single line for the adjusted fault current.
BRWP-1 FDR
BRWP-1 CBL
↑LV 3PH: 0.9 kA
↑LV SLG: 0.4 kA
↓LV 3PH: 5.1 kA
↓LV SLG: 3.9 kA
BRWP-1.
LV 0.9 kA
BRWP-2 FDR
BRWP-2 CBL
↑LV 3PH: 0.9 kA
↑LV SLG: 0.4 kA
↓LV 3PH: 5.1 kA
↓LV SLG: 3.9 kA
BRWP-2.
LV 0.9 kA
BRWP-3 FDR
BRWP-3 CBL
↑LV 3PH: 0.9 kA
↑LV SLG: 0.4 kA
↓LV 3PH: 5.1 kA
↓LV SLG: 3.9 kA
BRWP-3.
LV 0.9 kA
T-LB FDR
CBL-T6
↓LV 3PH: 5.3 kA
↓LV SLG: 3.6 kA
T-LB
15 kVA
Z%: 2.8 %
↓LV 1.3 kA
CBL-LB
↓LV 3PH: 1.1 kA
↓LV SLG: 1.1 kA
LB MAIN
LB
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 1.149 kA
LV SLG: 1.066 kA
LB BR
GEN PANEL FDR
CBL-T-GEN PANEL
↓LV 3PH: 5.6 kA
↓LV SLG: 3.8 kA
T-GEN PANEL
25 kVA
Z%: 4.3 %
↓LV 1.3 kA
GEN PANEL MAIN
GEN PANEL
Nom Bus Volt: 240 V
LV 3PH: 1.281 kA
LV SLG: 1.321 kA
GEN PANEL BR

Legend

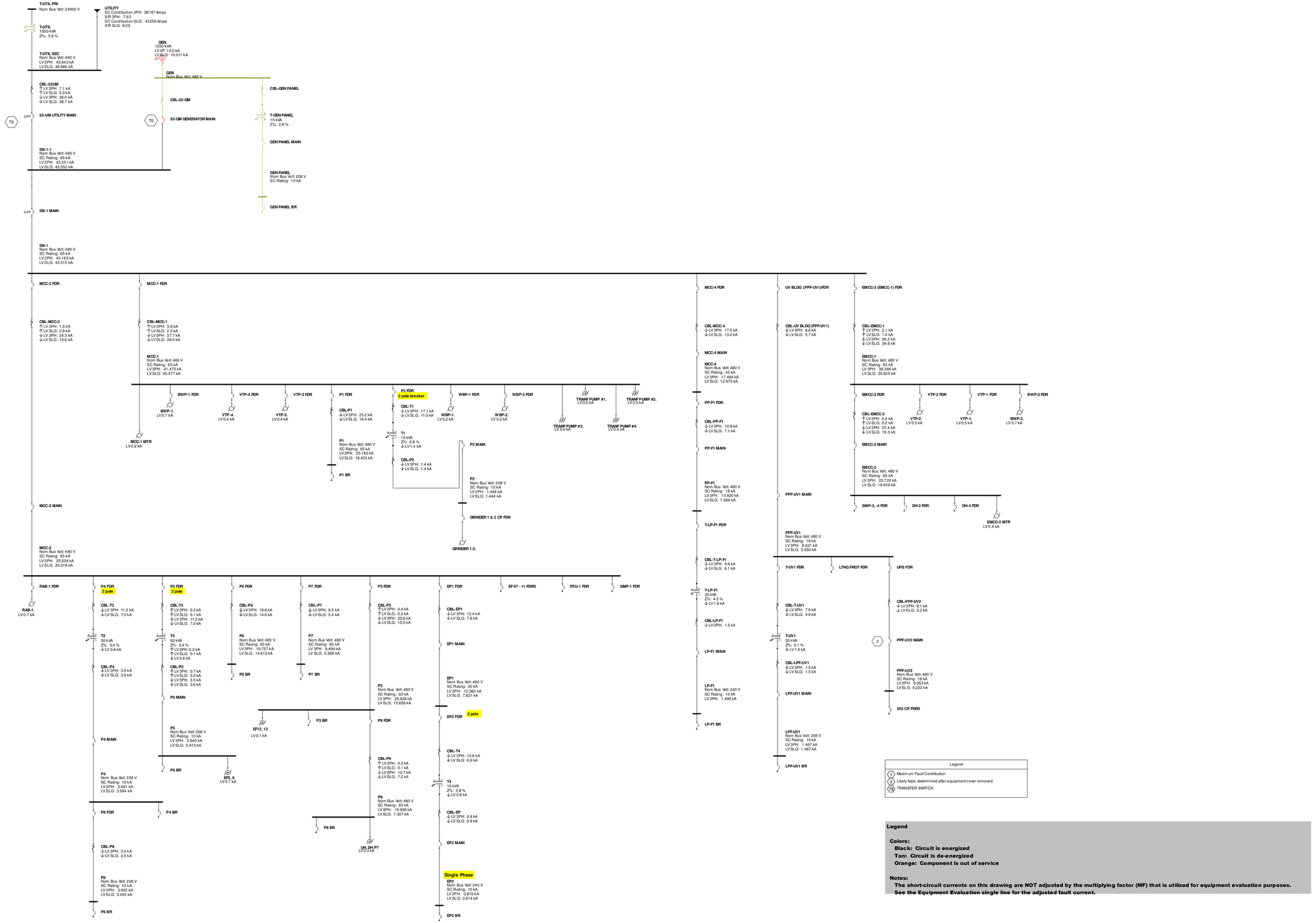
Colors
- **Black: Circuit is energized**
- **Tan: Circuit is de-energized**
- **Orange: Component is out of service**

Notes:
- **The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation Input Sheet for the adjusted fault current.**

Legend

Colors
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service

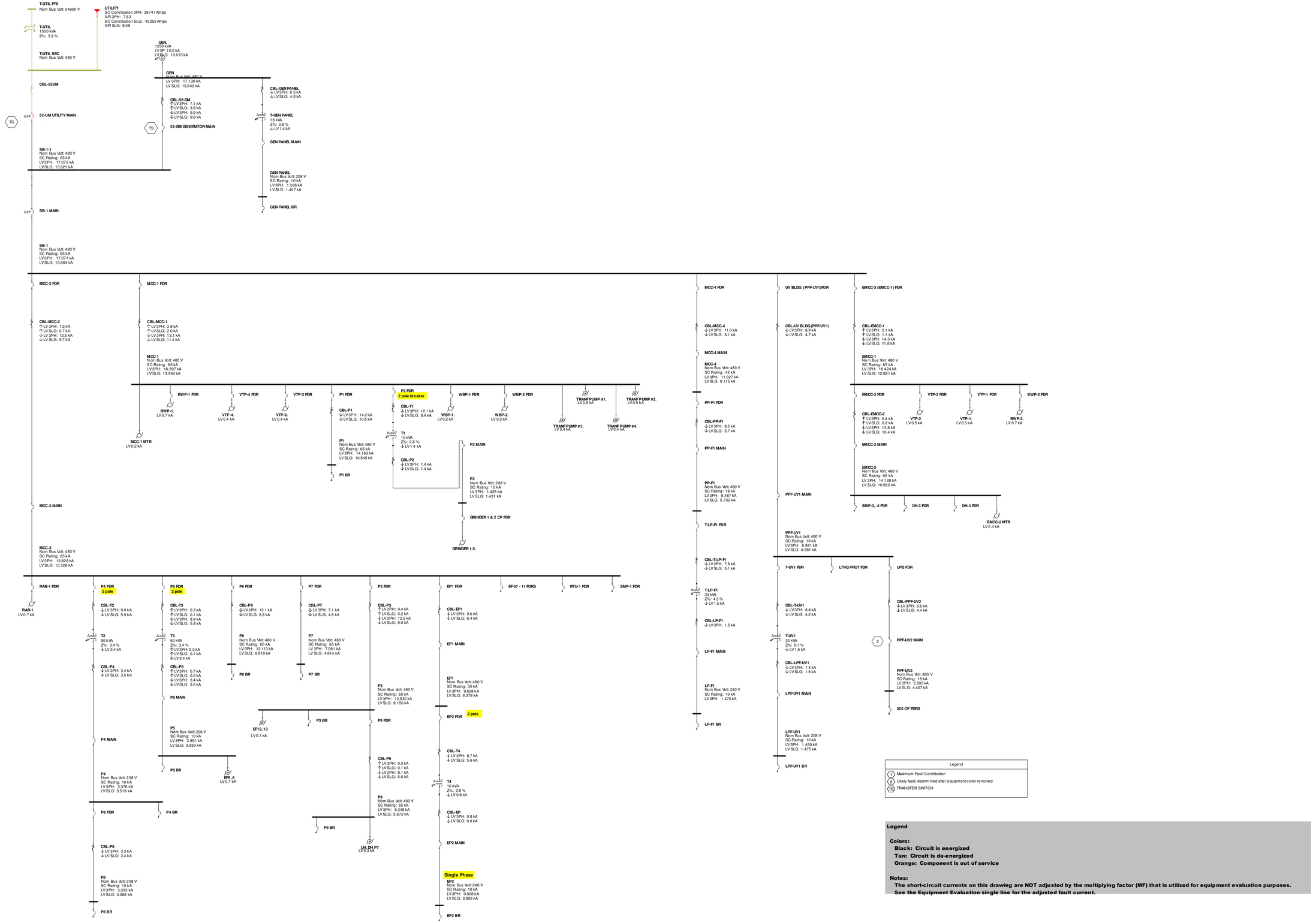
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation topic brief for the adjusted fault current.



Legend

Colors:
- **Black: Circuit is energized**
- **Tan: Circuit is de-energized**
- **Orange: Component is out of service**

Notes:
- **The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation single line for the adjusted fault current.**



Legend	
1	Maximum Fault Contribution
2	Likely feed, determined after equipment cover removed.
TS	TRANSFER SWITCH

Legend

Colors:
- **Black: Circuit is energized**
- **Tan: Circuit is de-energized**
- **Orange: Component is out of service**

Notes:
- **The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation single line for the adjusted fault current.**

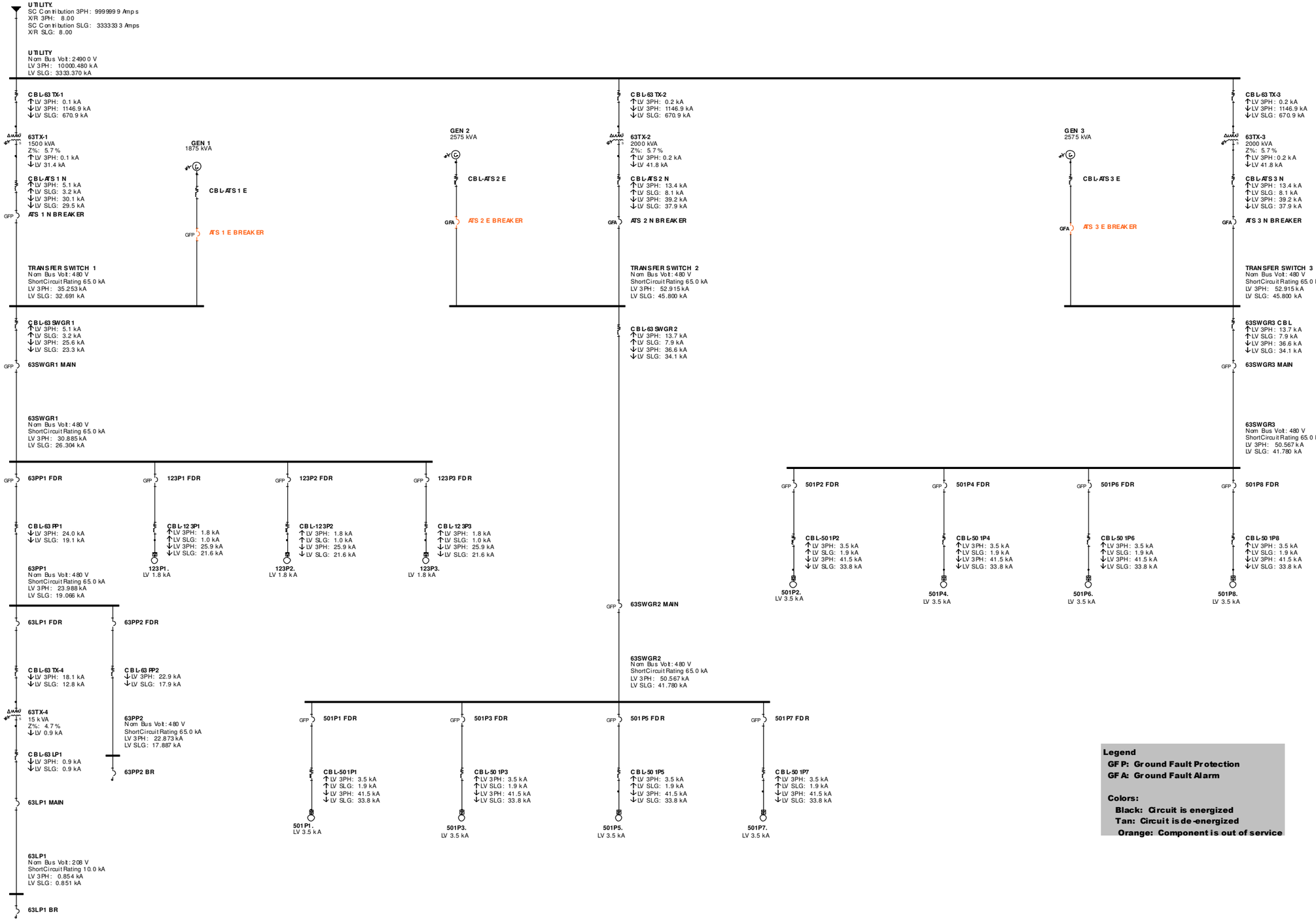
Legend

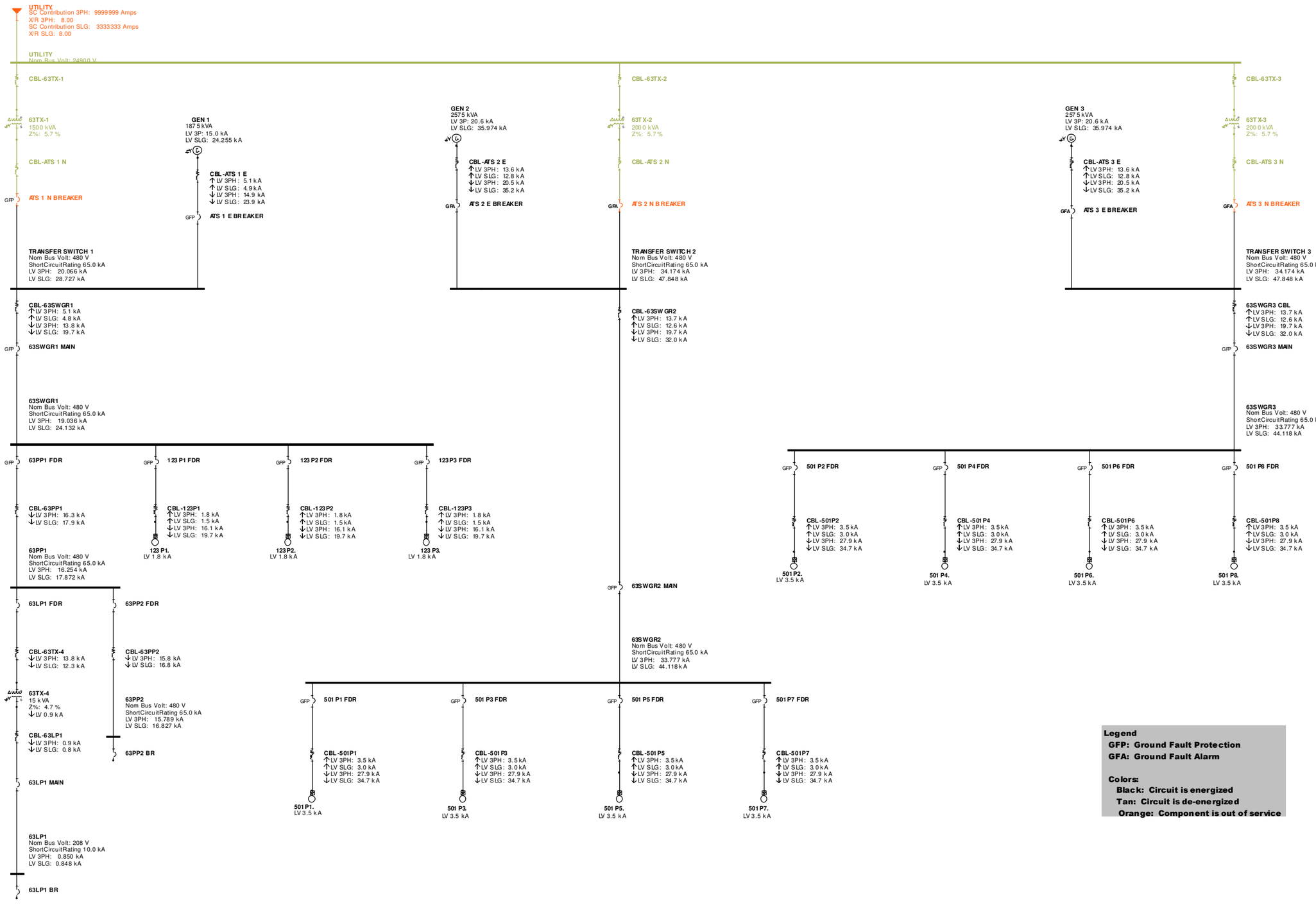
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service

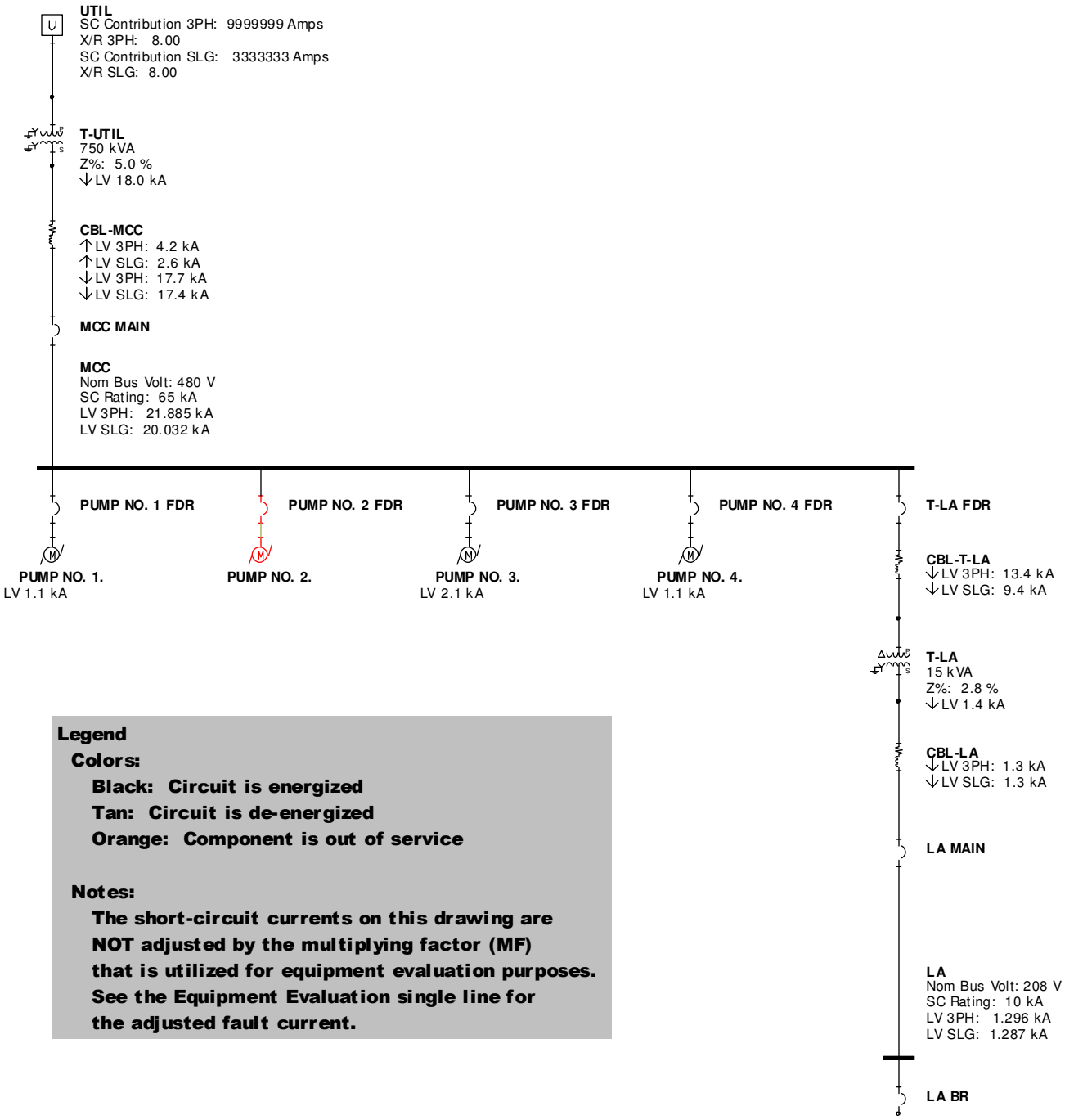
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.

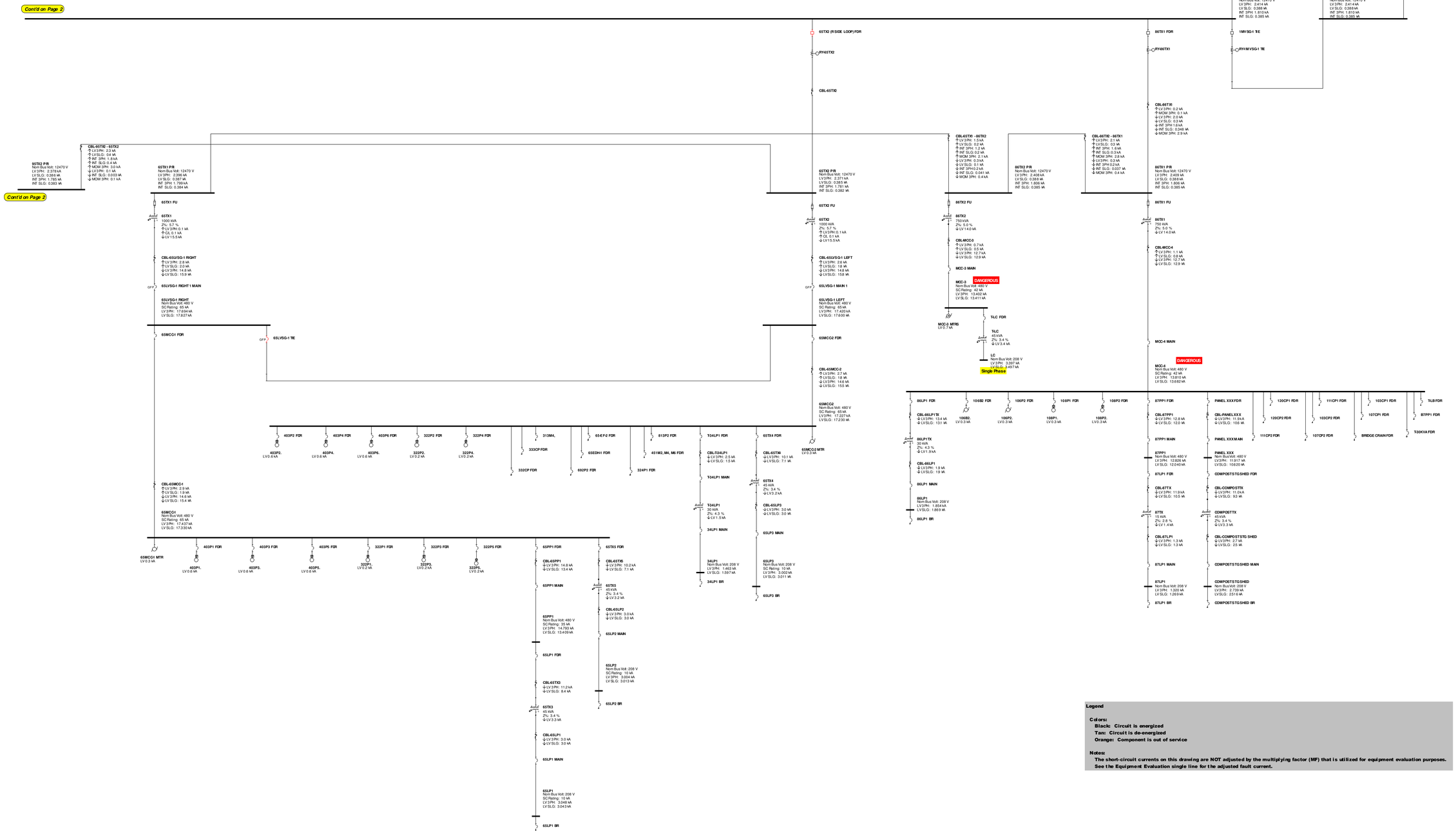
TRC Engineers

Project: WJ Hooper WRF -
Calculated Short-Circuit Currents


UTILITY
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 3333333 Amps
X/R SLG: 8.00
UTILITY
Nom Bus Volt: 24900 V
LV 3PH: 10000.480 kA
LV SLG: 3333.370 kA
CBL-63TX-1
LV 3PH: 0.1 kA
LV 3PH: 1146.9 kA
LV SLG: 670.9 kA
63TX-1
1500 kVA
Z%: 5.7 %
LV 3PH: 0.1 kA
LV 31.4 kA
CBL-ATS1N
LV 3PH: 5.1 kA
LV SLG: 3.2 kA
LV 3PH: 30.1 kA
LV SLG: 29.5 kA
ATS 1 N BREAKER
GEN 1
1875 kVA
CBL-ATS1E
ATS 1 E BREAKER
TRANSFER SWITCH 1
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 35.253 kA
LV SLG: 32.691 kA
CBL-63SWGR1
LV 3PH: 5.1 kA
LV SLG: 3.2 kA
LV 3PH: 25.6 kA
LV SLG: 23.3 kA
63SWGR1 MAIN
63SWGR1
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 30.885 kA
LV SLG: 26.304 kA
63PP1 FDR
CBL-63PP1
LV 3PH: 24.0 kA
LV SLG: 19.1 kA
63PP1
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 23.988 kA
LV SLG: 19.066 kA
63LP1 FDR
CBL-63TX-4
LV 3PH: 18.1 kA
LV SLG: 12.8 kA
63TX-4
15 kVA
Z%: 4.7 %
LV 0.9 kA
CBL-63LP1
LV 3PH: 0.9 kA
LV SLG: 0.9 kA
63LP1 MAIN
63LP1
Nom Bus Volt: 208 V
ShortCircuit Rating 10.0 kA
LV 3PH: 0.854 kA
LV SLG: 0.851 kA
63LP1 BR
63PP2 FDR
CBL-63PP2
LV 3PH: 22.9 kA
LV SLG: 17.9 kA
63PP2
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 22.873 kA
LV SLG: 17.887 kA
63PP2 BR
123P1 FDR
CBL-123P1
LV 3PH: 1.8 kA
LV SLG: 1.0 kA
LV 3PH: 25.9 kA
LV SLG: 21.6 kA
123P1.
LV 1.8 kA
123P2 FDR
CBL-123P2
LV 3PH: 1.8 kA
LV SLG: 1.0 kA
LV 3PH: 25.9 kA
LV SLG: 21.6 kA
123P2.
LV 1.8 kA
123P3 FDR
CBL-123P3
LV 3PH: 1.8 kA
LV SLG: 1.0 kA
LV 3PH: 25.9 kA
LV SLG: 21.6 kA
123P3.
LV 1.8 kA
GEN 2
2575 kVA
CBL-ATS2E
ATS 2 E BREAKER
CBL-63TX-2
LV 3PH: 0.2 kA
LV 3PH: 1146.9 kA
LV SLG: 670.9 kA
63TX-2
2000 kVA
Z%: 5.7 %
LV 3PH: 0.2 kA
LV 41.8 kA
CBL-ATS2N
LV 3PH: 13.4 kA
LV SLG: 8.1 kA
LV 3PH: 39.2 kA
LV SLG: 37.9 kA
ATS 2 N BREAKER
TRANSFER SWITCH 2
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 52.915 kA
LV SLG: 45.800 kA
CBL-63SWGR2
LV 3PH: 13.7 kA
LV SLG: 7.9 kA
LV 3PH: 36.6 kA
LV SLG: 34.1 kA
63SWGR2 MAIN
63SWGR2
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 kA
LV 3PH: 50.567 kA
LV SLG: 41.780 kA
501P1 FDR
CBL-501P1
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P1.
LV 3.5 kA
501P3 FDR
CBL-501P3
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P3.
LV 3.5 kA
501P5 FDR
CBL-501P5
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P5.
LV 3.5 kA
501P7 FDR
CBL-501P7
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P7.
LV 3.5 kA
GEN 3
2575 kVA
CBL-ATS3E
ATS 3 E BREAKER
CBL-63TX-3
LV 3PH: 0.2 kA
LV 3PH: 1146.9 kA
LV SLG: 670.9 kA
63TX-3
2000 kVA
Z%: 5.7 %
LV 3PH: 0.2 kA
LV 41.8 kA
CBL-ATS3N
LV 3PH: 13.4 kA
LV SLG: 8.1 kA
LV 3PH: 39.2 kA
LV SLG: 37.9 kA
ATS 3 N BREAKER
TRANSFER SWITCH 3
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 k
LV 3PH: 52.915 kA
LV SLG: 45.800 kA
63SWGR3 CBL
LV 3PH: 13.7 kA
LV SLG: 7.9 kA
LV 3PH: 36.6 kA
LV SLG: 34.1 kA
63SWGR3 MAIN
63SWGR3
Nom Bus Volt: 480 V
ShortCircuit Rating 65.0 k
LV 3PH: 50.567 kA
LV SLG: 41.780 kA
501P2 FDR
CBL-501P2
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P2.
LV 3.5 kA
501P4 FDR
CBL-501P4
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P4.
LV 3.5 kA
501P6 FDR
CBL-501P6
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P6.
LV 3.5 kA
501P8 FDR
CBL-501P8
LV 3PH: 3.5 kA
LV SLG: 1.9 kA
LV 3PH: 41.5 kA
LV SLG: 33.8 kA
501P8.
LV 3.5 kA
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service


UTILITY
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 3333333 Amps
X/R SLG: 8.00
UTILITY
Nom Bus Volt: 24900 V
CBL-63TX-1
63TX-1
1500 kVA
Z%: 5.7 %
CBL-ATS 1 N
GFP
ATS 1 N BREAKER
GEN 1
187 5 kVA
LV 3P: 15.0 kA
LV SLG: 24.255 kA
CBL-ATS 1 E
LV 3PH: 5.1 kA
LV SLG: 4.9 kA
LV 3PH: 14.9 kA
LV SLG: 23.9 kA
GFP
ATS 1 E BREAKER
TRANSFER SWITCH 1
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 20.066 kA
LV SLG: 28.727 kA
CBL-63SWGR1
LV 3PH: 5.1 kA
LV SLG: 4.8 kA
LV 3PH: 13.8 kA
LV SLG: 19.7 kA
GFP
63SWGR1 MAIN
63SWGR1
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 19.036 kA
LV SLG: 24.132 kA
GFP
63PP1 FDR
CBL-63PP1
LV 3PH: 16.3 kA
LV SLG: 17.9 kA
63PP1
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 16.254 kA
LV SLG: 17.872 kA
63LP1 FDR
CBL-63TX-4
LV 3PH: 13.8 kA
LV SLG: 12.3 kA
63TX-4
15 kVA
Z%: 4.7 %
LV 0.9 kA
CBL-63LP1
LV 3PH: 0.9 kA
LV SLG: 0.8 kA
63LP1 MAIN
63LP1
Nom Bus Volt: 208 V
ShortCircuitRating 10.0 kA
LV 3PH: 0.850 kA
LV SLG: 0.848 kA
63LP1 BR
63PP2 FDR
CBL-63PP2
LV 3PH: 15.8 kA
LV SLG: 16.8 kA
63PP2
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 15.789 kA
LV SLG: 16.827 kA
63PP2 BR
123 P1 FDR
CBL-123P1
LV 3PH: 1.8 kA
LV SLG: 1.5 kA
LV 3PH: 16.1 kA
LV SLG: 19.7 kA
123 P1.
LV 1.8 kA
123 P2 FDR
CBL-123P2
LV 3PH: 1.8 kA
LV SLG: 1.5 kA
LV 3PH: 16.1 kA
LV SLG: 19.7 kA
123 P2.
LV 1.8 kA
123 P3 FDR
CBL-123P3
LV 3PH: 1.8 kA
LV SLG: 1.5 kA
LV 3PH: 16.1 kA
LV SLG: 19.7 kA
123 P3.
LV 1.8 kA
GEN 2
2575 kVA
LV 3P: 20.6 kA
LV SLG: 35.974 kA
CBL-ATS 2 E
LV 3PH: 13.6 kA
LV SLG: 12.8 kA
LV 3PH: 20.5 kA
LV SLG: 35.2 kA
GFA
ATS 2 E BREAKER
CBL-63TX-2
63TX-2
2000 kVA
Z%: 5.7 %
CBL-ATS 2 N
GFA
ATS 2 N BREAKER
TRANSFER SWITCH 2
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 34.174 kA
LV SLG: 47.848 kA
CBL-63SWGR2
LV 3PH: 13.7 kA
LV SLG: 12.6 kA
LV 3PH: 19.7 kA
LV SLG: 32.0 kA
GFP
63SWGR2 MAIN
63SWGR2
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 33.777 kA
LV SLG: 44.118 kA
GFP
501 P1 FDR
CBL-501P1
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P1.
LV 3.5 kA
501 P3 FDR
CBL-501P3
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P3.
LV 3.5 kA
501 P5 FDR
CBL-501P5
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P5.
LV 3.5 kA
501 P7 FDR
CBL-501P7
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P7.
LV 3.5 kA
GEN 3
2575 kVA
LV 3P: 20.6 kA
LV SLG: 35.974 kA
CBL-ATS 3 E
LV 3PH: 13.6 kA
LV SLG: 12.8 kA
LV 3PH: 20.5 kA
LV SLG: 35.2 kA
GFA
ATS 3 E BREAKER
CBL-63TX-3
63TX-3
2000 kVA
Z%: 5.7 %
CBL-ATS 3 N
GFA
ATS 3 N BREAKER
TRANSFER SWITCH 3
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 k
LV 3PH: 34.174 kA
LV SLG: 47.848 kA
63SWGR3 CBL
LV 3PH: 13.7 kA
LV SLG: 12.6 kA
LV 3PH: 19.7 kA
LV SLG: 32.0 kA
GFP
63SWGR3 MAIN
63SWGR3
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 k
LV 3PH: 33.777 kA
LV SLG: 44.118 kA
GFP
501 P2 FDR
CBL-501P2
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P2.
LV 3.5 kA
501 P4 FDR
CBL-501 P4
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P4.
LV 3.5 kA
501 P6 FDR
CBL-501P6
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P6.
LV 3.5 kA
501 P8 FDR
CBL-501P8
LV 3PH: 3.5 kA
LV SLG: 3.0 kA
LV 3PH: 27.9 kA
LV SLG: 34.7 kA
501 P8.
LV 3.5 kA
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service


UTIL
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 3333333 Amps
X/R SLG: 8.00
T-UTIL
750 kVA
Z%: 5.0 %
LV 18.0 kA
CBL-MCC
LV 3PH: 4.2 kA
LV SLG: 2.6 kA
LV 3PH: 17.7 kA
LV SLG: 17.4 kA
MCC MAIN
MCC
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 21.885 kA
LV SLG: 20.032 kA
PUMP NO. 1 FDR
PUMP NO. 2 FDR
PUMP NO. 3 FDR
PUMP NO. 4 FDR
T-LA FDR
PUMP NO. 1.
LV 1.1 kA
PUMP NO. 2.
PUMP NO. 3.
LV 2.1 kA
PUMP NO. 4.
LV 1.1 kA
CBL-T-LA
LV 3PH: 13.4 kA
LV SLG: 9.4 kA
T-LA
15 kVA
Z%: 2.8 %
LV 1.4 kA
CBL-LA
LV 3PH: 1.3 kA
LV SLG: 1.3 kA
LA MAIN
LA
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 1.296 kA
LV SLG: 1.287 kA
LA BR
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes. See the Equipment Evaluation single line for the adjusted fault current.


Cont'd on Page 2
Cont'd on Page 2
UTIL
SC Contribution 3PH 3090 Amps
X/R 3PH 7.74
SC Contribution SLG 2911 Amps
X/R SLG 6.94
RYUTIL
UTIL SERVICE POINT
Nom Bus Volt: 12470 V
CBL-52N1
52N1 UTIL MAIN
RY52N1
1MVSG-1 LEFT
Nom Bus Volt: 12470 V
LV 3PH: 2.414 kA
LV SLG: 0.388 kA
INT 3PH: 1.810 kA
INT SLG: 0.385 kA
1MVSG-1 TIE
RY1M1MVSG-1 TIE
G1
2575 kVA
NGR: 36 Ohms
LV 3P: 0.8 kA
LV SLG: 0.150 kA
INT 3P: 0.8 kA
INT SLG: 0.177 kA
MOM 3P: 0.794 kA
MOM SLG: 0.161 kA
CBL-52G1
LV 3PH: 1.6 kA
LV SLG: 0.2 kA
INT 3PH: 1.0 kA
INT SLG: 0.2 kA
MOM 3PH: 2.0 kA
LV 3PH: 0.8 kA
LVSLG: 0.1 kA
INT 3PH 0.8 kA
INT SLG: 0.177 kA
MOM 3PH: 1.2 kA
52G1 GENMAIN1
RYGEN1
1MVSG-1 RIGHT
Nom Bus Volt: 12470 V
LV 3PH: 2.414 kA
LV SLG: 0.388 kA
INT 3PH: 1.810 kA
INT SLG: 0.385 kA
G2
2575 kVA
NGR: 36 Ohms
LV 3P: 0.8 kA
LVSLG: 0.150 kA
INT 3P: 0.8 kA
INT SLG: 0.177 kA
MOM 3P: 0.794 kA
MOM SLG: 0.161 kA
CBL-52G2
LV 3PH: 1.6 kA
LV SLG: 0.2 kA
INT 3PH: 1.0 kA
INT SLG: 0.2 kA
MOM 3PH: 2.0 kA
LV 3PH: 0.8 kA
LVSLG: 0.1 kA
INT 3PH 0.8 kA
INT SLG: 0.177 kA
MOM 3PH: 1.2 kA
52G2 GENMAIN2
RYGEN2
65TX2 (R SIDE LOOP) FDR
RY65TX2
CBL-65TX2
65TX2 P/R
Nom Bus Volt: 12470 V
LV 3PH: 2.371 kA
LVSLG: 0.385 kA
INT 3PH: 1.781 kA
INT SLG: 0.382 kA
65TX2 FU
65TX2
1000 kVA
Z%: 5.7 %
LV 3PH: 0.1 kA
DL: 0.1 kA
LV: 15.5 kA
CBL-65SVSG-1 LEFT
LV 3PH: 2.6 kA
LV SLG: 1.8 kA
LV 3PH: 14.8 kA
LV SLG: 15.8 kA
65LVSG-1 MAIN 1
65LVSG-1 LEFT
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 17.420 kA
LV SLG: 17.600 kA
65MCC2 FDR
CBL-65MCC-2
LV 3PH: 2.7 kA
LV SLG: 1.8 kA
LV 3PH: 14.6 kA
LV SLG: 15.5 kA
65MCC2
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 17.227 kA
LV SLG: 17.230 kA
65MCC2 MTR
LV 0.3 kA
CBL-65TX0 - 86TX2
LV 3PH: 1.5 kA
LV SLG: 0.2 kA
INT 3PH: 1.2 kA
INT SLG: 0.2 kA
MOM 3PH: 2.1 kA
LV 3PH: 0.3 kA
LV SLG: 0.1 kA
INT 3PH 0.2 kA
INT SLG: 0.041 kA
MOM 3PH: 0.4 kA
86TX2 P/R
Nom Bus Volt: 12470 V
LV 3PH: 2.408 kA
LV SLG: 0.388 kA
INT 3PH: 1.806 kA
INT SLG: 0.385 kA
CBL-86TX0 - 86TX1
LV 3PH: 2.1 kA
LVSLG: 0.3 kA
INT 3PH: 1.6 kA
INT SLG: 0.3 kA
MOM 3PH: 2.8 kA
LV 3PH: 0.3 kA
INT 3PH 0.2 kA
INT SLG: 0.037 kA
MOM 3PH: 0.4 kA
86TX1 FDR
RY86TX1
CBL-86TX1
LV 3PH: 0.2 kA
MOM 3PH: 0.1 kA
LV 3PH: 2.0 kA
LV SLG: 0.3 kA
INT 3PH 1.6 kA
INT SLG: 0.248 kA
MOM 3PH: 2.9 kA
86TX1 P/R
Nom Bus Volt: 12470 V
LV 3PH: 2.409 kA
LV SLG: 0.388 kA
INT 3PH: 1.806 kA
INT SLG: 0.385 kA
86TX1 FU
86TX1
750 kVA
Z%: 5.0 %
LV 14.0 kA
CBL-MCC-4
LV 3PH: 1.1 kA
LV SLG: 0.8 kA
LV 3PH: 12.7 kA
LV SLG: 12.9 kA
MCC-4 MAIN
MCC-4
DANGEROUS
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 13.810 kA
LV SLG: 13.682 kA
86TX2 FU
86TX2
750 kVA
Z%: 5.0 %
LV 14.0 kA
CBL-MCC-3
LV 3PH: 0.7 kA
LV SLG: 0.5 kA
LV 3PH: 12.7 kA
LV SLG: 12.9 kA
MCC-3 MAIN
MCC-3
DANGEROUS
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 13.449 kA
LV SLG: 13.411 kA
MCC-3 MTR
LV 0.7 kA
TLC FDR
TLC
45 kVA
Z%: 3.4 %
LV 3.4 kA
LC
Nom Bus Volt: 208 V
LV 3PH: 2.397 kA
LVSLG: 2.497 kA
Single Phase
86LP1 FDR
CBL-86LP1TX
LV 3PH: 13.4 kA
LV SLG: 13.1 kA
86LP1TX
30 kVA
Z%: 4.3 %
LV 1.9 kA
CBL-86LP1
LV 3PH: 1.9 kA
LV SLG: 1.9 kA
86LP1 MAIN
86LP1
Nom Bus Volt: 208 V
LV 3PH: 1.854 kA
LV SLG: 1.869 kA
86LP1 BR
106B2 FDR
106B2.
LV 0.3 kA
106P2 FDR
106P2.
LV 0.3 kA
108P1 FDR
108P1.
LV 0.3 kA
108P2 FDR
108P2.
LV 0.3 kA
87PP1 FDR
CBL-87PP1
LV 3PH: 12.8 kA
LV SLG: 12.0 kA
87PP1 MAIN
87PP1
Nom Bus Volt: 480 V
LV 3PH: 12.826 kA
LV SLG: 12.040 kA
87LP1 FDR
CBL-87TX
LV 3PH: 11.9 kA
LV SLG: 10.5 kA
87TX
15 kVA
Z%: 2.8 %
LV 1.4 kA
CBL-87LP1
LV 3PH: 1.3 kA
LV SLG: 1.3 kA
87LP1 MAIN
87LP1
Nom Bus Volt: 208 V
LV 3PH: 1.320 kA
LV SLG: 1.269 kA
87LP1 BR
PANEL XXX FDR
CBL-PANEL XXX
LV 3PH: 11.9 kA
LV SLG: 10.6 kA
PANEL XXX MAIN
PANEL XXX
Nom Bus Volt: 480 V
LV 3PH: 11.917 kA
LV SLG: 10620 kA
COMPOSTSTGSHED FDR
CBL-COMPOSTTX
LV 3PH: 11.0 kA
LV SLG: 9.9 kA
COMPOSTTX
45 kVA
Z%: 3.4 %
LV 3.3 kA
CBL-COMPOSTSTG SHED
LV 3PH: 2.7 kA
LV SLG: 2.5 kA
COMPOSTSTGSHED MAIN
COMPOSTSTGSHED
Nom Bus Volt: 208 V
LV 3PH: 2.739 kA
LVSLG: 2316 kA
COMPOSTSTGSHED BR
120CP1 FDR
120CP2 FDR
111CP2 FDR
111CP1 FDR
103CP2 FDR
103CP1 FDR
107CP2 FDR
107CP1 FDR
BRIDGE CRAIN FDR
T4LB FDR
87PP1 FDR
T30KVA FDR
65TX4 FDR
CBL-65TX4
LV 3PH: 10.1 kA
LV SLG: 7.1 kA
65TX4
45 kVA
Z%: 3.4 %
LV 3.2 kA
CBL-65LP3
LV 3PH: 3.0 kA
LV SLG: 3.0 kA
65LP3 MAIN
65LP3
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.002 kA
LV SLG: 3.011 kA
65LP3 BR
T34LP1 FDR
CBL-T34LP1
LV 3PH: 2.6 kA
LV SLG: 1.5 kA
T34LP1 MAIN
T34LP1
30 kVA
Z%: 4.3 %
LV 1.5 kA
34LP1 MAIN
34LP1
Nom Bus Volt: 208 V
LV 3PH: 1.463 kA
LV SLG: 1.597 kA
34LP1 BR
813P2 FDR
451M2, MA, M6 FDR
324P1 FDR
654E-F-2 FDR
65EDH41 FDR
692P2 FDR
313M4, 333CP FDR
333CP FDR
322P4 FDR
322P4.
LV 0.2 kA
322P2 FDR
322P2.
LV 0.2 kA
403P6 FDR
403P6.
LV 0.6 kA
403P4 FDR
403P4.
LV 0.6 kA
403P2 FDR
403P2.
LV 0.6 kA
CBL-65MCC-1
LV 3PH: 2.9 kA
LV SLG: 1.9 kA
LV 3PH: 14.6 kA
LV SLG: 15.4 kA
65MCC1
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 17.437 kA
LV SLG: 17.330 kA
65MCC1 MTR
LV 0.3 kA
403P1 FDR
403P1.
LV 0.6 kA
403P3 FDR
403P3.
LV 0.6 kA
403P5 FDR
403P5.
LV 0.6 kA
322P1 FDR
322P1.
LV 0.2 kA
322P3 FDR
322P3.
LV 0.2 kA
322P5 FDR
322P5.
LV 0.2 kA
65PP1 FDR
CBL-65PP1
LV 3PH: 14.8 kA
LV SLG: 13.4 kA
65PP1 MAIN
65PP1
Nom Bus Volt: 480 V
SC Rating: 35 kA
LV 3PH: 14.793 kA
LV SLG: 13.459 kA
65LP1 FDR
CBL-65TX3
LV 3PH: 11.2 kA
LV SLG: 8.4 kA
65TX3
45 kVA
Z%: 3.4 %
LV 3.3 kA
CBL-65LP1
LV 3PH: 3.0 kA
LV SLG: 3.0 kA
65LP1 MAIN
65LP1
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.048 kA
LV SLG: 3.043 kA
65LP1 BR
65TX5 FDR
CBL-65TX5
LV 3PH: 10.2 kA
LV SLG: 7.1 kA
65TX5
45 kVA
Z%: 3.4 %
LV 3.2 kA
CBL-65LP2
LV 3PH: 3.0 kA
LV SLG: 3.0 kA
65LP2 MAIN
65LP2
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.004 kA
LV SLG: 3.013 kA
65LP2 BR
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.

Cont'd on Page 1

Cont'd on Page 2

Cont'd on Page 2

Cont'd on Page 2

UTIL
SC Contribution 3PH: 3090 Amps
X/R 3PH: 7.74
SC Contribution SLG: 2911 Amps
X/R SLG: 6.94

RYUTIL

UTIL SERVICE POINT
Nom Bus Volt: 12470 V
LV 3PH: 3.917 kA
LV SLG: 3.356 kA
INT 3PH: 3.313 kA
INT SLG: 3.040 kA

CBL-52N1
↑LV 3PH: 0.8 kA
↑LV SLG: 0.5 kA
↑INT 3PH: 0.2 kA
↑INT SLG: 0.1 kA
↑MOM 3PH: 0.7 kA
↓LV 3PH: 3.1 kA
↓LV SLG: 2.9 kA
↓INT 3PH:3.1 kA
↓INT SLG: 2.884 kA
↓MOM 3PH: 4.2 kA

52N1 UTIL MAIN

RY52N1

1MVSG-1 LEFT
Nom Bus Volt: 12470 V
LV 3PH: 3.911 kA
LV SLG: 3.346 kA
INT 3PH: 3.306 kA
INT SLG: 3.030 kA

G1
2575 kVA
NGR: 36 Ohms

CBL-52G1

52G1 GEN MAIN1

RYGEN1

1MVSG-1 RIGHT
Nom Bus Volt: 12470 V

G2
2575 kVA
NGR: 36 Ohms

CBL-52G2

52G1 GEN MAIN2

RYGEN2

1MVSG-1 TIE

RYH1MVSG-1 TIE

95TX2 P/R
Nom Bus Volt: 12470 V
LV 3PH: 3.798 kA
LV SLG: 3.208 kA
INT 3PH: 3.214 kA
INT SLG: 2.911 kA

CBL-95TX2 - 65TX2
↑LV 3PH: 3.7 kA
↑LV SLG: 3.2 kA
↑INT 3PH: 3.2 kA
↑INT SLG:2.9 kA
↑MOM 3PH: 4.5 kA
↓LV 3PH: 0.1 kA
↓LV SLG: 0.1 kA
↓INT SLG: 0.014 kA
↓MOM 3PH: 0.1 kA

65TX1 P/R
Nom Bus Volt: 12470 V
LV 3PH: 3.857 kA
LV SLG: 3.273 kA
INT 3PH: 3.264 kA
INT SLG: 2.968 kA

65TX1 FU

65TX1
1000 kVA
2%: 5.7 %
↑LV 3PH:0.1 kA
↑LV SLG: 0.1 kA
↑QL 0.1 kA
↓LV 17.2 kA

CBL-65LVSG-1 RIGHT
↑LV 3PH: 2.8 kA
↑LV SLG: 1.9 kA
↓LV 3PH: 16.4 kA
↓LV SLG: 17.0 kA

65LVSG-1 RIGHT 1 MAIN

65LVSG-1 RIGHT
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 19.253 kA
LV SLG: 18.645 kA

65MCC1 FDR

65LVSG-1 TIE

65TX2 (R SIDE LOOP) FDR

RY65TX2

CBL-65TX2

65TX2 P/R
Nom Bus Volt: 12470 V
LV 3PH: 3.774 kA
LV SLG: 3.181 kA
INT 3PH: 3.197 kA
INT SLG: 2.888 kA

65TX2 FU

65TX2
1000 kVA
2%: 5.7 %
↑LV 3PH:0.1 kA
↑LV SLG: 0.1 kA
↑QL 0.1 kA
↓LV 17.2 kA

CBL-65LVSG-1 LEFT
↑LV 3PH: 2.6 kA
↑LV SLG: 1.8 kA
↓LV 3PH: 16.3 kA
↓LV SLG: 16.9 kA

65LVSG-1 MAIN 1

65LVSG-1 LEFT
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 18.948 kA
LV SLG: 18.604 kA

65MCC2 FDR

CBL-65MCC-2
↑LV 3PH: 2.7 kA
↑LV SLG: 1.7 kA
↓LV 3PH: 16.1 kA
↓LV SLG: 16.5 kA

65MCC2
SC Rating: 65 kA
LV 3PH: 18.710 kA
LV SLG: 18.183 kA

CBL-65TX - 86TX2
↑LV 3PH: 2.5 kA
↑LV SLG: 2.0 kA
↑INT 3PH: 2.2 kA
↑INT SLG: 1.9 kA
↑MOM 3PH: 3.2 kA
↓LV 3PH: 0.5 kA
↓LV SLG: 0.4 kA
↓INT 3PH:0.3 kA
↓INT SLG: 0.302 kA
↓MOM 3PH: 0.5 kA

86TX2 P/R
Nom Bus Volt: 12470 V
LV 3PH: 3.892 kA
LV SLG: 3.321 kA
INT 3PH: 3.292 kA
INT SLG: 3.008 kA

CBL-66TX2 - 86TX1
↑LV 3PH: 3.4 kA
↑LV SLG: 2.9 kA
↑INT 3PH: 3.0 kA
↑INT SLG:2.7 kA
↑MOM 3PH: 4.4 kA
↓LV 3PH: 0.4 kA
↓LV SLG: 0.4 kA
↓INT 3PH:0.3 kA
↓INT SLG: 0.299 kA
↓MOM 3PH: 0.5 kA

86TX1 FDR

RY66TX1

CBL-66TX1
↑LV 3PH: 0.2 kA
↑LV SLG: 0.1 kA
↑MOM 3PH: 0.1 kA
↓LV 3PH: 3.4 kA
↓LV SLG: 2.9 kA
↓INT 3PH:3.0 kA
↓INT SLG: 2.742 kA
↓MOM 3PH: 4.4 kA

86TX1 P/R
Nom Bus Volt: 12470 V
LV 3PH: 3.895 kA
LV SLG: 3.324 kA
INT 3PH: 3.294 kA
INT SLG: 3.011 kA

86TX2 FU

86TX2
750 kVA
2%: 5.0 %
↓LV 15.3 kA

CBL-MCC-3
↑LV 3PH: 0.7 kA
↑LV SLG: 0.5 kA
↓LV 3PH: 13.8 kA
↓LV SLG: 13.6 kA

MCC-3 MAIN

MCC-3 DANGEROUS
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 14.459 kA
LV SLG: 14.089 kA

MCC-3 MTR
LV 0.7 kA

TLC FDR

TLC
45 kVA
2%: 3.4 %
↓LV 3.4 kA

LC
Nom Bus Volt: 208 V
LV 3PH: 3.414 kA
LV SLG: 3.509 kA
Single Phase

86TX1 FU

86TX1
750 kVA
2%: 5.0 %
↓LV 15.3 kA

CBL-MCC-4
↑LV 3PH: 1.1 kA
↑LV SLG: 0.8 kA
↓LV 3PH: 13.7 kA
↓LV SLG: 13.6 kA

MCC-4 MAIN

MCC-4 DANGEROUS
Nom Bus Volt: 480 V
SC Rating: 42 kA
LV 3PH: 14.875 kA
LV SLG: 14.351 kA

403P2 FDR

403P2.
LV 0.6 kA

403P4 FDR

403P4.
LV 0.6 kA

403P6 FDR

403P6.
LV 0.6 kA

322P2 FDR

322P2.
LV 0.2 kA

322P4 FDR

322P4.
LV 0.2 kA

313M4.

333CP FDR

332CP FDR

65-E-F-2 FDR

692P2 FDR

65EDH1 FDR

324P1 FDR

451M2, MA, M6 FDR

813P2 FDR

T34LP1 FDR

CBL-T34LP1
↓LV 3PH: 2.5 kA
↓LV SLG: 1.5 kA

T34LP1 MAIN

T34LP1
30 kVA
2%: 4.3 %
↓LV 1.5 kA

34LP1 MAIN

34LP1
Nom Bus Volt: 208 V
LV 3PH: 1.465 kA
LV SLG: 1.598 kA

34LP1 BR

65TX4 FDR

CBL-65TX4
↓LV 3PH: 10.4 kA
↓LV SLG: 7.2 kA

65TX4
45 kVA
2%: 3.4 %
↓LV 2.2 kA

CBL-65LP3
↓LV 3PH: 3.0 kA
↓LV SLG: 3.0 kA

65LP3 MAIN

65LP3
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.012 kA
LV SLG: 3.018 kA

65LP3 BR

65MCC2 MTR
LV 0.3 kA

86LP1 FDR

CBL-86LP1TX
↓LV 3PH: 14.4 kA
↓LV SLG: 137 kA

86LP1TX
30 kVA
2%: 4.3 %
↓LV1.9 kA

CBL-86LP1
↓LV 3PH: 1.9 kA
↓LV SLG: 1.9 kA

86LP1 MAIN

86LP1
Nom Bus Volt: 208 V
LV 3PH: 1.857 kA
LV SLG: 1.871 kA

86LP1 BR

106B2 FDR

106B2.
LV 0.3 kA

106P2 FDR

106P2.
LV0.3 kA

108P1 FDR

108P1.
LV 0.2 kA

108P2 FDR

108P2.
LV0.2 kA

87PP1 FDR

CBL-87PP1
↓LV 3PH: 13.7 kA
↓LV SLG: 12.5 kA

87PP1 MAIN

87PP1
Nom Bus Volt: 480 V
LV 3PH: 13.705 kA
LV SLG: 12.517 kA

87LP1 FDR

CBL-87TTX
↓LV 3PH: 12.6 kA
↓LV SLG: 10.9 kA

87TX
15 kVA
2%: 2.8 %
↓LV1.4 kA

CBL-87LP1
↓LV 3PH: 1.3 kA
↓LV SLG: 1.3 kA

87LP1 MAIN

87LP1
Nom Bus Volt: 208 V
LV 3PH: 1.322 kA
LV SLG: 1.271 kA

87LP1 BR

PANEL XXX FDR

CBL-PANELXXX
↓LV 3PH: 12.6 kA
↓LV SLG: 11.0 kA

PANEL XXX MAIN

PANEL XXX
Nom Bus Volt: 480 V
LV 3PH: 12.641 kA
LV SLG: 10.962 kA

COMPOSTSTG SHED FDR

CBL-COMPOSTTX
↓LV 3PH: 11.6 kA
↓LV SLG: 9.6 kA

COMPOSTTX
45 kVA
2%: 3.4 %
↓LV 3.3 kA

CBL-COMPOSTSTG SHED
↓LV 3PH: 2.7 kA
↓LV SLG: 2.5 kA

COMPOSTSTG SHED MAIN

COMPOSTSTG SHED
Nom Bus Volt: 208 V
LV 3PH: 2.748 kA
LV SLG: 2.520 kA

COMPOSTSTG SHED BR

120CP1 FDR

120CP2 FDR

111CP1 FDR

103CP2 FDR

103CP1 FDR

107CP1 FDR

BRIDGE CRAIN FDR

TLB FDR

87PP1 FDR

T30KVA FDR

111CP2 FDR

107CP2 FDR

403P1 FDR

403P1.
LV 0.6 kA

403P3 FDR

403P3.
LV 0.6 kA

403P5 FDR

403P5.
LV 0.6 kA

322P1 FDR

322P1.
LV 0.2 kA

322P3 FDR

322P3.
LV0.2 kA

322P5 FDR

322P5.
LV0.2 kA

CBL-65MCC-1
↑LV 3PH: 2.9 kA
↑LV SLG: 1.9 kA
↓LV 3PH: 16.1 kA
↓LV SLG: 16.4 kA

65MCC1
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 18.935 kA
LV SLG: 18.280 kA

65MCC1 MTR
LV 0.3 kA

65PP1 FDR

CBL-65PP1
↓LV 3PH: 15.8 kA
↓LV SLG: 13.9 kA

65PP1 MAIN

65PP1
Nom Bus Volt: 480 V
SC Rating: 35 kA
LV 3PH: 15.812 kA
LV SLG: 13.927 kA

65LP1 FDR

CBL-65TX3
↓LV 3PH: 11.6 kA
↓LV SLG: 8.5 kA

65TX3
45 kVA
2%: 3.4 %
↓LV 3.3 kA

CBL-65LP1
↓LV 3PH: 3.1 kA
↓LV SLG: 3.0 kA

65LP1 MAIN

65LP1
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.059 kA
LV SLG: 3.050 kA

65LP1 BR

65TX5 FDR

CBL-65TX5
↓LV 3PH: 10.5 kA
↓LV SLG: 7.2 kA

65TX5
45 kVA
2%: 3.4 %
↓LV 3.2 kA

CBL-65LP2
↓LV 3PH: 3.0 kA
↓LV SLG: 3.0 kA

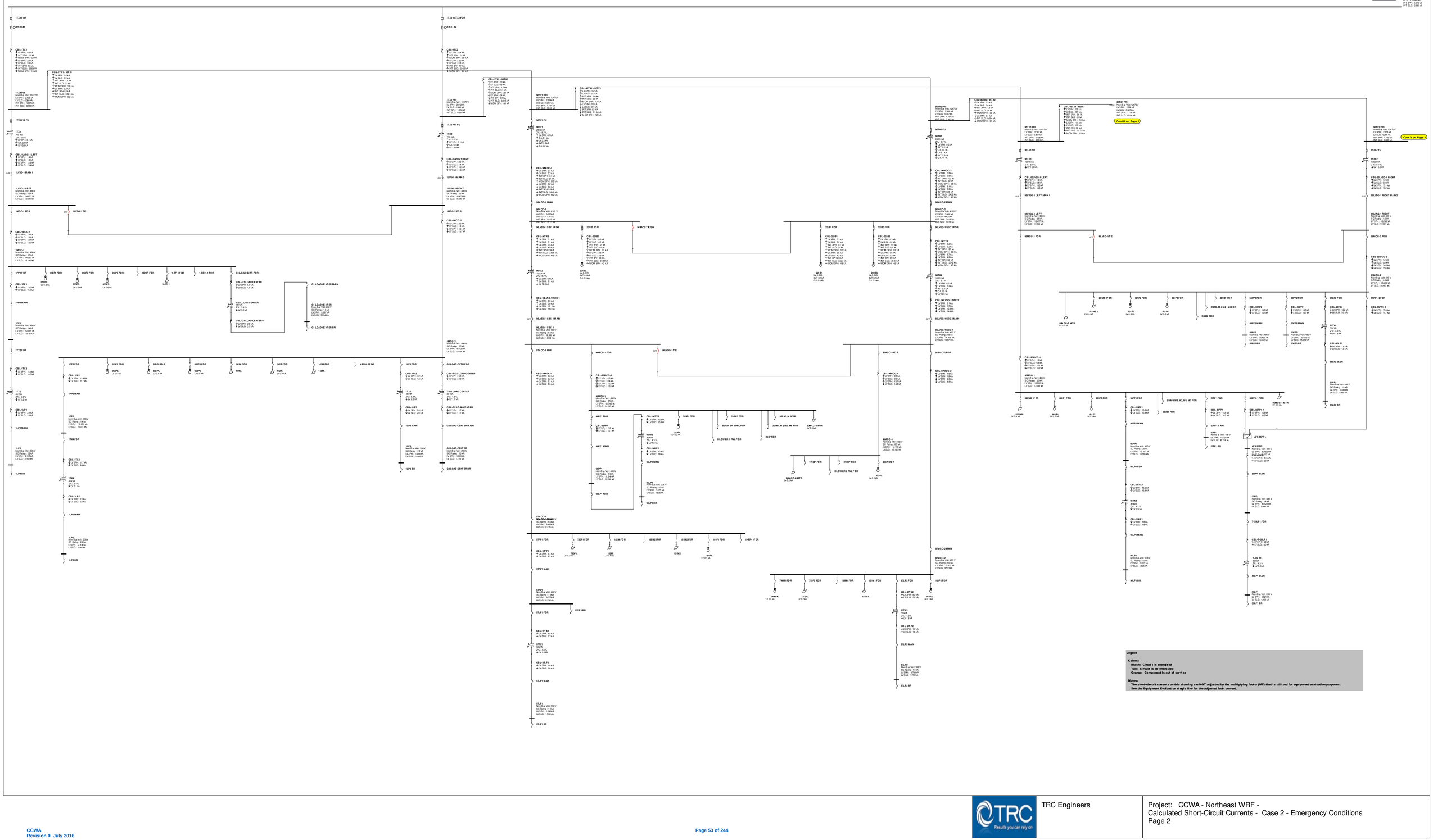
65LP2 MAIN

65LP2
Nom Bus Volt: 208 V
SC Rating: 10 kA
LV 3PH: 3.014 kA
LV SLG: 3.020 kA

65LP2 BR

TRC Engineers

Project: CCWA - Northeast WRF -
Calculated Short-Circuit Currents - Case 1 - Normal Conditions
Page 1



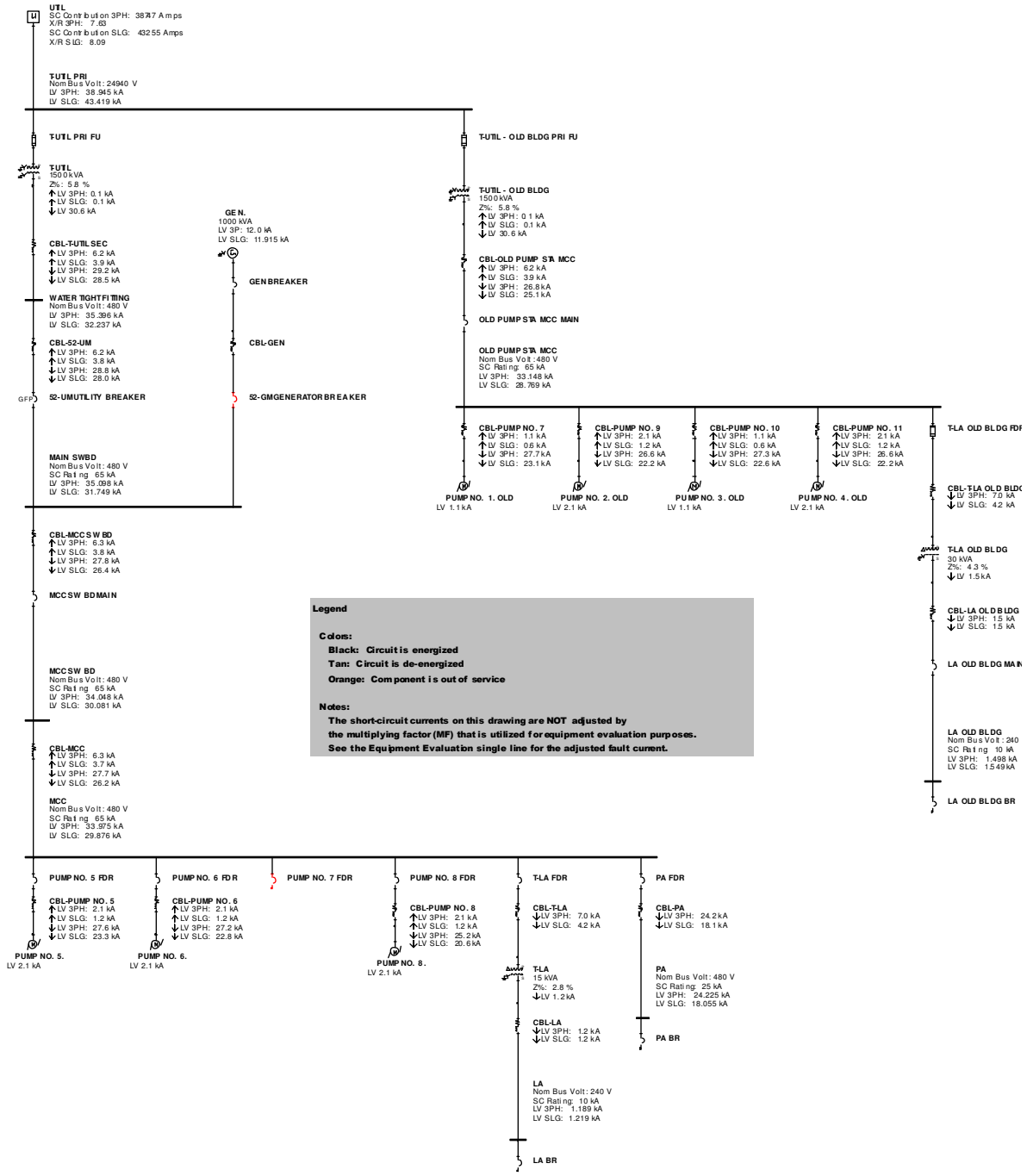
Legend

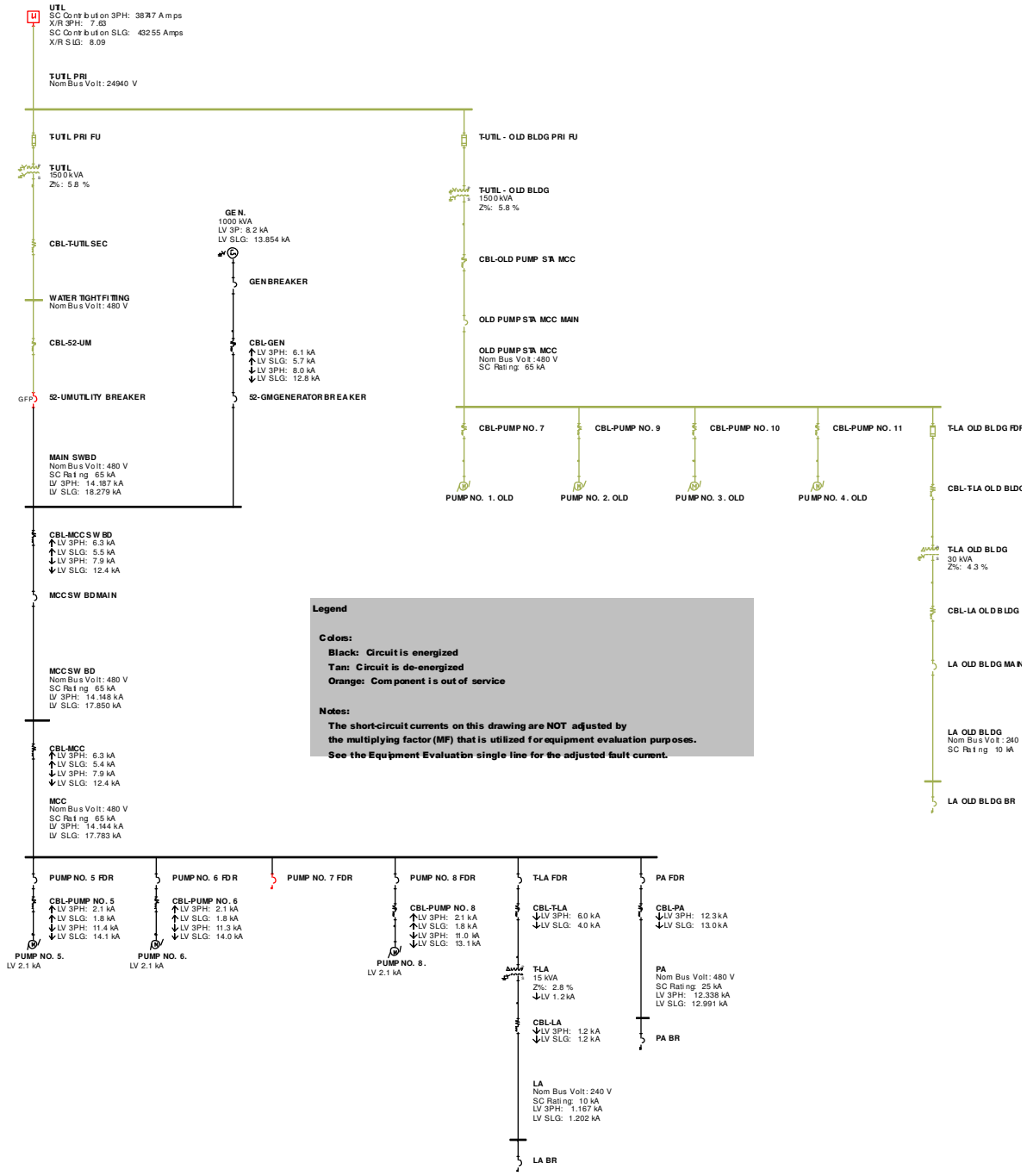
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service

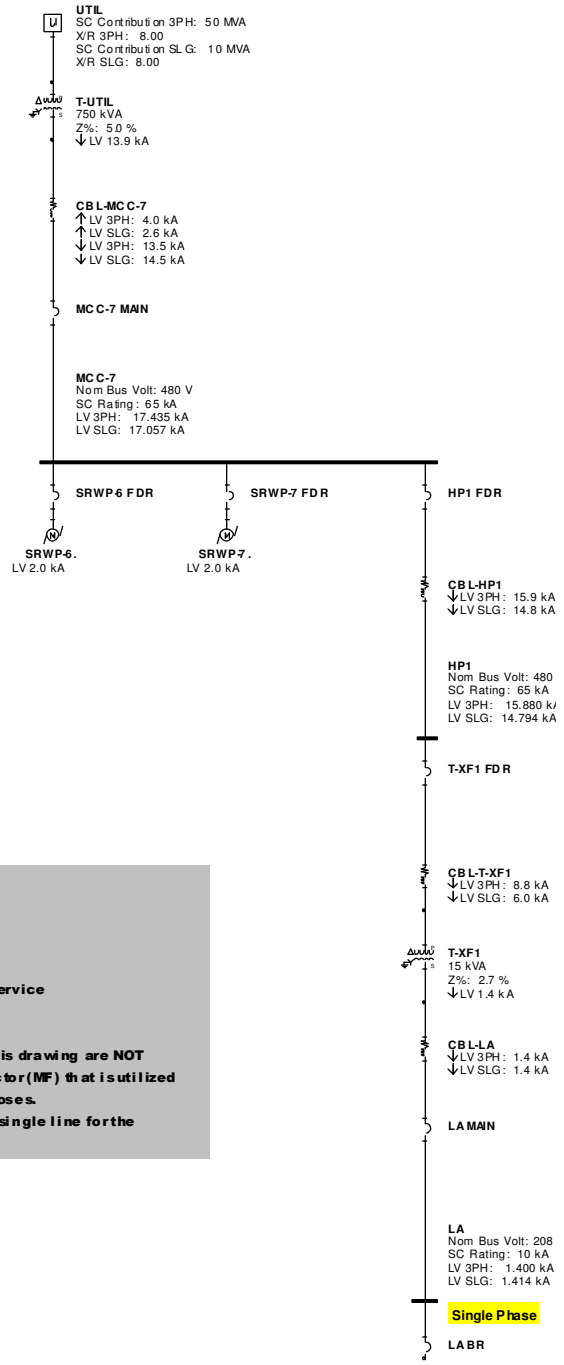
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.

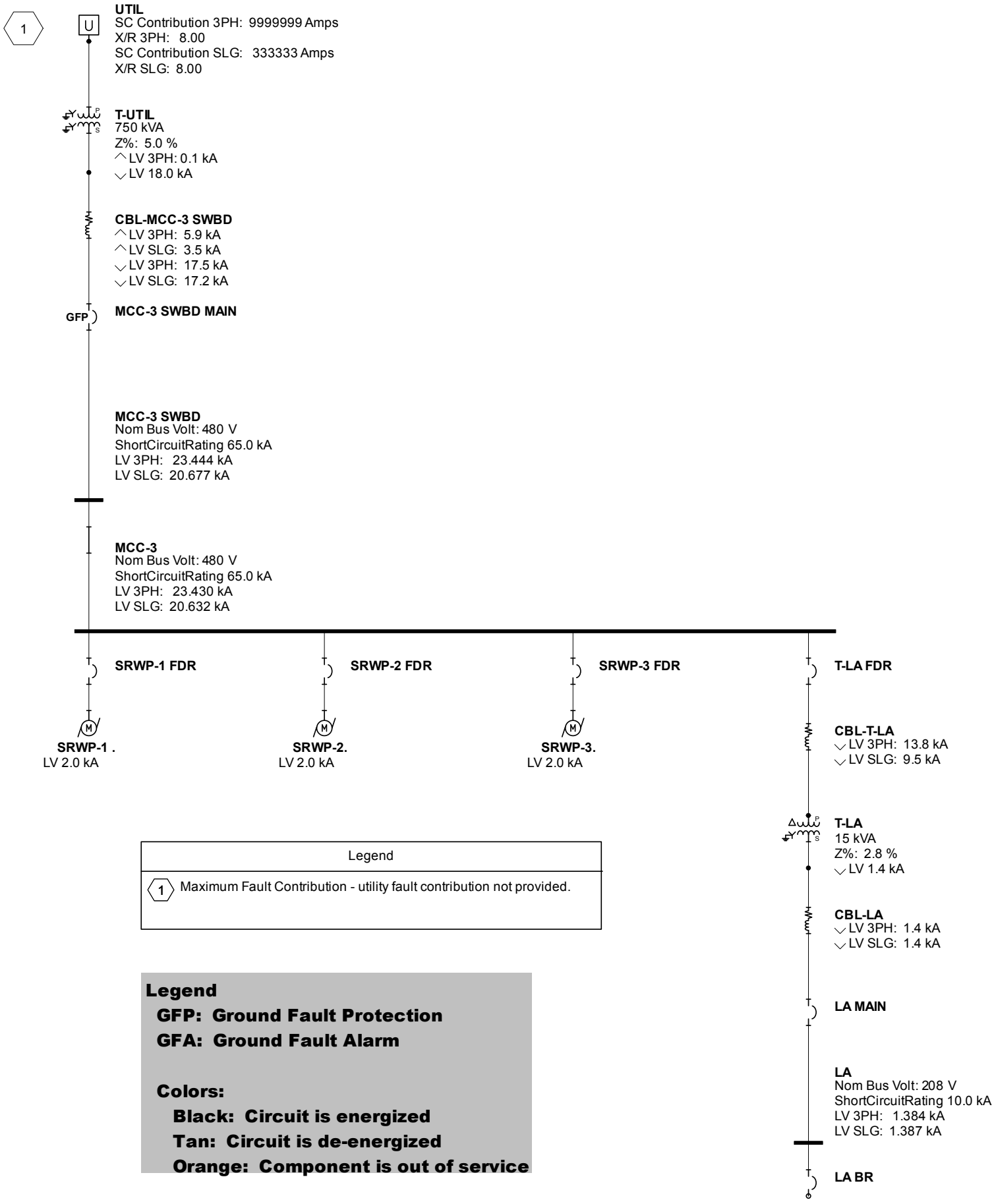
TRC Engineers

Project: CCWA - Northeast WRF -
Calculated Short-Circuit Currents - Case 2 - Emergency Conditions
Page 2


UTIL
SC Contribution 3PH: 38747 Amps
X/R 3PH: 7.63
SC Contribution SLG: 43255 Amps
X/R SLG: 8.09
T-UTIL PRI
Nom Bus Volt: 24940 V
LV 3PH: 38.945 kA
LV SLG: 43.419 kA
T-UTIL PRI FU
T-UTIL
1500 kVA
Z%: 5.8 %
LV 3PH: 0.1 kA
LV SLG: 0.1 kA
LV 30.6 kA
GEN.
1000 kVA
LV 3P: 12.0 kA
LV SLG: 11.915 kA
GEN BREAKER
CBL-T-UTIL SEC
LV 3PH: 6.2 kA
LV SLG: 3.9 kA
LV 3PH: 29.2 kA
LV SLG: 28.5 kA
WATER TIGHT FITTING
Nom Bus Volt: 480 V
LV 3PH: 35.396 kA
LV SLG: 32.237 kA
CBL-GEN
CBL-52-UM
LV 3PH: 6.2 kA
LV SLG: 3.8 kA
LV 3PH: 28.8 kA
LV SLG: 28.0 kA
GFP
52-UMUTILITY BREAKER
52-GMGENERATOR BREAKER
MAIN SWBD
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 35.098 kA
LV SLG: 31.749 kA
T-UTIL - OLD BLDG PRI FU
T-UTIL - OLD BLDG
1500 kVA
Z%: 5.8 %
LV 3PH: 0.1 kA
LV SLG: 0.1 kA
LV 30.6 kA
CBL-OLD PUMP STA MCC
LV 3PH: 6.2 kA
LV SLG: 3.9 kA
LV 3PH: 26.8 kA
LV SLG: 25.1 kA
OLD PUMP STA MCC MAIN
OLD PUMP STA MCC
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 33.148 kA
LV SLG: 28.769 kA
CBL-PUMP NO. 7
LV 3PH: 1.1 kA
LV SLG: 0.6 kA
LV 3PH: 27.7 kA
LV SLG: 23.1 kA
CBL-PUMP NO. 9
LV 3PH: 2.1 kA
LV SLG: 1.2 kA
LV 3PH: 26.6 kA
LV SLG: 22.2 kA
CBL-PUMP NO. 10
LV 3PH: 1.1 kA
LV SLG: 0.6 kA
LV 3PH: 27.3 kA
LV SLG: 22.6 kA
CBL-PUMP NO. 11
LV 3PH: 2.1 kA
LV SLG: 1.2 kA
LV 3PH: 26.6 kA
LV SLG: 22.2 kA
T-LA OLD BLDG FDR
CBL-T-LA OLD BLDG
LV 3PH: 7.0 kA
LV SLG: 4.2 kA
T-LA OLD BLDG
30 kVA
Z%: 4.3 %
LV 1.5 kA
CBL-LA OLD BLDG
LV 3PH: 1.5 kA
LV SLG: 1.5 kA
LA OLD BLDG MAIN
LA OLD BLDG
Nom Bus Volt: 240
SC Rating 10 kA
LV 3PH: 1.498 kA
LV SLG: 1.549 kA
LA OLD BLDG BR
PUMP NO. 1. OLD
LV 1.1 kA
PUMP NO. 2. OLD
LV 2.1 kA
PUMP NO. 3. OLD
LV 1.1 kA
PUMP NO. 4. OLD
LV 2.1 kA
CBL-MCC SWBD
LV 3PH: 6.3 kA
LV SLG: 3.8 kA
LV 3PH: 27.8 kA
LV SLG: 26.4 kA
MCC SW BD MAIN
MCC SW BD
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 34.048 kA
LV SLG: 30.081 kA
CBL-MCC
LV 3PH: 6.3 kA
LV SLG: 3.7 kA
LV 3PH: 27.7 kA
LV SLG: 26.2 kA
MCC
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 33.975 kA
LV SLG: 29.876 kA
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by
the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.
PUMP NO. 5 FDR
CBL-PUMP NO. 5
LV 3PH: 2.1 kA
LV SLG: 1.2 kA
LV 3PH: 27.6 kA
LV SLG: 23.3 kA
PUMP NO. 5.
LV 2.1 kA
PUMP NO. 6 FDR
CBL-PUMP NO. 6
LV 3PH: 2.1 kA
LV SLG: 1.2 kA
LV 3PH: 27.2 kA
LV SLG: 22.8 kA
PUMP NO. 6.
LV 2.1 kA
PUMP NO. 7 FDR
PUMP NO. 8 FDR
CBL-PUMP NO. 8
LV 3PH: 2.1 kA
LV SLG: 1.2 kA
LV 3PH: 25.2 kA
LV SLG: 20.6 kA
PUMP NO. 8.
LV 2.1 kA
T-LA FDR
CBL-T-LA
LV 3PH: 7.0 kA
LV SLG: 4.2 kA
T-LA
15 kVA
Z%: 2.8 %
LV 1.2 kA
CBL-LA
LV 3PH: 1.2 kA
LV SLG: 1.2 kA
LA
Nom Bus Volt: 240 V
SC Rating: 10 kA
LV 3PH: 1.189 kA
LV SLG: 1.219 kA
LA BR
PA FDR
CBL-PA
LV 3PH: 24.2 kA
LV SLG: 18.1 kA
PA
Nom Bus Volt: 480 V
SC Rating 25 kA
LV 3PH: 24.225 kA
LV SLG: 18.055 kA
PA BR


UTIL
SC Contribution 3PH: 38747 Amps
X/R 3PH: 7.63
SC Contribution SLG: 43255 Amps
X/R SLG: 8.09
T-UTIL PRI
Nom Bus Volt: 24940 V
T-UTIL PRI FU
T-UTIL
1500 kVA
Z%: 5.8 %
CBL-T-UTIL SEC
WATER TIGHT FITTING
Nom Bus Volt: 480 V
CBL-52-UM
GFP
52-UM UTILITY BREAKER
MAIN SWBD
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 14.187 kA
LV SLG: 18.279 kA
GEN.
1000 kVA
LV 3P: 8.2 kA
LV SLG: 13.854 kA
GEN BREAKER
CBL-GEN
LV 3PH: 6.1 kA
LV SLG: 5.7 kA
LV 3PH: 8.0 kA
LV SLG: 12.8 kA
52-GM GENERATOR BREAKER
CBL-MCC SWBD
LV 3PH: 6.3 kA
LV SLG: 5.5 kA
LV 3PH: 7.9 kA
LV SLG: 12.4 kA
MCC SWBD MAIN
MCC SWBD
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 14.148 kA
LV SLG: 17.850 kA
CBL-MCC
LV 3PH: 6.3 kA
LV SLG: 5.4 kA
LV 3PH: 7.9 kA
LV SLG: 12.4 kA
MCC
Nom Bus Volt: 480 V
SC Rating 65 kA
LV 3PH: 14.144 kA
LV SLG: 17.783 kA
T-UTIL - OLD BLDG PRI FU
T-UTIL - OLD BLDG
1500 kVA
Z%: 5.8 %
CBL-OLD PUMP STA MCC
OLD PUMP STA MCC MAIN
OLD PUMP STA MCC
Nom Bus Volt: 480 V
SC Rating: 65 kA
CBL-PUMP NO. 7
CBL-PUMP NO. 9
CBL-PUMP NO. 10
CBL-PUMP NO. 11
T-LA OLD BLDG FDR
PUMP NO. 1. OLD
PUMP NO. 2. OLD
PUMP NO. 3. OLD
PUMP NO. 4. OLD
CBL-T-LA OLD BLDG
T-LA OLD BLDG
30 kVA
Z%: 4.3 %
CBL-LA OLD BLDG
LA OLD BLDG MAIN
LA OLD BLDG
Nom Bus Volt: 240
SC Rating 10 kA
LA OLD BLDG BR
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by
the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.
PUMP NO. 5 FDR
CBL-PUMP NO. 5
LV 3PH: 2.1 kA
LV SLG: 1.8 kA
LV 3PH: 11.4 kA
LV SLG: 14.1 kA
PUMP NO. 5.
LV 2.1 kA
PUMP NO. 6 FDR
CBL-PUMP NO. 6
LV 3PH: 2.1 kA
LV SLG: 1.8 kA
LV 3PH: 11.3 kA
LV SLG: 14.0 kA
PUMP NO. 6.
LV 2.1 kA
PUMP NO. 7 FDR
PUMP NO. 8 FDR
CBL-PUMP NO. 8
LV 3PH: 2.1 kA
LV SLG: 1.8 kA
LV 3PH: 11.0 kA
LV SLG: 13.1 kA
PUMP NO. 8.
LV 2.1 kA
T-LA FDR
CBL-T-LA
LV 3PH: 6.0 kA
LV SLG: 4.0 kA
T-LA
15 kVA
Z%: 2.8 %
LV 1.2 kA
CBL-LA
LV 3PH: 1.2 kA
LV SLG: 1.2 kA
LA
Nom Bus Volt: 240 V
SC Rating: 10 kA
LV 3PH: 1.167 kA
LV SLG: 1.202 kA
LA BR
PA FDR
CBL-PA
LV 3PH: 12.3 kA
LV SLG: 13.0 kA
PA
Nom Bus Volt: 480 V
SC Rating: 25 kA
LV 3PH: 12.338 kA
LV SLG: 12.991 kA
PA BR


UTIL
SC Contribution 3PH: 50 MVA
X/R 3PH: 8.00
SC Contribution SLG: 10 MVA
X/R SLG: 8.00
T-UTIL
750 kVA
Z%: 5.0 %
LV 13.9 kA
CBL-MCC-7
LV 3PH: 4.0 kA
LV SLG: 2.6 kA
LV 3PH: 13.5 kA
LV SLG: 14.5 kA
MCC-7 MAIN
MCC-7
Nom Bus Volt: 480 V
SC Rating: 65 kA
LV 3PH: 17.435 kA
LV SLG: 17.057 kA
SRWP-6 FDR
SRWP-7 FDR
HP1 FDR
SRWP-6.
LV 2.0 kA
SRWP-7.
LV 2.0 kA
CBL-HP1
LV 3PH: 15.9 kA
LV SLG: 14.8 kA
HP1
Nom Bus Volt: 480
SC Rating: 65 kA
LV 3PH: 15.880 kA
LV SLG: 14.794 kA
T-XF1 FDR
CBL-T-XF1
LV 3PH: 8.8 kA
LV SLG: 6.0 kA
T-XF1
15 kVA
Z%: 2.7 %
LV 1.4 kA
CBL-LA
LV 3PH: 1.4 kA
LV SLG: 1.4 kA
LA MAIN
LA
Nom Bus Volt: 208
SC Rating: 10 kA
LV 3PH: 1.400 kA
LV SLG: 1.414 kA
Single Phase
LA BR
Legend
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
Notes:
The short-circuit currents on this drawing are NOT adjusted by the multiplying factor (MF) that is utilized for equipment evaluation purposes.
See the Equipment Evaluation single line for the adjusted fault current.


1
U
UTIL
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 333333 Amps
X/R SLG: 8.00
T-UTIL
750 kVA
Z%: 5.0 %
LV 3PH: 0.1 kA
LV 18.0 kA
CBL-MCC-3 SWBD
LV 3PH: 5.9 kA
LV SLG: 3.5 kA
LV 3PH: 17.5 kA
LV SLG: 17.2 kA
GFP
MCC-3 SWBD MAIN
MCC-3 SWBD
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 23.444 kA
LV SLG: 20.677 kA
MCC-3
Nom Bus Volt: 480 V
ShortCircuitRating 65.0 kA
LV 3PH: 23.430 kA
LV SLG: 20.632 kA
SRWP-1 FDR
SRWP-2 FDR
SRWP-3 FDR
T-LA FDR
SRWP-1 .
LV 2.0 kA
SRWP-2.
LV 2.0 kA
SRWP-3.
LV 2.0 kA
CBL-T-LA
LV 3PH: 13.8 kA
LV SLG: 9.5 kA
T-LA
15 kVA
Z%: 2.8 %
LV 1.4 kA
CBL-LA
LV 3PH: 1.4 kA
LV SLG: 1.4 kA
LA MAIN
LA
Nom Bus Volt: 208 V
ShortCircuitRating 10.0 kA
LV 3PH: 1.384 kA
LV SLG: 1.387 kA
LA BR
Legend
1 Maximum Fault Contribution - utility fault contribution not provided.
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service

APPENDIX E: EQUIPMENT EVALUATION

The following pages detail the results of Equipment Evaluation. Refer to Section III for a discussion regarding Equipment Evaluation.

E.1. RESULTS TABLE COLUMN HEADERS DEFINED

Below is an explanation of the data contained in the Equipment Evaluation results.

Equipment Evaluation - Explanation of table headings for Low Voltage Breakers

Column Header	Explanation
Breaker Name	Name of the breaker as it was modeled in this Study - reference the Study single line in Appendix F.
Equipment Designation	This is the equipment where the breaker is located - the switchgear, switchboard, panel, MCC, ATS, etc as it was modeled in this Study - reference Study single line in Appendix F..
Breaker Status	*Pass*, *Fail*, or *Marginal*: *Fail* indicates the device or assembly rating is less than the calculated fault current at that system location.
Bus Voltage	
Calculated INT Fault (kA)	Maximum calculated fault current, adjusted if necessary by LVF as detailed in Section III.B.1.
Breaker kAIC Rating (Full)	The published interrupting rating for the breakers. This is the standard or full rating.
Breaker kAIC Series Rating	If the breaker is applied to the system as a series rated breaker (ref Section III.B.2 for requirements), the published series rating appears in this field.
Fault INT Rating (Duty) %	Breaker interrupting rating divided by the Calculated INT Fault

Equipment Evaluation - Explanation of table headings for Fuses

Column Header	Explanation
Fuse Name	Name of the fuse as it was modeled in this Study - reference the Study single line in Appendix F.
Equipment Designation	This is the equipment where the fuse is located - the switchgear, switchboard, panel, MCC, ATS, etc as it was modeled in this Study - reference Study single line in Appendix F.
Fuse Status	*Pass*, *Fail*, or *Marginal*: *Fail* indicates the device or assembly rating is less than the calculated fault current at that system location.
Fuse Description	Fuse type, frame rating, sensor rating, trip rating, and trip unit type.
Bus Voltage	
Calculated INT Fault (kA)	Maximum calculated symmetrical fault current.
Fuse INT Rating	The published interrupting rating for the fuses.
Calculated Asym Fault (kA)	Maximum calculated asymmetrical fault current.
Fuse Asym Rating	The published interrupting rating for the fuses.
Fault INT Rating %	Fuse INT rating divided by the Calculated INT Fault.
Fault Asym Rating %	Fuse Asym rating divided by the Calculated Asym Fault.

Equipment Evaluation - Explanation of table headings for Equipment Assemblies

Column Header	Explanation
Equipment Assembly Designation	Name of switchgear, switchboard, panel, MCC, ATS, etc as it was modeled in this Study - reference Study single line in Appendix F.
Equipment Assembly Status	*Pass*, *Fail*, or *Marginal*: *Fail* indicates the device or assembly rating is less than the calculated fault current at that system location.
Assembly Type	Medium Voltage Switchgear, Low Voltage Switchgear, Panel, MCC, etc
Bus Voltage	
Calculated Maximum SC Current (kA)	Maximum calculated fault current at each bus.
Assembly Rating (kA)	The published rating.
Rating%	Calculated Maximum SC Current divided by Assembly Rating.

Equipment Evaluation - Explanation of table headings for Medium Voltage Breakers

Column Header	Explanation
Breaker Name	Name of the Breaker as it was modeled in this Study - reference the Study single line in Appendix F.
Equipment Designation	This is the equipment where the breaker is located - the switchgear, switchboard, panel, MCC, ATS, etc as it was modeled in this Study - reference Study single line in Appendix F.
Breaker Status	*Pass*, *Fail*, or *Marginal*: *Fail* indicates the device or assembly rating is less than the calculated fault current at that system location.
Bus Voltage	
Calculated INT Fault (kA)	Maximum calculated symmetrical fault current. Interrupting rating relates to contact separating or breaking ability.
Breaker INT Rating	The published interrupting rating for the Breakers.
Calculated C-L Fault (kA)	Maximum calculated Close-Latch/Momentary/Asymmetrical fault. Closing and latching ratings are withstand and momentary ratings, respectively.
Breaker C-L Rating	The published Close-Latch/Momentary/Asymmetrical rating for the Breakers.
Fault INT Rating %	Breaker INT rating divided by the Calculated INT Fault.
Fault C-L Rating %	Breaker Close-Latch/Momentary/Asymmetrical rating divided by the Calculated Close-Latch/Momentary/Asymmetrical Fault.
K	Rated voltage range factor.
Parting Time	Frame Parting Time.
Speed	Frame Parting Speed.
Rating Basis	Symmetrical or Total Rated.

E.2 RESULTS

E.2.1 Blalock Pump Station

E.2.2 W.B. Casey Water Reclamation Facility

E.2.3 Terry R. Hicks Water Production Facility

E.2.4 W.J. Hooper Water Production Facility

E.2.5 RL Jackson Water Reclamation Facility

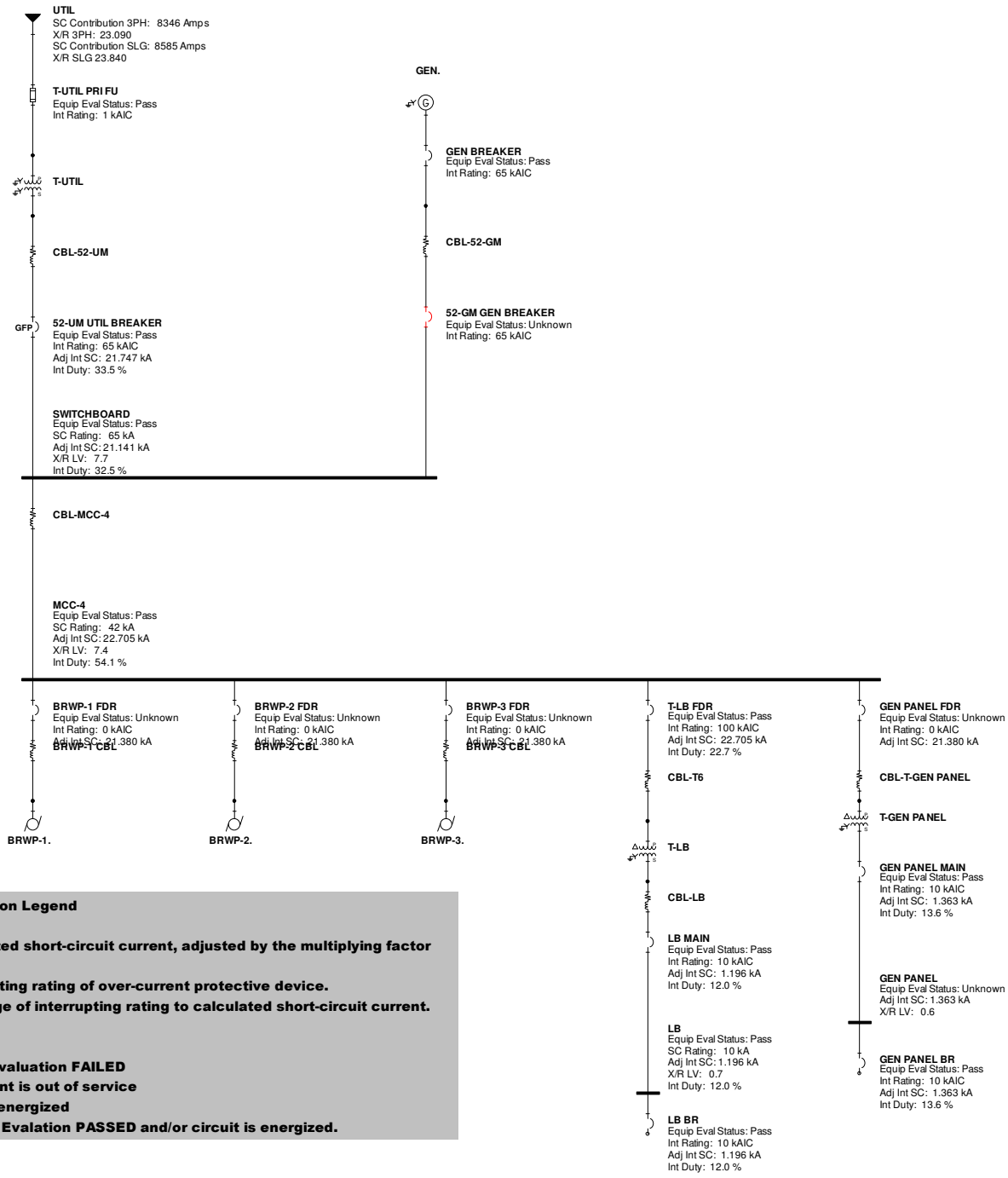
E.2.6 Jonesboro Pump Station

E.2.7 Noah's Ark Pump Station

E.2.8 Northeast Water Reclamation Facility

E.2.9 Shoal Creek Reservoir Pump Station

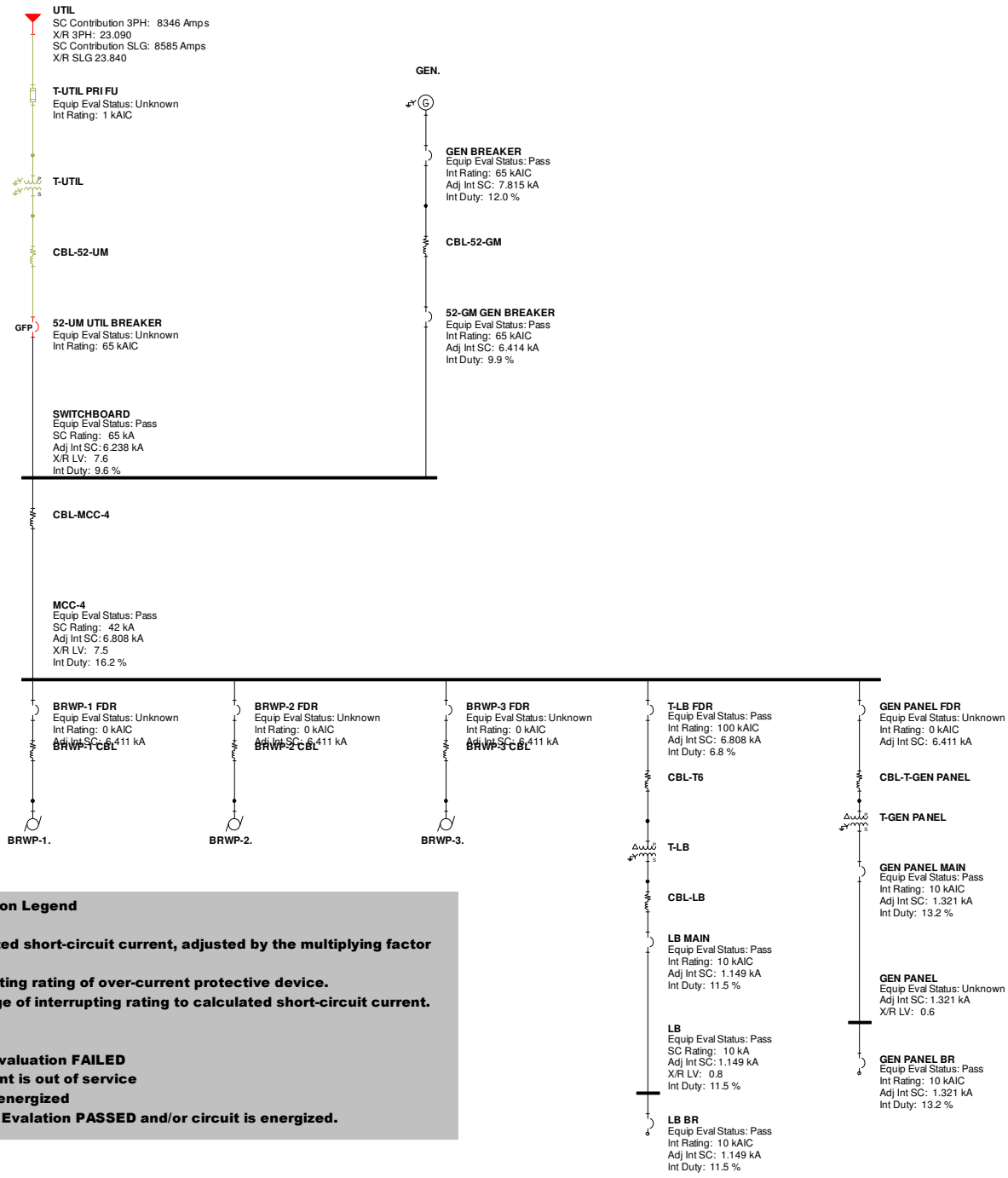
E.2.10 Smith Reservoir Pump Station



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
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Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
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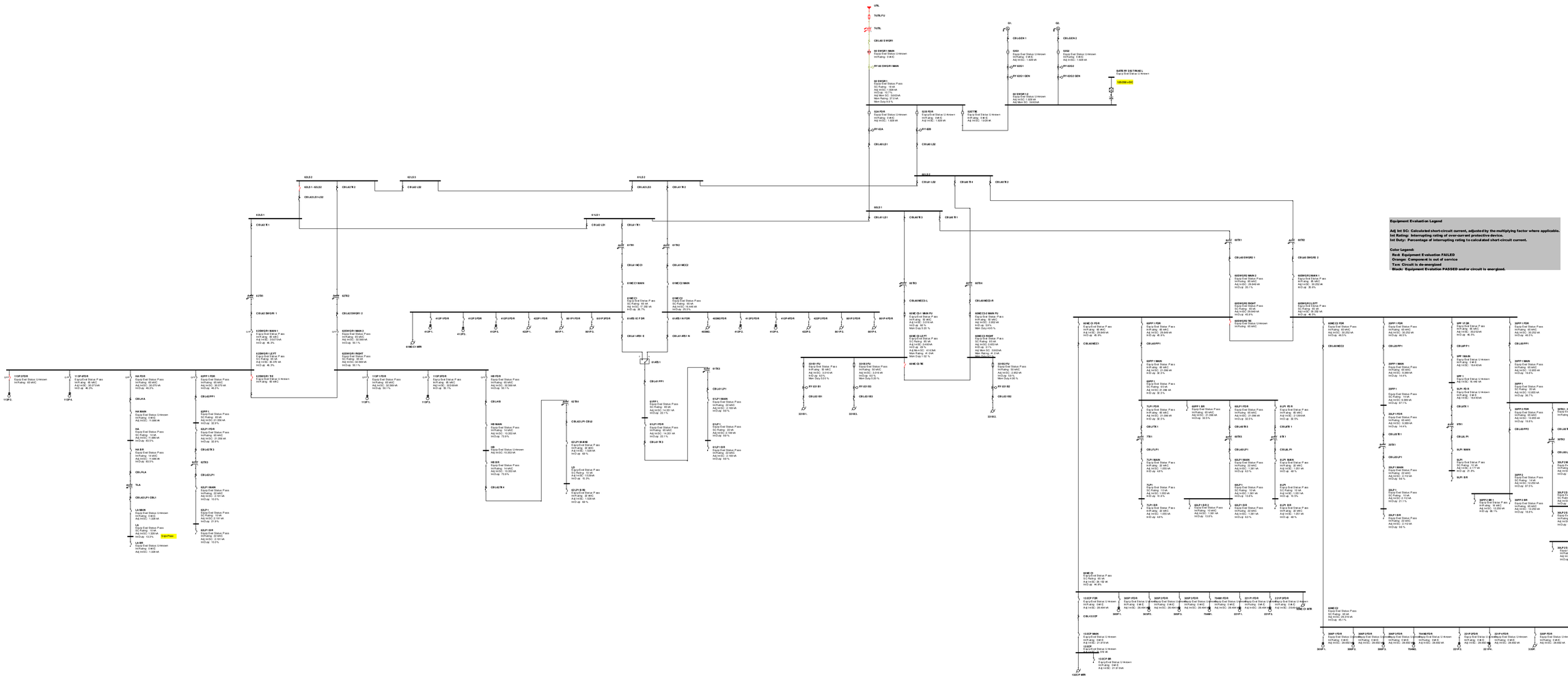
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evaluation PASSED and/or circuit is energized.



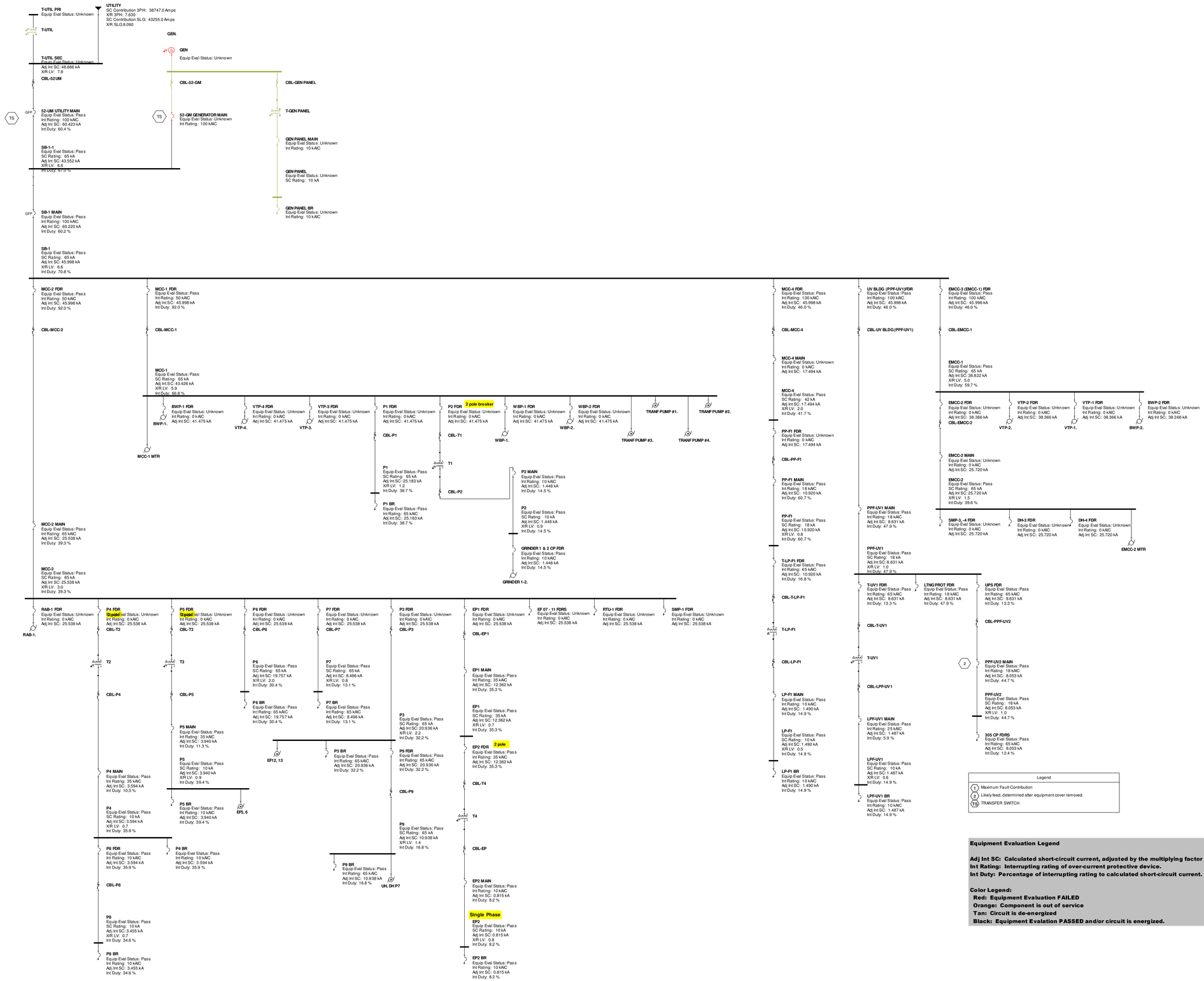
Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.

TRC Engineers

Project: W.B. Casey Water Reclamation Facility -
Equipment Evaluation Results - Case 2 - Emergency Conditions


T-UTIL PRI
Equip Eval Status: Unknown
T-UTIL
T-UTIL SEC
Equip Eval Status: Unknown
Adj Int SC: 48.886 kA
XR LV: 7.8
UTILITY
SC Contribution 3PH: 38747.0 Amps
XR 3PH: 7.630
SC Contribution SLG: 43255.0 Amps
XR SLG 8.090
GEN
GEN
Equip Eval Status: Unknown
CBL-52-GM
CBL-GEN PANEL
T-GEN PANEL
CBL-52UM
52-UM UTILITY MAIN
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 60.423 kA
Int Duty: 60.4 %
52-GM GENERATOR MAIN
Equip Eval Status: Unknown
Int Rating: 100 kAIC
GEN PANEL MAIN
Equip Eval Status: Unknown
Int Rating: 10 kAIC
GEN PANEL
Equip Eval Status: Unknown
SC Rating: 10 kA
GEN PANEL BR
Equip Eval Status: Unknown
Int Rating: 10 kAIC
SB-1-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 43.552 kA
XR LV: 6.6
Int Duty: 67.0 %
SB-1 MAIN
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 60.220 kA
Int Duty: 60.2 %
SB-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 45.998 kA
XR LV: 6.6
Int Duty: 70.8 %
MCC-2 FDR
Equip Eval Status: Pass
Int Rating: 50 kAIC
Adj Int SC: 45.998 kA
Int Duty: 92.0 %
MCC-1 FDR
Equip Eval Status: Pass
Int Rating: 50 kAIC
Adj Int SC: 45.998 kA
Int Duty: 92.0 %
CBL-MCC-2
CBL-MCC-1
MCC-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 43.426 kA
XR LV: 5.9
Int Duty: 66.8 %
BWP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
BWP-1.
MCC-1 MTR
VTP-4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
VTP-4.
VTP-3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
VTP-3.
P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
CBL-P1
P1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 25.183 kA
XR LV: 1.2
Int Duty: 38.7 %
P1 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 25.183 kA
Int Duty: 38.7 %
P2 FDR
2 pole breaker
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
CBL-T1
T1
CBL-P2
P2 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.448 kA
Int Duty: 14.5 %
P2
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.448 kA
XR LV: 0.9
Int Duty: 14.5 %
GRINDER 1 & 2 CP FDR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.448 kA
Int Duty: 14.5 %
GRINDER 1-2.
W BP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
WBP-1.
WBP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 41.475 kA
WBP-2.
TRANF PUMP #1.
TRANF PUMP #3.
TRANF PUMP #2.
TRANF PUMP #4.
MCC-2 MAIN
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 25.538 kA
Int Duty: 39.3 %
MCC-2
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 25.538 kA
XR LV: 3.0
Int Duty: 39.3 %
RAB-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
RAB-1.
P4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-T2
T2
CBL-P4
P4 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 3.594 kA
Int Duty: 10.3 %
P4
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.594 kA
XR LV: 0.7
Int Duty: 35.9 %
P6 FDR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.594 kA
Int Duty: 35.9 %
CBL-P8
P8
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.455 kA
XR LV: 0.7
Int Duty: 34.6 %
P8 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.455 kA
Int Duty: 34.6 %
P5 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-T3
T3
CBL-P5
P5 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 3.940 kA
Int Duty: 11.3 %
P5
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.940 kA
XR LV: 0.9
Int Duty: 39.4 %
P5 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.594 kA
Int Duty: 39.4 %
EP5, 6
P4 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.594 kA
Int Duty: 35.9 %
P6 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-P6
P6
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 19.757 kA
XR LV: 2.0
Int Duty: 30.4 %
P6 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 19.757 kA
Int Duty: 30.4 %
P7 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-P7
P7
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 8.496 kA
XR LV: 0.8
Int Duty: 13.1 %
P7 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.496 kA
Int Duty: 13.1 %
EP12, 13
P3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-P3
P3
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 20.936 kA
XR LV: 2.2
Int Duty: 32.2 %
P3 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 20.936 kA
Int Duty: 32.2 %
P9 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 20.936 kA
Int Duty: 32.2 %
CBL-P9
P9
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 10.938 kA
XR LV: 1.4
Int Duty: 16.8 %
P9 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 10.938 kA
Int Duty: 16.8 %
UH, DH P7
EP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
CBL-EP1
EP1 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 12.362 kA
Int Duty: 35.3 %
EP1
Equip Eval Status: Pass
SC Rating: 35 kA
Adj Int SC: 12.362 kA
XR LV: 0.7
Int Duty: 35.3 %
EP2 FDR
2 pole
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 12.362 kA
Int Duty: 35.3 %
CBL-T4
T4
CBL-EP
EP2 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 0.815 kA
Int Duty: 8.2 %
Single Phase
EP2
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 0.815 kA
XR LV: 0.8
Int Duty: 8.2 %
EP2 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 0.815 kA
Int Duty: 8.2 %
EF 07 - 11 FDRS
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
RTU-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
SMP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.538 kA
MCC-4 FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 45.998 kA
Int Duty: 46.0 %
CBL-MCC-4
MCC-4 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.494 kA
MCC-4
Equip Eval Status: Pass
SC Rating: 42 kA
Adj Int SC: 17.494 kA
XR LV: 2.0
Int Duty: 41.7 %
PP-P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.494 kA
CBL-PP-P1
PP-P1 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 10.920 kA
Int Duty: 60.7 %
PP-P1
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 10.920 kA
XR LV: 0.8
Int Duty: 60.7 %
T-LP-P1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 10.920 kA
Int Duty: 16.8 %
CBL-T-LP-F1
T-LP-P1
CBL-LP-F1
LP-P1 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.490 kA
Int Duty: 14.9 %
LP-P1
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.490 kA
XR LV: 0.5
Int Duty: 14.9 %
LP-P1 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.490 kA
Int Duty: 14.9 %
UV BLDG (PPF-UV1)FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 45.998 kA
Int Duty: 46.0 %
CBL-UV BLDG(PPF-UV1)
PPF-UV1 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 8.631 kA
Int Duty: 47.9 %
PPF-UV1
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 8.631 kA
XR LV: 1.0
Int Duty: 47.9 %
T-UV1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.631 kA
Int Duty: 13.3 %
LTNG PROT FDR
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 8.631 kA
Int Duty: 47.9 %
CBL-T-UV1
T-UV1
CBL-LPF-UV1
LPF-UV1 MAIN
Equip Eval Status: Pass
Int Rating: 25 kAIC
Adj Int SC: 1.487 kA
Int Duty: 5.9 %
LPF-UV1
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.487 kA
XR LV: 0.6
Int Duty: 14.9 %
LPF-UV1 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.487 kA
Int Duty: 14.9 %
EMCC-3 (EMCC-1) FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 45.998 kA
Int Duty: 46.0 %
CBL-EMCC-1
EMCC-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 38.822 kA
XR LV: 5.0
Int Duty: 59.7 %
EMCC-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 38.366 kA
CBL-EMCC-2
VTP-2.
VTP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 38.366 kA
VTP-1.
VTP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 38.366 kA
BWP-2.
BWP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 38.366 kA
EMCC-2 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.720 kA
EMCC-2
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 25.720 kA
XR LV: 1.5
Int Duty: 39.6 %
SMP-3, -4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.720 kA
DH-3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.720 kA
DH-4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 25.720 kA
EMCC-2 MTR
UPS FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.631 kA
Int Duty: 13.3 %
CBL-PPF-UV2
2
PPF-UV2 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 8.053 kA
Int Duty: 44.7 %
PPF-UV2
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 8.053 kA
XR LV: 1.0
Int Duty: 44.7 %
305 CP FDRS
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.053 kA
Int Duty: 12.4 %
Legend
1 Maximum Fault Contribution
2 Likely feed, determined after equipment cover removed.
TS TRANSFER SWITCH
Equipment Evaluation Legend
Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
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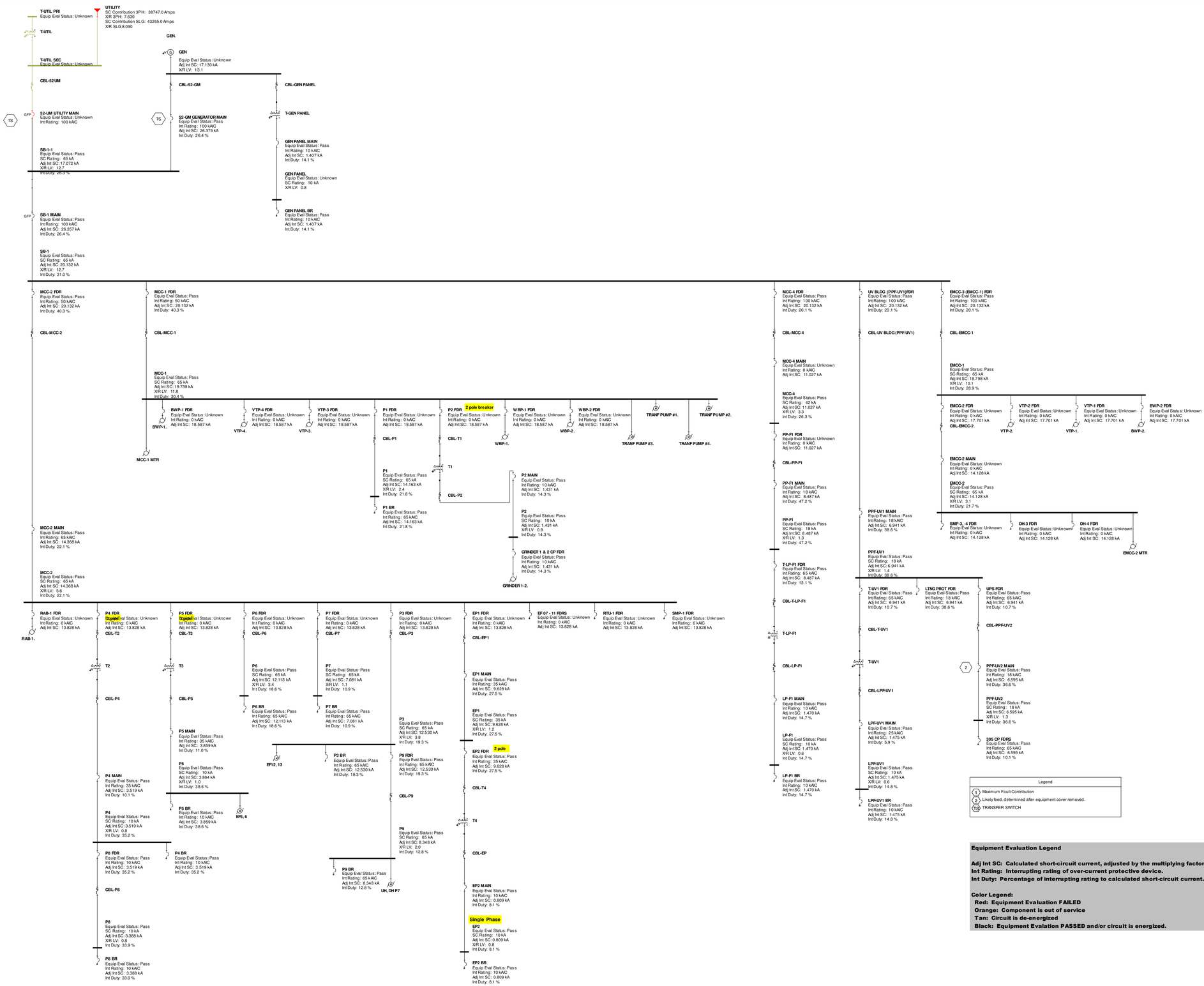
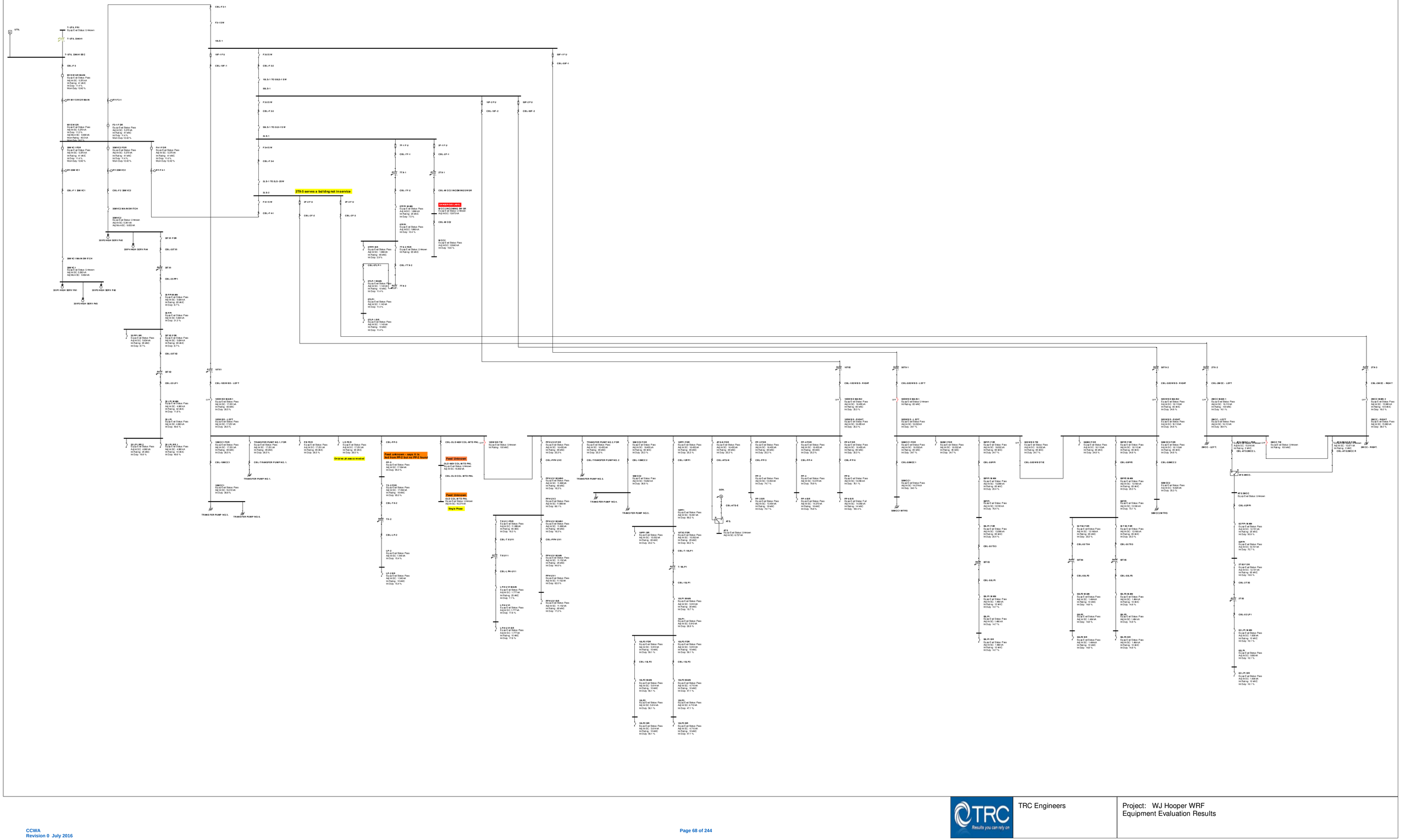
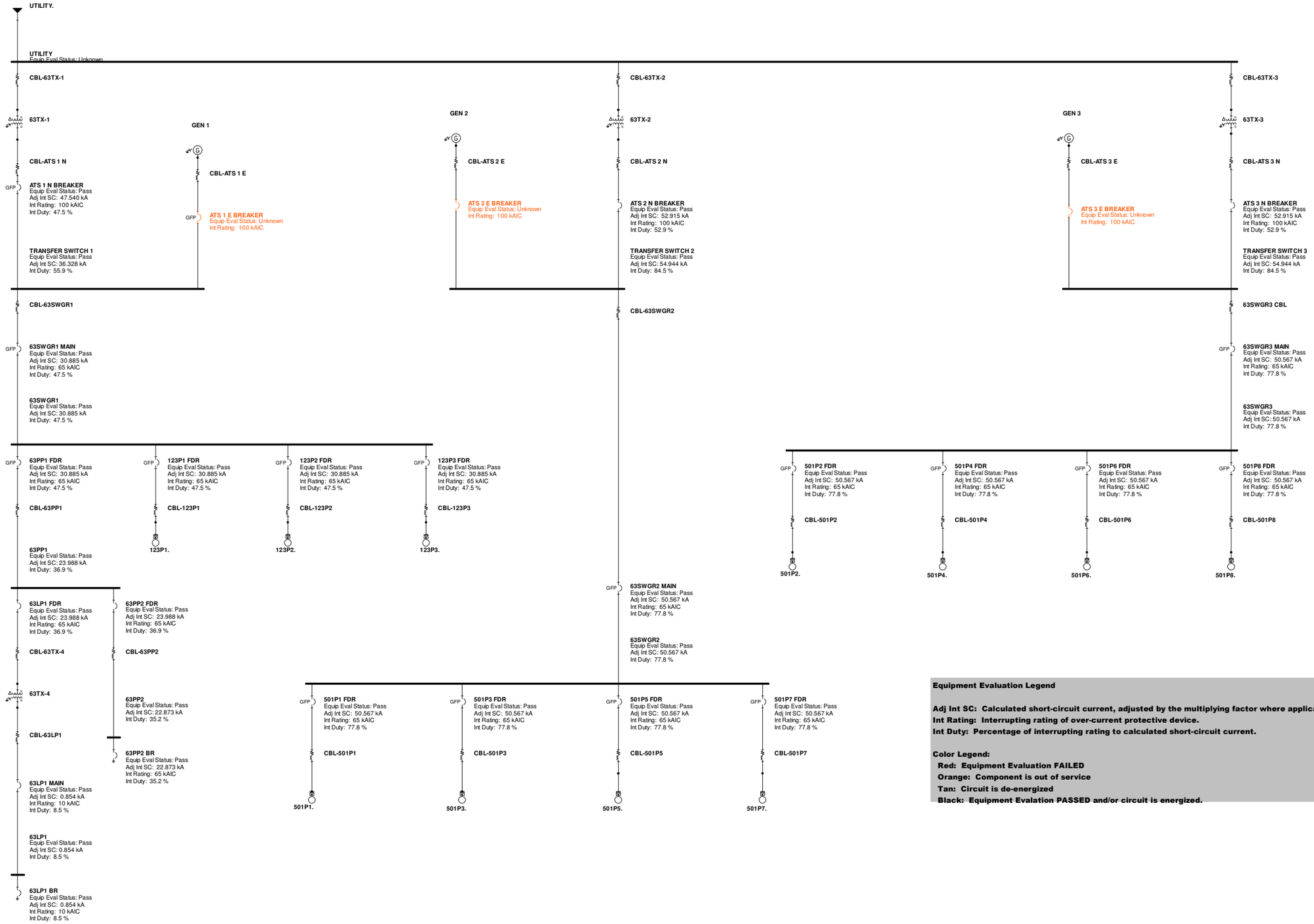
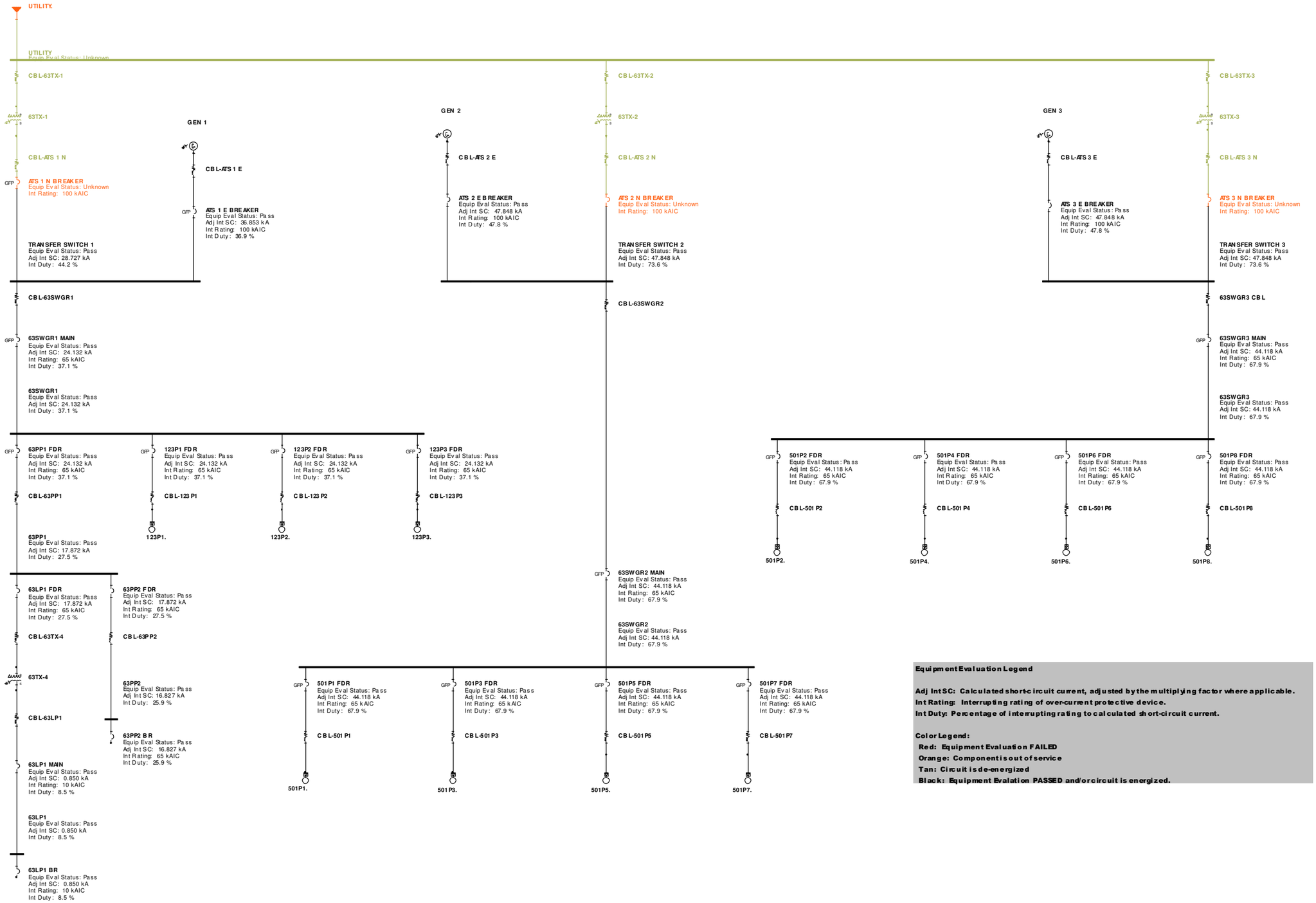

T-UTIL PRI
Equip Eval Status: Unknown
T-UTIL
T-UTIL SEC
Equip Eval Status: Unknown
UTILITY
SC Contribution 3PH: 38747.0 Amps
XR 3PH: 7.630
SC Contribution SLG: 43255.0 Amps
XR SLG 8.090
GEN
GEN
Equip Eval Status: Unknown
Adj Int SC: 17.130 kA
XR LV: 13.1
CBL-52-UM
CBL-52-GM
CBL-GEN PANEL
52-UM UTILITY MAIN
Equip Eval Status: Unknown
Int Rating: 100 kAIC
52-GM GENERATOR MAIN
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 26.379 kA
Int Duty: 26.4 %
T-GEN PANEL
GEN PANEL MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.407 kA
Int Duty: 14.1 %
GEN PANEL
Equip Eval Status: Unknown
SC Rating: 10 kA
XR LV: 0.8
GEN PANEL BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.407 kA
Int Duty: 14.1 %
SB-1-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 17.072 kA
XR LV: 12.7
Int Duty: 26.3 %
SB-1 MAIN
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 26.357 kA
Int Duty: 26.4 %
SB-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 20.132 kA
XR LV: 12.7
Int Duty: 31.0 %
MCC-2 FDR
Equip Eval Status: Pass
Int Rating: 50 kAIC
Adj Int SC: 20.132 kA
Int Duty: 40.3 %
MCC-1 FDR
Equip Eval Status: Pass
Int Rating: 50 kAIC
Adj Int SC: 20.132 kA
Int Duty: 40.3 %
CBL-MCC-2
CBL-MCC-1
MCC-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 19.739 kA
XR LV: 11.8
Int Duty: 30.4 %
BWP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
BWP-1.
MCC-1 MTR
VTP-4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
VTP-4.
VTP-3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
VTP-3.
P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
P2 FDR
2 pole breaker
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
W BP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
WBP-1.
WBP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.587 kA
WBP-2.
TRANF PUMP #1.
TRANF PUMP #3.
TRANF PUMP #2.
TRANF PUMP #4.
CBL-P1
CBL-T1
T1
P1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 14.163 kA
XR LV: 2.4
Int Duty: 21.8 %
CBL-P2
P2 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.431 kA
Int Duty: 14.3 %
P1 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 14.163 kA
Int Duty: 21.8 %
P2
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.431 kA
XR LV: 0.9
Int Duty: 14.3 %
GRINDER 1 & 2 CP FDR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.431 kA
Int Duty: 14.3 %
GRINDER 1-2.
MCC-2 MAIN
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 14.368 kA
Int Duty: 22.1 %
MCC-2
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 14.368 kA
XR LV: 5.6
Int Duty: 22.1 %
RAB-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
RAB-1.
P4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-T2
P5 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-T3
P6 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-P6
P7 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-P7
P3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-P3
EP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
CBL-EP1
EF 07 - 11 FDRS
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
RTU-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
SMP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.828 kA
T2
T3
P6
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 12.113 kA
XR LV: 3.4
Int Duty: 18.6 %
P7
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 7.081 kA
XR LV: 1.1
Int Duty: 10.9 %
P3
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 12.530 kA
XR LV: 3.8
Int Duty: 19.3 %
EP1 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 9.628 kA
Int Duty: 27.5 %
CBL-P4
CBL-P5
P6 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 12.113 kA
Int Duty: 18.6 %
P7 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 7.081 kA
Int Duty: 10.9 %
P5 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 3.859 kA
Int Duty: 11.0 %
EP12, 13
P3 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 12.530 kA
Int Duty: 19.3 %
P9 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 12.530 kA
Int Duty: 19.3 %
EP1
Equip Eval Status: Pass
SC Rating: 35 kA
Adj Int SC: 9.628 kA
XR LV: 1.2
Int Duty: 27.5 %
EP2 FDR
2 pole
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 9.628 kA
Int Duty: 27.5 %
P5
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.864 kA
XR LV: 1.0
Int Duty: 38.6 %
P5 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.859 kA
Int Duty: 38.6 %
EP5, 6
CBL-T4
CBL-P9
P9
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 8.348 kA
XR LV: 2.0
Int Duty: 12.8 %
T4
P4 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 3.519 kA
Int Duty: 10.1 %
P4
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.519 kA
XR LV: 0.8
Int Duty: 35.2 %
P4 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.519 kA
Int Duty: 35.2 %
P9 BR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.348 kA
Int Duty: 12.8 %
UH, DH P7
CBL-EP
EP2 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 0.809 kA
Int Duty: 8.1 %
Single Phase
EP2
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 0.809 kA
XR LV: 0.8
Int Duty: 8.1 %
P6 FDR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.519 kA
Int Duty: 35.2 %
CBL-P8
P8
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.388 kA
XR LV: 0.8
Int Duty: 33.9 %
P8 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 3.388 kA
Int Duty: 33.9 %
EP2 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 0.809 kA
Int Duty: 8.1 %
MCC-4 FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 20.132 kA
Int Duty: 20.1 %
CBL-MCC-4
MCC-4 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 11.027 kA
MCC-4
Equip Eval Status: Pass
SC Rating: 42 kA
Adj Int SC: 11.027 kA
XR LV: 3.3
Int Duty: 26.3 %
PP-P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 11.027 kA
CBL-PP-P1
PP-P1 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 8.487 kA
Int Duty: 47.2 %
PP-P1
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 8.487 kA
XR LV: 1.3
Int Duty: 47.2 %
T-LP-F1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 8.487 kA
Int Duty: 13.1 %
CBL-T-LP-F1
T-LP-F1
CBL-LP-F1
LP-F1 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.470 kA
Int Duty: 14.7 %
LP-F1
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.470 kA
XR LV: 0.6
Int Duty: 14.7 %
LP-F1 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.470 kA
Int Duty: 14.7 %
UV BLDG (PPF-UV1)FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 20.132 kA
Int Duty: 20.1 %
CBL-UV BLDG (PPF-UV1)
PPF-UV1 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 6.941 kA
Int Duty: 38.6 %
PPF-UV1
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 6.941 kA
XR LV: 1.4
Int Duty: 38.6 %
T-UV1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 6.941 kA
Int Duty: 10.7 %
LTNG PROT FDR
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 6.941 kA
Int Duty: 38.6 %
CBL-T-UV1
T-UV1
CBL-LPF-UV1
LPF-UV1 MAIN
Equip Eval Status: Pass
Int Rating: 25 kAIC
Adj Int SC: 1.475 kA
Int Duty: 5.9 %
LPF-UV1
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 1.475 kA
XR LV: 0.6
Int Duty: 14.8 %
LPF-UV1 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.475 kA
Int Duty: 14.8 %
EMCC-3 (EMCC-1) FDR
Equip Eval Status: Pass
Int Rating: 100 kAIC
Adj Int SC: 20.132 kA
Int Duty: 20.1 %
CBL-EMCC-1
EMCC-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 18.798 kA
XR LV: 10.1
Int Duty: 28.9 %
EMCC-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.701 kA
CBL-EMCC-2
VTP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.701 kA
VTP-2.
VTP-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.701 kA
VTP-1.
BWP-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 17.701 kA
BWP-2.
EMCC-2 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.128 kA
EMCC-2
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 14.128 kA
XR LV: 3.1
Int Duty: 21.7 %
SMP-3, -4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.129 kA
DH-3 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.128 kA
DH-4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.128 kA
EMCC-2 MTR
UPS FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 6.941 kA
Int Duty: 10.7 %
CBL-PPF-UV2
2
PPF-UV2 MAIN
Equip Eval Status: Pass
Int Rating: 18 kAIC
Adj Int SC: 6.595 kA
Int Duty: 36.6 %
PPF-UV2
Equip Eval Status: Pass
SC Rating: 18 kA
Adj Int SC: 6.595 kA
XR LV: 1.3
Int Duty: 36.6 %
305 CP FDRS
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 6.595 kA
Int Duty: 10.1 %
Legend
1 Maximum Fault Contribution
2 Likely feed, determined after equipment cover removed.
TS TRANSFER SWITCH
Equipment Evaluation Legend
Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.

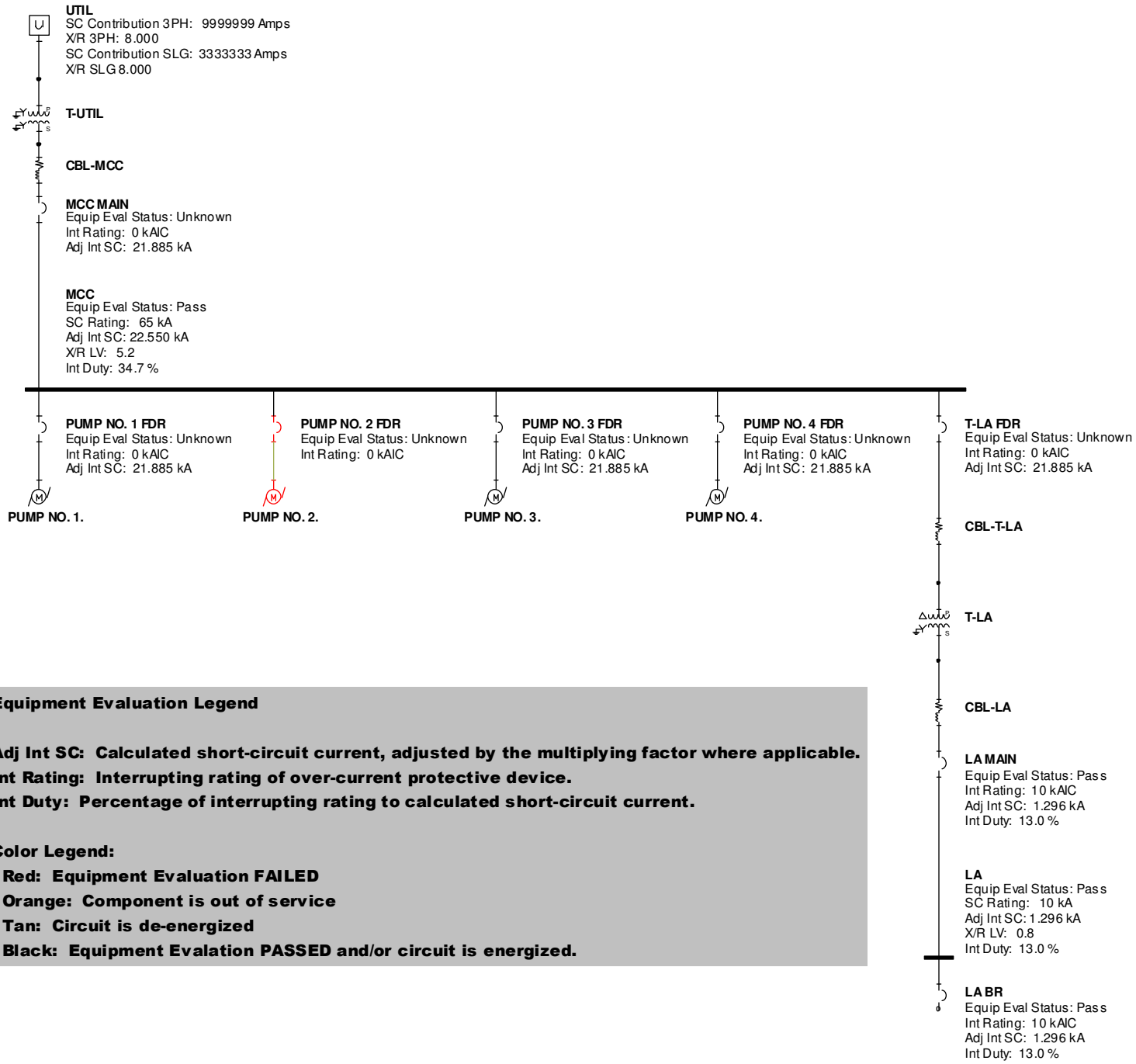


TRC Engineers

Project: WJ Hooper WRF
Equipment Evaluation Results


UTILITY.
UTILITY
Equip Eval Status: Unknown
CBL-63TX-1
63TX-1
CBL-ATS 1 N
GFP
ATS 1 N BREAKER
Equip Eval Status: Pass
Adj Int SC: 47.540 kA
Int Rating: 100 kAIC
Int Duty: 47.5 %
TRANSFER SWITCH 1
Equip Eval Status: Pass
Adj Int SC: 36.328 kA
Int Duty: 55.9 %
GEN 1
CBL-ATS 1 E
ATS 1 E BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
GEN 2
CBL-ATS 2 E
ATS 2 E BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
CBL-63TX-2
63TX-2
CBL-ATS 2 N
ATS 2 N BREAKER
Equip Eval Status: Pass
Adj Int SC: 52.915 kA
Int Rating: 100 kAIC
Int Duty: 52.9 %
TRANSFER SWITCH 2
Equip Eval Status: Pass
Adj Int SC: 54.944 kA
Int Duty: 84.5 %
GEN 3
CBL-ATS 3 E
ATS 3 E BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
CBL-63TX-3
63TX-3
CBL-ATS 3 N
ATS 3 N BREAKER
Equip Eval Status: Pass
Adj Int SC: 52.915 kA
Int Rating: 100 kAIC
Int Duty: 52.9 %
TRANSFER SWITCH 3
Equip Eval Status: Pass
Adj Int SC: 54.944 kA
Int Duty: 84.5 %
CBL-63SWGR1
63SWGR1 MAIN
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Rating: 65 kAIC
Int Duty: 47.5 %
63SWGR1
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Duty: 47.5 %
CBL-63SWGR2
63SWGR2 MAIN
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
63SWGR2
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Duty: 77.8 %
63SWGR3 CBL
63SWGR3 MAIN
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
63SWGR3
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Duty: 77.8 %
63PP1 FDR
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Rating: 65 kAIC
Int Duty: 47.5 %
CBL-63PP1
63PP1
Equip Eval Status: Pass
Adj Int SC: 23.988 kA
Int Duty: 36.9 %
123P1 FDR
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Rating: 65 kAIC
Int Duty: 47.5 %
CBL-123P1
123P1.
123P2 FDR
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Rating: 65 kAIC
Int Duty: 47.5 %
CBL-123P2
123P2.
123P3 FDR
Equip Eval Status: Pass
Adj Int SC: 30.885 kA
Int Rating: 65 kAIC
Int Duty: 47.5 %
CBL-123P3
123P3.
501P2 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P2
501P2.
501P4 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P4
501P4.
501P6 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P6
501P6.
501P8 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P8
501P8.
63LP1 FDR
Equip Eval Status: Pass
Adj Int SC: 23.988 kA
Int Rating: 65 kAIC
Int Duty: 36.9 %
CBL-63TX-4
63TX-4
CBL-63LP1
63LP1 MAIN
Equip Eval Status: Pass
Adj Int SC: 0.854 kA
Int Rating: 10 kAIC
Int Duty: 8.5 %
63LP1
Equip Eval Status: Pass
Adj Int SC: 0.854 kA
Int Duty: 8.5 %
63LP1 BR
Equip Eval Status: Pass
Adj Int SC: 0.854 kA
Int Rating: 10 kAIC
Int Duty: 8.5 %
63PP2 FDR
Equip Eval Status: Pass
Adj Int SC: 23.988 kA
Int Rating: 65 kAIC
Int Duty: 36.9 %
CBL-63PP2
63PP2
Equip Eval Status: Pass
Adj Int SC: 22.873 kA
Int Duty: 35.2 %
63PP2 BR
Equip Eval Status: Pass
Adj Int SC: 22.873 kA
Int Rating: 65 kAIC
Int Duty: 35.2 %
501P1 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P1
501P1.
501P3 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P3
501P3.
501P5 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P5
501P5.
501P7 FDR
Equip Eval Status: Pass
Adj Int SC: 50.567 kA
Int Rating: 65 kAIC
Int Duty: 77.8 %
CBL-501P7
501P7.
Equipment Evaluation Legend
Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.


UTILITY
UTILITY
Equip Eval Status: Unknown
CBL-63TX-1
63TX-1
CBL-ATS 1 N
GFP
ATS 1 N BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
TRANSFER SWITCH 1
Equip Eval Status: Pass
Adj Int SC: 28.727 kA
Int Duty: 44.2 %
GEN 1
CBL-ATS 1 E
GFP
ATS 1 E BREAKER
Equip Eval Status: Pass
Adj Int SC: 36.853 kA
Int Rating: 100 kAIC
Int Duty: 36.9 %
GEN 2
CBL-ATS 2 E
ATS 2 E BREAKER
Equip Eval Status: Pass
Adj Int SC: 47.848 kA
Int Rating: 100 kAIC
Int Duty: 47.8 %
CBL-63TX-2
63TX-2
CBL-ATS 2 N
ATS 2 N BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
TRANSFER SWITCH 2
Equip Eval Status: Pass
Adj Int SC: 47.848 kA
Int Duty: 73.6 %
GEN 3
CBL-ATS 3 E
ATS 3 E BREAKER
Equip Eval Status: Pass
Adj Int SC: 47.848 kA
Int Rating: 100 kAIC
Int Duty: 47.8 %
CBL-63TX-3
63TX-3
CBL-ATS 3 N
ATS 3 N BREAKER
Equip Eval Status: Unknown
Int Rating: 100 kAIC
TRANSFER SWITCH 3
Equip Eval Status: Pass
Adj Int SC: 47.848 kA
Int Duty: 73.6 %
CBL-63SWGR1
63SWGR1 MAIN
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Rating: 65 kAIC
Int Duty: 37.1 %
63SWGR1
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Duty: 37.1 %
CBL-63SWGR2
63SWGR2 MAIN
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
63SWGR2
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Duty: 67.9 %
63SWGR3 CBL
63SWGR3 MAIN
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
63SWGR3
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Duty: 67.9 %
63PP1 FDR
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Rating: 65 kAIC
Int Duty: 37.1 %
CBL-63PP1
63PP1
Equip Eval Status: Pass
Adj Int SC: 17.872 kA
Int Duty: 27.5 %
123P1 FDR
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Rating: 65 kAIC
Int Duty: 37.1 %
CBL-123 P1
123P1.
123P2 FDR
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Rating: 65 kAIC
Int Duty: 37.1 %
CBL-123 P2
123P2.
123P3 FDR
Equip Eval Status: Pass
Adj Int SC: 24.132 kA
Int Rating: 65 kAIC
Int Duty: 37.1 %
CBL-123 P3
123P3.
501P2 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P2
501P2.
501P4 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P4
501P4.
501P6 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P6
501P6.
501P8 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P8
501P8.
63LP1 FDR
Equip Eval Status: Pass
Adj Int SC: 17.872 kA
Int Rating: 65 kAIC
Int Duty: 27.5 %
CBL-63TX-4
63TX-4
CBL-63LP1
63LP1 MAIN
Equip Eval Status: Pass
Adj Int SC: 0.850 kA
Int Rating: 10 kAIC
Int Duty: 8.5 %
63LP1
Equip Eval Status: Pass
Adj Int SC: 0.850 kA
Int Duty: 8.5 %
63LP1 BR
Equip Eval Status: Pass
Adj Int SC: 0.850 kA
Int Rating: 10 kAIC
Int Duty: 8.5 %
63PP2 FDR
Equip Eval Status: Pass
Adj Int SC: 17.872 kA
Int Rating: 65 kAIC
Int Duty: 27.5 %
CBL-63PP2
63PP2
Equip Eval Status: Pass
Adj Int SC: 16.827 kA
Int Duty: 25.9 %
63PP2 BR
Equip Eval Status: Pass
Adj Int SC: 16.827 kA
Int Rating: 65 kAIC
Int Duty: 25.9 %
501P1 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P1
501P1.
501P3 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P3
501P3.
501P5 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P5
501P5.
501P7 FDR
Equip Eval Status: Pass
Adj Int SC: 44.118 kA
Int Rating: 65 kAIC
Int Duty: 67.9 %
CBL-501 P7
501P7.
Equipment Evaluation Legend
Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.

Cont'd on Page 2

UTIL
SC Contribution 3 PH: 3090 Amps
X/R 3Ph: 7.737
SC Contribution SLG: 2911 Amps
X/R SLG 6.941

RY-UTIL
Equip Eval Status : Unknown

UTIL SERVICE POINT
Equip Eval Status : Unknown
Adj Mom SC: 5.313 kA
X/R LV : 7.3
Adj Mom SC: 4.997 kA
X/R Mom: 7.9

CBL-52N1

52N1 UTIL MAIN
Equip Eval Status : Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.306 kA

RY-52N1
Equip Eval Status : Unknown

1MVSG-1 LEFT
Equip Eval Status : Unknown
Adj Int SC: 3.306 kA
X/R LV: 7.8
Adj Mom SC: 4.974 kA
X/R Mom: 7.8

1MVSG-1 TIE
Equip Eval Status : Unknown
Int Rating: 0 kAIC

RY-1MVSG-1 TIE
Equip Eval Status : Unknown

G1.

CBL-52G1

52G1 GEN MAIN 1
Equip Eval Status : Unknown
Int Rating: 0 kAIC

RY-GEN 1
Equip Eval Status : Unknown

1MVSG-1 RIGHT
Equip Eval Status : Unknown

G2.

CBL-52G2

52G1 GEN MAIN 2
Equip Eval Status : Unknown
Int Rating: 0 kAIC

RY-GEN 2
Equip Eval Status : Unknown

CBL-95TX2 - 65TX2

95TX2 PRI

65TX1 PRI

65TX1 FU
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.565 kA

65TX1

CBL-65LVSG-1 RIGHT

65LVSG-1 RIGHT 1 MAIN
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 19.253 kA
Int Duty: 29.6 %

65LVSG-1 RIGHT
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 19.253 kA
X/R LV: 5.6
Int Duty: 29.6 %

65MCC-1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 19.253 kA
Int Duty: 29.6 %

65LVSG-1 TIE
Equip Eval Status: Unknown
Int Rating: 65 kAIC

CBL-65MCC-1

65MCC-1
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 19.589 kA
X/R LV: 5.4
Int Duty: 30.1 %

65MCC-1 MTR

403P1. **403P2.** **403P3.** **403P4.** **403P5.** **403P6.** **322P1.** **322P2.** **322P3.** **322P4.** **322P5.** **322P6.**

403P1 FDR / **403P2 FDR** / **403P3 FDR** / **403P4 FDR** / **403P5 FDR** / **403P6 FDR** / **322P1 FDR** / **322P2 FDR** / **322P3 FDR** / **322P4 FDR** / **322P5 FDR**
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

313M-5
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

333CP FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

332CP FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

65-6F-2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

65EDH-1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

650P2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

813P2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

451M2, M-4, M-6 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

324P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

T-34L P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

CBL-T-34L P1

T-34L P1 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 2.466 kA
Int Duty: 25.0 %

T-34L P1

34LP1 MAIN
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.588 kA
Int Duty: 16.0 %

34LP1
Equip Eval Status: Unknown
Adj Int SC: 1.588 kA
X/R LV: 0.5

34LP1 BR
Equip Eval Status: Pass
Int Rating: 10 kAIC
Adj Int SC: 1.588 kA
Int Duty: 16.0 %

65TX4 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.710 kA

CBL-65TX4

65TX4

CBL-65LP3

65LP3 MAIN
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.018 kA
Int Duty: 13.7 %

65LP3
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.018 kA
X/R LV: 0.7
Int Duty: 30.2 %

65LP3 BR
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.018 kA
Int Duty: 13.7 %

65MCC-2 MTR

65T X2 (R SIDE LOOP) FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC

RY-65T X2
Equip Eval Status: Unknown

CBL-65T X2

CBL-65T X1 - 86TX2

CBL-86T X2 - 86TX1

65T X2 PRI

65T X2 FU
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.491 kA

65T X2

CBL-65LVSG-1 LEFT

65LVSG-1 MAIN 1
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 18.948 kA
Int Duty: 29.2 %

65LVSG-1 LEFT
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 18.948 kA
X/R LV: 5.5
Int Duty: 29.2 %

65MCC-2 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 18.948 kA
Int Duty: 29.2 %

CBL-65MCC-2

65MCC-2
Equip Eval Status: Pass
SC Rating: 65 kA
Adj Int SC: 19.283 kA
X/R LV: 5.3
Int Duty: 29.7 %

65P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.605 kA

CBL-65PP1

65PP1 MAIN
Equip Eval Status: Pass
Int Rating: 35 kAIC
Adj Int SC: 15.812 kA
Int Duty: 45.2 %

65PP1
Equip Eval Status: Pass
SC Rating: 3.5 kA
Adj Int SC: 15.812 kA
X/R LV: 3.0
Int Duty: 45.2 %

65LP1 FDR
Equip Eval Status: Pass
Int Rating: 65 kAIC
Adj Int SC: 15.812 kA
Int Duty: 24.3 %

CBL-65TX3

65TX3

CBL-65LP1

65LP1 MAIN
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.059 kA
Int Duty: 13.9 %

65LP1
Equip Eval Status: Pass
SC Rating: 1.0 kA
Adj Int SC: 3.059 kA
X/R LV: 0.8
Int Duty: 30.6 %

65LP1 BR
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.059 kA
Int Duty: 13.9 %

65TX5 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 18.935 kA

CBL-65TX5

65TX5

CBL-65LP2

65LP2 MAIN
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.020 kA
Int Duty: 13.7 %

65LP2
Equip Eval Status: Pass
SC Rating: 10 kA
Adj Int SC: 3.020 kA
X/R LV: 0.7
Int Duty: 30.2 %

65LP2 BR
Equip Eval Status: Pass
Int Rating: 22 kAIC
Adj Int SC: 3.020 kA
Int Duty: 13.7 %

86T X1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.306 kA

RY-86T X1
Equip Eval Status: Unknown

CBL-86T X1

86T X1 PRI

86T X1 FU
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.559 kA

86T X1

CBL-MCC-4

MCC-4 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

MCC-4
Equip Eval Status: Pass
SC Rating: 42 kA
Adj Int SC: 14.875 kA
X/R LV: 4.3
Int Duty: 35.4 %

86T X2 PRI

86T X2 FU
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 3.597 kA

86T X2

CBL-MCC-3

MCC-3 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.458 kA

MCC-3
Equip Eval Status: Pass
SC Rating: 42 kA
Adj Int SC: 14.458 kA
X/R LV: 4.2
Int Duty: 34.4 %

MCC-3 MTRS

T-LC FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.458 kA

T-LC

LC Single Phase
Equip Eval Status: Unknown
Adj Int SC: 3.509 kA
X/R LV: 0.8

86LP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

CBL-86LP1TX

86LP1TX

CBL-86LP1

86LP1 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 1.871 kA

86LP1
Equip Eval Status: Unknown
Adj Int SC: 1.871 kA
X/R LV: 0.6

86LP1 BR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 1.871 kA

106P2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

106P2.

106B2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

106B2.

108P2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

108P2.

108P1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

108P1.

87PP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

CBL-87PP1

87PP1 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.705 kA

87PP1
Equip Eval Status: Unknown
Adj Int SC: 13.705 kA
X/R LV: 2.8

87LP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 13.705 kA

CBL-87TX

87TX

CBL-87LP1

87LP1 MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 1.322 kA

87LP1
Equip Eval Status: Unknown
Adj Int SC: 1.322 kA
X/R LV: 0.8

87LP1 BR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 1.322 kA

PANEL XXX FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

CBL-PANEL XXX

PANEL XXX MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 12.641 kA

PANEL XXX
Equip Eval Status: Unknown
Adj Int SC: 12.641 kA
X/R LV: 2.2

COMPOST STG SHED FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 12.641 kA

CBL-COMPOST TX

COMPOST TX

CBL-COMPOST STG SHED

COMPOST STG SHED MAIN
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 2.748 kA

COMPOST STG SHED
Equip Eval Status: Unknown
Adj Int SC: 2.748 kA
X/R LV: 0.7

COMPOST STG SHED BR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 2.748 kA

120CP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

120CP2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

111CP2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

111CP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

103CP2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

107CP2 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

103CP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

107CP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

BRIDGE CRAN FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

T-LB FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

87PP1 FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

T-30KVA FDR
Equip Eval Status: Unknown
Int Rating: 0 kAIC
Adj Int SC: 14.875 kA

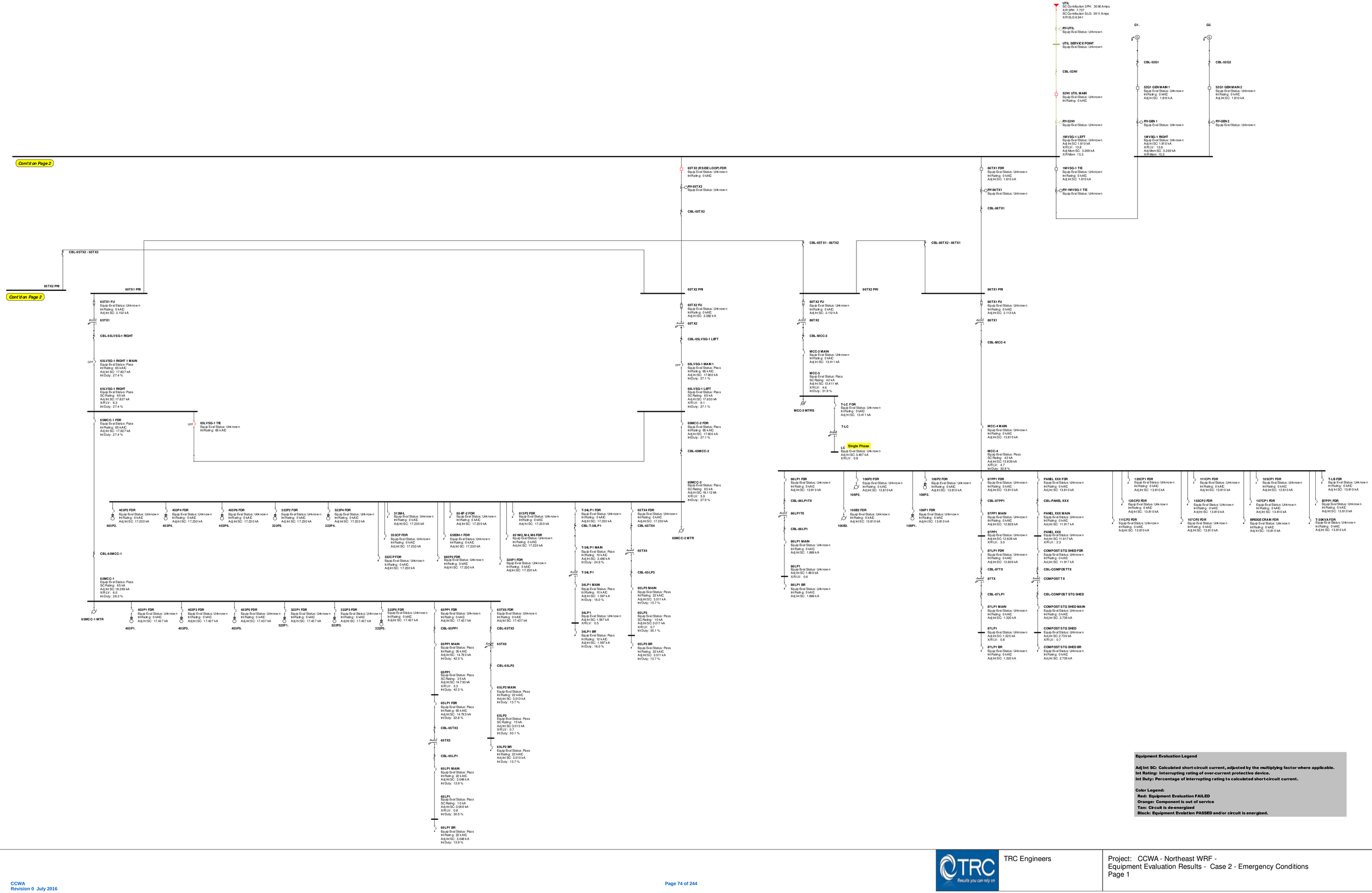
TRC Engineers

Project: CCWA - Northeast WRF -
Equipment Evaluation Results - Case 1 - Normal Conditions
Page 1

Cont'd on Page 1

Cont'd on Page 2

Cont'd on Page 3



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalution PASSED and/or circuit is energized.

Cont'd on Page 1

Cont'd on Page 2

Cont'd on Page 3

Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of overcurrent protective device.
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Color Legend:
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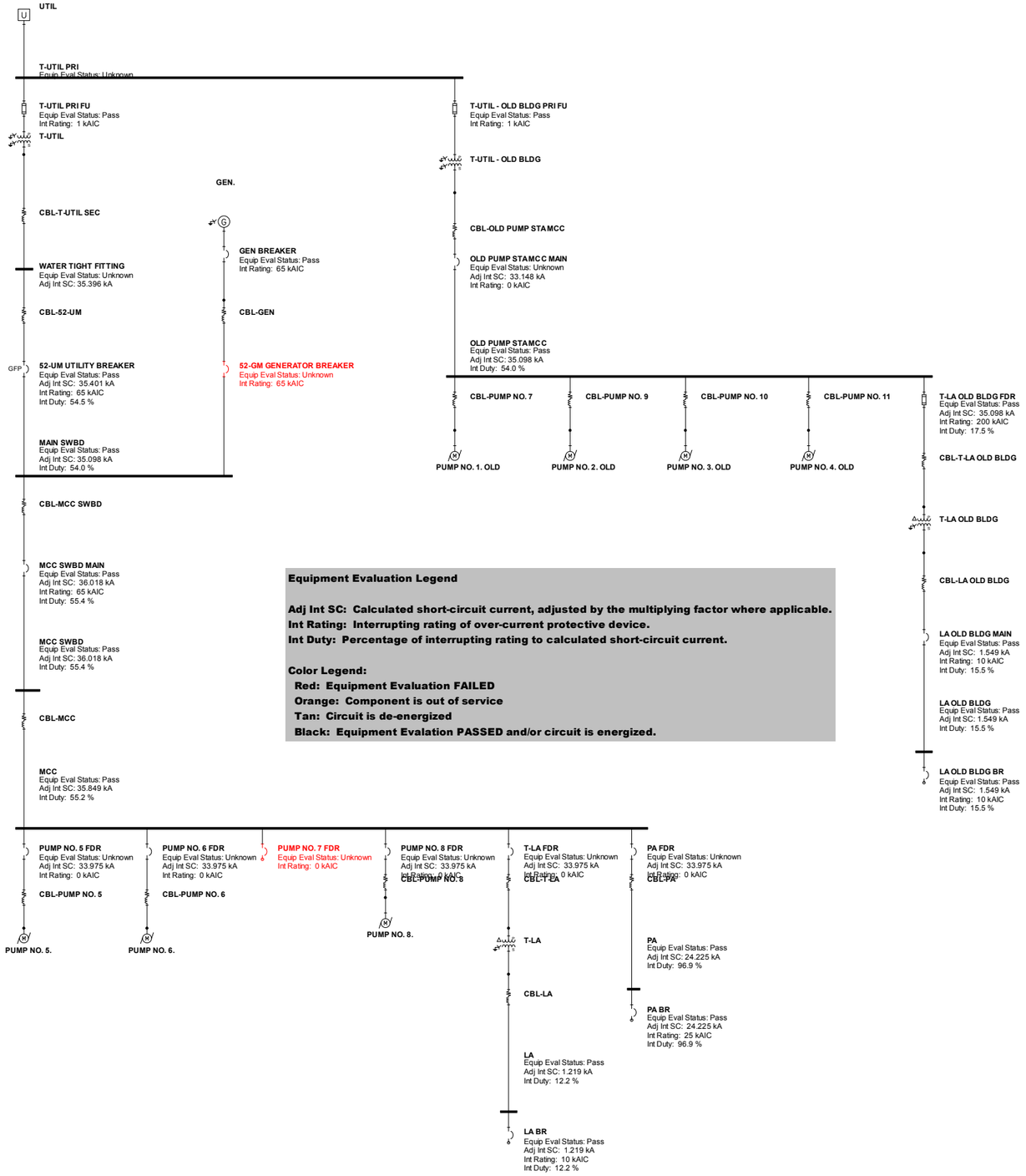
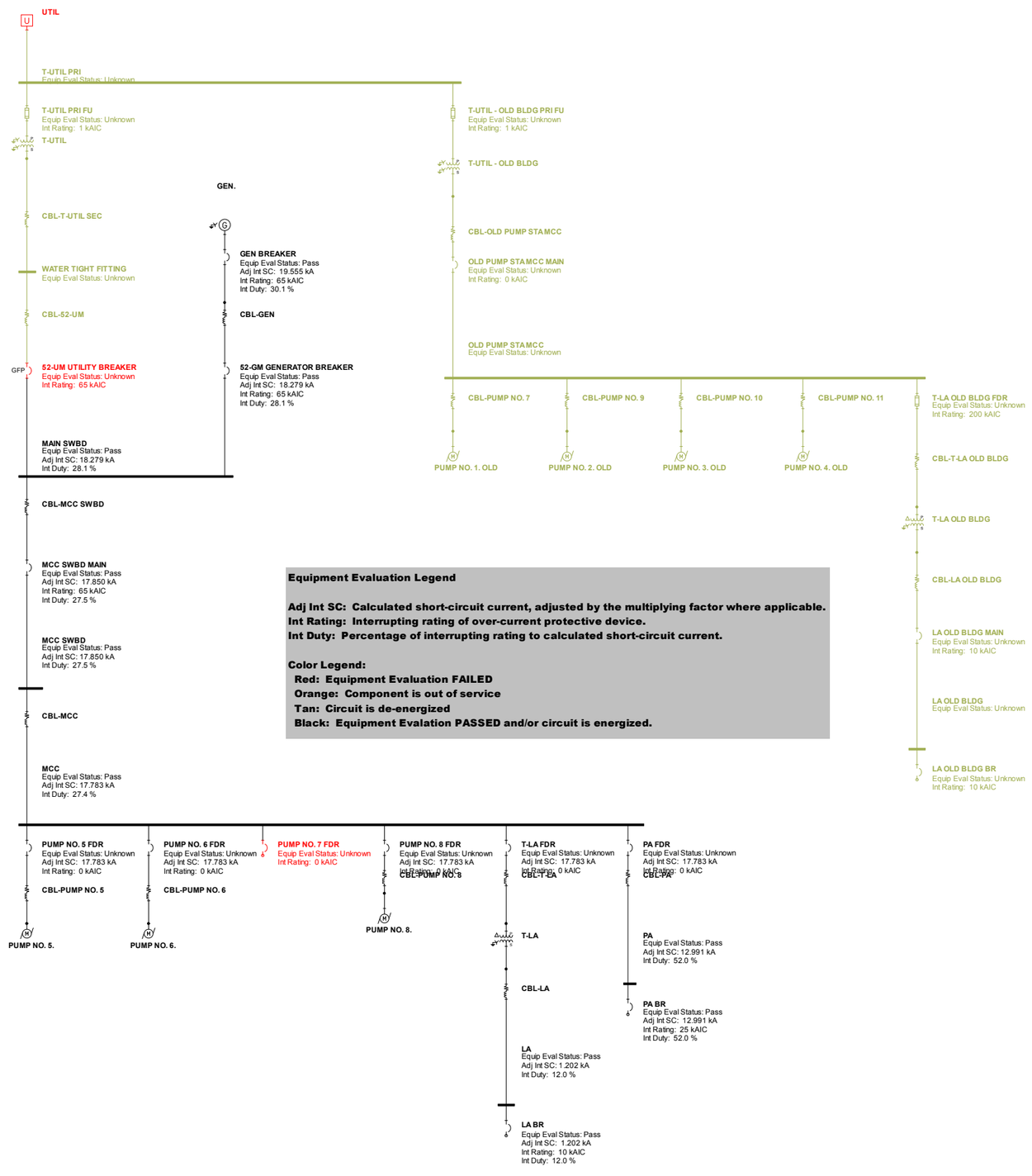
Black: Equipment Evaluation PASSED and/or circuit is energized.



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

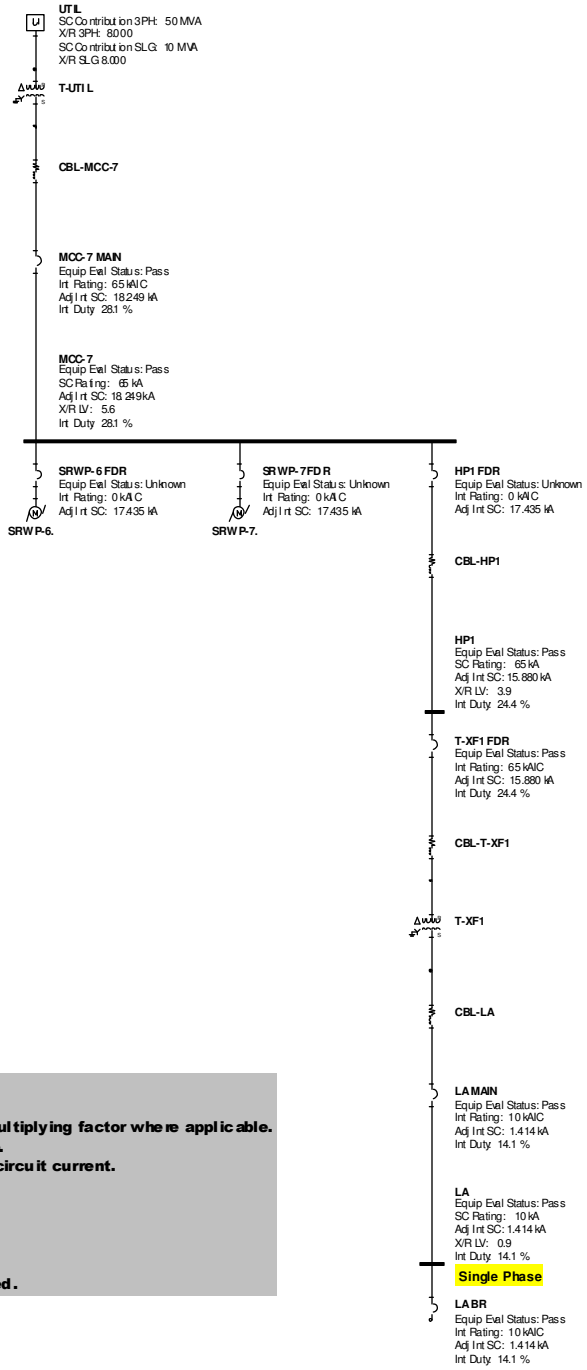
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

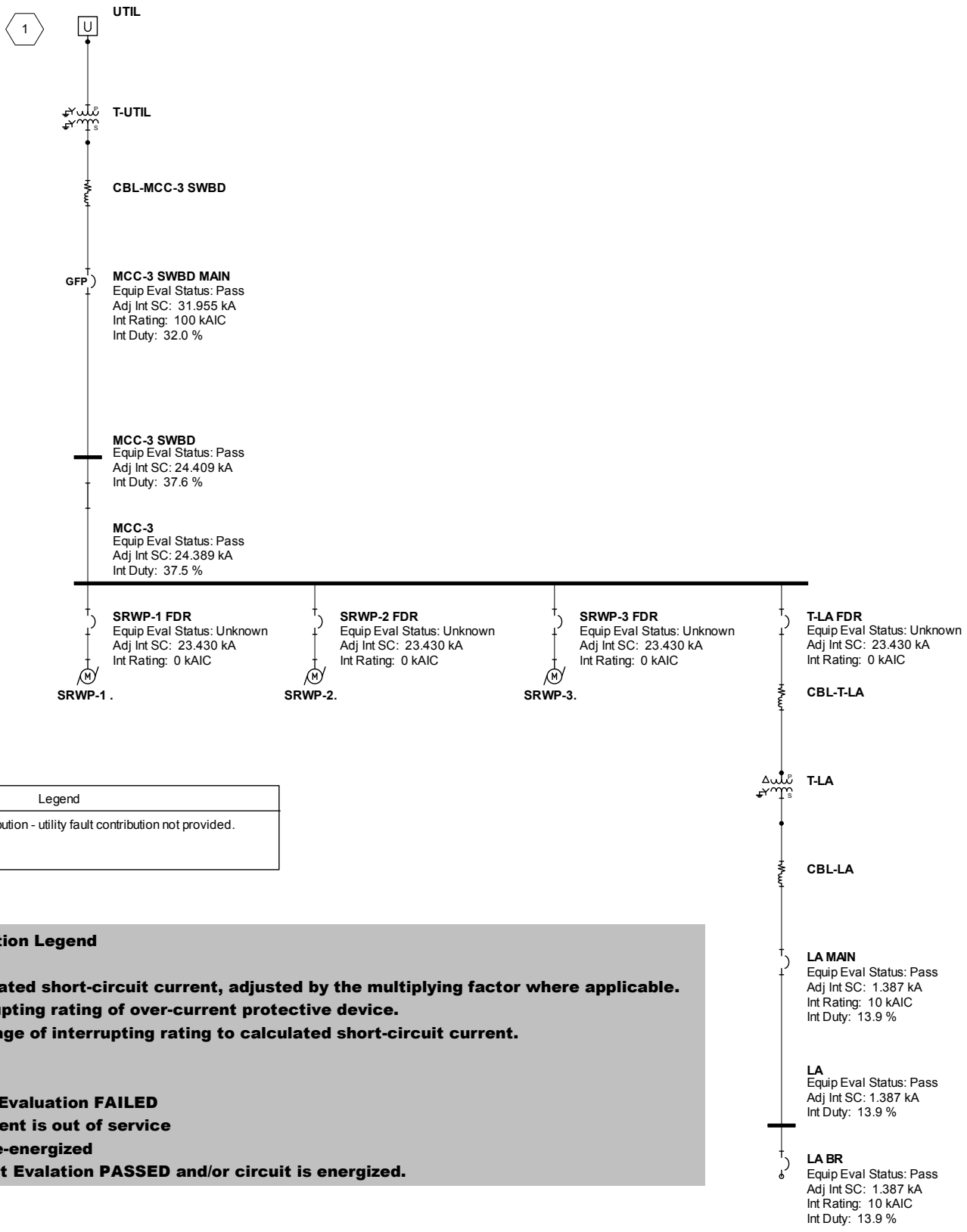
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.



Equipment Evaluation Legend

Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.



Legend
1 Maximum Fault Contribution - utility fault contribution not provided.

Equipment Evaluation Legend

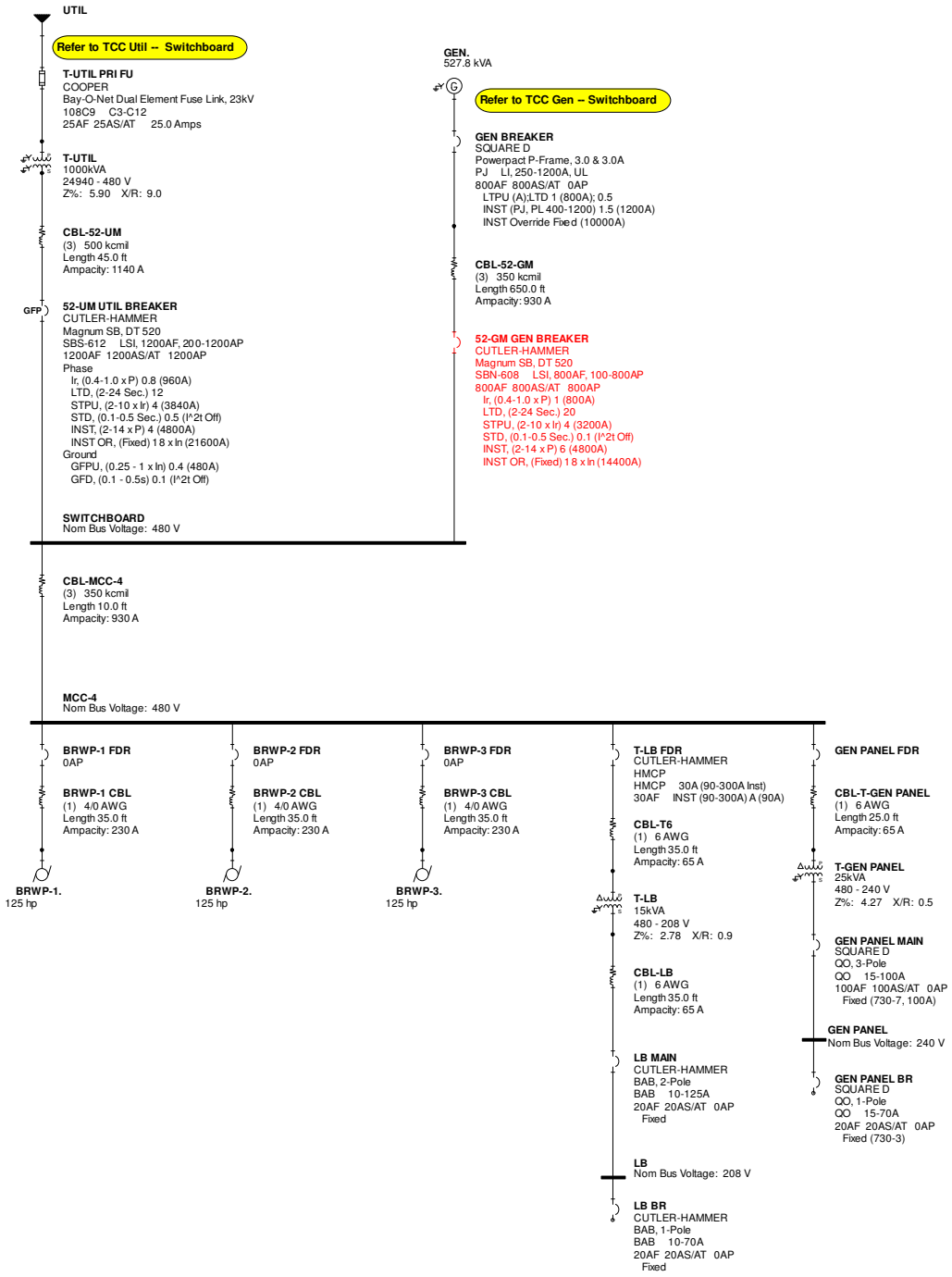
Adj Int SC: Calculated short-circuit current, adjusted by the multiplying factor where applicable.
Int Rating: Interrupting rating of over-current protective device.
Int Duty: Percentage of interrupting rating to calculated short-circuit current.

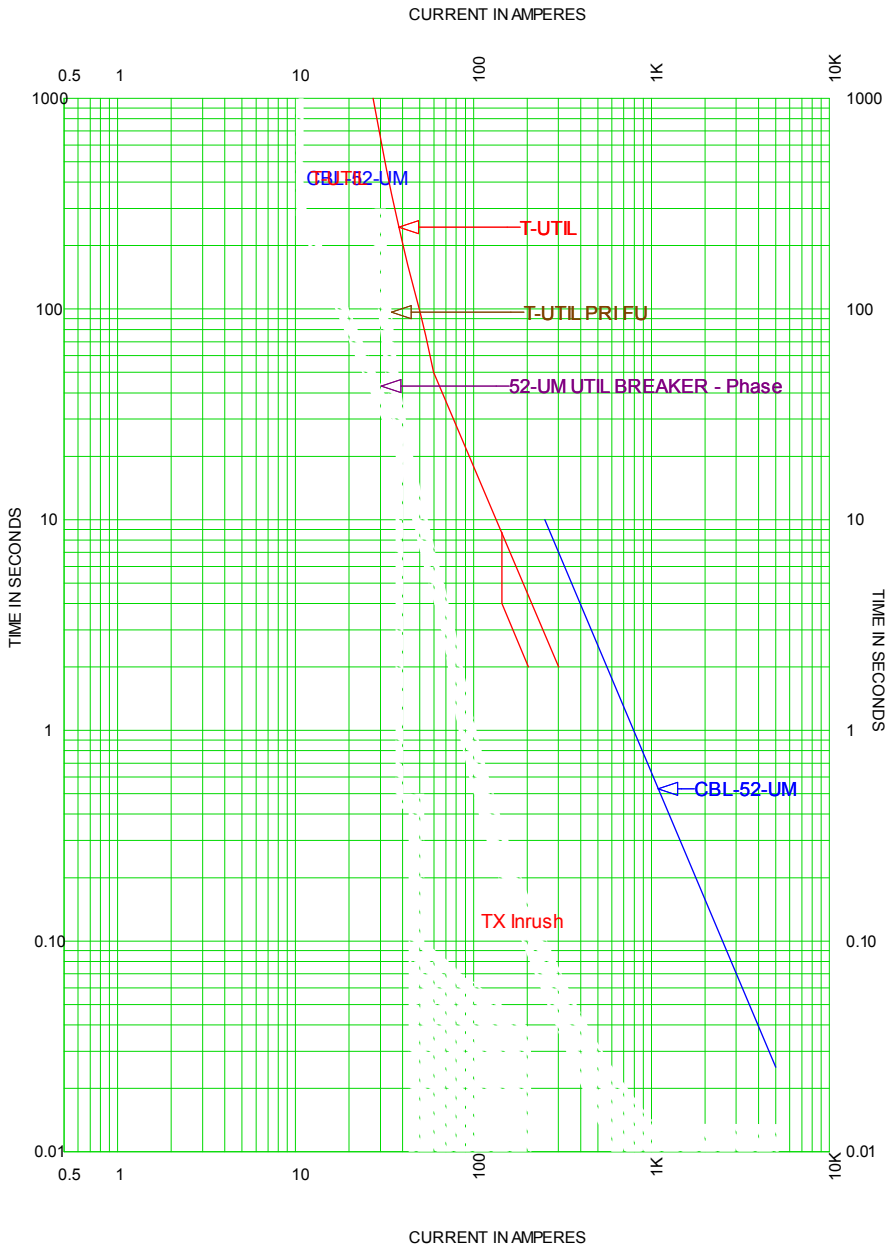
Color Legend:
Red: Equipment Evaluation FAILED
Orange: Component is out of service
Tan: Circuit is de-energized
Black: Equipment Evalation PASSED and/or circuit is energized.

APPENDIX F: SETTINGS AND TCCS

Breaker and relay settings, as found and noted during data collection, are documented in the TCC Single Lines on the following pages and are accompanied by the TCCs (time-current curves) which reflect the settings.

The Incident Energy Analysis is based on these settings. Any changes to the settings will affect the incident energy calculations and invalidate the data contained on the arc flash hazard warning label.


UTIL
Refer to TCC Util -- Switchboard
T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C9 C3-C12
25AF 25AS/AT 25.0 Amps
T-UTIL
1000kVA
24940 - 480 V
Z%: 5.90 X/R: 9.0
CBL-52-UM
(3) 500 kcmil
Length 45.0 ft
Ampacity: 1140 A
GFP
52-UM UTIL BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS/AT 1200AP
Phase
Ir, (0.4-1.0 x P) 0.8 (960A)
LTD, (2-24 Sec.) 12
STPU, (2-10 x Ir) 4 (3840A)
STD, (0.1-0.5 Sec.) 0.5 (I^2t Off)
INST, (2-14 x P) 4 (4800A)
INST OR, (Fixed) 18 x In (21600A)
Ground
GFPU, (0.25 - 1 x In) 0.4 (480A)
GFD, (0.1 - 0.5s) 0.1 (I^2t Off)
SWITCHBOARD
Nom Bus Voltage: 480 V
GEN.
527.8 kVA
G
Refer to TCC Gen -- Switchboard
GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
800AF 800AS/AT 0AP
LTPU (A):LTD 1 (800A); 0.5
INST (PJ, PL 400-1200) 1.5 (1200A)
INST Override Fixed (10000A)
CBL-52-GM
(3) 350 kcmil
Length 650.0 ft
Ampacity: 930 A
52-GM GEN BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBN-608 LSI, 800AF, 100-800AP
800AF 800AS/AT 800AP
Ir, (0.4-1.0 x P) 1 (800A)
LTD, (2-24 Sec.) 20
STPU, (2-10 x Ir) 4 (3200A)
STD, (0.1-0.5 Sec.) 0.1 (I^2t Off)
INST, (2-14 x P) 6 (4800A)
INST OR, (Fixed) 18 x In (14400A)
CBL-MCC-4
(3) 350 kcmil
Length 10.0 ft
Ampacity: 930 A
MCC-4
Nom Bus Voltage: 480 V
BRWP-1 FDR
0AP
BRWP-1 CBL
(1) 4/0 AWG
Length 35.0 ft
Ampacity: 230 A
BRWP-1.
125 hp
BRWP-2 FDR
0AP
BRWP-2 CBL
(1) 4/0 AWG
Length 35.0 ft
Ampacity: 230 A
BRWP-2.
125 hp
BRWP-3 FDR
0AP
BRWP-3 CBL
(1) 4/0 AWG
Length 35.0 ft
Ampacity: 230 A
BRWP-3.
125 hp
T-LB FDR
CUTLER-HAMMER
HMCP
HMCP 30A (90-300A Inst)
30AF INST (90-300A) A (90A)
CBL-T6
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A
T-LB
15kVA
480 - 208 V
Z%: 2.78 X/R: 0.9
CBL-LB
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A
LB MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
20AF 20AS/AT 0AP
Fixed
LB
Nom Bus Voltage: 208 V
LB BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS/AT 0AP
Fixed
GEN PANEL FDR
CBL-T-GEN PANEL
(1) 6 AWG
Length 25.0 ft
Ampacity: 65 A
T-GEN PANEL
25kVA
480 - 240 V
Z%: 4.27 X/R: 0.5
GEN PANEL MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS/AT 0AP
Fixed (730-7, 100A)
GEN PANEL
Nom Bus Voltage: 240 V
GEN PANEL BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS/AT 0AP
Fixed (730-3)



UTIL

T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C9 C3-C12
25AF 25AS/AT 25.0 Amps

T-UTIL
1000kVA
24940/480 V
Z%: 5.90 X/R: 9.0

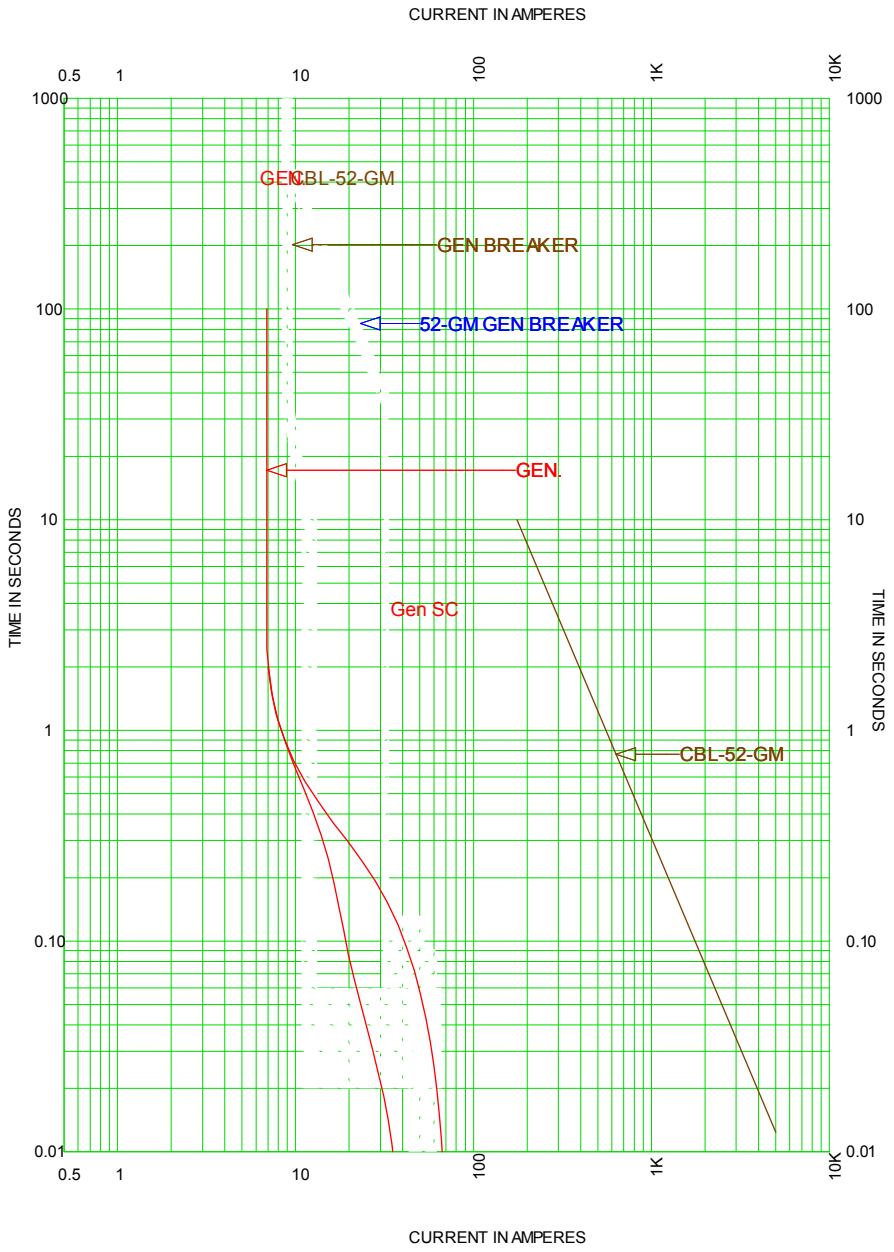
CBL-52-UM
(3) 500 kcmil
Length 45.0 ft
Ampacity: 1140 A

GFP

52-UM UTIL BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS/AT 1200AP
Phase
Ir, (0.4-1.0 x P) 0.8 (960A)
LTD, (2-24 Sec.) 12
STPU, (2-10 x Ir) 4 (3840A)
STD, (0.1-0.5 Sec.) 0.5 (I^2t Off)
INST, (2-14 x P) 4 (4800A)
INST OR, (Fixed) 18 x In (21600A)
Ground
GFPU, (0.25 - 1 x In) 0.4 (480A)
GFD, (0.1 - 0.5s) 0.1 (I^2t Off)

SWITCHBOARD
Nom Bus Voltage: 480 V

TCC Narrative: The main breaker settings coordinate with the primary fuse and provide adequate overload protection for the transformer.



GEN.
475 kW

GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
800AF 800AS/AT 0A P
LTPU (A);LTD 1 (800A); 0.5
INST (PJ, PL400-1200) 1.5 (1200A)
INST Override Fixed (10000A)

CBL-52-GM
(3) 350 kcmil
Length 650.0 ft
Ampacity: 930 A

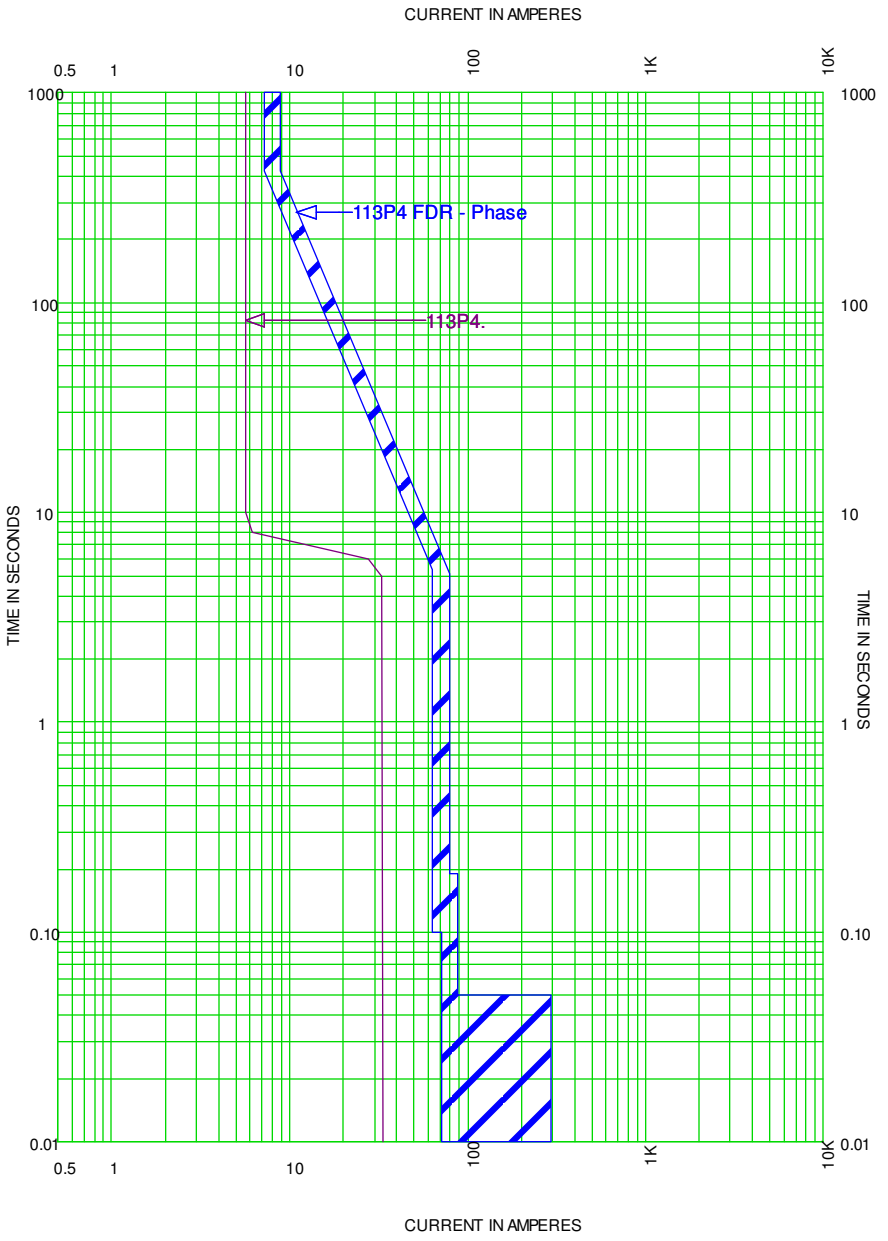
52-GM GEN BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBN-608 LSI, 800AF, 100-800AP
800AF 800AS/AT 800AP
Ir, (0.4-1.0 x P) 1 (800A)
LTD, (2-24 Sec.) 20
STPU, (2-10 x Ir) 4 (3200A)
STD, (0.1-0.5 Sec.) 0.1 (I^2t Off)
INST, (2-14 x P) 6 (4800A)
INST OR, (Fixed) 18 x In (14400A)

SWITCHBOARD
Nom Bus Voltage: 480 V

TCC Narrative: GEN BREAKER settings provide adequate generator protection while allow for short-duration overloads and starting.
52-GM GEN BREAKER settings allow for downstream coordination. These two breakers are redundant, meaning the tripping of either or both would result in the same extent of power outage and therefore tripping curve overlap is NOT considered to be mis-coordination.

TRC Engineers

Project: W.B. Casey Water Reclamation Facility -
Arc Flash Risk Assessment
Settings and TCC Overview



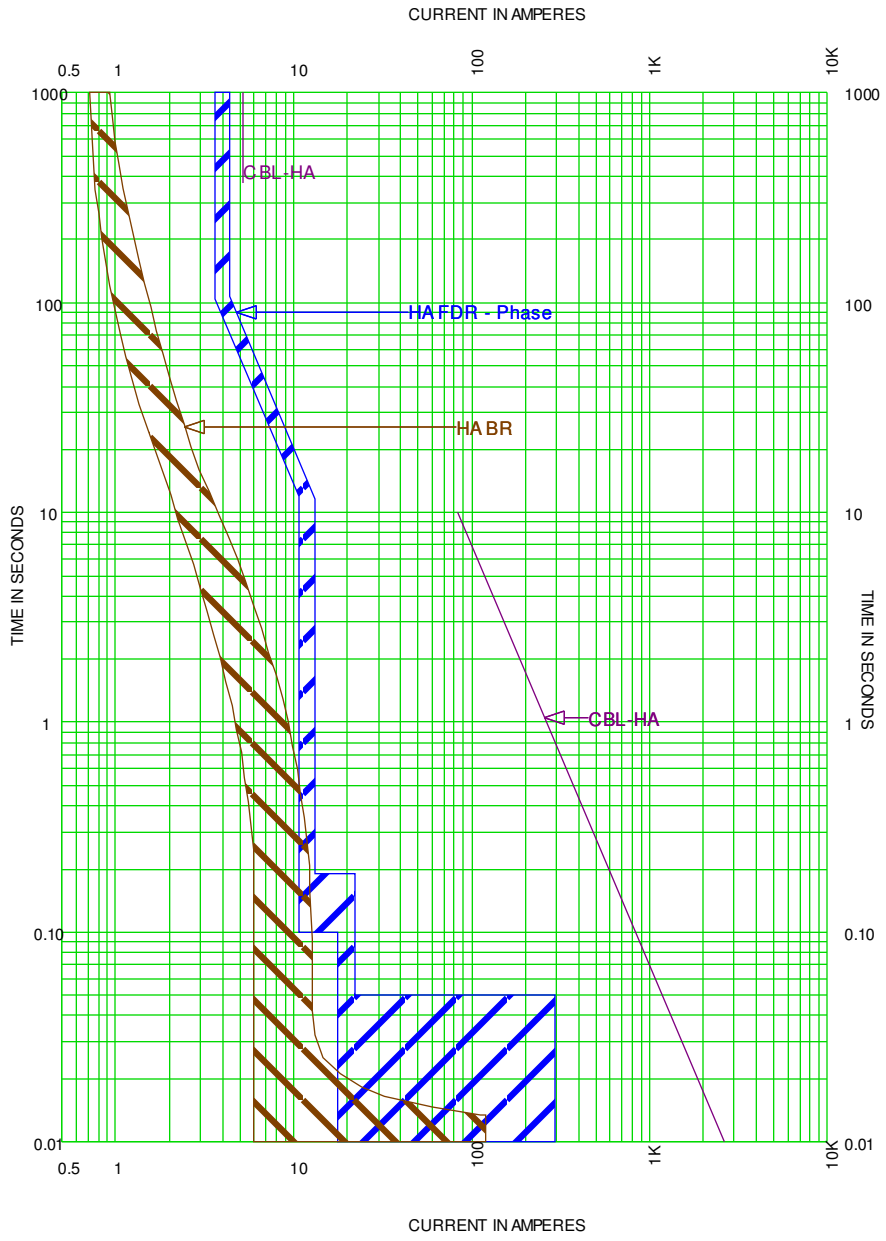
62SWGR1 LEFT
Nom Bus Voltage: 480 V

GFP

113P4 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 1 (800A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 9 (7200A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

113P4.
470 hp
RAW SEWAGE PUMP #4

TCC Narrative: Existing breaker settings provide adequate equipment protection.



62SWGR1 LEFT
Nom Bus Voltage: 480 V

GFP

HA FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 400AP
Phase
LTPU (0.5-1.1 x P) 1 (400A)
LTD (1-4) 1
STPU (1.5-9 x LTPU) 3 (1200A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 5 (2000A)
Ground
GFPU (0.2-0.6 x S) 0.25 (200A)
GFD (Min-Max) Min (I^2t Off)

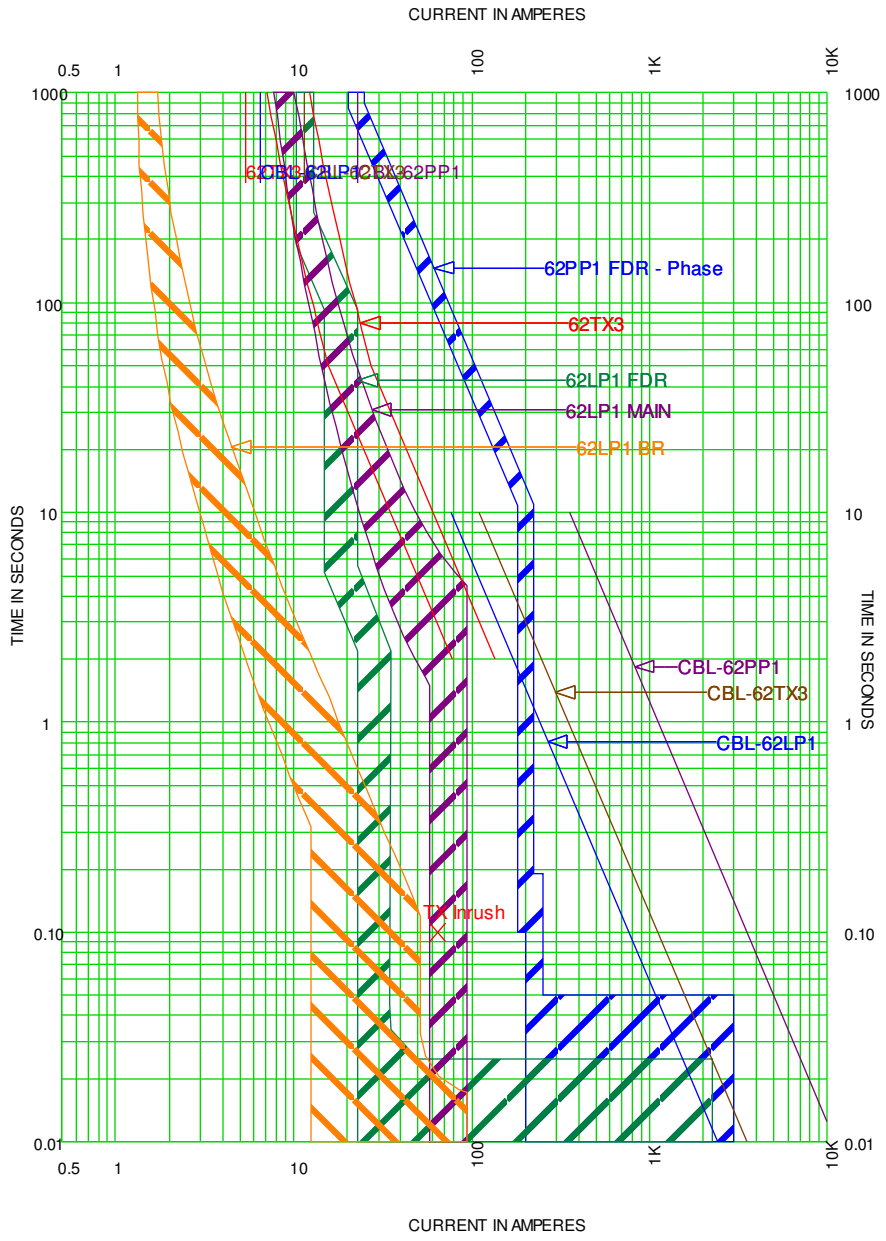
CBL-HA
(1) 500 kcmil
Length 300.0 ft
Ampacity: 525 A

HA MAIN

HA
Nom Bus Voltage: 480 V

HA BR
CUTLER-HAMMER
EHD
EHD 15-100A
70AF 70AS/AT 0AP
Fixed

TCC Narrative: Existing breaker settings provide adequate conductor protection and downstream coordination.



62SWGR1 LEFT
Nom Bus Voltage: 480 V

GFP

62PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 400AS/AT 225AP
Phase
LTPU (0.5-1.1 x P) 1 (225A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (2025A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (2250A)
Ground
GFPU (0.2-0.6 x S) 0.6 (240A)
GFD (Min-Max) Int (I^2t Off)

CBL-62PP1
(1) 4/0 AWG
Length 45.0 ft
Ampacity: 230 A

62PP1
Nom Bus Voltage: 480 V

62LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
100AF 100AS/AT 0AP
MIN

CBL-62TX3
(1) 2 AWG
Length 8.0 ft
Ampacity: 115 A

62TX3
45kVA
480 - 208 V
Z%: 5.40 X/R: 0.7

CBL-62LP1
(1) 1/0 AWG
Length 6.0 ft
Ampacity: 150 A

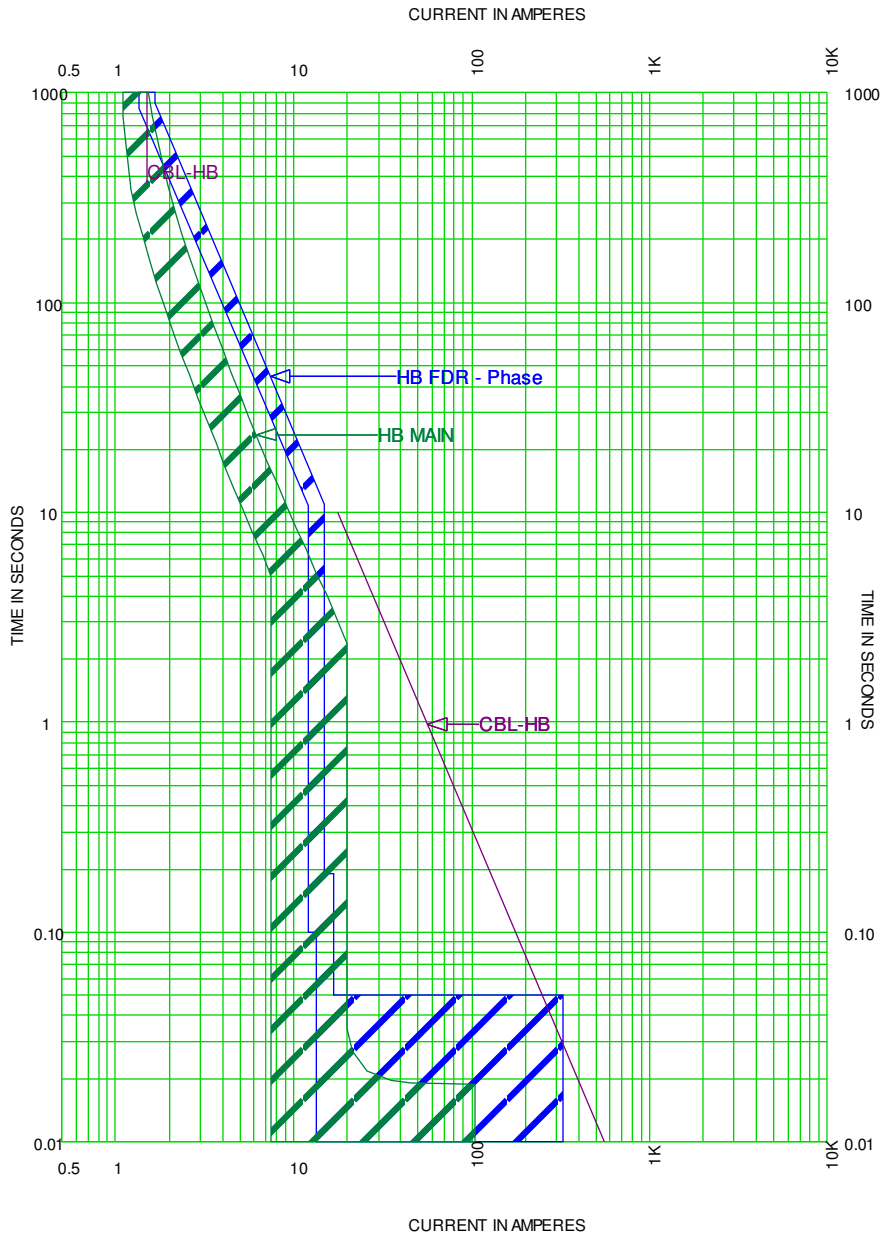
62LP1 MAIN
GE
THQD
THQD 100-225A
225AF 150AS/AT 0AP
Fixed

62LP1
Nom Bus Voltage: 208 V

62LP1 BR
GE
THHQB
THHQB 15-100A
50AF 30AS/AT 0AP
Fixed

TCC Narrative: Given the tripping curve characteristics of the downstream thermal-magnetic breakers, an adequate level of equipment protection and downstream coordination is achieved by the existing breaker settings.

TCC: 62SWGR -- 62LP1
Current Scale x 10
Reference Voltage: 480



62SWGR1 RIGHT
Nom Bus Voltage: 480 V

GFP

HB FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 150AS/AT 150AP
Phase
LTPU (0.5-1.1 x P) 1 (150A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (1350A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (1500A)
Ground
GFPU (0.2-0.6 x S) 0.6 (90A)
GFD (Min-Max) Min (I^2t Off)

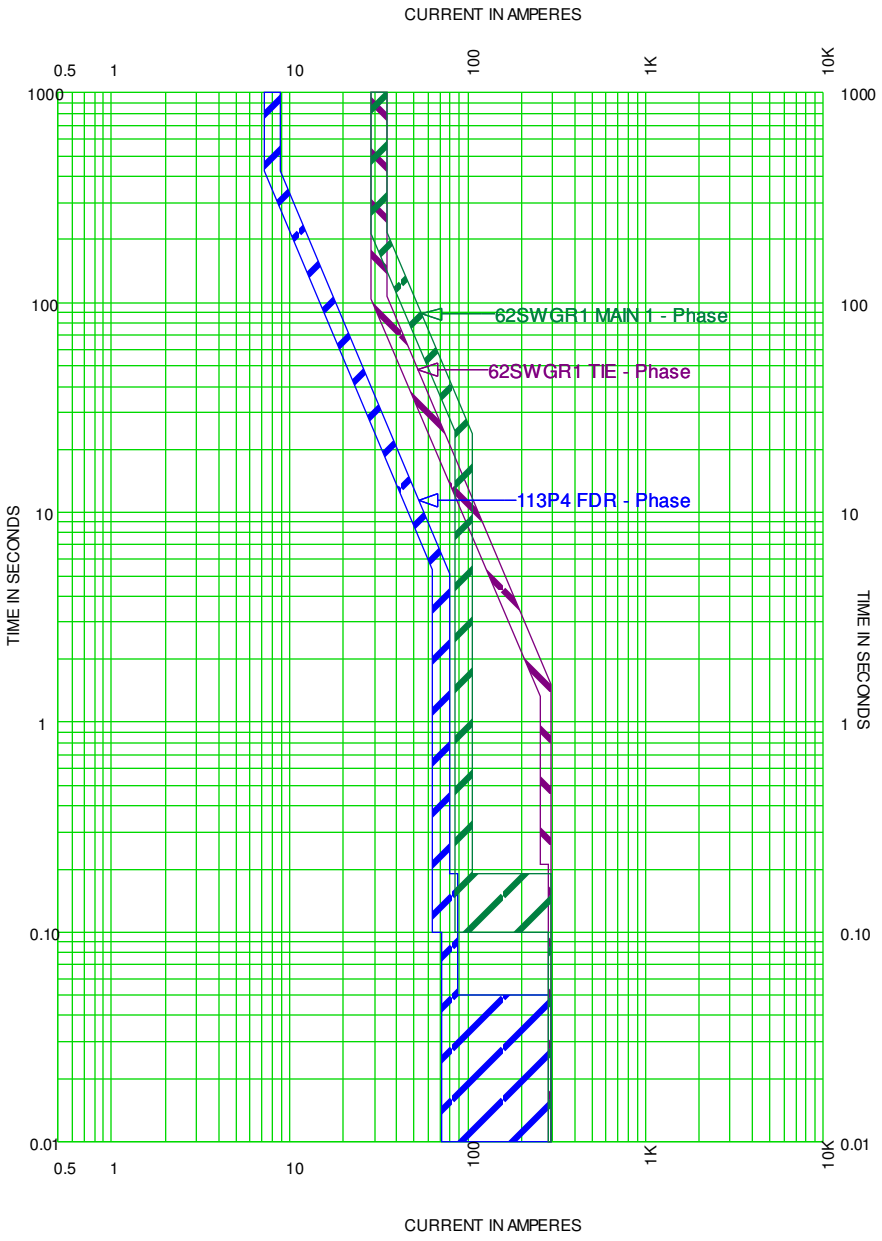
CBL-HB
(1) 1/0 AWG
Length 150.0 ft
Ampacity: 150 A

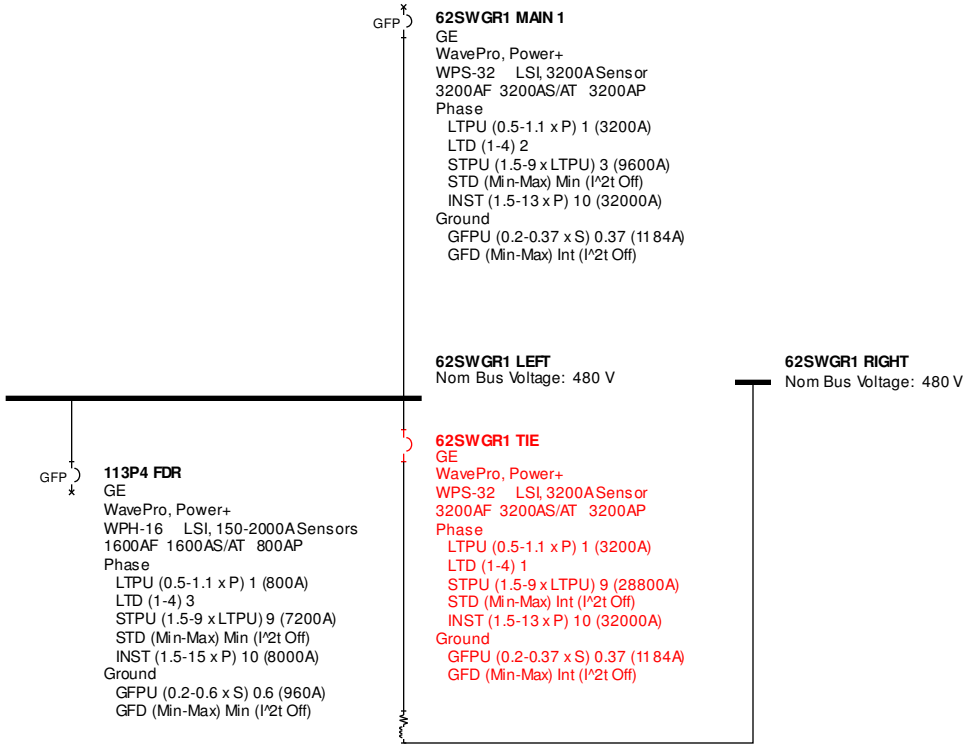
HB MAIN
GE
TED (E-150 Line)
TED 15-150A, 2-3 Pole
150AF 100AS/AT 0AP
Fixed

HB
Nom Bus Voltage: 480 V

TCC Narrative:

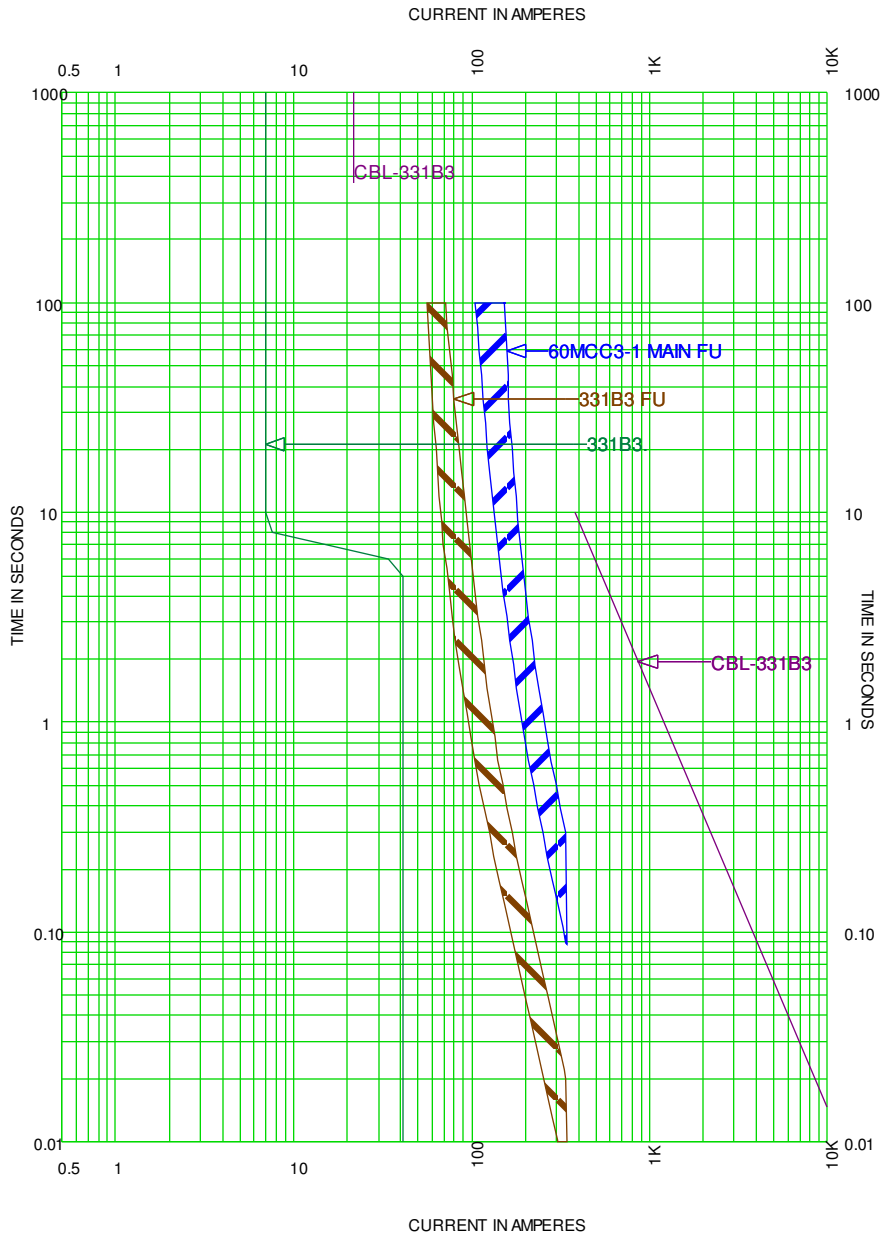
TCC: 62SWGR -- HB
Current Scale x 100
Reference Voltage: 480





TCC Narrative:

TCC: 62SWGR
Current Scale x 100
Reference Voltage: 480



60MCC3-1 MAIN FU
GE
9F60 EJ-2, 2.54 & 5.08kV R-Rated
EJ-2, 12R 2R-36R
230AF 230AS/AT 230 Amps

60MCC3 LEFT
Nom Bus Voltage: 4160 V

331B3 FU
GE
9F60 EJ-2, 2.54 & 5.08kV R-Rated
EJ-2, 6R 2R-36R
170AF 170AS/AT 170 Amps

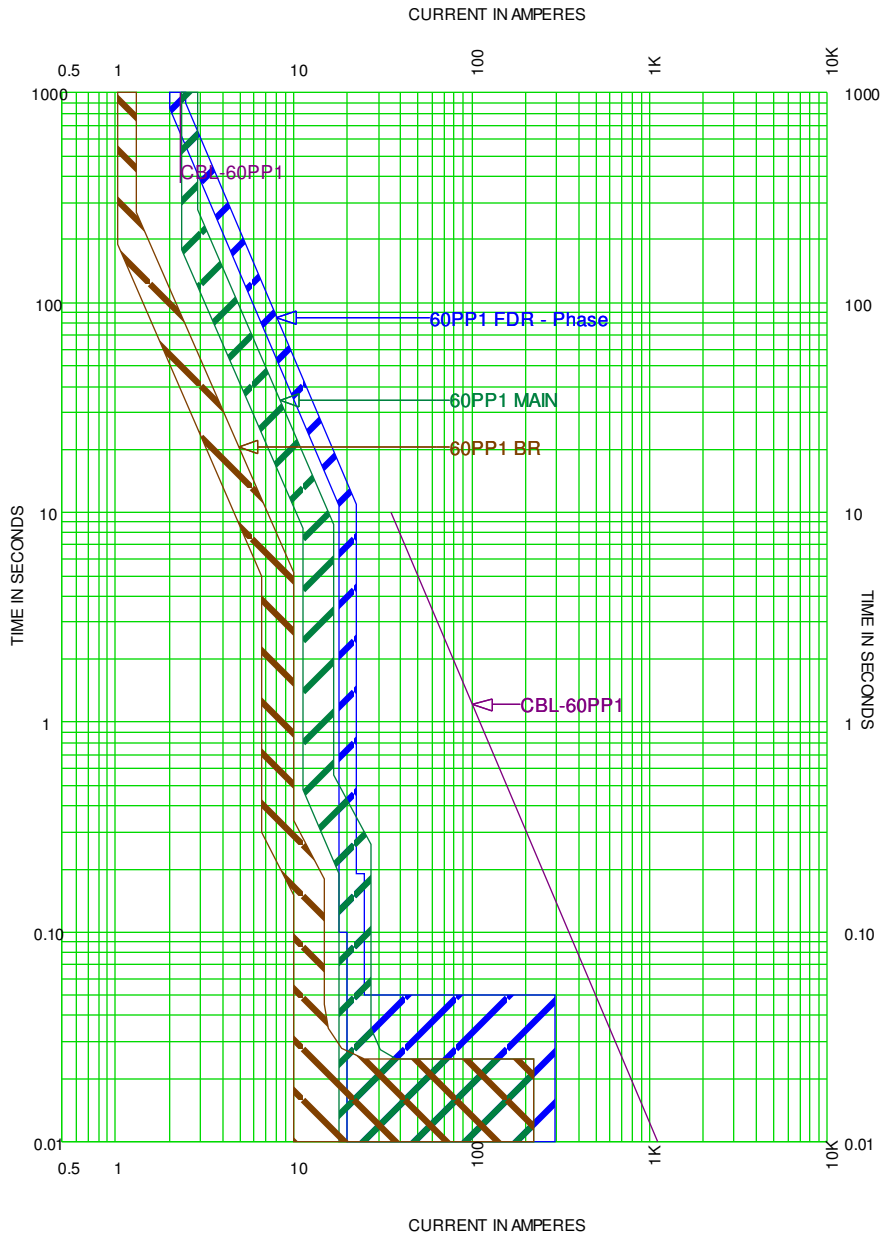
RY-331B3

CBL-331B3
(1) 3/0 AWG
Length 75.9 ft
Ampacity: 216 A

331B3.
500 hp
BLOWER

TCC Narrative: The fuse curves illustrate good upstream and downstream coordination and adequate equipment protection.

TCC: 60MCC3 Current Scale x 10 Reference Voltage: 4160



60SWGR2 RIGHT
Nom Bus Voltage: 480 V

60PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 400AS/AT 225AP
Phase
LTPU (0.5-1.1 x P) 1 (225A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (2025A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (2250A)
Ground
GFPU (0.2-0.6 x S) 0.6 (240A)
GFD (Min-Max) Min (I^2t Off)

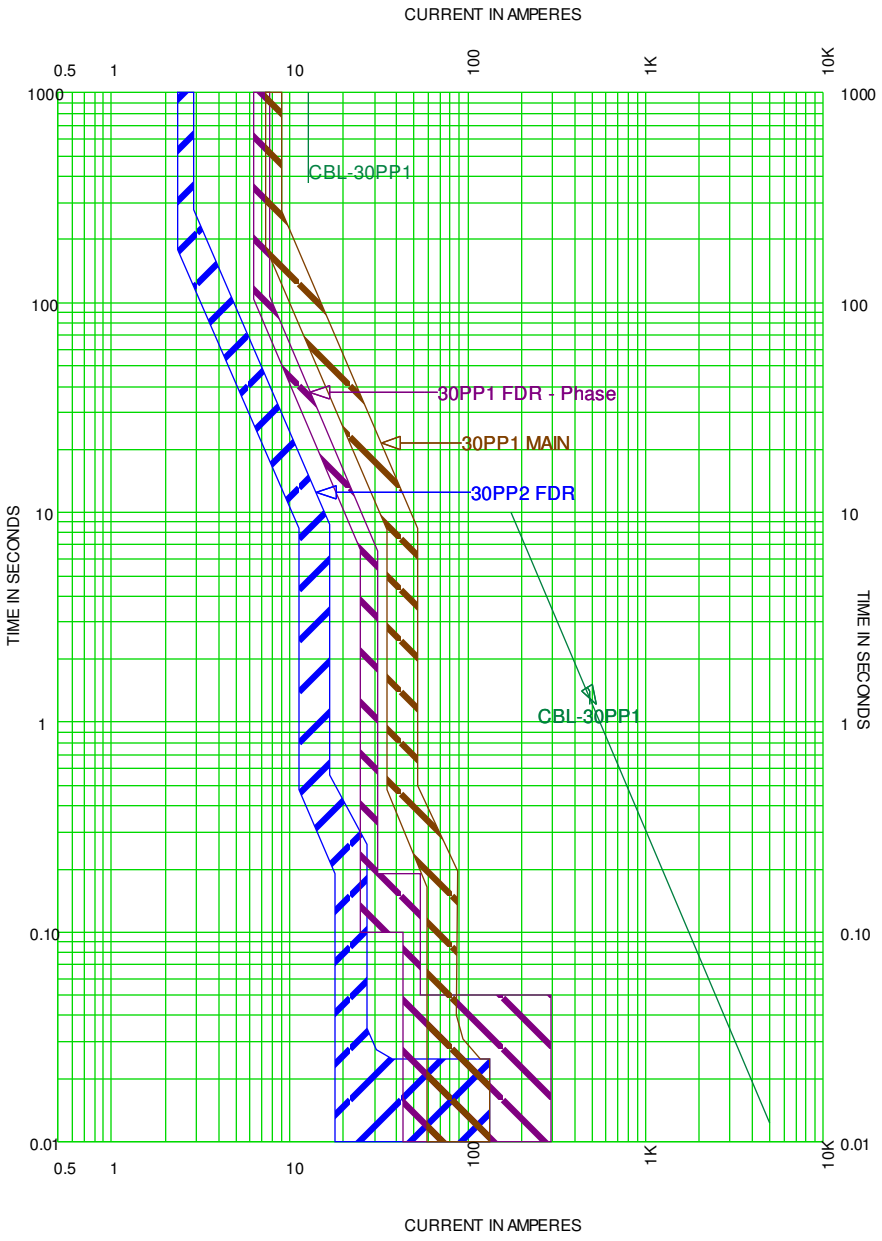
CBL-60PP1
(1) 4/0 AWG
Length 46.0 ft
Ampacity: 230 A

60PP1 MAIN
GE
SFLA, Spectra RMS
SFLA 70-250A
250AF 225AS/AT 0AP
MAX

60PP1
Nom Bus Voltage: 480 V

60PP1 BR
GE
SELA, Spectra RMS
SELA 15-150A
100AF 100AS/AT 0AP
MAX

TCC Narrative: 60PP1 FDR and 60PP1 MAIN are redundant, meaning the tripping of either or both will result in the same extent of power outage. Therefore, overlap of the tripping curves for these breakers is not considered mis-coor
Otherwise, given the tripping characteristics of the downstream thermal-magnetic breakers, adequate downstream coordination and equipment protection is achieved.



60SWGR2 LEFT
Nom Bus Voltage: 480 V

30PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 700A P
Phase
LTPU (0.5-1.1 x P) 1 (700A)
LTD (1-4) 1
STPU (1.5-9 x LTPU) 4 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 7 (4900A)
Ground
GFPU (0.2-0.6 x S) 0.35 (280A)
GFD (Min-Max) Min (I^2t Off)

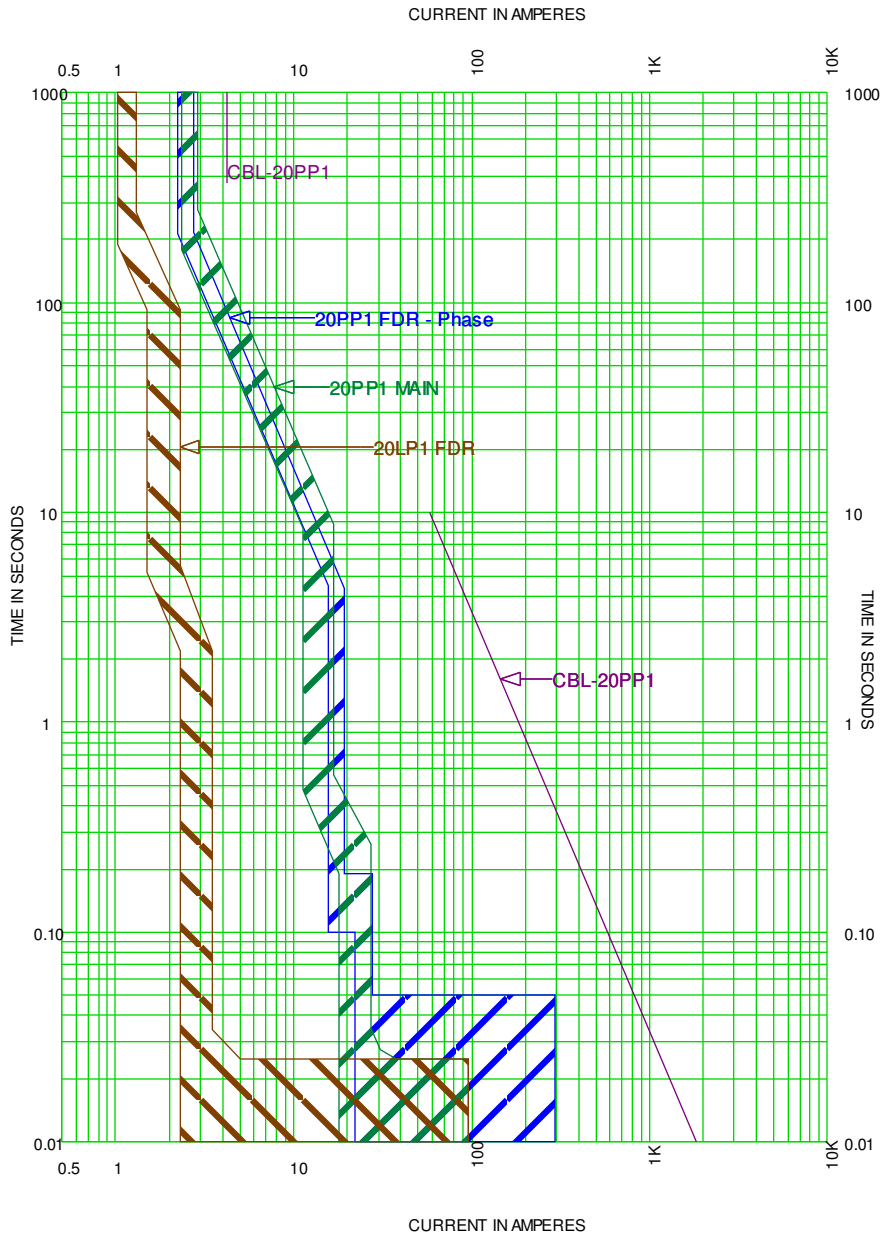
CBL-30PP1
(3) 350 kcmil
Length 680.0 ft
Ampacity: 1274 A

30PP1 MAIN
GE
SKLA, Spectra RMS
SKLA 300-1200A
700AF 700AS/AT 0AP
MAX

30PP1
Nom Bus Voltage: 480 V

30PP2 FDR
GE
SFLA, Spectra RMS
SFLA 70-250A
250AF 225AS/AT 0AP
MAX

TCC Narrative: 30PP1 FDR and 30PP1 MAIN are redundant, meaning the tripping of either or both will result in the same extent of power outage. Therefore, overlap of the tripping curves for these breakers is not considered mis-coor
Otherwise, given the tripping characteristics of the downstream thermal-magnetic breakers, adequate downstream coordination and equipment protection is achieved.



60SWGR2 LEFT
Nom Bus Voltage: 480 V

20PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 400AS/AT 250AP
Phase
LTPU (0.5-1.1 x P) 1 (250A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 7 (1750A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (2500A)
Ground
GFPU (0.2-0.6 x S) 0.6 (240A)
GFD (Min-Max) Min (I^2t Off)

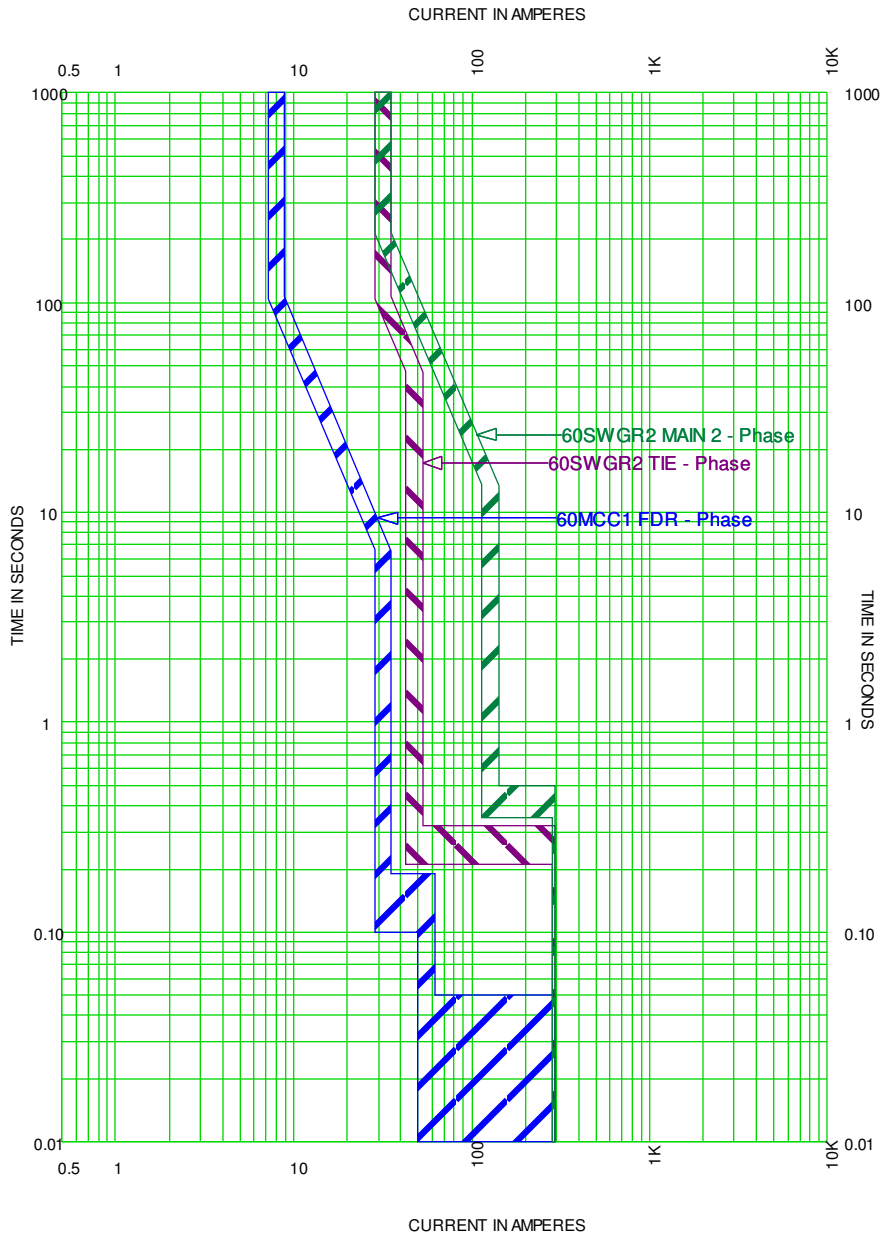
CBL-20PP1
(1) 350 kcmil
Length 375.0 ft
Ampacity: 425 A

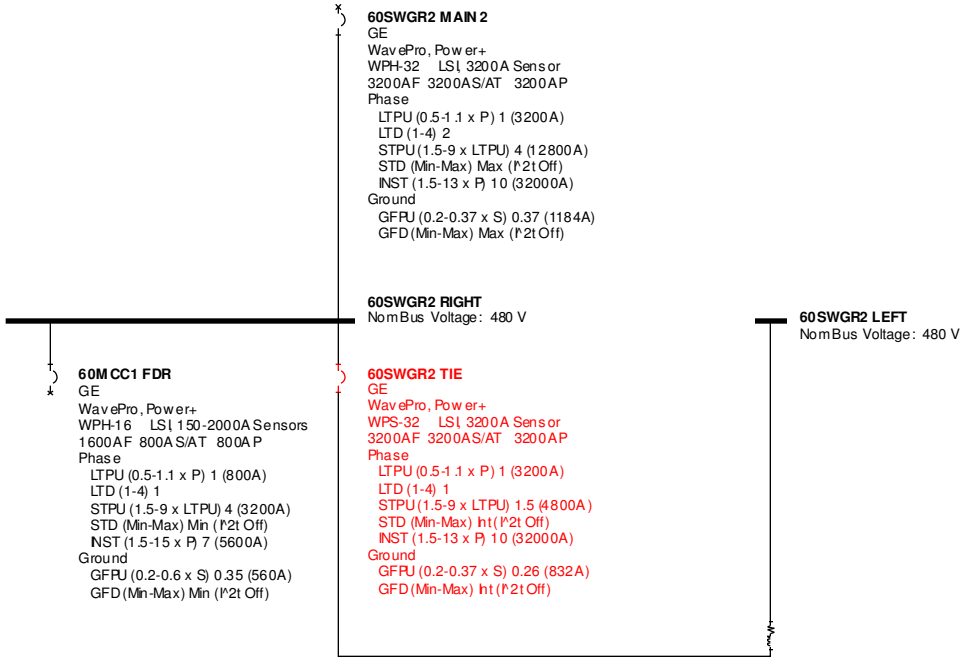
20PP1 MAIN
GE
SFLA, Spectra RMS
SFLA 70-250A
250AF 225AS/AT 0A P
MAX

20PP1
Nom Bus Voltage: 480 V

20LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
100AF 100AS/AT 0A P
MIN

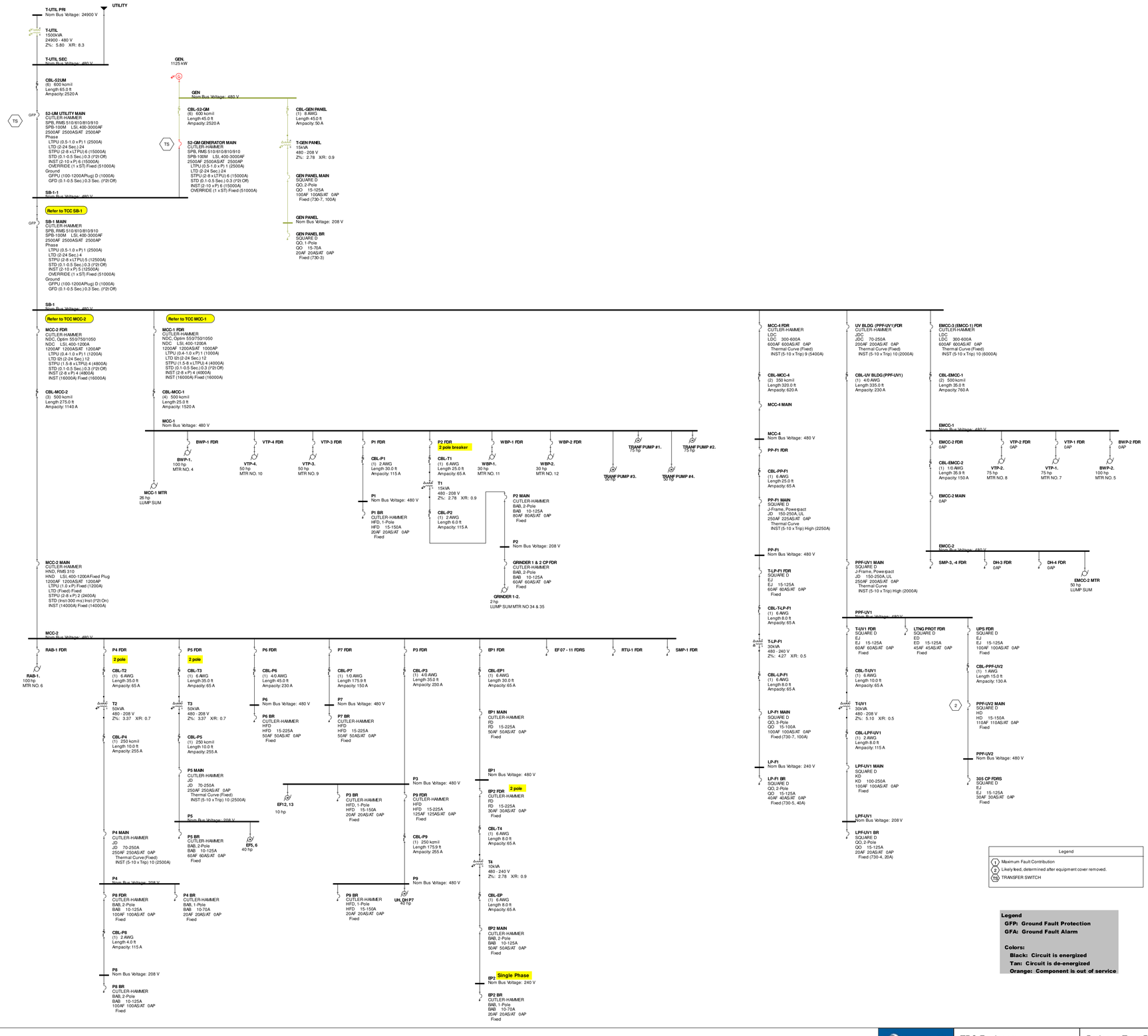
TCC Narrative: 20PP1 FDR and 20PP1 MAIN are redundant, meaning the tripping of either or both will result in the same extent of power outage. Therefore, overlap of the tripping curves for these breakers is not considered mis-coor
Otherwise, given the tripping characteristics of the downstream thermal-magnetic breakers, adequate downstream coordination and equipment protection is achieved.

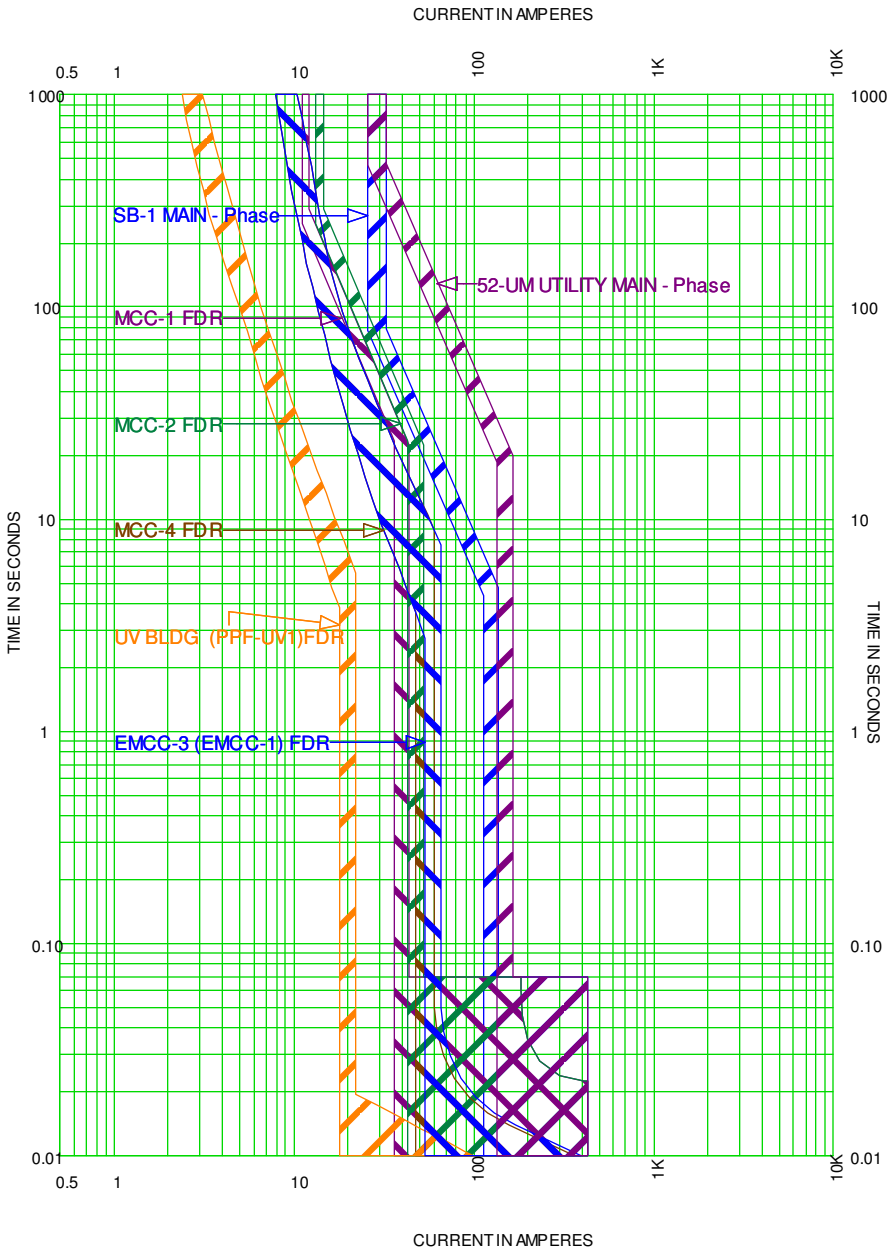


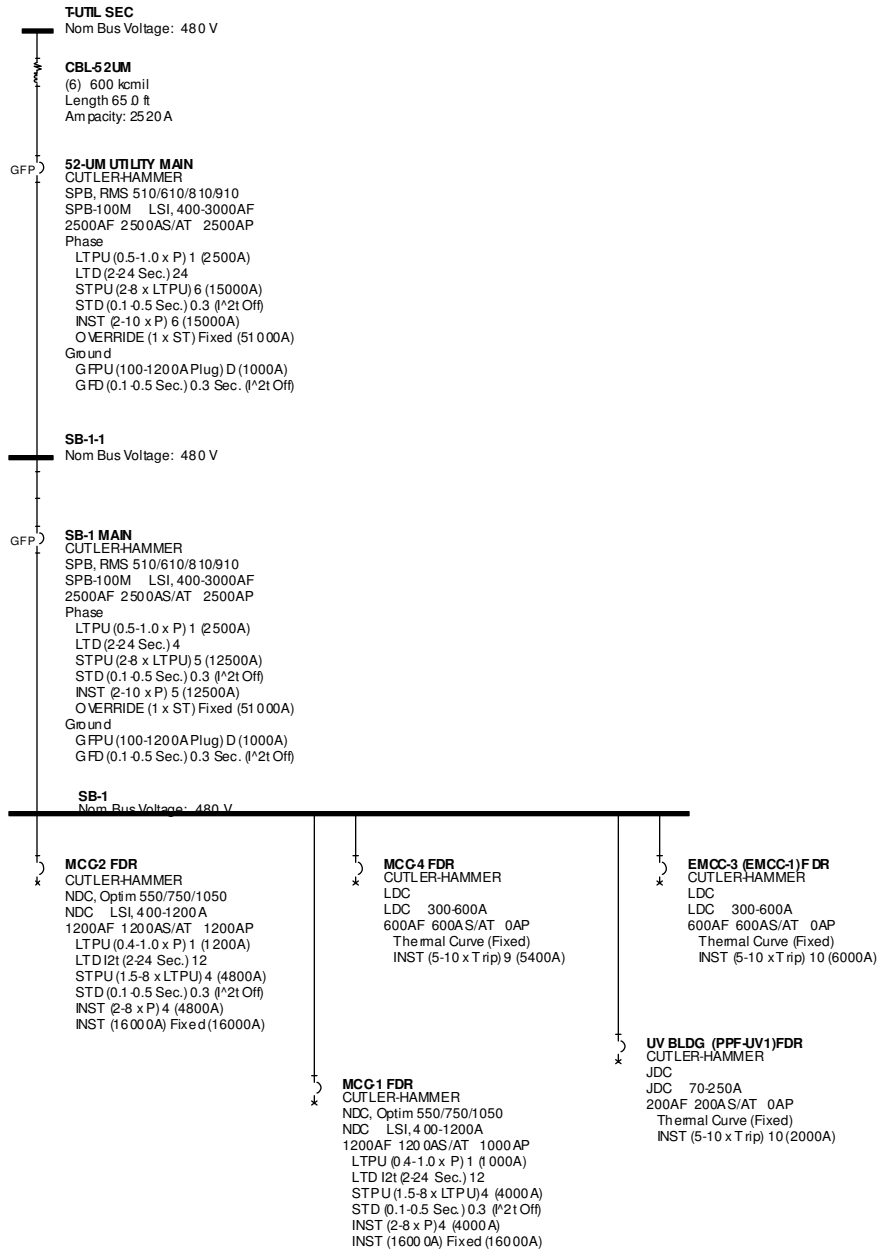


TCC Narrative: Existing settings for the breakers depicted - the main, tie, and largest feeder breakers - represent good coordination.

TCC: 60SWGR Current Scale x 100 Reference Voltage: 480

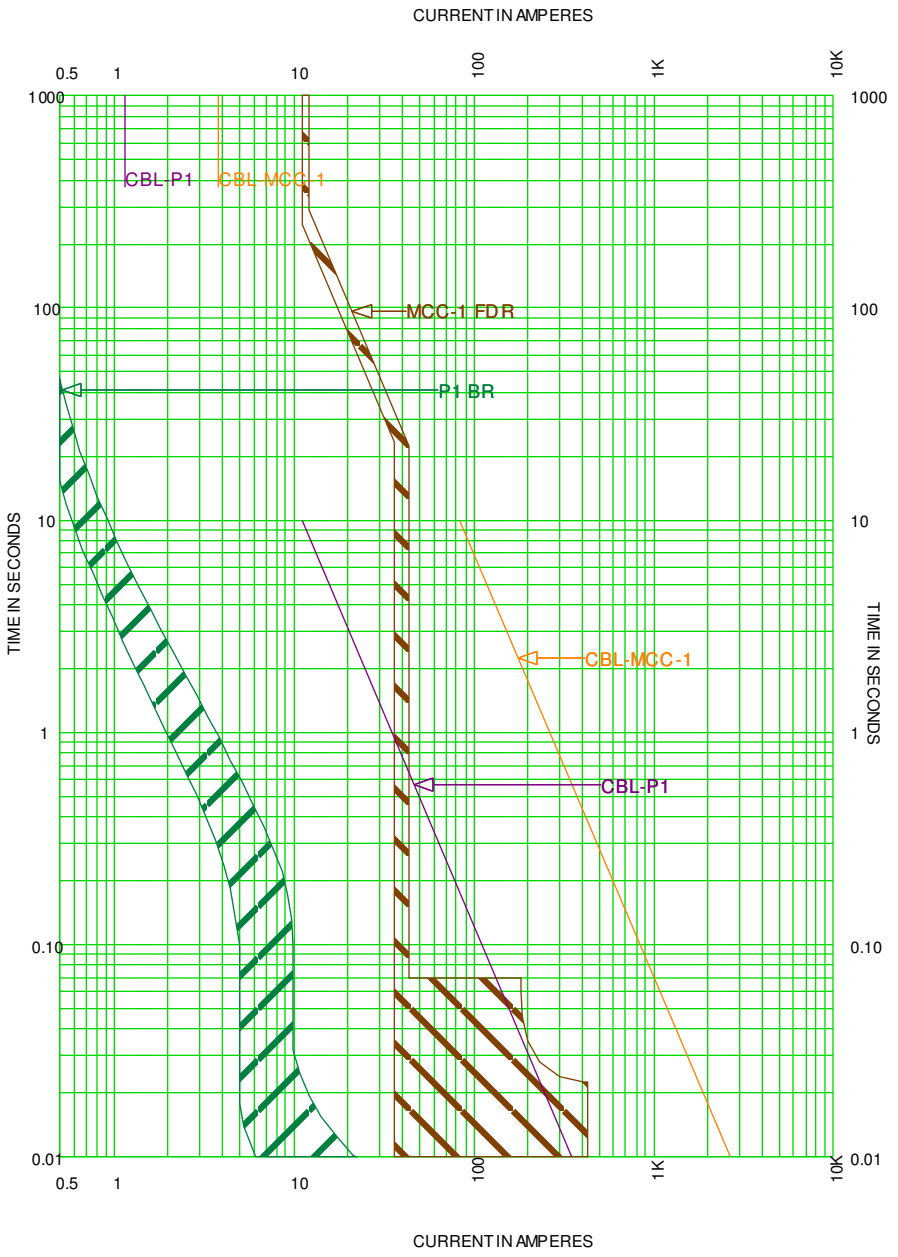

UTILITY
T-UTIL PRI
Nom Bus Voltage: 24900 V
T-UTIL
1500kVA
24900 - 480 V
Z%: 5.80 XR: 8.3
T-UTIL SEC
Nom Bus Voltage: 480 V
GEN
1125 kW
GEN
Nom Bus Voltage: 480 V
CBL-52UM
(6) 600 kcmil
Length 65.0 ft
Ampacity: 2520 A
CBL-52-GM
(6) 600 kcmil
Length 45.0 ft
Ampacity: 2520 A
CBL-GEN PANEL
(1) 8 AWG
Length 45.0 ft
Ampacity: 50 A
52-UM UTILITY MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS/AT 2500AP
Phase
LTPU (0.5-1.0 x P) 1 (2500A)
LTD (2-24 Sec.) 24
STPU (2-8 x LTPU) 6 (15000A)
STD (0.1-0.5 Sec.) 0.3 (I²2t Off)
INST (2-10 x P) 6 (15000A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200APlug) D (1000A)
GFD (0.1-0.5 Sec.) 0.3 Sec. (I²2t Off)
52-GM GENERATOR MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS/AT 2500AP
LTPU (0.5-1.0 x P) 1 (2500A)
LTD (2-24 Sec.) 24
STPU (2-8 x LTPU) 6 (15000A)
STD (0.1-0.5 Sec.) 0.3 (I²2t Off)
INST (2-10 x P) 6 (15000A)
OVERRIDE (1 x ST) Fixed (51000A)
T-GEN PANEL
15kVA
480 - 208 V
Z%: 2.78 XR: 0.9
GEN PANEL MAIN
SQUARE D
QO, 2-Pole
QO 15-125A
100AF 100AS/AT 0AP
Fixed (730-7, 100A)
GEN PANEL
Nom Bus Voltage: 208 V
GEN PANEL BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS/AT 0AP
Fixed (730-3)
SB-1-1
Nom Bus Voltage: 480 V
Refer to TCC SB-1
SB-1 MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS/AT 2500AP
Phase
LTPU (0.5-1.0 x P) 1 (2500A)
LTD (2-24 Sec.) 4
STPU (2-8 x LTPU) 5 (12500A)
STD (0.1-0.5 Sec.) 0.3 (I²2t Off)
INST (2-10 x P) 5 (12500A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200APlug) D (1000A)
GFD (0.1-0.5 Sec.) 0.3 Sec. (I²2t Off)
SB-1
Nom Bus Voltage: 480 V
Refer to TCC MCC-2
MCC-2 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS/AT 1200AP
LTPU (0.4-1.0 x P) 1 (1200A)
LTD I2t (2-24 Sec.) 12
STPU (1.5-8 x LTPU) 4 (4800A)
STD (0.1-0.5 Sec.) 0.3 (I²2t Off)
INST (2-8 x P) 4 (4800A)
INST (16000A) Fixed (16000A)
CBL-MCC-2
(3) 500 kcmil
Length 275.0 ft
Ampacity: 1140 A
Refer to TCC MCC-1
MCC-1 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS/AT 1000AP
LTPU (0.4-1.0 x P) 1 (1000A)
LTD I2t (2-24 Sec.) 12
STPU (1.5-8 x LTPU) 4 (4000A)
STD (0.1-0.5 Sec.) 0.3 (I²2t Off)
INST (2-8 x P) 4 (4000A)
INST (16000A) Fixed (16000A)
CBL-MCC-1
(4) 500 kcmil
Length 25.0 ft
Ampacity: 1520 A
MCC-1
Nom Bus Voltage: 480 V
BWP-1 FDR
BWP-1.
100 hp
MTR NO. 4
VTP-4 FDR
VTP-4.
50 hp
MTR NO. 10
VTP-3 FDR
VTP-3.
50 hp
MTR NO. 9
P1 FDR
CBL-P1
(1) 2 AWG
Length 30.0 ft
Ampacity: 115 A
P2 FDR
2 pole breaker
CBL-T1
(1) 6 AWG
Length 25.0 ft
Ampacity: 65 A
T1
15kVA
480 - 208 V
Z%: 2.78 XR: 0.9
P1
Nom Bus Voltage: 480 V
P1 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS/AT 0AP
Fixed
CBL-P2
(1) 2 AWG
Length 6.0 ft
Ampacity: 115 A
WBP-1 FDR
WBP-1.
30 hp
MTR NO. 11
WBP-2 FDR
WBP-2.
30 hp
MTR NO. 12
TRANF PUMP #1.
75 hp
TRANF PUMP #2.
75 hp
TRANF PUMP #3.
50 hp
TRANF PUMP #4.
50 hp
P2 MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
80AF 80AS/AT 0AP
Fixed
P2
Nom Bus Voltage: 208 V
GRINDER 1 & 2 CP FDR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
60AF 60AS/AT 0AP
Fixed
GRINDER 1-2.
2 hp
LUMP SUM MTR NO 34 & 35
MCC-1 MTR
26 hp
LUMP SUM
MCC-2 MAIN
CUTLER-HAMMER
HND, RMS 510
HND LSI, 400-1200AFixed Plug
1200AF 1200AS/AT 1200AP
LTPU (1.0 x P) Fixed (1200A)
LTD (Fixed) Fixed
STPU (2-8 x P) 2 (2400A)
STD (Inst-300 ms) Inst (I²2t On)
INST (14000A) Fixed (14000A)
MCC-2
Nom Bus Voltage: 480 V
RAB-1 FDR
RAB-1.
100 hp
MTR NO. 6
P4 FDR
2 pole
CBL-T2
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A
T2
50kVA
480 - 208 V
Z%: 3.37 XR: 0.7
CBL-P4
(1) 250 kcmil
Length 10.0 ft
Ampacity: 255 A
P5 FDR
2 pole
CBL-T3
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A
T3
50kVA
480 - 208 V
Z%: 3.37 XR: 0.7
CBL-P5
(1) 250 kcmil
Length 10.0 ft
Ampacity: 255 A
P6 FDR
CBL-P6
(1) 4/0 AWG
Length 45.0 ft
Ampacity: 230 A
P6
Nom Bus Voltage: 480 V
P6 BR
CUTLER-HAMMER
HFD
HFD 15-225A
50AF 50AS/AT 0AP
Fixed
P7 FDR
CBL-P7
(1) 1/0 AWG
Length 175.9 ft
Ampacity: 150 A
P7
Nom Bus Voltage: 480 V
P7 BR
CUTLER-HAMMER
HFD
HFD 15-225A
50AF 50AS/AT 0AP
Fixed
P3 FDR
CBL-P3
(1) 4/0 AWG
Length 35.0 ft
Ampacity: 230 A
P3
Nom Bus Voltage: 480 V
P3 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS/AT 0AP
Fixed
EP2, 13
10 hp
P9 FDR
CUTLER-HAMMER
HFD
HFD 15-225A
125AF 125AS/AT 0AP
Fixed
CBL-P9
(1) 250 kcmil
Length 175.9 ft
Ampacity: 255 A
P9
Nom Bus Voltage: 480 V
P9 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS/AT 0AP
Fixed
UH_DH P7
40 hp
EP1 FDR
CBL-EP1
(1) 4/0 AWG
Length 30.0 ft
Ampacity: 65 A
EP1 MAIN
CUTLER-HAMMER
FD
FD 15-225A
50AF 50AS/AT 0AP
Fixed
EP1
Nom Bus Voltage: 480 V
EP2 FDR
2 pole
CUTLER-HAMMER
FD
FD 15-225A
30AF 30AS/AT 0AP
Fixed
CBL-T4
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A
T4
10kVA
480 - 240 V
Z%: 2.78 XR: 0.9
CBL-EP
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A
EP2 MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
50AF 50AS/AT 0AP
Fixed
EP2
Single Phase
Nom Bus Voltage: 240 V
EP2 BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS/AT 0AP
Fixed
EF07 - 11 FDRS
RTU-1 FDR
SMP-1 FDR
EP5, 6
40 hp
P4
Nom Bus Voltage: 208 V
P4 MAIN
CUTLER-HAMMER
JD
JD 70-250A
250AF 250AS/AT 0AP
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (2500A)
P5
Nom Bus Voltage: 208 V
P5 BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-125A
60AF 60AS/AT 0AP
Fixed
P8 FDR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
100AF 100AS/AT 0AP
Fixed
P4 BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS/AT 0AP
Fixed
CBL-P8
(1) 2 AWG
Length 4.0 ft
Ampacity: 115 A
P8
Nom Bus Voltage: 208 V
P8 BR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
100AF 100AS/AT 0AP
Fixed
MCC-4 FDR
CUTLER-HAMMER
LDC
LDC 300-600A
600AF 600AS/AT 0AP
Thermal Curve (Fixed)
INST (5-10 x Trip) 9 (5400A)
CBL-MCC-4
(2) 350 kcmil
Length 320.0 ft
Ampacity: 620 A
MCC-4 MAIN
MCC-4
Nom Bus Voltage: 480 V
PP-P1 FDR
CBL-PP-P1
(1) 6 AWG
Length 25.0 ft
Ampacity: 65 A
PP-P1 MAIN
SQUARE D
J-Frame, Powerpact
JD 150-250A,UL
250AF 225AS/AT 0AP
Thermal Curve
INST (5-10 x Trip) High (2250A)
PP-P1
Nom Bus Voltage: 480 V
T-LP-P1 FDR
SQUARE D
EJ
EJ 15-125A
60AF 60AS/AT 0AP
Fixed
CBL-T-LP-P1
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A
T-LP-P1
30kVA
480 - 240 V
Z%: 4.27 XR: 0.5
CBL-LP-P1
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A
LP-P1 MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS/AT 0AP
Fixed (730-7, 100A)
LP-P1
Nom Bus Voltage: 240 V
LP-P1 BR
SQUARE D
QO, 2-Pole
QO 15-125A
40AF 40AS/AT 0AP
Fixed (730-5, 40A)
UV BLDG (PPF-UV1)FDR
CUTLER-HAMMER
JDC
JDC 70-250A
200AF 200AS/AT 0AP
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (2000A)
CBL-UV BLDG (PPF-UV1)
(1) 4/0 AWG
Length 335.0 ft
Ampacity: 230 A
PPF-UV1 MAIN
SQUARE D
J-Frame, Powerpact
JD 150-250A, UL
250AF 200AS/AT 0AP
Thermal Curve
INST (5-10 x Trip) High (2000A)
PPF-UV1
Nom Bus Voltage: 480 V
T-UV1 FDR
SQUARE D
EJ
EJ 15-125A
60AF 60AS/AT 0AP
Fixed
LTNG PROT FDR
SQUARE D
ED
ED 15-125A
45AF 45AS/AT 0AP
Fixed
UPS FDR
SQUARE D
EJ
EJ 15-125A
100AF 100AS/AT 0AP
Fixed
CBL-T-UV1
(1) 6 AWG
Length 10.0 ft
Ampacity: 65 A
T-UV1
30kVA
480 - 208 V
Z%: 5.10 XR: 0.5
CBL-PPF-UV2
(1) 1 AWG
Length 15.0 ft
Ampacity: 130 A
2
PPF-UV2 MAIN
SQUARE D
HD
HD 15-150A
110AF 110AS/AT 0AP
Fixed
CBL-LPF-UV1
(1) 2 AWG
Length 8.0 ft
Ampacity: 115 A
LPF-UV1 MAIN
SQUARE D
KD
KD 100-250A
100AF 100AS/AT 0AP
Fixed
PPF-UV2
Nom Bus Voltage: 480 V
305 CP FDRS
SQUARE D
EJ
EJ 15-125A
30AF 30AS/AT 0AP
Fixed
LPF-UV1
Nom Bus Voltage: 208 V
LPF-UV1 BR
SQUARE D
QO, 2-Pole
QO 15-125A
20AF 20AS/AT 0AP
Fixed (730-4, 20A)
EMCC-3 (EMCC-1) FDR
CUTLER-HAMMER
LDC
LDC 300-600A
600AF 600AS/AT 0AP
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (6000A)
CBL-EMCC-1
(2) 500 kcmil
Length 35.0 ft
Ampacity: 760 A
EMCC-1
Nom Bus Voltage: 480 V
EMCC-2 FDR
0AP
VTP-2 FDR
0AP
VTP-1 FDR
0AP
BWP-2 FDR
0AP
CBL-EMCC-2
(1) 1/0 AWG
Length 35.0 ft
Ampacity: 150 A
VTP-2.
75 hp
MTR NO. 8
VTP-1.
75 hp
MTR NO. 7
BWP-2.
100 hp
MTR NO. 5
EMCC-2 MAIN
0AP
EMCC-2
Nom Bus Voltage: 480 V
SMP-3, -4 FDR
DH-3 FDR
0AP
DH-4 FDR
0AP
EMCC-2 MTR
50 hp
LUMP SUM
Legend
1 Maximum Fault Contribution
2 Likely feed, determined after equipment cover removed.
TS TRANSFER SWITCH
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service





TCC Narrative: This TCC addresses only the coordination between 52-UM UTILITY MAAIN and SB-1 MAIN and the downstream feeder breakers. 52-UM UTILITY MAIN and SB-1 MAIN are redundant, meaning the tripping of either or both will result in the same extent of power outage. Therefore, tripping curve overlap for these two breakers does note represent mis-coordination.
SB-1 MAIN and the feeder breakers coordinate to the INST pick-up of the main breaker. The INST pickup of the main breaker could be increased to improve downstream coordination.

TCC: SB-1 Current Scale x 100 Reference Voltage: 480



SB-1
Nom Bus Voltage: 480 V

MCC-1 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS/AT 1000AP
LTPU (0.4-1.0 x P) 1 (1000A)
LTD I2t (2-24 Sec.) 12
STPU (1.5-8 x LTPU) 4 (4000A)
STD (0.1-0.5 Sec.) 0.3 (I^2t Off)
INST (2-8 x P) 4 (4000A)
INST (16000A) Fixed (16000A)

CBL-MCC-1
(4) 500 kcmil
Length 25.0 ft
Ampacity: 1520 A

MCC-1
Nom Bus Voltage: 480 V

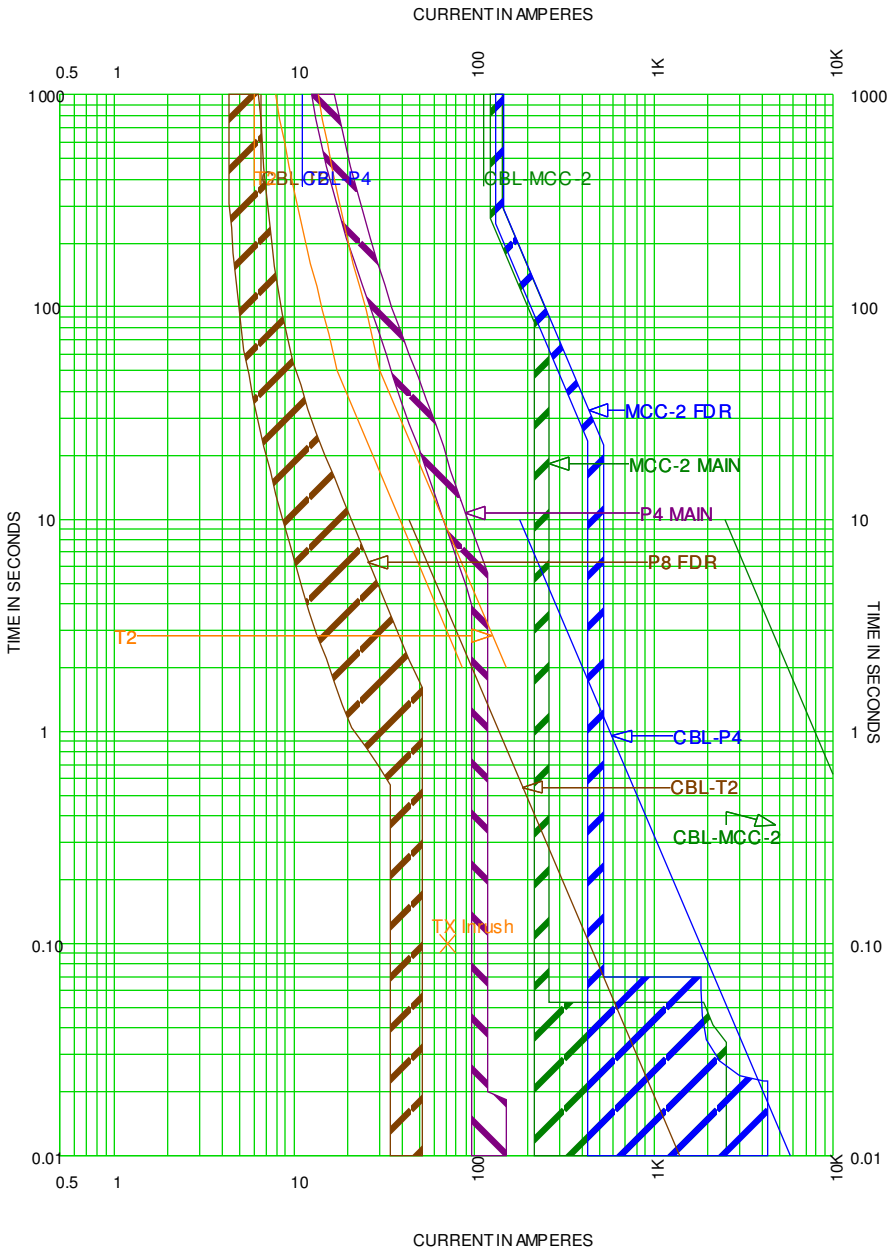
P1 FDR

CBL-P1
(1) 2 AWG
Length 30.0 ft
Ampacity: 115 A

P1
Nom Bus Voltage: 480 V

P1 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS/AT 0AP
Fixed

TCC Narrative: Excellent equipment protection and downstream coordination is achieved with the existing settings.



SB-1
Nom Bus Voltage: 480 V

MCC-2 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS/AT 1200AP
LTPU (0.4-1.0 x P) 1 (1200A)
LTD I2t (2-24 Sec.) 12
STPU (1.5-8 x LTPU) 4 (4800A)
STD (0.1-0.5 Sec.) 0.3 (I^2t Off)
INST (2-8 x P) 4 (4800A)
INST (16000A) Fixed (16000A)

CBL-MCC-2
(3) 500 kcmil
Length 275.0 ft
Ampacity: 1140 A

MCC-2 MAIN
CUTLER-HAMMER
HND, RMS 310
HND LSI, 400-1200A Fixed Plug
1200AF 1200AS/AT 1200AP
LTPU (1.0 x P) Fixed (1200A)
LTD (Fixed) Fixed
STPU (2-8 x P) 2 (2400A)
STD (Inst-300 ms) Inst (I^2t On)
INST (14000A) Fixed (14000A)

MCC-2
Nom Bus Voltage: 480 V

P4 FDR
2 pole

CBL-T2
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A

T2
50kVA
480 - 208 V
Z%: 3.37 X/R: 0.7

CBL-P4
(1) 250 kcmil
Length 10.0 ft
Ampacity: 255 A

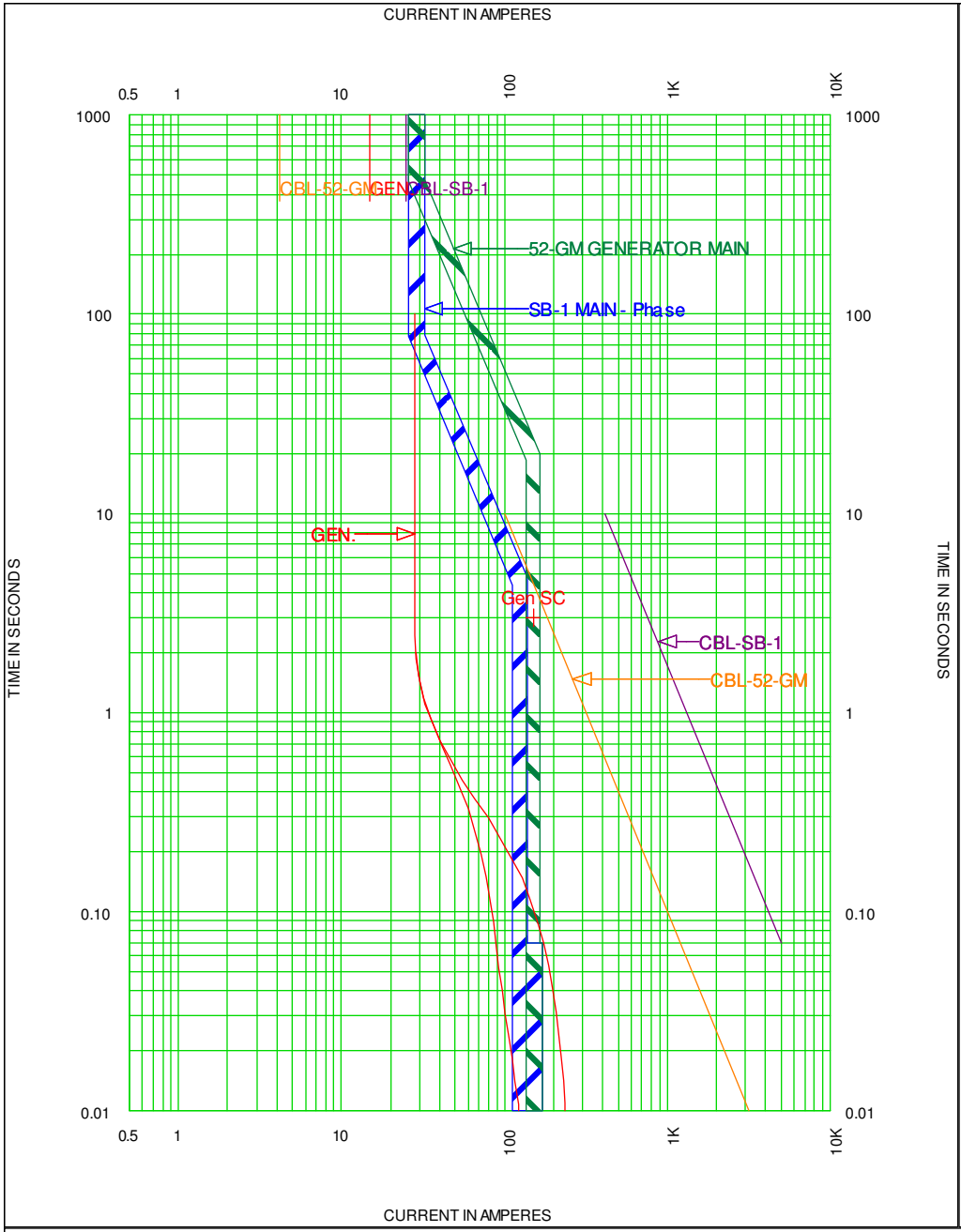
P4 MAIN
CUTLER-HAMMER
JD
JD 70-250A
250AF 250AS/AT 0AP
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (25(

P4
Nom Bus Voltage: 208 V

P8 FDR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
100AF 100AS/AT 0AP
Fixed

TCC Narrative: MCC-2 FDR and MCC-2 MAIN are redundant, meaning the tripping of either or both would result in the same extent of power outage. Excellent equipment protection and downstream coordination are exhibited by the existing breaker settings

TCC: MCC-2 Current Scale x 10 Reference Voltage: 480



GEN.
1125 kW

GEN
Nom Bus Voltage: 480 V

CBL-52-GM
(6) 600 kcmil
Length 45.0 ft
Ampacity: 2520 A

52-GM GENERATOR MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS/AT 2500AP
LTPU (0.5-1.0 x P) 1 (2500A)
LTD (2-24 Sec.) 24
STPU (2-8 x LTPU) 6 (15000A)
STD (0.1-0.5 Sec.) 0.3 (I^2t Off)
INST (2-10 x P) 6 (15000A)
OVERRIDE (1 x ST) Fixed (51000A)

SB-1-1
Nom Bus Voltage: 480 V

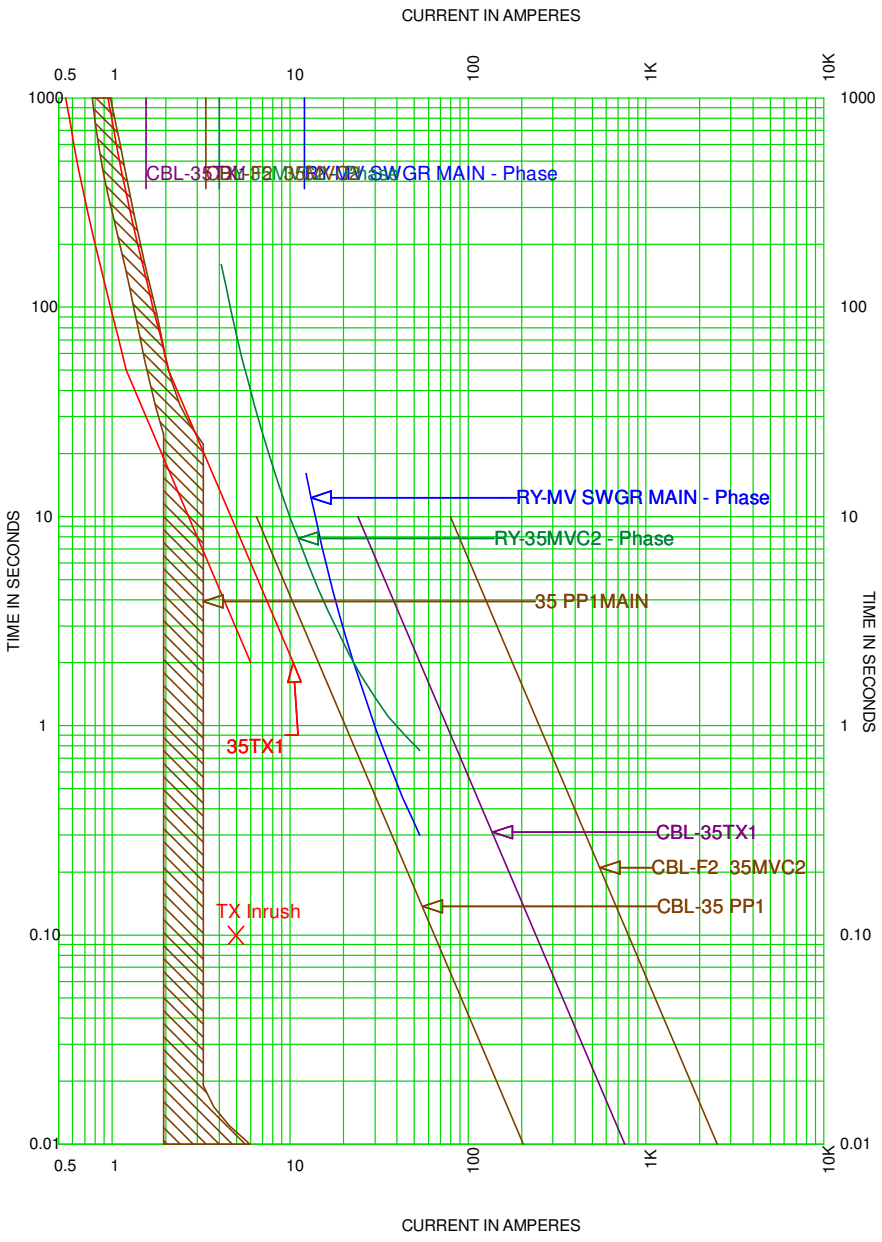
GFP

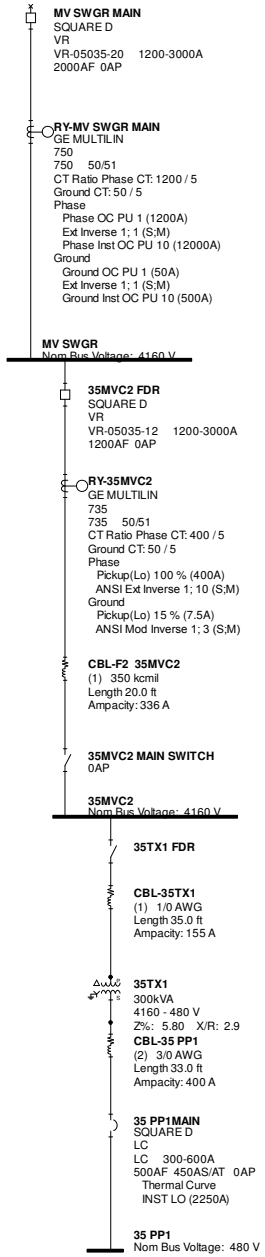
SB-1 MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS/AT 2500AP
Phase
LTPU (0.5-1.0 x P) 1 (2500A)
LTD (2-24 Sec.) 4
STPU (2-8 x LTPU) 5 (12500A)
STD (0.1-0.5 Sec.) 0.3 (I^2t Off)
INST (2-10 x P) 5 (12500A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200A Plug) D (1000A)
GFD (0.1-0.5 Sec.) 0.3 Sec. (I^2t Off)

TCC Narrative: The existing settings of 52-GM GENERATOR MAIN provide adequate backup protection for the generator and coordinate with the downstream SB-1 MAN to the INST pickup of 52-GM GENERATOR MAIN.

TRC Engineers

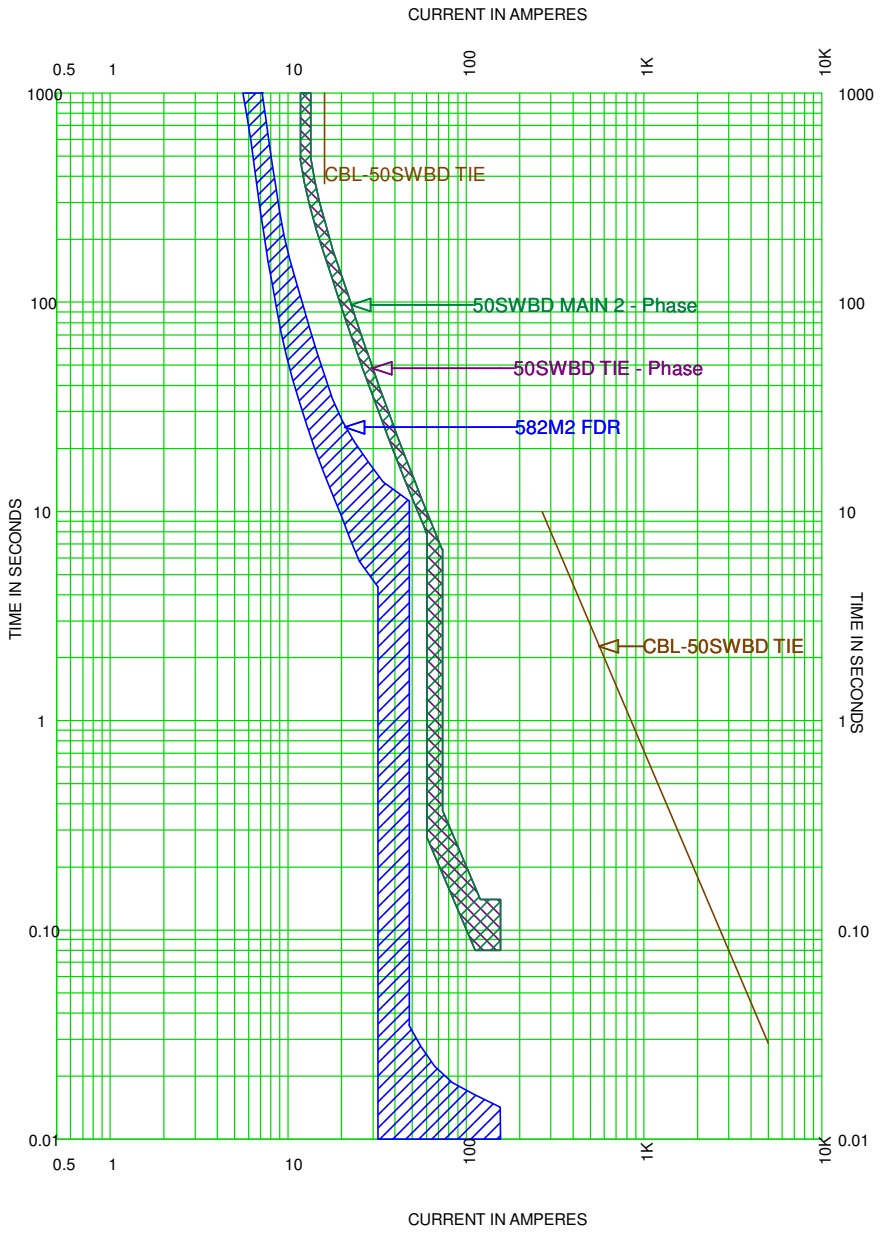
Project: WJ Hooper WRF
Arc Flash Risk Assessment
Settings and TCC Overview





TCC Narrative: Existing settings provide adequate equipment protections and downstream coordination.

TCC: MV SWGR --- 35 PP1 Current Scale x 100 Reference Voltage: 4160



GFP

50SWBD MAIN 2
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW16N LSI, 400-6000AS, UL
1600AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 0.7 (1120A); 8
STPU 6 (6720A)
STD 0.1 (I^2t On)
INST (NW**N "OFF") OFF
Ground
GFPU (500-1200A) J (1200A)
GFD (0-0.4) 0.4 (I^2t Off)

50SWBD - LEFT
Nom Bus Voltage: 480 V

50SWBD - RIGHT
Nom Bus Voltage: 480 V

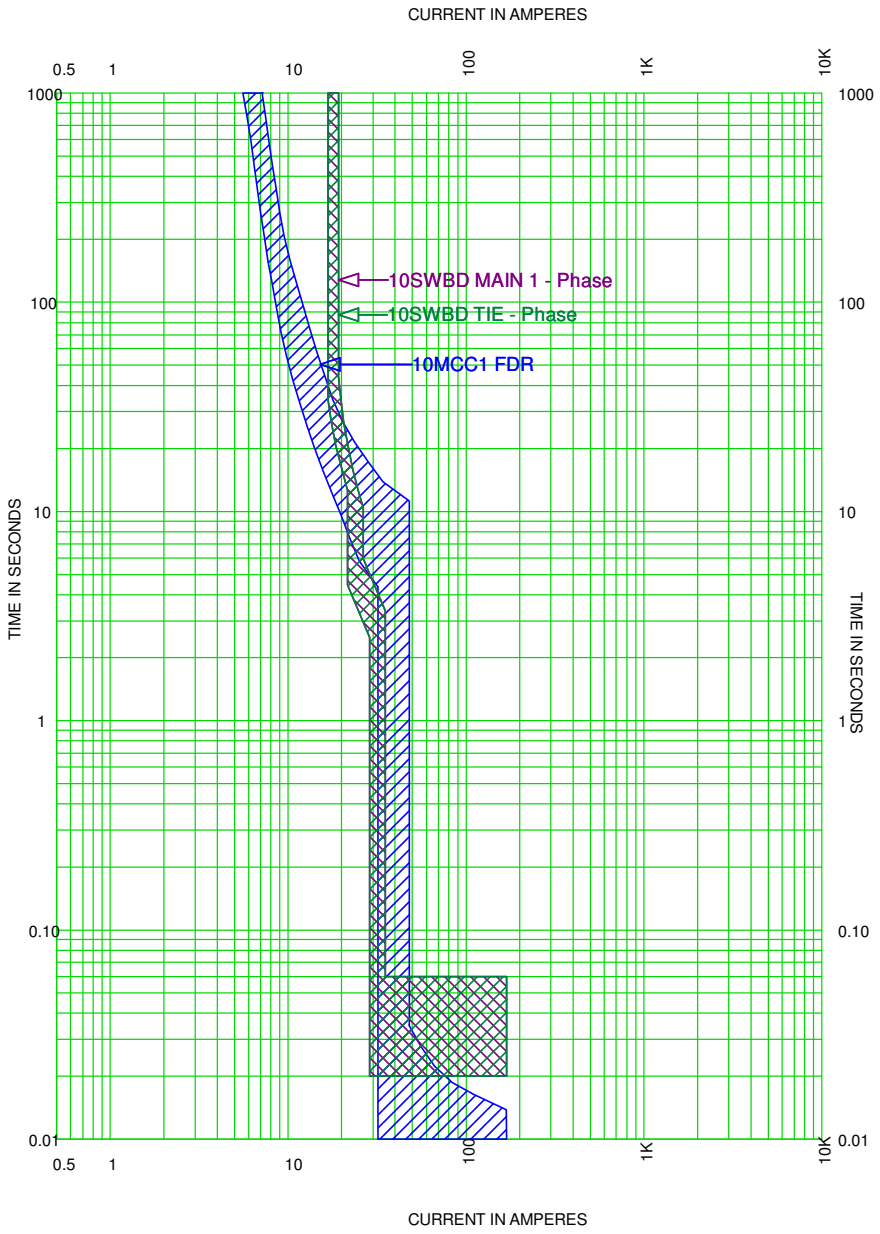
GFP

50SWBD TIE
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW16N LSI, 400-6000AS, UL
1600AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 0.7 (1120A); 8
STPU 6 (6720A)
STD 0.1 (I^2t On)
INST (NW**N "OFF") OFF
Ground
GFPU (500-1200A) J (1200A)
GFD (0-0.4) 0.4 (I^2t Off)

582M2 FDR
SQUARE D
LC
LC 300-600A
400AF 400AS/AT 0AP
Thermal Curve
INST HI (4000A)

TCC Narrative: Existing breaker settings provide adaquate conductor protection and downstream coordination.

TCC: 50SWBD
Current Scale x 100
Reference Voltage: 480



GFP

10SWBD MAIN 1
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW16N LSI, 400-6000AS, UL
1600AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 1 (1600A); 0.5
STPU 1.5 (2400A)
STD 0.1 (I^2t On)
INST (NW**N) 2 (3200A)
Ground
GFPU (500-1200A) A (500A)
GFD (0-0.4) 0.4 (I^2t Off)

10SWBD - LEFT
Nom Bus Voltage: 480 V

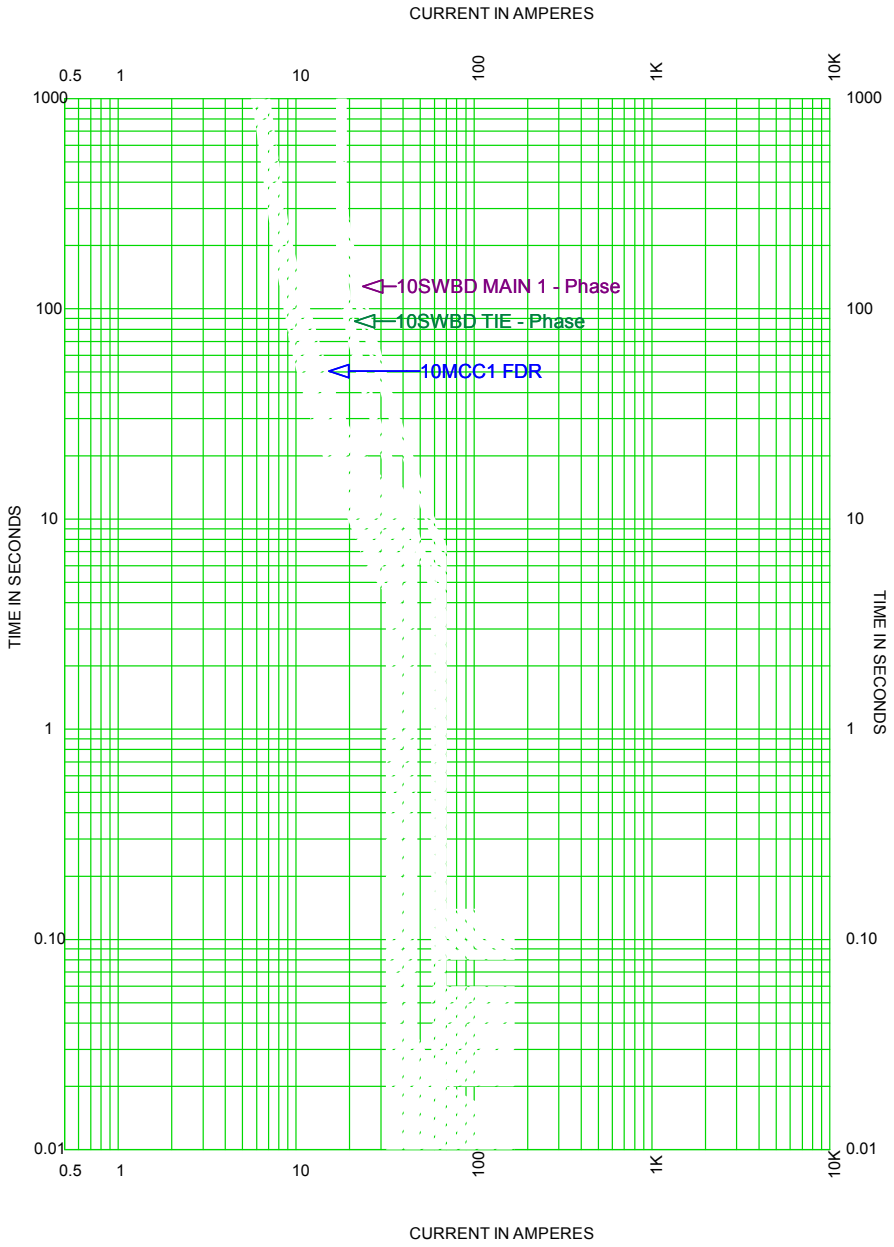
10SWBD - RIGHT
Nom Bus Voltage: 480 V

10MCC1 FDR
SQUARE D
LC
LC 300-600A
400AF 400AS/AT 0AP
Thermal Curve
INST HI (4000A)

GFP

10SWBD TIE
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW30H LSI, 400-6000AS, UL
3000AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 1 (1600A); 0.5
STPU 1.5 (2400A)
STD 0.1 (I^2t On)
INST (NW25H, NW30H) 2 (3200A)
Ground
GFPU (500-1200A) A (500A)
GFD (0-0.4) 0.4 (I^2t Off)

TCC Narrative: Existing settings of main and tie breakers mis-coordinate with the settings of the largest downstream breaker. See "TCC 10SWBD - Recommended" for recommended settings.



GFP

10SWBD MAIN 1
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW16N LSI, 400-6000AS, UL
1600AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 1 (1600A); 4
STPU 4 (6400A)
STD 0.1 (I^2t Off)
INST (NW**N) 15 (24000A)
Ground
GFPU (500-1200A) A (500A)
GFD (0-0.4) 0.4 (I^2t Off)

10SWBD - LEFT
Nom Bus Voltage: 480 V

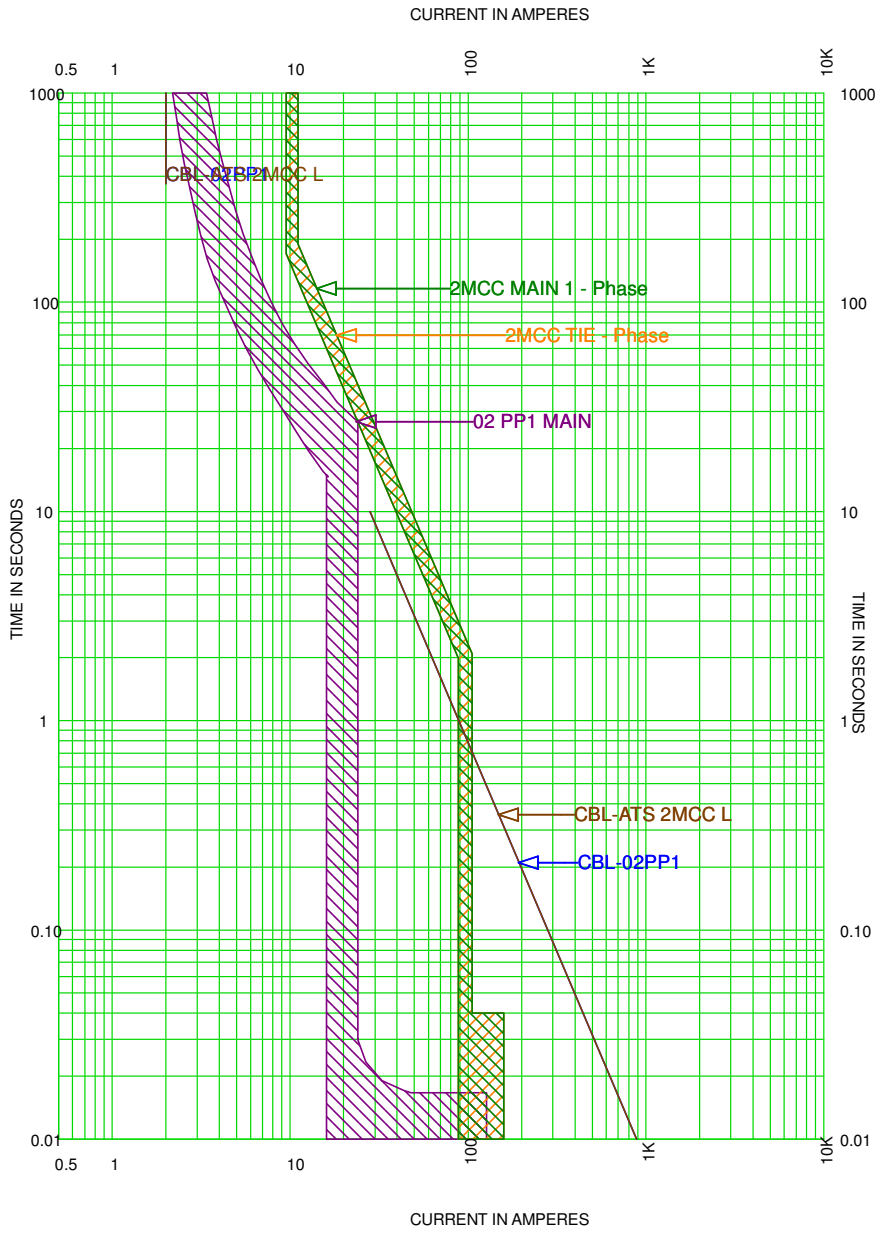
10MCC1 FDR
SQUARE D
LC
LC 300-600A
400AF 400AS/AT 0AP
Thermal Curve
INST HI (4000A)

GFP

10SWBD TIE
SQUARE D
Masterpact NW, 5.0 & 6.0 A/P/H
NW30H LSI, 400-6000AS, UL
3000AF 1600AS/AT 0AP
Phase
LTPU (A);LTD 1 (1600A); 2
STPU 5 (8000A)
STD 0.4 (I^2t On)
INST (NW25H, NW30H) 4 (6400A)
Ground
GFPU (500-1200A) A (500A)
GFD (0-0.4) 0.4 (I^2t Off)

10SWBD - RIGHT
Nom Bus Voltage: 480 V

TCC Narrative: Recommended settings for the main and tie breakers are displayed in this TCC. These settings accomplish downstream coordination and adequate equipment protection. The existing settings for the main and tie breaker DO NOT provide downstream coordination and may result in tripping of the main or tie breakers for a fault downstream of feeder breakers.



GFP

2MCC MAIN 1
SQUARE D
PX, Micrologic
PX LSI, 600-1600A
1200AF 1200AS/AT 1200AP
Phase
LTPU (0.5-1.0 x P) 0.8 (960A)
LTD (2-24 Sec.) 4.5
STPU (2-8 x P) 8.0 (9600A)
STD (0.1-0.5 Sec.) .5 (I^2t On)
INST (2.5-8 x P) 8.0 (9600A)
Ground
GFPU (0.2-0.75 x S) 0.2 (240A)
GFD (0.1-0.5 Sec.) 0.5

2MCC - LEFT
Nom Bus Voltage: 480 V

ATS 2MCC L FDR

CBL-ATS 2MCC L
(1) 3/0 AWG
Length 33.0 ft
Ampacity: 200 A

E N

ATS 2MCC.
ASCO
7000 ATS w/CB
200.0 A
Withstand Sym kA: 10.00 kA
30-4000A

GFP

2MCC TIE
SQUARE D
PX, Micrologic
PX LSI, 600-1600A
1200AF 1200AS/AT 1200AP
Phase
LTPU (0.5-1.0 x P) 0.8 (960A)
LTD (2-24 Sec.) 4.5
STPU (2-8 x P) 8.0 (9600A)
STD (0.1-0.5 Sec.) .5 (I^2t On)
INST (2.5-8 x P) 8.0 (9600A)
Ground
GFPU (0.2-0.75 x S) 0.2 (240A)
GFD (0.1-0.5 Sec.) 0.5

ATS 2MCC
Nom Bus Voltage: 480 V

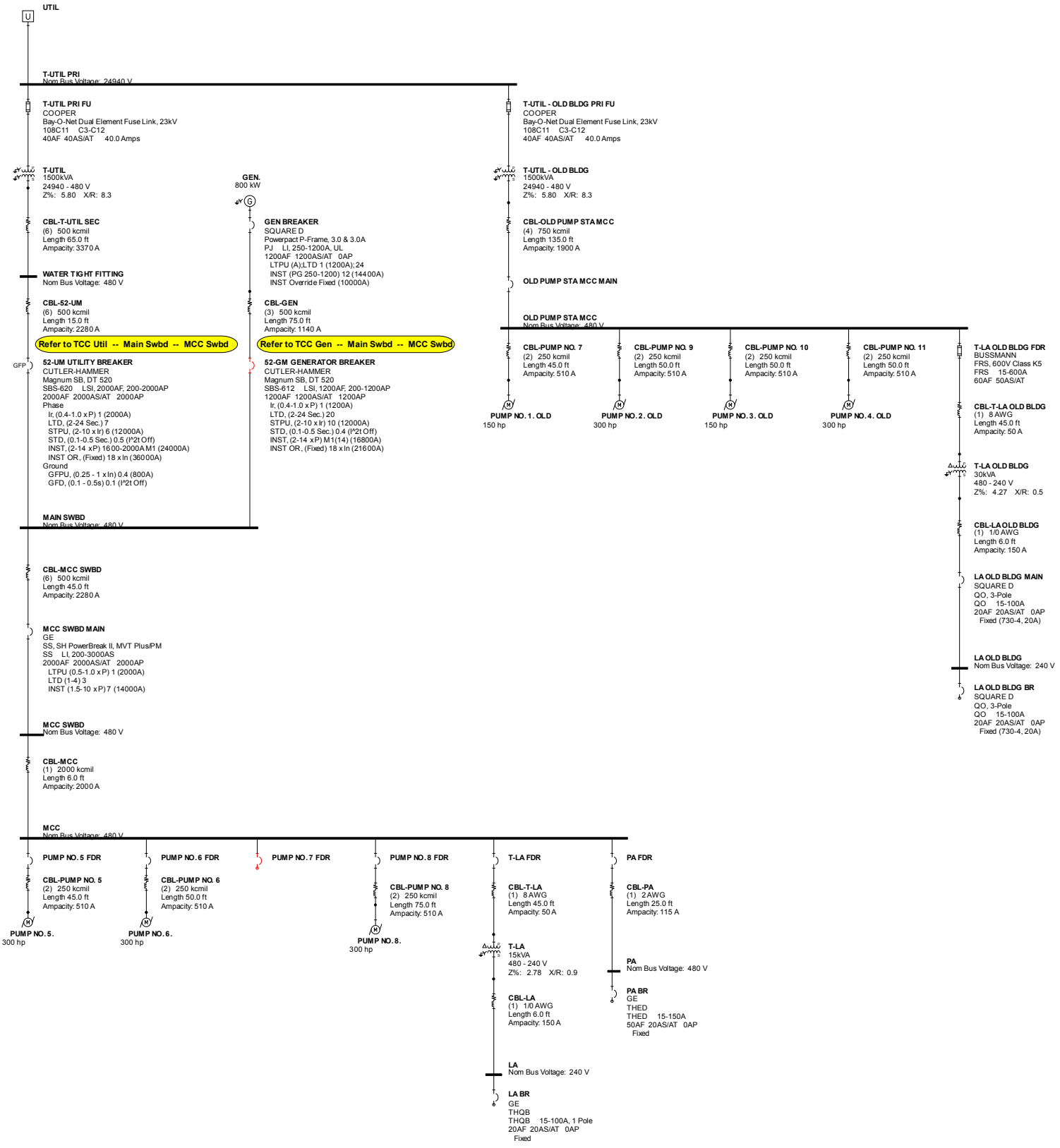
CBL-02PP1
(1) 3/0 AWG
Length 28.0 ft
Ampacity: 200 A

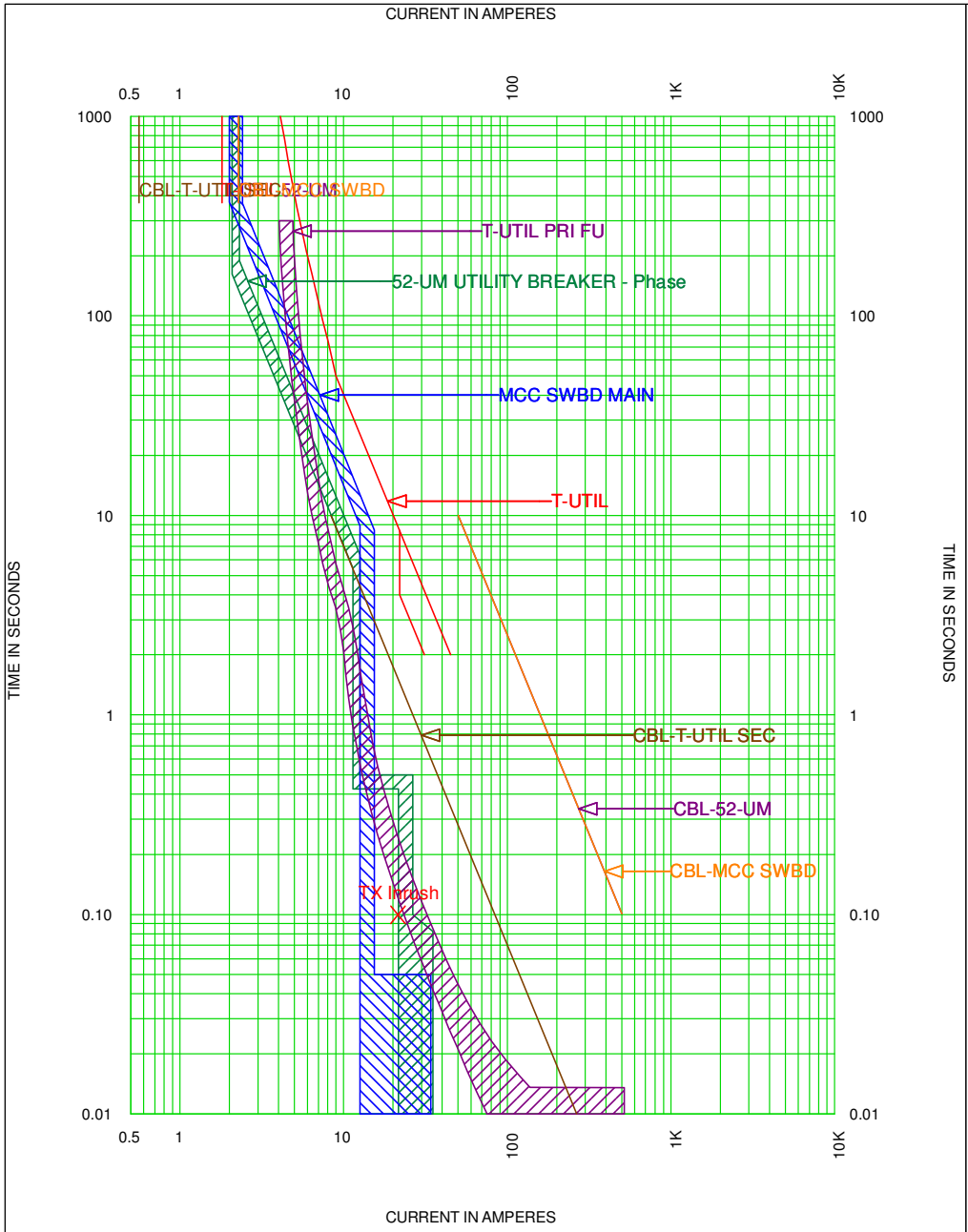
02 PP1 MAIN
SQUARE D
KA
KA 70-250A
250AF 200AS/AT 0AP
Thermal Curve
INST HI (2000A)

02PP1
Nom Bus Voltage: 480 V

TCC Narrative: Existing breaker settings provide adequate conductor protection and downstream coordination.

TCC: 2MCC Current Scale x 100 Reference Voltage: 480


UTIL
T-UTIL PRI
Nom Bus Voltage: 24940 V
T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C11 C3-C12
40AF 40AS/AT 40.0 Amps
T-UTIL
1500kVA
24940 - 480 V
Z%: 5.80 X/R: 8.3
GEN.
800 kW
CBL-T-UTIL SEC
(6) 500 kcmil
Length 65.0 ft
Ampacity: 3370 A
GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
1200AF 1200AS/AT 0AP
LTPU (A);LTD 1 (1200A); 24
INST (PG 250-1200) 12 (14400A)
INST Override Fixed (10000A)
WATER TIGHT FITTING
Nom Bus Voltage: 480 V
CBL-52-UM
(6) 500 kcmil
Length 15.0 ft
Ampacity: 2280 A
CBL-GEN
(3) 500 kcmil
Length 75.0 ft
Ampacity: 1140 A
Refer to TCC Util -- Main Swbd -- MCC Swbd
Refer to TCC Gen -- Main Swbd -- MCC Swbd
GFP
52-UM UTILITY BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-620 LSI, 2000AF, 200-2000AP
2000AF 2000AS/AT 2000AP
Phase
Ir, (0.4-1.0 x P) 1 (2000A)
LTD, (2-24 Sec.) 7
STPU, (2-10 x Ir) 6 (12000A)
STD, (0.1-0.5 Sec.) 0.5 (I^2t Off)
INST, (2-14 xP) 1600-2000A M1 (24000A)
INST OR, (Fixed) 18 x In (36000A)
Ground
GFPU, (0.25 - 1 x In) 0.4 (800A)
GFD, (0.1 - 0.5s) 0.1 (I^2t Off)
52-GM GENERATOR BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS/AT 1200AP
Ir, (0.4-1.0 x P) 1 (1200A)
LTD, (2-24 Sec.) 20
STPU, (2-10 x Ir) 10 (12000A)
STD, (0.1-0.5 Sec.) 0.4 (I^2t Off)
INST, (2-14 xP) M1(14) (16800A)
INST OR, (Fixed) 18 x In (21600A)
MAIN SWBD
Nom Bus Voltage: 480 V
CBL-MCC SWBD
(6) 500 kcmil
Length 45.0 ft
Ampacity: 2280 A
MCC SWBD MAIN
GE
SS, SH PowerBreak II, MVT Plus/PM
SS LI, 200-3000AS
2000AF 2000AS/AT 2000AP
LTPU (0.5-1.0 x P) 1 (2000A)
LTD (1-4) 3
INST (1.5-10 x P) 7 (14000A)
MCC SWBD
Nom Bus Voltage: 480 V
CBL-MCC
(1) 2000 kcmil
Length 6.0 ft
Ampacity: 2000 A
MCC
Nom Bus Voltage: 480 V
PUMP NO. 5 FDR
CBL-PUMP NO. 5
(2) 250 kcmil
Length 45.0 ft
Ampacity: 510 A
PUMP NO. 5.
300 hp
PUMP NO. 6 FDR
CBL-PUMP NO. 6
(2) 250 kcmil
Length 50.0 ft
Ampacity: 510 A
PUMP NO. 6.
300 hp
PUMP NO. 7 FDR
PUMP NO. 8 FDR
CBL-PUMP NO. 8
(2) 250 kcmil
Length 75.0 ft
Ampacity: 510 A
PUMP NO. 8.
300 hp
T-LA FDR
CBL-T-LA
(1) 8 AWG
Length 45.0 ft
Ampacity: 50 A
T-LA
15kVA
480 - 240 V
Z%: 2.78 X/R: 0.9
CBL-LA
(1) 1/0 AWG
Length 6.0 ft
Ampacity: 150 A
LA
Nom Bus Voltage: 240 V
LA BR
GE
THQB
THQB 15-100A, 1 Pole
20AF 20AS/AT 0AP
Fixed
PA FDR
CBL-PA
(1) 2 AWG
Length 25.0 ft
Ampacity: 115 A
PA
Nom Bus Voltage: 480 V
PA BR
GE
THED
THED 15-150A
50AF 20AS/AT 0AP
Fixed
T-UTIL - OLD BLDG PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C11 C3-C12
40AF 40AS/AT 40.0 Amps
T-UTIL - OLD BLDG
1500kVA
24940 - 480 V
Z%: 5.80 X/R: 8.3
CBL-OLD PUMP STA MCC
(4) 750 kcmil
Length 135.0 ft
Ampacity: 1900 A
OLD PUMP STA MCC MAIN
OLD PUMP STA MCC
Nom Bus Voltage: 480 V
CBL-PUMP NO. 7
(2) 250 kcmil
Length 45.0 ft
Ampacity: 510 A
PUMP NO. 1. OLD
150 hp
CBL-PUMP NO. 9
(2) 250 kcmil
Length 50.0 ft
Ampacity: 510 A
PUMP NO. 2. OLD
300 hp
CBL-PUMP NO. 10
(2) 250 kcmil
Length 50.0 ft
Ampacity: 510 A
PUMP NO. 3. OLD
150 hp
CBL-PUMP NO. 11
(2) 250 kcmil
Length 50.0 ft
Ampacity: 510 A
PUMP NO. 4. OLD
300 hp
T-LA OLD BLDG FDR
BUSSMANN
FRS, 600V Class K5
FRS 15-600A
60AF 50AS/AT
CBL-T-LA OLD BLDG
(1) 8 AWG
Length 45.0 ft
Ampacity: 50 A
T-LA OLD BLDG
30kVA
480 - 240 V
Z%: 4.27 X/R: 0.5
CBL-LA OLD BLDG
(1) 1/0 AWG
Length 6.0 ft
Ampacity: 150 A
LA OLD BLDG MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
20AF 20AS/AT 0AP
Fixed (730-4, 20A)
LA OLD BLDG
Nom Bus Voltage: 240 V
LA OLD BLDG BR
SQUARE D
QO, 3-Pole
QO 15-100A
20AF 20AS/AT 0AP
Fixed (730-4, 20A)



T-UTIL PRI
Nom Bus Voltage: 24940 V

T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C11 C3-C12
40AF 40AS/AT 40.0 Amps

T-UTIL
1500kVA
24940/480 V
Z%: 5.80 X/R: 8.3

CBL-T-UTIL SEC
(6) 500 kcmil
Length 65.0 ft
Ampacity: 3370 A

WATER TIGHT FITTING
Nom Bus Voltage: 480 V

CBL-52-UM
(6) 500 kcmil
Length 15.0 ft
Ampacity: 2280 A

GFP

52-UM UTILITY BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-620 LSI, 2000AF, 200-2000AP
2000AF 2000AS/AT 2000AP
Phase
Ir, (0.4-1.0 x P) 1 (2000A)
LTD, (2-24 Sec.) 7
STPU, (2-10 x Ir) 6 (12000A)
STD, (0.1-0.5 Sec.) 0.5 (I^2t Off)
INST, (2-14 x P) 1600-2000A M1 (24000A)
INST OR, (Fixed) 18 x In (36000A)
Ground
GFPU, (0.25 - 1 x In) 0.4 (800A)
GFD, (0.1 - 0.5s) 0.1 (I^2t Off)

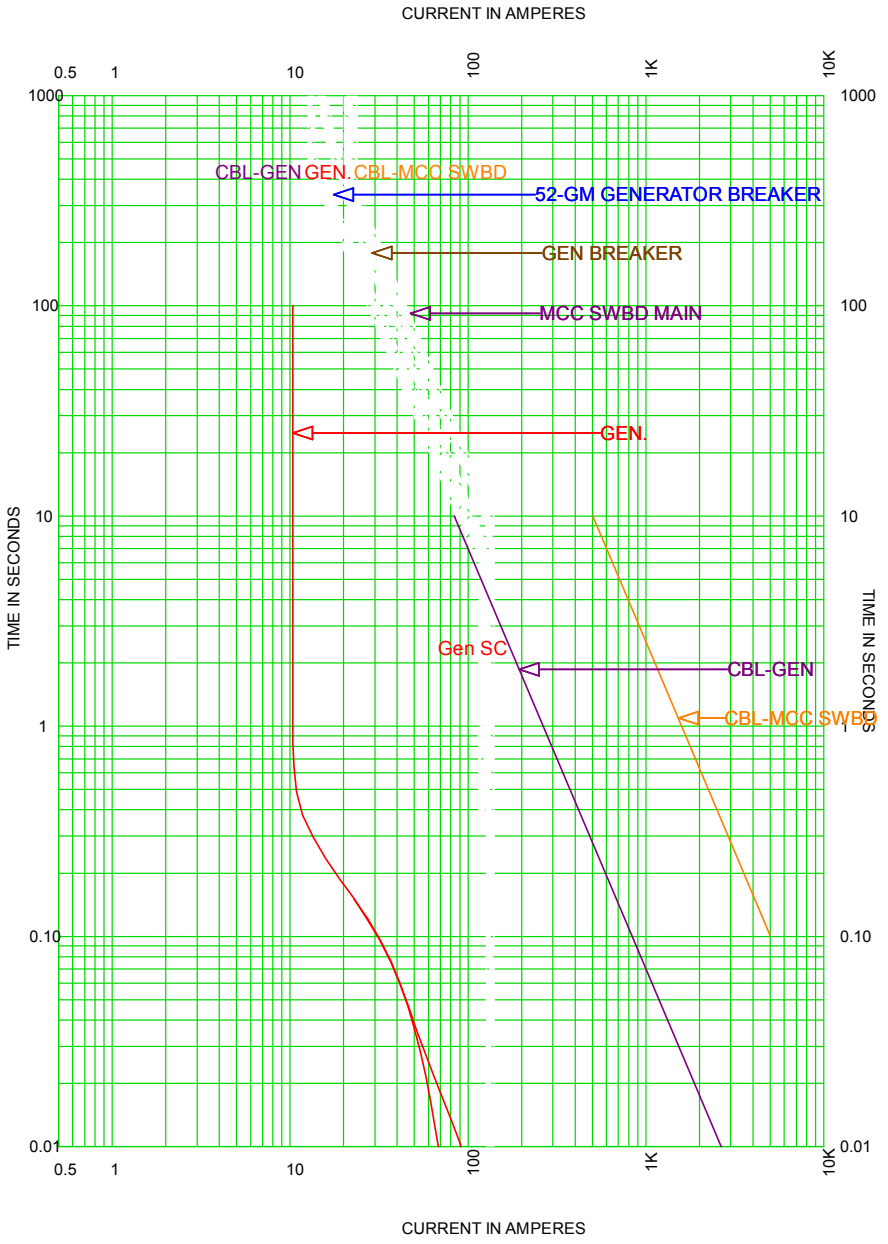
MAIN SWBD
Nom Bus Voltage: 480 V

CBL-MCC SWBD
(6) 500 kcmil
Length 45.0 ft
Ampacity: 2280 A

MCC SWBD MAIN
GE
SS, SH PowerBreak II, MVT Plus/PM
SS LI, 200-3000AS
2000AF 2000AS/AT 2000AP
LTPU (0.5-1.0 x P) 1 (2000A)
LTD (1-4) 3
INST (1.5-10 x P) 7 (14000A)

MCC SWBD
Nom Bus Voltage: 480 V

TCC Narrative: The 52-UM UTILITY BREAKER and the MCC SWBD MAIN breaker are redundant, meaning the tripping of either or both would result in the same extent of power outage. Therefore, overlap of their trip curves is not consider
The existing settings of 52-UM UTILITY BREAKER provide adequate transformer overload protection and conductor protection.



GEN.
800 kW

GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
1200AF 1200AS/AT 0AP
LTPU (A);LTD 1 (1200A); 24
INST (PG 250-1200) 12 (14400A)
INST Override Fixed (10000A)

CBL-GEN
(3) 500 kcmil
Length 75.0 ft
Ampacity: 1140 A

52-GM GENERATOR BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS/AT 1200AP
Ir, (0.4-1.0 x P) 1 (1200A)
LTD, (2-24 Sec.) 20
STPU, (2-10 x Ir) 10 (12000A)
STD, (0.1-0.5 Sec.) 0.4 (I^2t Off)
INST, (2-14 x P) M1(14) (16800A)
INST OR, (Fixed) 18 x In (21600A)

MAIN SWBD
Nom Bus Voltage: 480 V

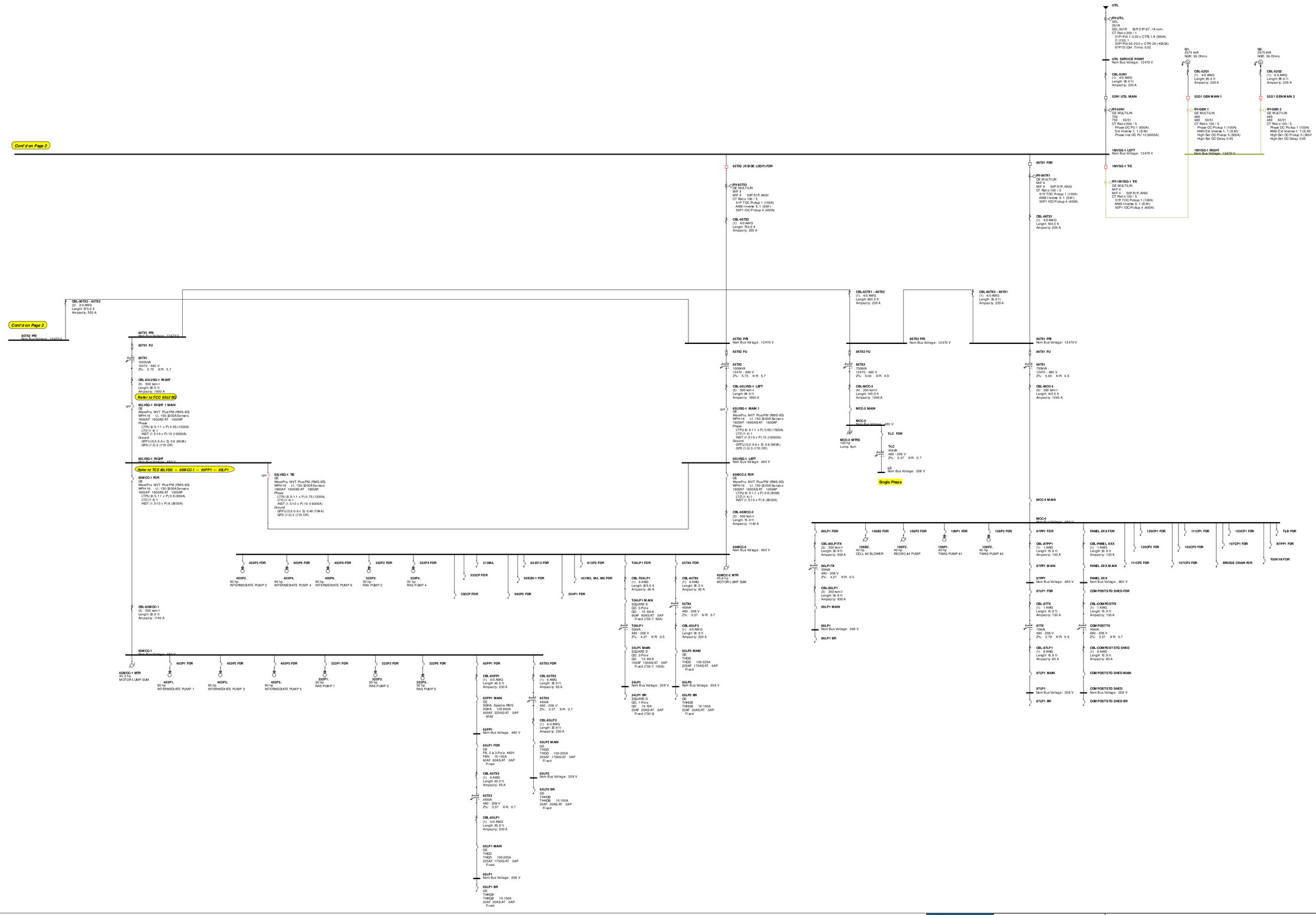
CBL-MCC SWBD
(6) 500 kcmil
Length 45.0 ft
Ampacity: 2280 A

MCC SWBD MAIN
GE
SS, SH PowerBreak II, MVT Plus/PM
SS LI, 200-3000AS
2000AF 2000AS/AT 2000AP
LTPU (0.5-1.0 x P) 1 (2000A)
LTD (1-4) 3
INST (1.5-10 x P) 7 (14000A)

MCC SWBD
Nom Bus Voltage: 480 V

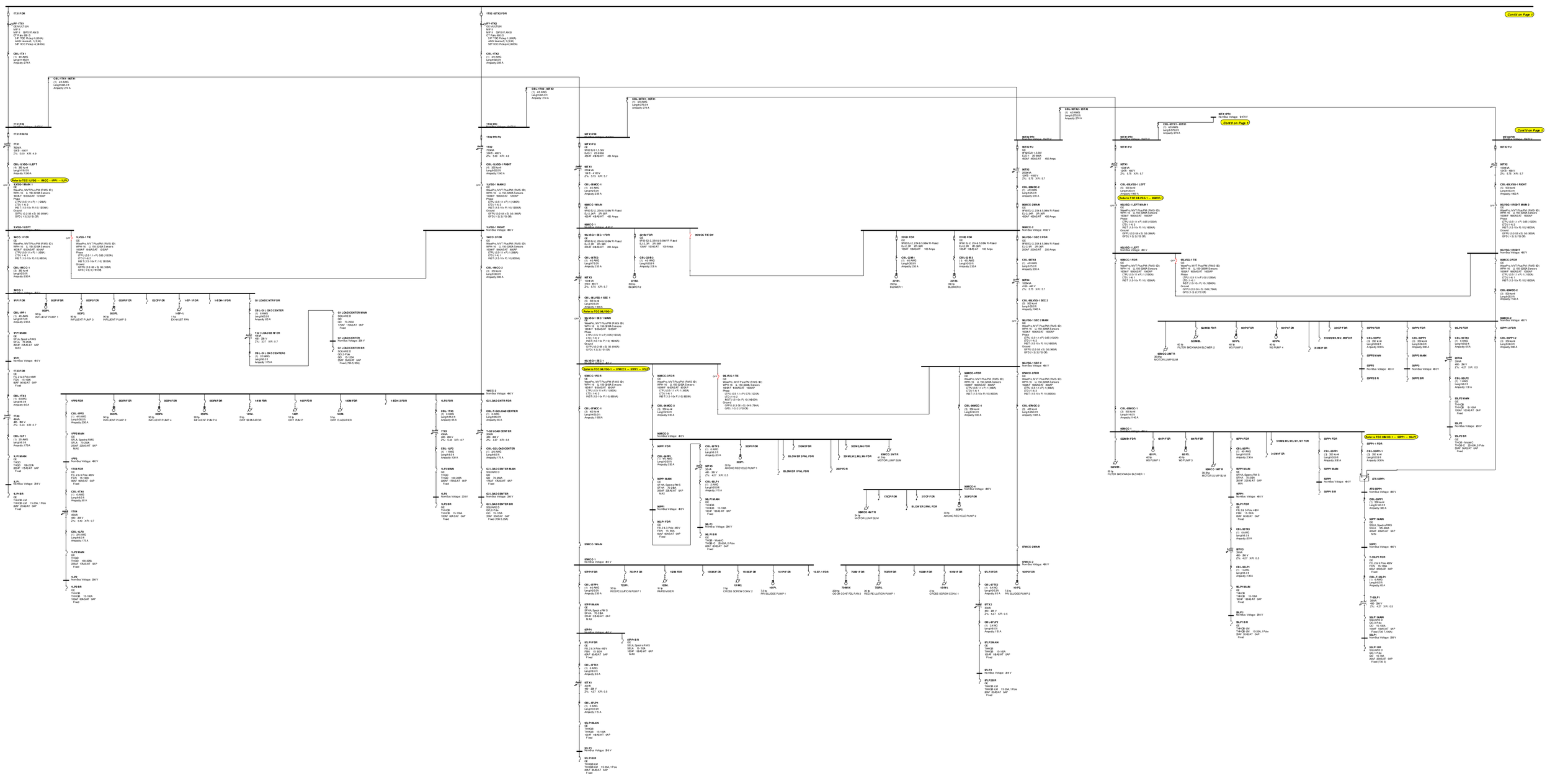
TCC Narrative: The existing settings for 52-GM GENERATOR BREAKER provide back-up protection for the generator. All three breakers depicted are redundant, meaning the trip of any or all of those breakers would result in the same extent of power outage. Therefore, any overlap of those trip curves is not considered mis-coordination.

TCC: Gen -- Main Swbd -- MCC Swbd
Current Scale x 100
Reference Voltage: 480



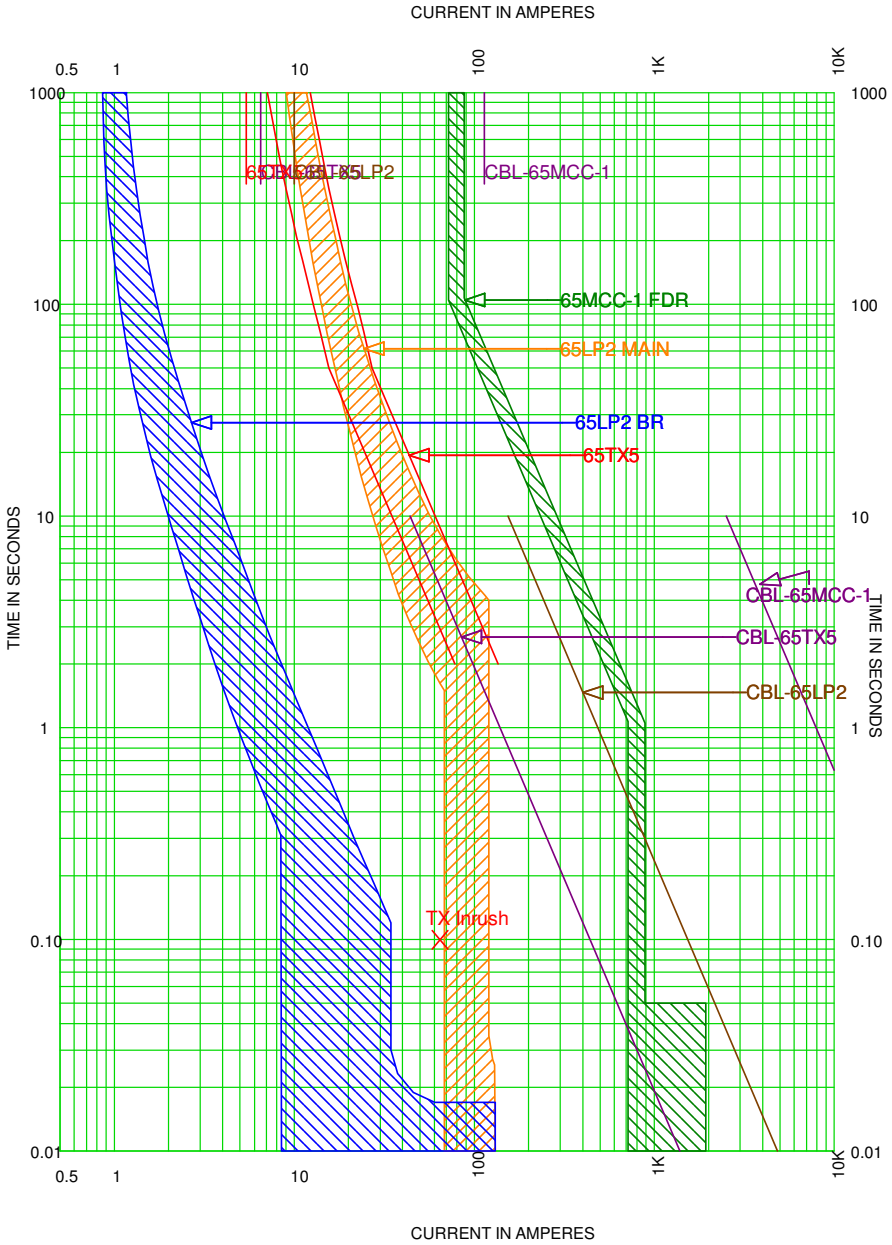
TRC Engineers

Project: CCWA - Northeast WRF -
Arc Flash Risk Assessment
Settings and TCC Overview - Page 1



TRC Engineers

Project: CCWA - Northeast WRF -
Arc Flash Risk Assessment
Settings and TCC Overview - Page 2



65LVSG-1 RIGHT
Nom Bus Voltage: 480 V

65MCC-1 FDR
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1000AP
LTPU (0.5-1.1 x P) 0.8 (800A)
LTD (1-4) 1
INST (1.5-10 x P) 8 (8000A)

CBL-65MCC-1
(3) 500 kcmil
Length 20.0 ft
Ampacity: 1140 A

65MCC-1
Nom Bus Voltage: 480 V

65TX5 FDR

CBL-65TX5
(1) 6 AWG
Length 35.0 ft
Ampacity: 65 A

65TX5
45kVA
480 - 208 V
Z%: 3.37 X/R: 0.7

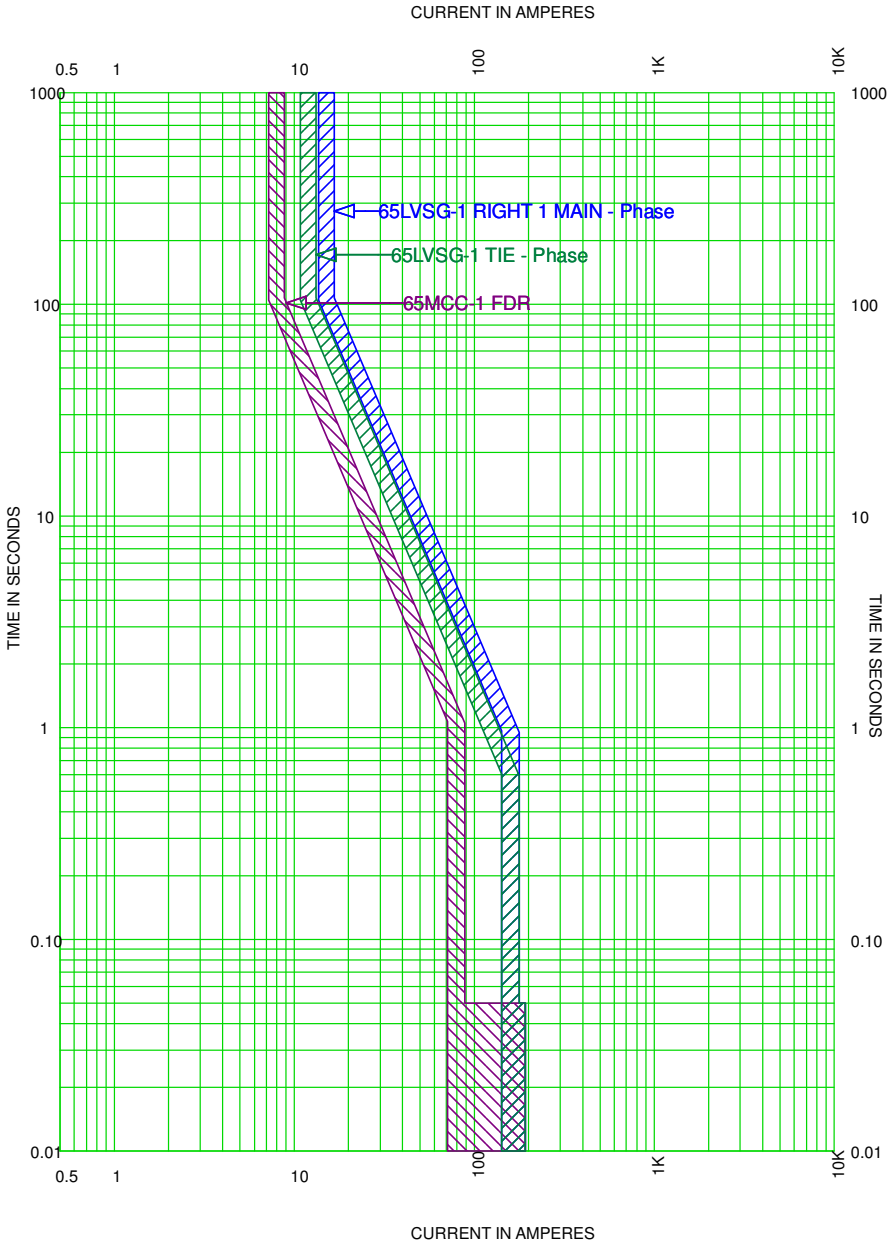
CBL-65LP2
(1) 4/0 AWG
Length 30.9 ft
Ampacity: 230 A

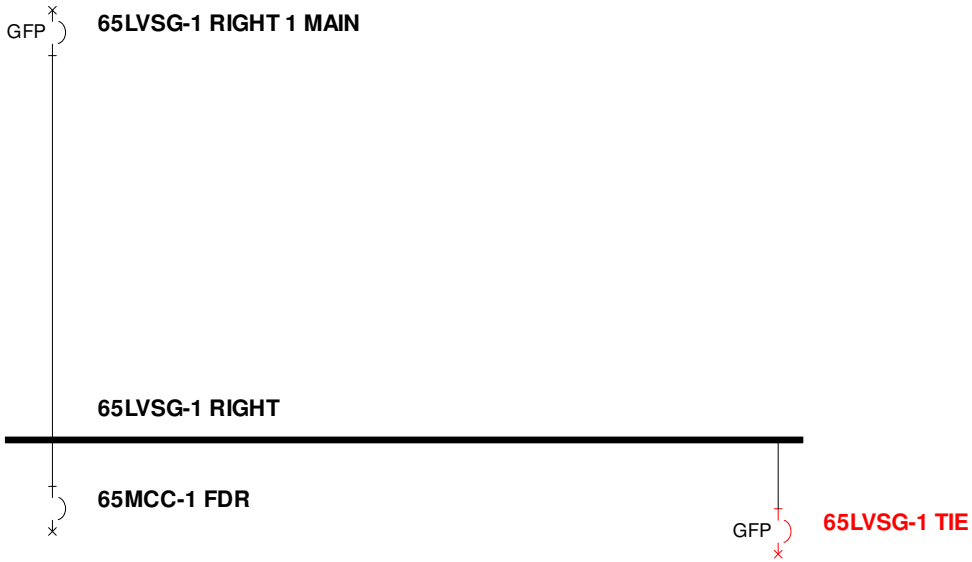
65LP2 MAIN
GE
THQD
THQD 100-225A
225AF 175AS/AT 0AP
Fixed

65LP2
Nom Bus Voltage: 208 V

65LP2 BR
GE
THHQB
THHQB 15-100A
20AF 20AS/AT 0AP
Fixed

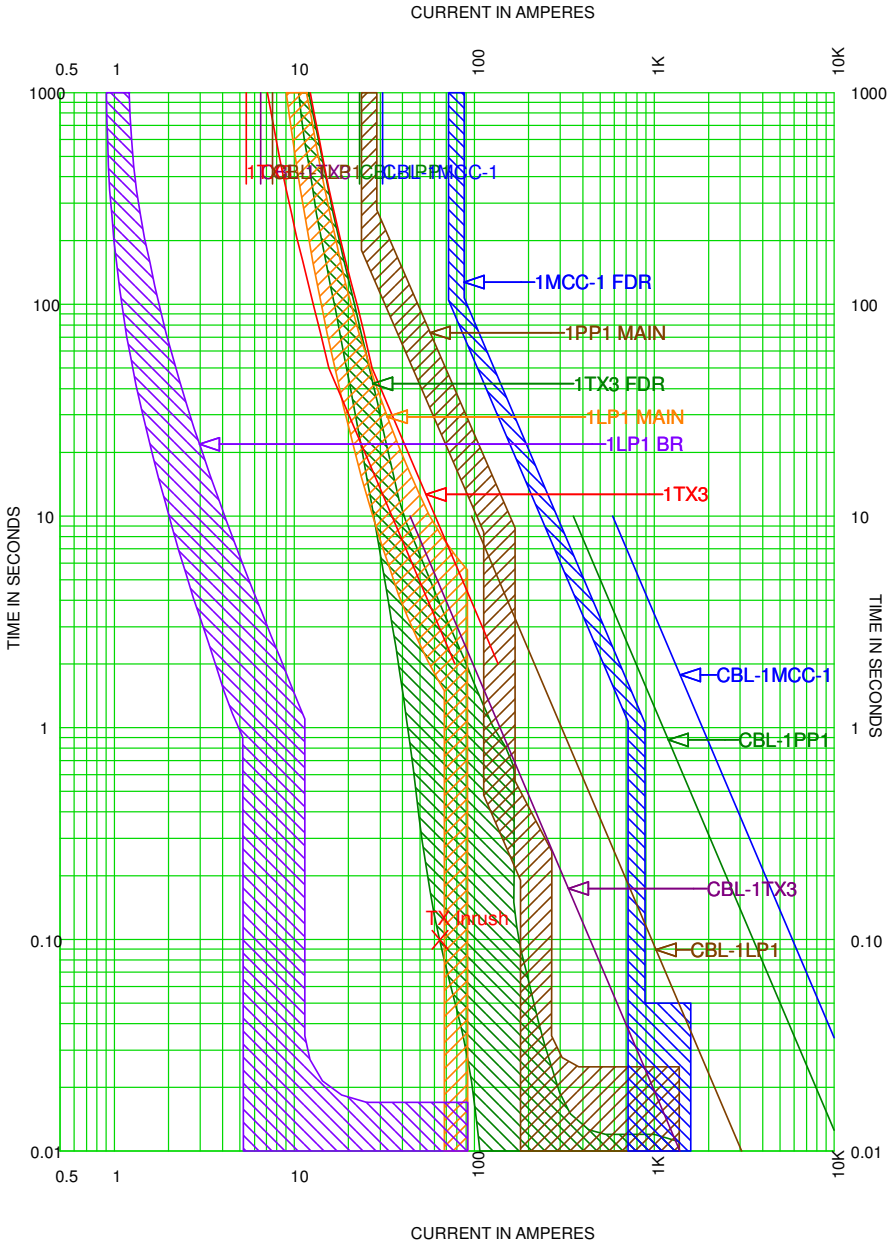
TCC Narrative: The panel main breaker coordinates with the panel branch breakers to the instantaneous pickup of the panel main breaker.





TCC Narrative: Existing settings achieve downstream coordination to the point of the instantaneous pickup of the main breaker.

TCC: 65LVSG Current Scale x 100 Reference Voltage: 480



1LVSG-1 LEFT
Nom Bus Voltage: 480 V

1MCC-1 FDR
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 800AP
LTPU (0.5-1.1 x P) 1 (800A)
LTD (1-4) 1
INST (1.5-10 x P) 10 (8000A)

CBL-1MCC-1
(3) 350 kcmil
Length 25.0 ft
Ampacity: 930 A

1MCC-1
Nom Bus Voltage: 480 V

1PP1 FDR

CBL-1PP1
(1) 4/0 AWG
Length 37.0 ft
Ampacity: 230 A

1PP1 MAIN
GE
SFLA, Spectra RMS
SFLA 70-250A
250AF 225AS/AT 0AP
MAX

1PP1
Nom Bus Voltage: 480 V

1TX3 FDR
GE
FC, 2 & 3-Pole 480V
FCN 15-100A
90AF 90AS/AT 0AP
Fixed

CBL-1TX3
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A

1TX3
45kVA
480 - 208 V
Z%: 5.40 X/R: 0.7

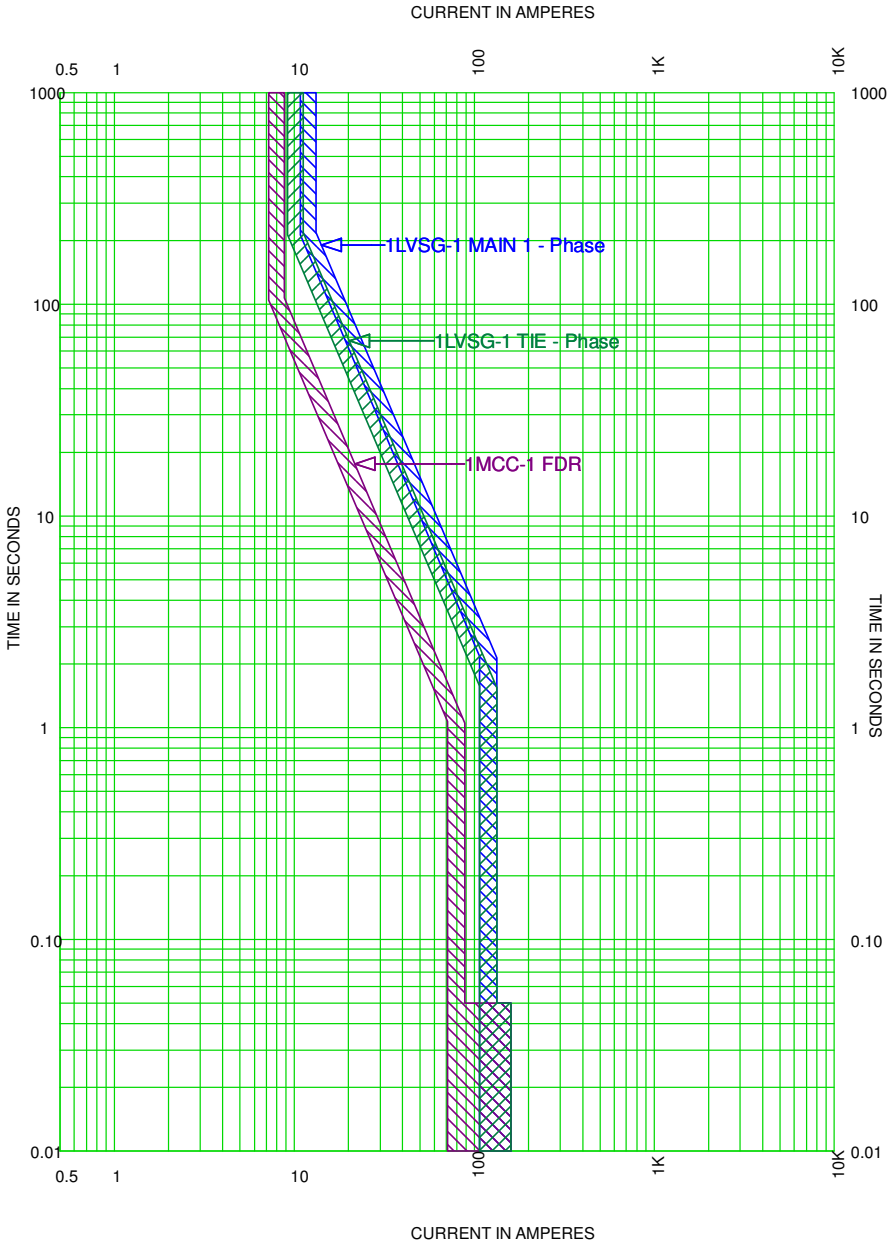
CBL-1LP1
(1) 2/0 AWG
Length 8.0 ft
Ampacity: 175 A

1LP1 MAIN
GE
THQD
THQD 100-225A
225AF 175AS/AT 0AP
Fixed

1LP1
Nom Bus Voltage: 208 V

1LP1 BR
GE
THHQB-LM
THHQB-LM 15-20A, 1 Pole
20AF 20AS/AT 0AP
Fixed

TCC Narrative: 1LP1 MAIN and 1TX3 FDR are redundant as are 1PP1 FDR and 1PP1 MAIN. Therefore, tripping curve overlap between the two breakers of each of these two pairs does not represent mis-coordination.
The panel main breakers coordinate with the panel branch breakers to the instantaneous pickup of the main breakers, typical for thermal-magnetic breakers.
The existing settings for 1MMC-1 FDR and other breakers depicted achieve adequate equipment protections and downstream coordination.



GFP

1LVSG-1 MAIN 1
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1200AP
Phase
LTPU (0.5-1.1 x P) 1 (1200A)
LTD (1-4) 2
INST (1.5-10 x P) 10 (12000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (1-3) 3 (I^2t Off)

1LVSG-1 LEFT
Nom Bus Voltage: 480 V

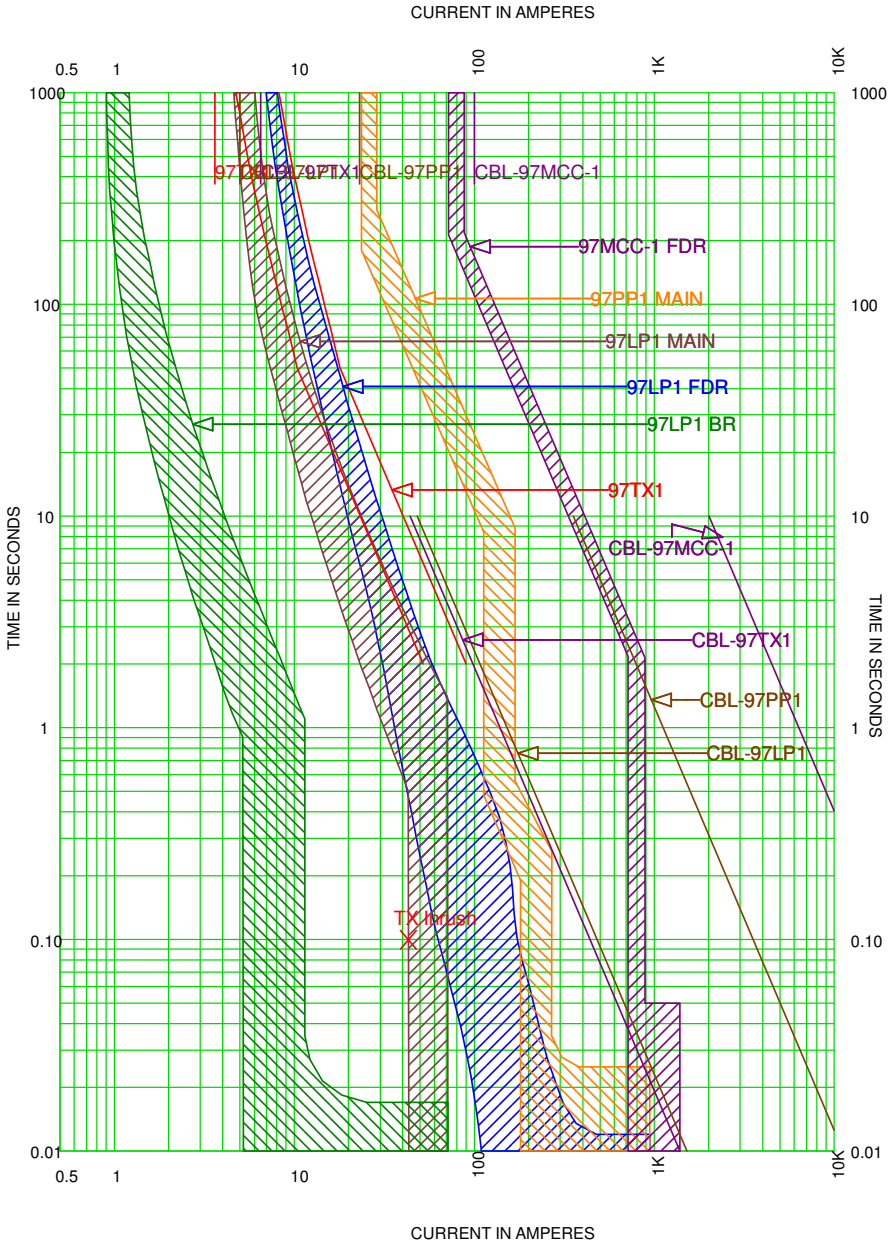
Refer to TCC 1LVSG -- 1MCC --1PP1 -- 1LP1

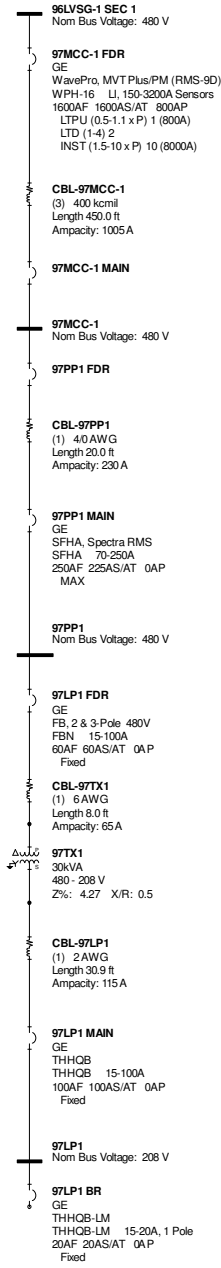
1MCC-1 FDR
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 800AP
LTPU (0.5-1.1 x P) 1 (800A)
LTD (1-4) 1
INST (1.5-10 x P) 10 (8000A)

GFP

1LVSG-1 TIE
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1200AP
Phase
LTPU (0.5-1.1 x P) 0.85 (1020A)
LTD (1-4) 2
INST (1.5-10 x P) 10 (12000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (1-3) 3 (I^2t Off)

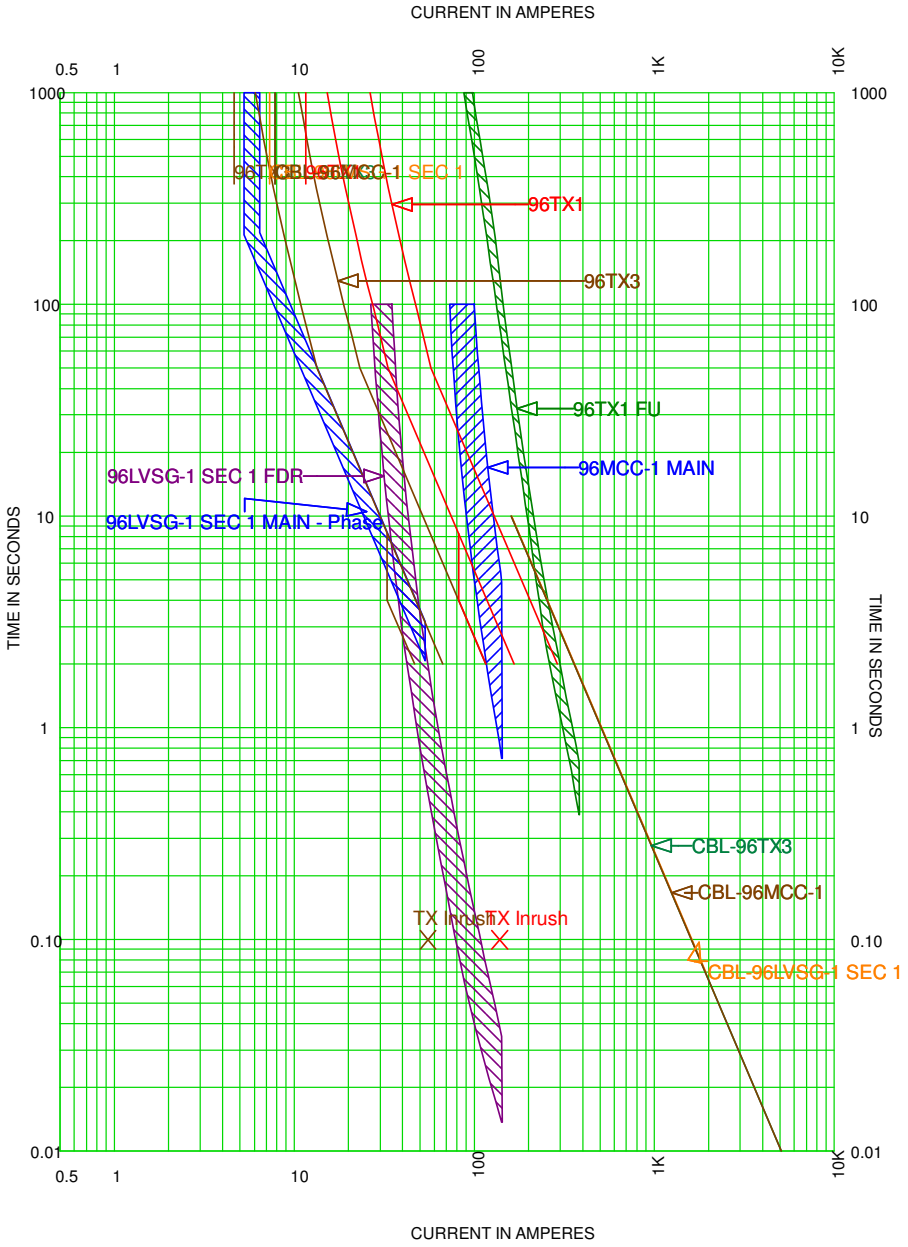
TCC Narrative:





TCC Narrative: 97LP1 MAIN and 97LP1 FDR are redundant, meaning the tripping of either or both will result in the same extent of power outage. This is also true for the 97PP1 MAIN/ 97PP1 FDR pair and the 97MCC-1 FDR and 97MMC-1 MAIN pair. Trip curve overlap for redundant breakers is not considered mis-coordination.
The existing breaker settings depicted in this TCC represent adequate equipment protection and downstream coordination.

TCC: 96LVSG-1 -- 97MCC1 -- 97PP1 -- 97LP1 Current Scale x 10 Reference Voltage: 480



96TX1 PRI
Nom Bus Voltage: 12470 V

96TX1 FU
GE
9F62 EJ0-1, 5.5kV
EJO-1 25-900A
450AF 450AS/AT 450 Amps

96TX1
2500kVA
12470 - 4160 V
Z%: 5.75 X/R: 5.7

CBL-96MCC-1
(1) 4/0 AWG
Length 25.0 ft
Ampacity: 235 A

96MCC-1 MAIN
GE
9F60 EJ-2, 2.54 & 5.08kV R-Rated
EJ-2, 24R 2R-36R
450AF 450AS/AT 450 Amps

96MCC-1
Nom Bus Voltage: 4160 V

96LVSG-1 SEC 1 FDR
GE
9F60 EJ-2, 2.54 & 5.08kV R-Rated
EJ-2, 9R 2R-36R
200AF 200AS/AT 200 Amps

CBL-96TX3
(1) 4/0 AWG
Length 75.0 ft
Ampacity: 235 A

96TX3
1000kVA
4160 - 480 V
Z%: 5.75 X/R: 5.7

CBL-96LVSG-1 SEC 1
(5) 500 kcmil
Length 35.0 ft
Ampacity: 1900 A

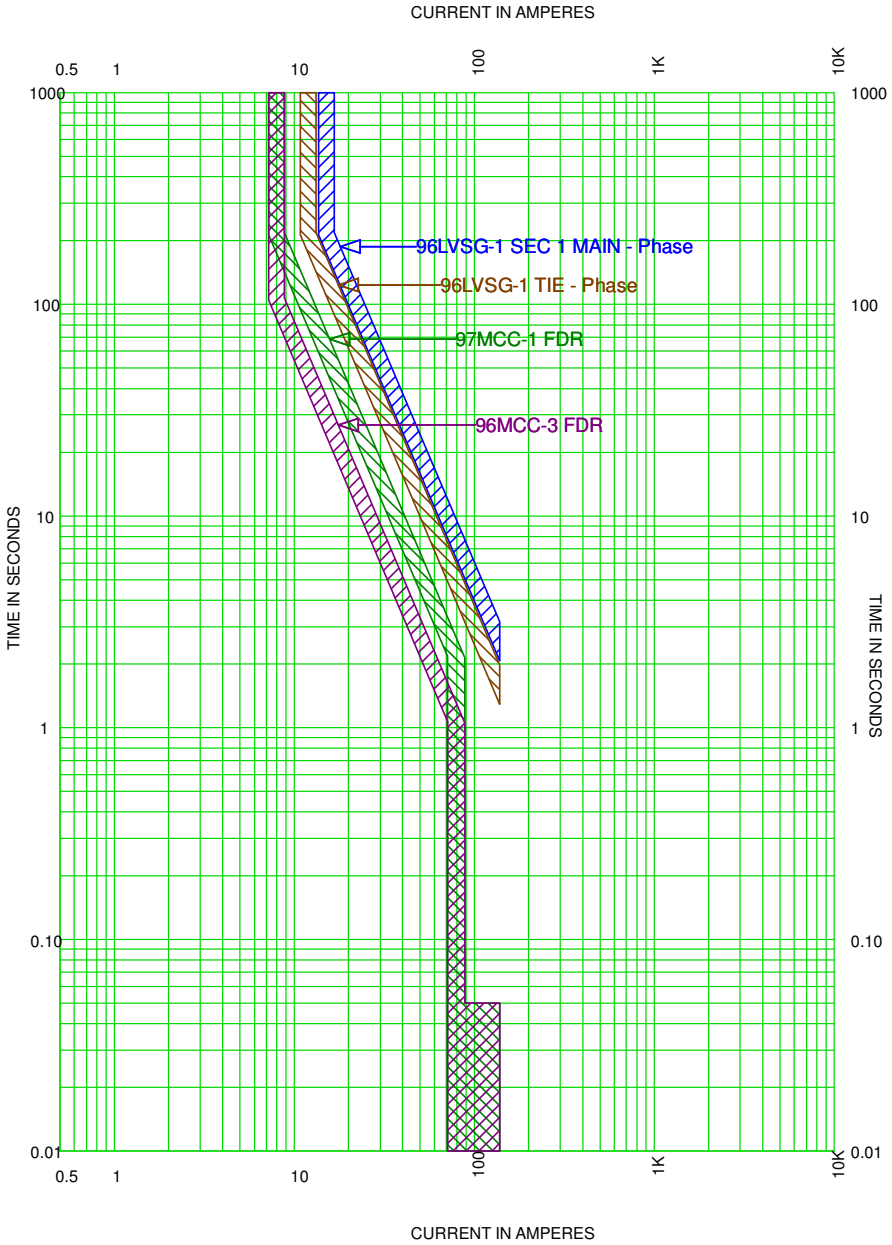
GFP

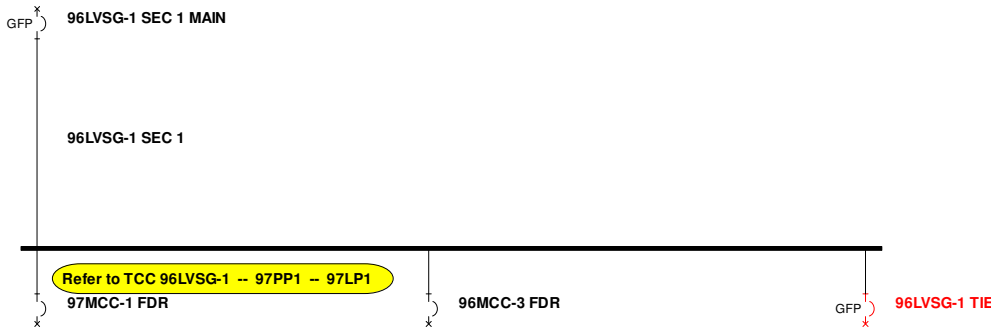
96LVSG-1 SEC 1 MAIN
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1600AP
Phase
LTPU (0.5-1.1 x P) 0.95 (1520A)
LTD (1-4) 2
INST (1.5-10 x P) 10 (16000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (1-3) 3 (I^2t Off)

96LVSG-1 SEC 1
Nom Bus Voltage: 480 V

TCC Narrative:

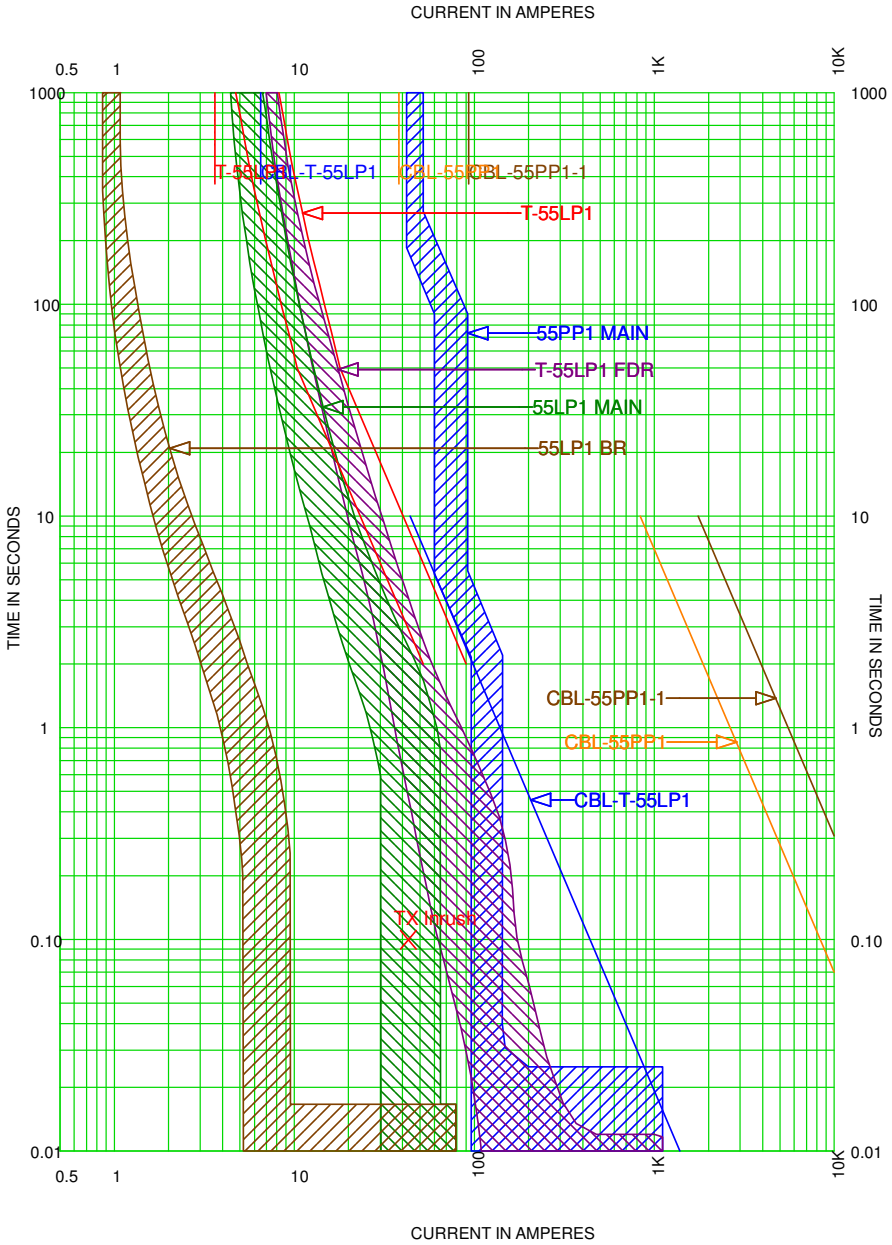
TCC: 96MCC-1 -- 96LVSG-1
Current Scale x 10
Reference Voltage: 12470





TCC Narrative: Existing settings for the breakers depicted achieve excellent downstream coordination.

TCC: 96LVSG-1 Current Scale x 100 Reference Voltage: 480



95MCC-1
Nom Bus Voltage: 480 V

55PP1-1 FDR

CBL-55PP1-1
(3) 350 kcmil
Length 30.9 ft
Ampacity: 930 A

E N
ATS 55PP1.

ATS 55PP1
Nom Bus Voltage: 480 V

CBL-55PP1
(1) 500 kcmil
Length 160.0 ft
Ampacity: 380 A

55PP1 MAIN
GE
SGLA, Spectra RMS
SGLA 125-600A
400AF 400AS/AT 0AP
MIN

55PP1
Nom Bus Voltage: 480 V

T-55LP1 FDR
GE
FC, 2 & 3-Pole 480V
FCN 15-100A
60AF 60AS/AT 0AP
Fixed

CBL-T-55LP1
(1) 6 AWG
Length 8.0 ft
Ampacity: 65 A

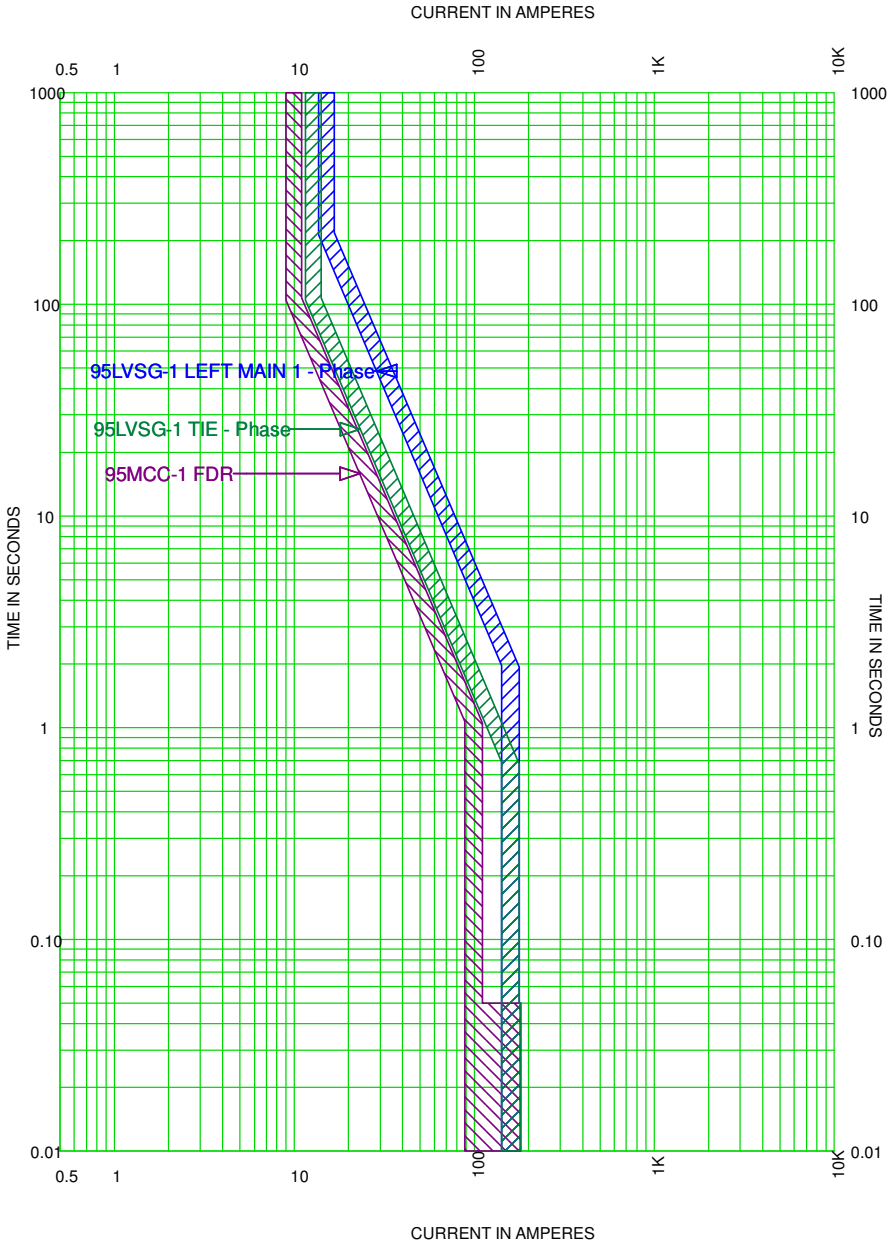
T-55LP1
30kVA
480 - 208 V
Z%: 4.27 X/R: 0.5

55LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS/AT 0AP
Fixed (730-7, 100A)

55LP1
Nom Bus Voltage: 208 V

55LP1 BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS/AT 0AP
Fixed (730-3)

TCC Narrative: 55LP1 MAIN and T-55LP1 FDR are redundant, meaning the tripping of either or both will result in the same extent of power outage. Tripping curve overlap of redundant breakers is not considered mis-coordination. 55PP1-1 FD and 55PP1 MAIN are also redundant. Existing settings achieve adequate equipment protection and downstream coordination to the instantaneous pickup of the upstream breaker.



GFP

95LVSG-1 LEFT MAIN 1
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1600AP
Phase
LTPU (0.5-1.1 x P) 0.95 (1520A)
LTD (1-4) 2
INST (1.5-10 x P) 10 (16000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (1-3) 3 (I^2t Off)

95LVSG-1 LEFT
Nom Bus Voltage: 480 V

95MCC-1 FDR
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1000AP
LTPU (0.5-1.1 x P) 1 (1000A)
LTD (1-4) 1
INST (1.5-10 x P) 10 (10000A)

GFP

95LVSG-1 TIE
GE
WavePro, MVT Plus/PM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS/AT 1600AP
Phase
LTPU (0.5-1.1 x P) 0.8 (1280A)
LTD (1-4) 1
INST (1.5-10 x P) 10 (16000A)
Ground
GFPU (0.2-0.6 x S) 0.49 (784A)
GFD (1-3) 2 (I^2t Off)

TCC Narrative: Existing settings achieve downstream coordination to the instantaneous pickup of the upstream breakers.

UTILITY

UTILITY
Nom Bus Voltage: 24900 V

CBL-63TX-1
(1) 2/0 AWG
Length 100.8 ft
Ampacity: 185 A

63TX-1
1500kVA
24900 - 480 V
Z%: 5.75 X/R: 5.7

CBL-ATS 1 N
(6) 500 kcmil
Length 50.0 ft
Ampacity: 3148 A

Refer to TCC UTIL -- 63PP1

GFP **ATS 1 N BREAKER**
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LI, 400-3000AF
3000AF 3000AS/AT 3000AP
Phase
LTPU (0.5-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 24
INST (2-10 x P) 6 (18000A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200A Plug) D (1200A)
GFD (0.1-0.5 Sec.) 0.3 Sec. (I^2t Off)

TRANSFER SWITCH 1
Nom Bus Voltage: 480 V

Refer to TCC GEN 1 -- 63SWGR1

GEN 1
1500 kW

CBL-ATS 1 E
(6) 500 kcmil
Length 15.0 ft
Ampacity: 3148 A

GFP **ATS 1 E BREAKER**
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LI, 400-3000AF
3000AF 3000AS/AT 3000AP
Phase
LTPU (0.5-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 24
INST (2-10 x P) 6 (18000A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200A Plug) D (1200A)
GFD (0.1-0.5 Sec.) 0.5 Sec. (I^2t Off)

CBL-63SWGR1
(6) 750 kcmil
Length 235.0 ft
Ampacity: 3974 A

GFP **63SWGR1 MAIN**
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS/AT 3200AP
Phase
LTPU (0.5-1.1 x P) 1 (3200A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 4 (12800A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-13 x P) 10 (32000A)
Ground
GFPU (0.2-0.37 x S) 0.34 (1088A)
GFD (Min-Max) Max (I^2t Off)

63SWGR1
Nom Bus Voltage: 480 V

GFP **63PP1 FDR**
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 0.5 (400A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 7 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (480A)
GFD (Min-Max) Int (I^2t Off)

CBL-63PP1
(1) 350 kcmil
Length 45.0 ft
Ampacity: 310 A

63PP1
Nom Bus Voltage: 480 V

Refer to TCC 63PP1 -- 63LP1

63LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS/AT 0AP
MAX

CBL-63TX-4
(1) 6 AWG
Length 12.0 ft
Ampacity: 65 A

63TX-4
15kVA
480 - 208 V
Z%: 4.70 X/R: 0.9

CBL-63LP1
(1) 6 AWG
Length 5.0 ft
Ampacity: 65 A

63LP1 MAIN
GE
THQB
THQB 15-100A
100AF 60AS/AT 0AP
Fixed

63LP1
Nom Bus Voltage: 208 V

63LP1 BR
GE
THQB
THQB - 1 pole 15-100A
20AF 15AS/AT 0AP
Fixed

63PP2 FDR
GE
SELA, Spectra RMS
SELA 15-150A
150AF 150AS/AT 0AP
MAX

CBL-63PP2
(1) 1/0 AWG
Length 6.0 ft
Ampacity: 150 A

63PP2
Nom Bus Voltage: 480 V

63PP2 BR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS/AT 0AP
MAX

GFP **123P1 FDR**
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 0.5 (400A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 7 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (480A)
GFD (Min-Max) Min (I^2t Off)

CBL-123P1
(2) 500 kcmil
Length 45.9 ft
Ampacity: 760 A

123P1.
250 hp
RAW SEWAGE PUMP NO. 1

GFP **123P2 FDR**
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 0.5 (400A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 7 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (480A)
GFD (Min-Max) Min (I^2t Off)

CBL-123P2
(2) 500 kcmil
Length 45.9 ft
Ampacity: 760 A

123P2.
250 hp
RAW SEWAGE PUMP NO. 2

GFP **123P3 FDR**
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 0.5 (400A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 7 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (480A)
GFD (Min-Max) Min (I^2t Off)

CBL-123P3
(2) 500 kcmil
Length 45.9 ft
Ampacity: 760 A

123P3.
250 hp
RAW SEWAGE PUMP NO. 3

Refer to TCC GEN 2 -- 63SWGR2

GEN 2
2060 kW

CBL-ATS 2 E
(6) 500 kcmil
Length 15.0 ft
Ampacity: 3148 A

GFA **ATS 2 E BREAKER**
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000 -3200A Plugs
3200AF 3000AS/AT 3000AP
LTPU (0.4-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 7
STPU (2-10 x LTPU) 6 (18000A)
STD (0.1-0.5 Sec.) 0.5 (I^2t On)
INST (2-10 x P) M1 (10) (30000A)

CBL-63TX-2
(1) 2/0 AWG
Length 100.8 ft
Ampacity: 185 A

63TX-2
2000kVA
24900 - 480 V
Z%: 5.75 X/R: 5.7

CBL-ATS 2 N
(6) 500 kcmil
Length 60.0 ft
Ampacity: 3148 A

Refer to TCC UTIL - 63SWGR2

GFA **ATS 2 N BREAKER**
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000 -3200A Plugs
3200AF 3000AS/AT 3000AP
LTPU (0.4-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 7
STPU (2-10 x LTPU) 6 (18000A)
STD (0.1-0.5 Sec.) 0.5 (I^2t On)
INST (2-10 x P) M1(10) (30000A)

TRANSFER SWITCH 2
Nom Bus Voltage: 480 V

CBL-63SWGR2
(6) 750 kcmil
Length 75.0 ft
Ampacity: 3974 A

GFP **63SWGR2 MAIN**
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS/AT 3200AP
Phase
LTPU (0.5-1.1 x P) 1 (3200A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 4 (12800A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-13 x P) 10 (32000A)
Ground
GFPU (0.2-0.37 x S) 0.37 (1184A)
GFD (Min-Max) Min (I^2t Off)

63SWGR2
Nom Bus Voltage: 480 V

GFP **501P1 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P1
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P1.
500 hp
TRANSFER PUMP NO. 1

GFP **501P3 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 15 (15000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P3
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P3.
500 hp
TRANSFER PUMP NO. 3

GFP **501P5 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.5 (800A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P5
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P5.
500 hp
TRANSFER PUMP NO. 5

GFP **501P7 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P7
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P7.
500 hp
TRANSFER PUMP NO. 7

GEN 3
2060 kW

CBL-ATS 3 E
(6) 500 kcmil
Length 15.0 ft
Ampacity: 3148 A

GFA **ATS 3 E BREAKER**
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000 -3200A Plugs
3200AF 3000AS/AT 3000AP
LTPU (0.4-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 7
STPU (2-10 x LTPU) 6 (18000A)
STD (0.1-0.5 Sec.) 0.5 (I^2t On)
INST (2-10 x P) M1 (10) (30000A)

CBL-63TX-3
(1) 2/0 AWG
Length 100.8 ft
Ampacity: 185 A

63TX-3
2000kVA
24900 - 480 V
Z%: 5.75 X/R: 5.7

CBL-ATS 3 N
(6) 500 kcmil
Length 60.0 ft
Ampacity: 3148 A

GFA **ATS 3 N BREAKER**
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000 -3200A Plugs
3200AF 3000AS/AT 3000AP
LTPU (0.4-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 7
STPU (2-10 x LTPU) 6 (18000A)
STD (0.1-0.5 Sec.) 0.5 (I^2t On)
INST (2-10 x P) M1 (10) (30000A)

TRANSFER SWITCH 3
Nom Bus Voltage: 480 V

63SWGR3 CBL
(6) 750 kcmil
Length 75.0 ft
Ampacity: 3974 A

GFP **63SWGR3 MAIN**
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS/AT 3200AP
Phase
LTPU (0.5-1.1 x P) 1 (3200A)
LTD (1-4) 1
STPU (1.5-9 x LTPU) 3 (9600A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-13 x P) 10 (32000A)
Ground
GFPU (0.2-0.37 x S) 0.28 (896A)
GFD (Min-Max) Int (I^2t Off)

63SWGR3
Nom Bus Voltage: 480 V

GFP **501P2 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P2
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P2.
500 hp
TRANSFER PUMP NO. 2

GFP **501P4 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P4
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P4.
500 hp
TRANSFER PUMP NO. 4

GFP **501P6 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P6
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P6.
500 hp
TRANSFER PUMP NO. 6

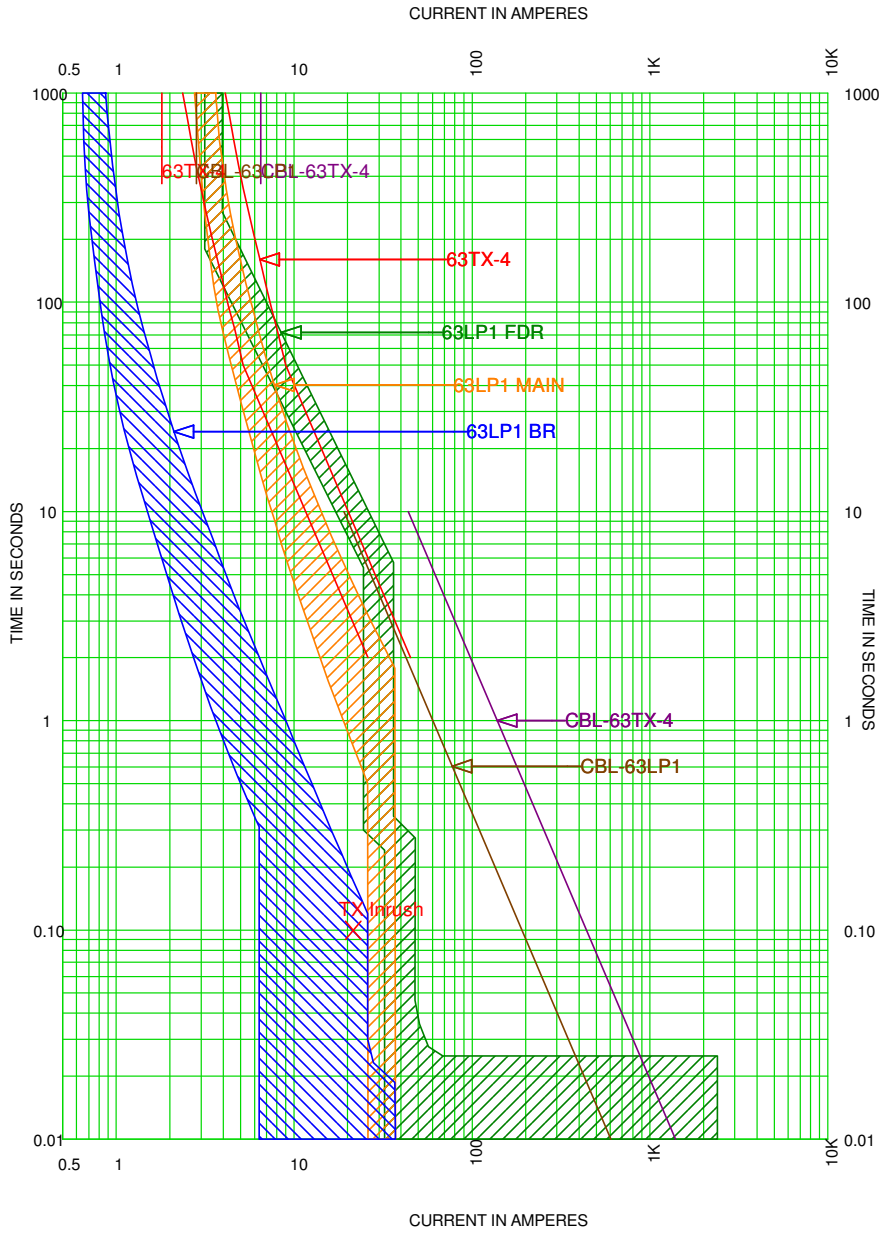
GFP **501P8 FDR**
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

CBL-501P8
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P8.
500 hp
TRANSFER PUMP NO. 8

Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm

Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service



63PP1
Nom Bus Voltage: 480 V

63LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS/AT 0AP
MAX

CBL-63TX-4
(1) 6 AWG
Length 12.0 ft
Ampacity: 65 A

63TX-4
15kVA
480 - 208 V
Z%: 4.70 X/R: 0.9

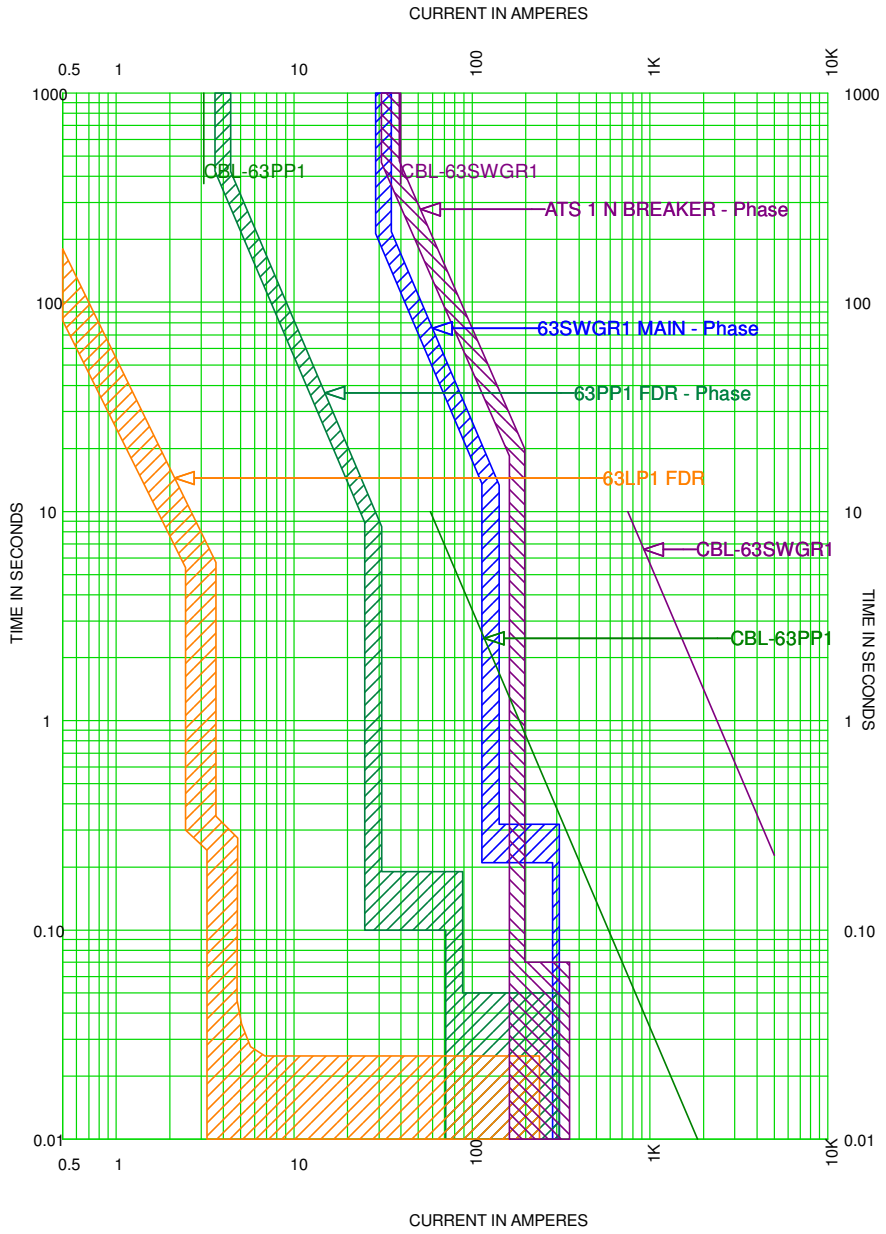
CBL-63LP1
(1) 6 AWG
Length 5.0 ft
Ampacity: 65 A

63LP1 MAIN
GE
THQB
THQB 15-100A
100AF 60AS/AT 0AP
Fixed

63LP1
Nom Bus Voltage: 208 V

63LP1 BR
GE
THQB
THQB - 1 pole 15-100A
20AF 15AS/AT 0AP
Fixed

TCC Narrative: 63LP1 FDR and 63LP1 MAIN are redundannt, meaning the tripping of either or both will result in the same extent of power outage. Therefore, overlap of the tripping curves is not considered mis-coordination. There breakers provide adequate conductor and transformer protection.



GFP

ATS 1 N BREAKER
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LI, 400-3000AF
3000AF 3000AS/AT 3000AP
Phase
LTPU (0.5-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 24
INST (2-10 x P) 6 (18000A)
OVERRIDE (1 x ST) Fixed (51000A)
Ground
GFPU (100-1200A Plug) D (1200A)
GFD (0.1-0.5 Sec.) 0.3 Sec. (I^2t Off)

TRANSFER SWITCH 1
Nom Bus Voltage: 480 V

CBL-63SWGR1
(6) 750 kcmil
Length 235.0 ft
Ampacity: 3974 A

GFP

63SWGR1 MAIN
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS/AT 3200AP
Phase
LTPU (0.5-1.1 x P) 1 (3200A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 4 (12800A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-13 x P) 10 (32000A)
Ground
GFPU (0.2-0.37 x S) 0.34 (1088A)
GFD (Min-Max) Max (I^2t Off)

63SWGR1
Nom Bus Voltage: 480 V

GFP

63PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS/AT 800AP
Phase
LTPU (0.5-1.1 x P) 0.5 (400A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 7 (2800A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (8000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (480A)
GFD (Min-Max) Int (I^2t Off)

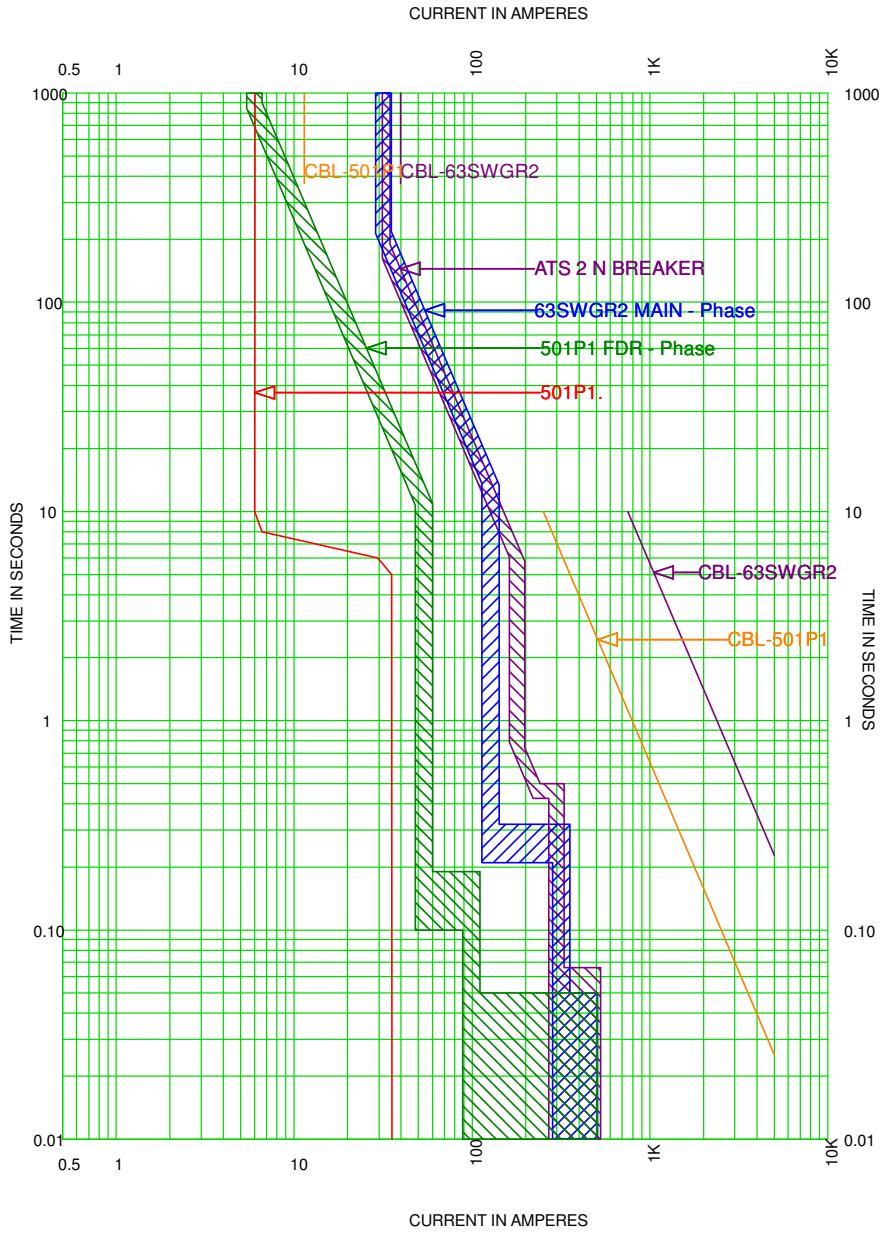
CBL-63PP1
(1) 350 kcmil
Length 45.0 ft
Ampacity: 310 A

63PP1
Nom Bus Voltage: 480 V

63LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS/AT 0AP
MAX

TCC Narrative: ATS 1 N BREAKER and 63SWGR1 MAIN are redundant, meaning the tripping or either or both results in the same extent of power outage. Therefore tripping curve overlap or these two breakers is not considered mis-coordination. Settings for these two breakers provide adequate conductor protection and coordinate with downstream breakers to the INST pickup of each of the respective breakers. 63PP1 FDR provides adequate conductor protection and coordinates with the downstream breaker to the INST pickup of 63PP1 FDR.

TCC: UTIL -- 63PP1 Current Scale x 100 Reference Voltage: 480



GFA

ATS 2 N BREAKER
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000-3200A Plugs
3200AF 3000AS/AT 3000AP
LTPU (0.4-1.0 x P) 1 (3000A)
LTD (2-24 Sec.) 7
STPU (2-10 x LTPU) 6 (18000A)
STD (0.1-0.5 Sec.) 0.5 (I^2t On)
INST (2-10 x P) M1(10) (30000A)

TRANSFER SWITCH 2
Nom Bus Voltage: 480 V

CBL-63SWGR2
(6) 750 kcmil
Length 75.0 ft
Ampacity: 3974 A

GFP

63SWGR2 MAIN
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS/AT 3200AP
Phase
LTPU (0.5-1.1 x P) 1 (3200A)
LTD (1-4) 2
STPU (1.5-9 x LTPU) 4 (12800A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-13 x P) 10 (32000A)
Ground
GFPU (0.2-0.37 x S) 0.37 (1184A)
GFD (Min-Max) Min (I^2t Off)

63SWGR2
Nom Bus Voltage: 480 V

GFP

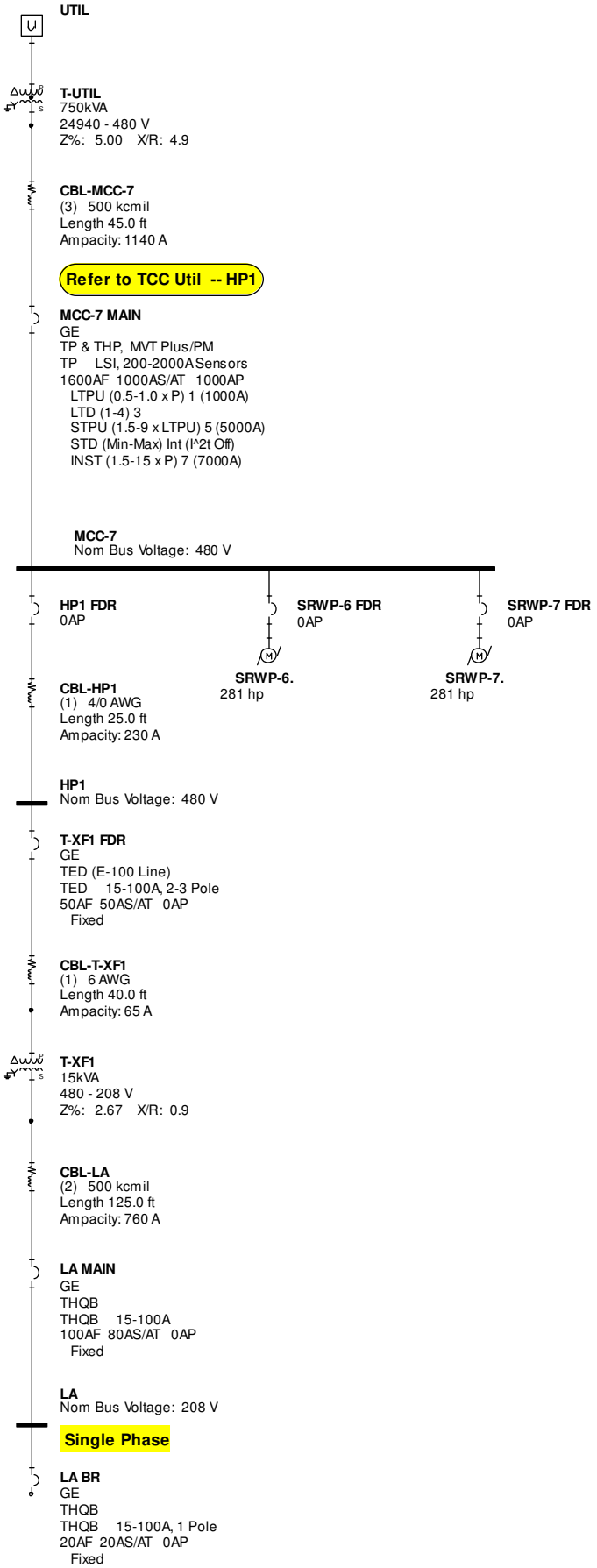
501P1 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS/AT 1000AP
Phase
LTPU (0.5-1.1 x P) 0.6 (600A)
LTD (1-4) 4
STPU (1.5-9 x LTPU) 9 (5400A)
STD (Min-Max) Min (I^2t Off)
INST (1.5-15 x P) 10 (10000A)
Ground
GFPU (0.2-0.6 x S) 0.6 (960A)
GFD (Min-Max) Min (I^2t Off)

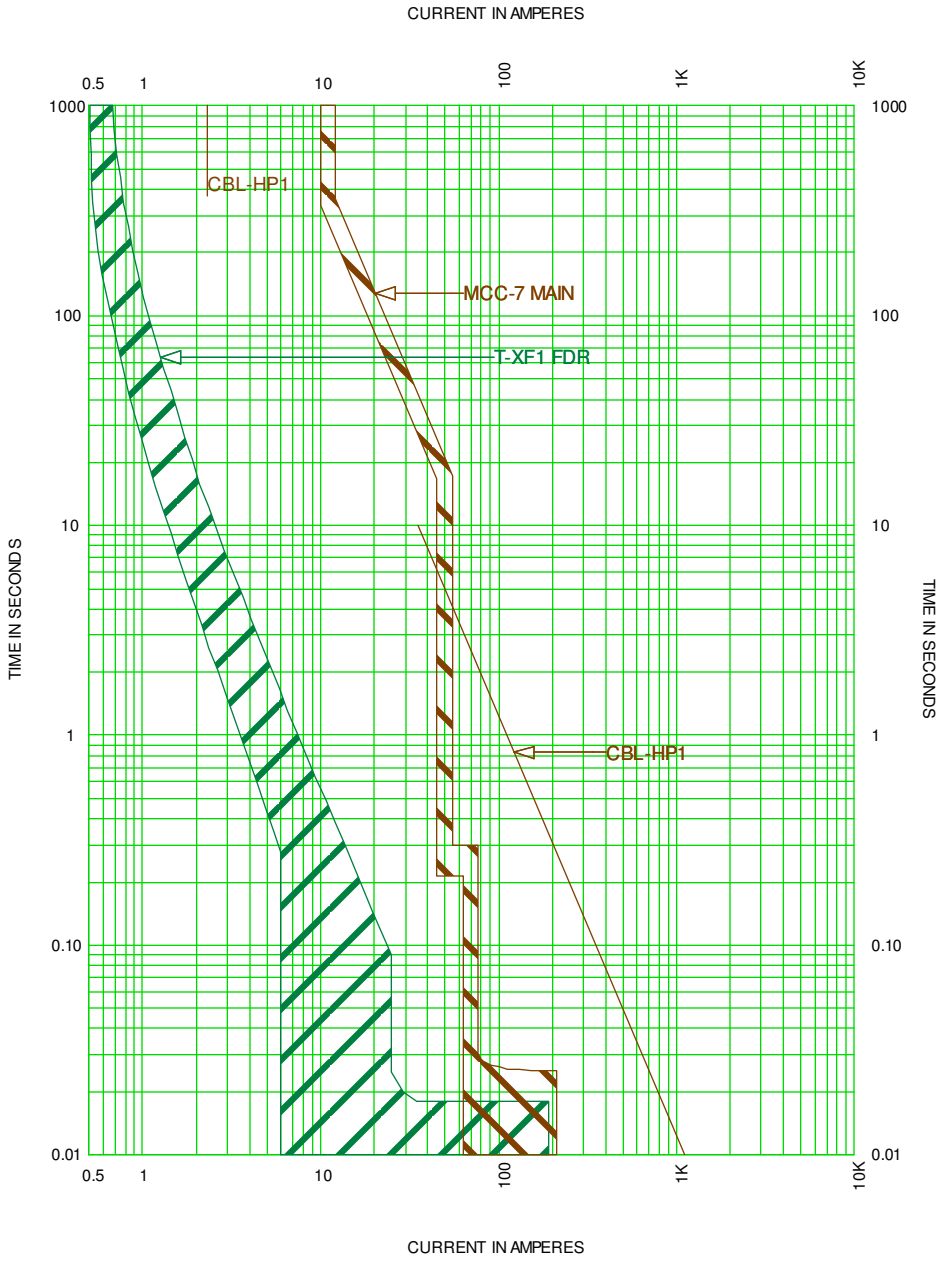
CBL-501P1
(3) 500 kcmil
Length 45.9 ft
Ampacity: 1140 A

501P1.
500 hp
TRANSFER PUMP NO. 1

TCC Narrative: ATS 2 N BREAKER and 63SWGR2 MAIN are redundant, meaning the tripping or either or both results in the same extent of power outage. Therefore tripping curve overlap of these two breakers is not considered mis-coordi
50PP1 FDR provides adequate conductor protection and adequate backup motor protection.

TCC: UTIL - 63SWGR2 Current Scale x 100 Reference Voltage: 480


UTIL
T-UTIL
750kVA
24940 - 480 V
Z%: 5.00 X/R: 4.9
CBL-MCC-7
(3) 500 kcmil
Length 45.0 ft
Ampacity: 1140 A
Refer to TCC Util -- HP1
MCC-7 MAIN
GE
TP & THP, MVT Plus/PM
TP LSI, 200-2000A Sensors
1600AF 1000AS/AT 1000AP
LTPU (0.5-1.0 x P) 1 (1000A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 5 (5000A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-15 x P) 7 (7000A)
MCC-7
Nom Bus Voltage: 480 V
HP1 FDR
0AP
SRWP-6 FDR
0AP
SRWP-7 FDR
0AP
SRWP-6.
281 hp
SRWP-7.
281 hp
CBL-HP1
(1) 4/0 AWG
Length 25.0 ft
Ampacity: 230 A
HP1
Nom Bus Voltage: 480 V
T-XF1 FDR
GE
TED (E-100 Line)
TED 15-100A, 2-3 Pole
50AF 50AS/AT 0AP
Fixed
CBL-T-XF1
(1) 6 AWG
Length 40.0 ft
Ampacity: 65 A
T-XF1
15kVA
480 - 208 V
Z%: 2.67 X/R: 0.9
CBL-LA
(2) 500 kcmil
Length 125.0 ft
Ampacity: 760 A
LA MAIN
GE
THQB
THQB 15-100A
100AF 80AS/AT 0AP
Fixed
LA
Nom Bus Voltage: 208 V
Single Phase
LA BR
GE
THQB
THQB 15-100A, 1 Pole
20AF 20AS/AT 0AP
Fixed



MCC-7 MAIN
GE
TP & THP, MVT Plus/PM
TP LSI, 200-2000A Sensors
1600AF 1000AS/AT 1000AP
LTPU (0.5-1.0 x P) 1 (1000A)
LTD (1-4) 3
STPU (1.5-9 x LTPU) 5 (5000A)
STD (Min-Max) Int (I^2t Off)
INST (1.5-15 x P) 7 (7000A)

MCC-7
Nom Bus Voltage: 480 V

HP1 FDR
0AP

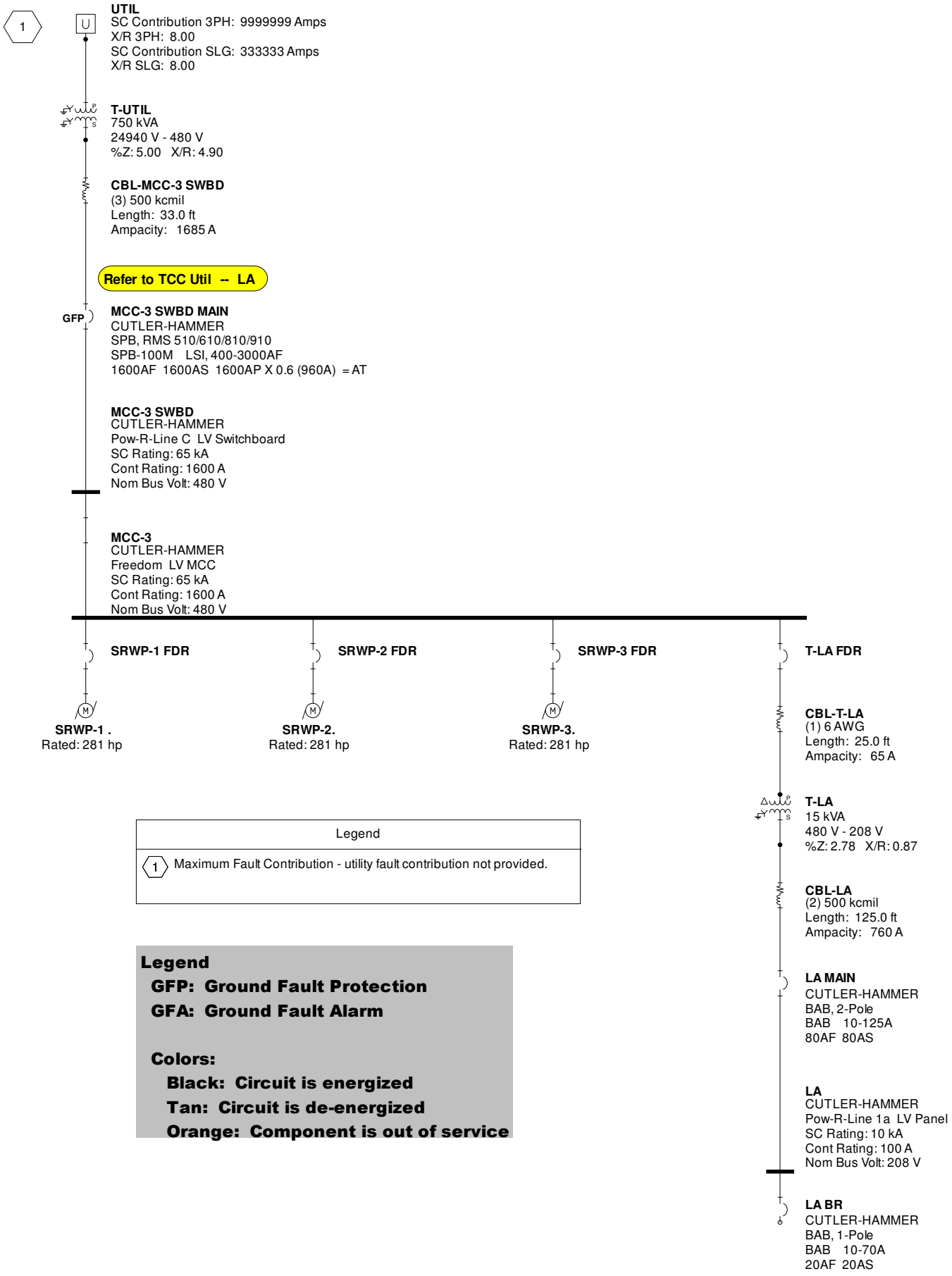
CBL-HP1
(1) 4/0 AWG
Length 25.0 ft
Ampacity: 230 A

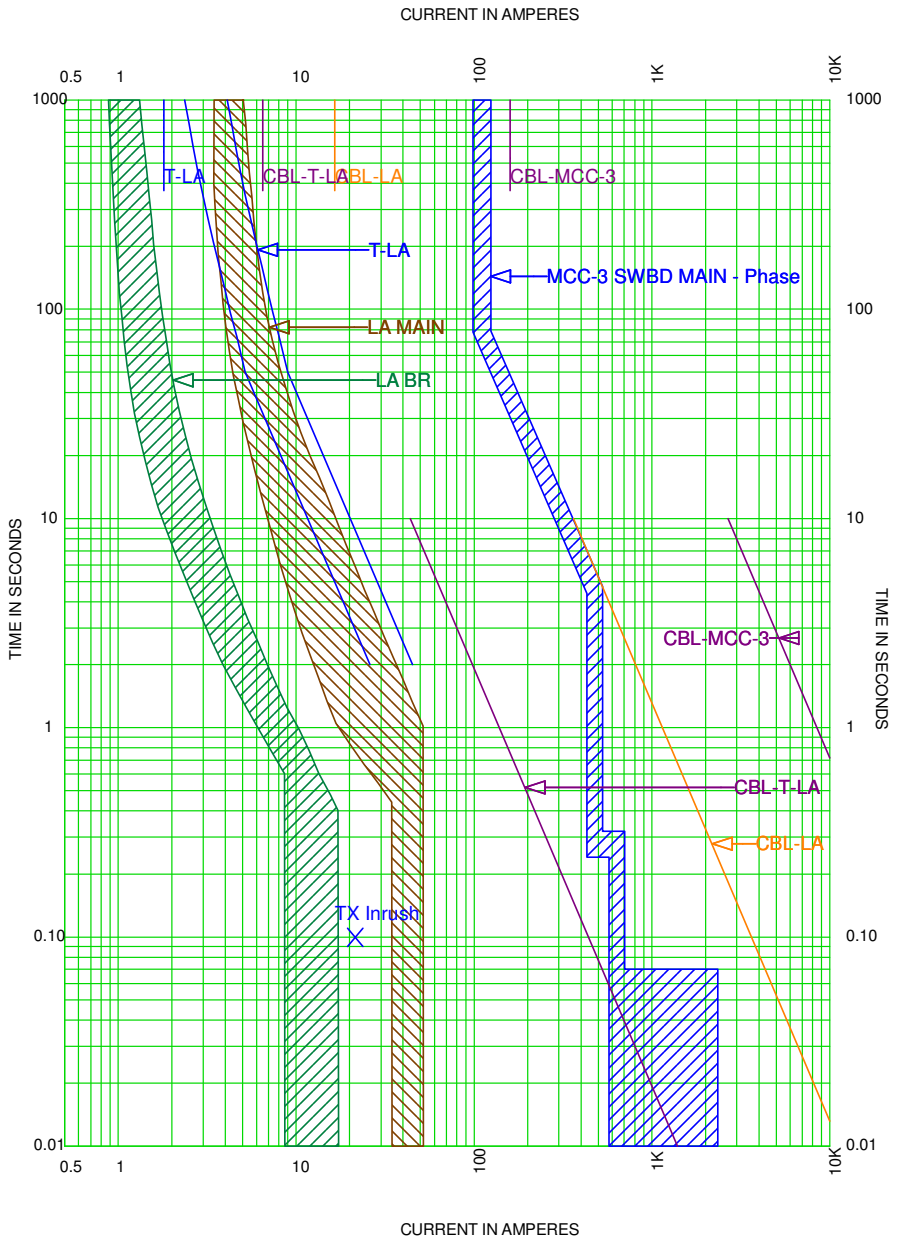
HP1
Nom Bus Voltage: 480 V

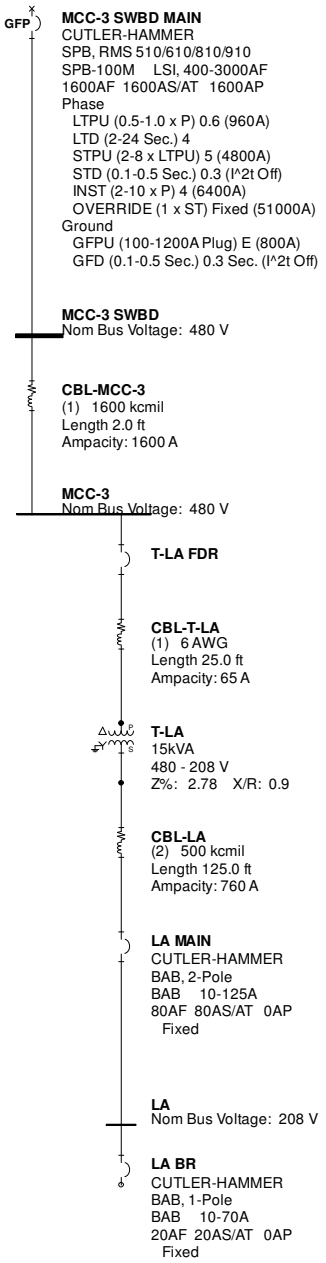
T-XF1 FDR
GE
TED (E-100 Line)
TED 15-100A, 2-3 Pole
50AF 50AS/AT 0AP
Fixed

TCC Narrative: The existing settings of the main breaker provide adequate equipment protections and downstream coordination.

TCC: Util -- HP1 Current Scale x 100 Reference Voltage: 480


1
UTIL
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 333333 Amps
X/R SLG: 8.00
T-UTIL
750 kVA
24940 V - 480 V
%Z: 5.00 X/R: 4.90
CBL-MCC-3 SWBD
(3) 500 kcmil
Length: 33.0 ft
Ampacity: 1685 A
Refer to TCC Util -- LA
GFP
MCC-3 SWBD MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
1600AF 1600AS 1600AP X 0.6 (960A) = AT
MCC-3 SWBD
CUTLER-HAMMER
Pow-R-Line C LV Switchboard
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
MCC-3
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
SRWP-1 FDR
SRWP-2 FDR
SRWP-3 FDR
T-LA FDR
SRWP-1 .
Rated: 281 hp
SRWP-2.
Rated: 281 hp
SRWP-3.
Rated: 281 hp
CBL-T-LA
(1) 6 AWG
Length: 25.0 ft
Ampacity: 65 A
T-LA
15 kVA
480 V - 208 V
%Z: 2.78 X/R: 0.87
CBL-LA
(2) 500 kcmil
Length: 125.0 ft
Ampacity: 760 A
LA MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
80AF 80AS
LA
CUTLER-HAMMER
Pow-R-Line 1a LV Panel
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
LA BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS
Legend
1 Maximum Fault Contribution - utility fault contribution not provided.
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service





TCC Narrative: The existing breaker settings for the MAIN breakers provide adequate equipment protection and downstream coordination.

TCC: Util -- LA

Current Scale x 10

Reference Voltage: 480

APPENDIX G: INCIDENT ENERGY ANALYSIS RESULTS

G.1. RESULTS TABLE COLUMN HEADERS DEFINED

The following is an explanation of the information contained in the Incident Energy Analysis Results table.

Column Number	Column Header	Explanation
1	Bus Name	Name of switchgear, switchboard, panel, MCC, ATS, etc as it was modeled in this Study - reference Study single line in Appendix I.
2	Protective Device Name	Name of the device primarily responsible for clearing a potential fault at the associated bus. This is likely the breaker, fuse, or relay upstream from the equipment, aka "Bus Name" in Column 1.
3	Bus kV	Nominal voltage of the bus in Column 1.
4	Bus Bolted Fault (kA)	Bolted three-phase fault current (from the Comprehensive Report) for the bus in Column 1 from the system operating conditions that will result in the worst-case calculated value for incident energy.
5	Protective Device Bolted Fault Current (kA)	The portion of the total bolted fault current, that flows through a given protective device.
6	Bus Arcing Fault	The calculated arcing current on the faulted bus.
7	Protective Device Arcing Fault Current (kA)	The arc current flowing through each protective device feeding the electric arc fault. Note that the total arc fault current may flow through several parallel sources to the arc location. The Protective Device Arcing Fault Current is reported for the immediate branch connected to the bus so the actual arcing fault current passing through the reported device might be different from the reported values if the device is not directly connected to fault location or installed at different voltage level.
8	Trip / Delay Time	The time required for the protective device to operate for the given arcing fault condition. In the case of a relay, the breaker opening time is entered separately from the relay trip time. For low voltage breakers and fuses, the trip time is assumed to be the total clearing curve or high tolerance of the published trip curve.
9	Breaker Opening Time	The time required for a breaker to open after receiving a signal from the trip unit to operate. The combination of the Trip/Delay time and the Breaker Opening time determines the total time required to clear the fault. For low voltage circuit breakers, the total clearing time displayed on the Manufacturer's drawing is assumed to include the breaker opening time.
10	Ground	Indicates whether the fault location includes a path to ground. Systems with high-resistance grounds are assumed to be ungrounded in the Arc Flash calculations.
11	Equip Type	Indicates whether the equipment is Switchgear, Panel, Cable or Open Air. The equipment type provides a default Gap value and a distance exponent used in the incident energy equations.
12	Gap	The spacing between bus bars or conductors at the arc location.
13	Arc Flash Boundary	The distance from exposed live parts within which a person could receive a 2nd degree burn.
14	Working Distance	The distance between the arc source and the worker's face or chest.
15	Incident Energy	The amount of energy on a surface at a specific distance from a flash.
16	Notes	

G.2. INCIDENT ENERGY ANALYSIS RESULTS TABLES

Incident Energy Results - Blalock Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
GEN PANEL	52-UM UTIL BREAKER	0.24	1.34	1.17	1.18	1.03	2	0.000	Yes	PNL	25	4' 3"	1' 6"	7	(*N9) (*S1)
LB	T-LB FDR	0.21	1.20	1.20	1.08	1.08	0.015	0.000	Yes	PNL	25	2"	1' 6"	0	(*S1)
MCC-4	52-UM UTIL BREAKER	0.48	20.93	18.28	13.55	11.84	0.057	0.000	Yes	MCC	25	2' 5"	1' 6"	3	(*S1)
SWITCHBOARD	T-UTIL PRI FU	0.48	21.14	18.50	10.57	9.25	1.603	0.000	Yes	PNL	25	14' 8"	1' 6"	50	(*N3) (*S1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2 Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.

1.2 - 12.0 cal/cm^2 Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.

12.0 - 40.0 cal/cm^2 Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.

40.0 - 999.0 cal/cm^2 No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

NFPA 70E 2015 Annex D4

IEEE 1584 - 2002/2004a Edition

Incident Energy Results - Blalock Pump Station

Bus + Line Side (Included Line Side + Load Side Contributions)

80% Cleared Fault Threshold

Mis-coordination checked

Included induction motors for 6.0 cycles

Worst Case

For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.

Incident Energy Analysis - W.B. Casey Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
132CP	60MCC1 FDR	0.48	23.21	21.28	14.81	13.58	0.05	0.000	Yes	PNL	25	2' 4"	1' 6"	3	(*Case 1)
20LP1	20LP1 FDR	0.21	2.07	2.07	1.58	1.58	0.025	0.000	Yes	PNL	25	4"	1' 6"	0	(*N5) (*Case 1)
20PP1 (20PP1 MAIN LineSide)	20PP1 FDR	0.48	9.59	9.59	6.96	6.96	0.05	0.000	Yes	PNL	25	1' 5"	1' 6"	1	(*Case 1)
30LP1 SEC 1	30LP1 MAIN	0.21	2.12	2.12	1.61	1.61	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N9) (*Case 1)
30LP1 SEC 2	30LP1 MAIN	0.21	2.09	2.09	1.59	1.59	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N9) (*Case 1)
30LP2 SEC 1	30LP2 MAIN	0.21	2.13	2.13	1.61	1.61	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N9) (*Case 1)
30LP2 SEC 2	30LP2 MAIN	0.21	2.10	2.10	1.60	1.60	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N9) (*Case 1)
30PP1 (30PP1 MAIN LineSide)	30PP1 FDR	0.48	13.25	13.25	9.18	9.18	0.05	0.000	Yes	PNL	25	1' 9"	1' 6"	2	(*Case 1)
30PP2	30PP2 FDR	0.48	12.61	12.61	8.79	8.79	0.025	0.000	Yes	PNL	25	1' 1"	1' 6"	1	(*Case 1)
60 SWGR1	T-UTIL FU	12.47	3.33	2.31	2.80	1.94	0.3216	0.000	Yes	SWG	152	2'	3'	1	(*N3) (*N5) (*Case 1)
60 SWGR1-2 (RY-52G1 GEN LineSide)	RY-52G1 GEN	12.47	1.59	0.79	1.75	0.87	0.05	0.083	Yes	SWG	152	2' 6"	3'	1	(*N2) (*N9) (*Case 1)
60LP1	60LP1 MAIN	0.21	1.38	1.38	1.19	1.19	2	0.000	Yes	PNL	25	4' 3"	1' 6"	7	(*N9) (*Case 1)
60MCC1	60MCC1 FDR	0.48	28.56	26.19	17.68	16.21	0.05	0.000	Yes	MCC	25	2' 8"	1' 6"	3	(*Case 1)
60MCC2	60MCC2 FDR	0.48	28.72	26.27	17.76	16.25	0.05	0.000	Yes	MCC	25	2' 8"	1' 6"	3	(*Case 1)
60MCC3 LEFT (60MCC3-1 MAIN FU LineSide)	RY-52A	4.16	3.42	2.35	3.72	2.56	0.8329	0.083	Yes	SWG	104	6' 6"	3'	3	(*Case 1)
60MCC3 RIGHT (60MCC3-2 MAIN FU LineSide)	RY-52B	4.16	3.04	2.32	3.31	2.52	0.8415	0.083	Yes	SWG	104	6' 6"	3'	3	(*Case 1)
60PP1 (60PP1 MAIN LineSide)	60PP1 FDR	0.48	22.30	22.30	14.31	14.31	0.05	0.000	Yes	PNL	25	2' 4"	1' 6"	2	(*Case 1)
60PP2 (60PP2 MAIN LineSide)	60MCC2 FDR	0.48	23.22	21.24	14.82	13.55	0.05	0.000	Yes	PNL	25	2' 4"	1' 6"	3	(*Case 1)
60SWGR2 LEFT	60SWGR2 MAIN 1	0.48	29.66	27.21	13.24	12.15	2	0.000	Yes	SWG	32	24' 6"	2'	48	(*N3) (*N9) (*Case 1)
60SWGR2 RIGHT	60SWGR2 MAIN 2	0.48	29.41	27.04	13.15	12.09	2	0.000	Yes	SWG	32	24' 4"	2'	48	(*N3) (*N9) (*Case 1)
61LP1	61LP1 MAIN	0.21	2.15	2.15	1.63	1.63	2	0.000	Yes	PNL	25	5' 3"	1' 6"	9	(*N9) (*Case 1)
61MCC1	RY-52A	0.48	17.23	12.47	11.48	8.31	1.917	0.083	Yes	MCC	25	16' 8"	1' 6"	62	(*N9) (*Case 1)
61MCC2	RY-52B	0.48	16.46	12.42	11.04	8.33	1.917	0.083	Yes	MCC	25	16' 7"	1' 6"	62	(*N9) (*Case 1)
61PP1	RY-52B	0.48	14.86	11.20	10.12	7.63	1.917	0.083	Yes	PNL	25	15' 10"	1' 6"	57	(*N9) (*Case 1)
62LP1	62LP1 FDR	0.21	2.18	2.18	1.64	1.64	0.025	0.000	Yes	PNL	25	4"	1' 6"	0	(*N5) (*Case 1)
62LS1	RY-52A	12.47	3.13	2.63	3.40	2.86	0.4685	0.083	Yes	SWG	152	4' 2"	3'	2	(*Case 1)
62LS2	RY-52B	12.47	3.05	2.57	3.32	2.80	0.4713	0.083	Yes	SWG	152	4'	3'	2	(*Case 1)
62LS3	RY-52B	12.47	3.09	2.61	3.37	2.84	0.4695	0.083	Yes	SWG	152	4' 1"	3'	2	(*Case 1)
62PP1	62PP1 FDR	0.48	22.52	22.52	14.43	14.43	0.05	0.000	Yes	PNL	25	2' 4"	1' 6"	2	(*Case 1)
62SWGR1 LEFT (62SWGR1 MAIN 1 LineSide)	RY-52A	0.48	29.65	23.00	13.23	10.27	1.917	0.083	Yes	SWG	32	24'	2'	47	(*N3) (*N9) (*Case 1)
62SWGR1 RIGHT (62SWGR1 MAIN 2 LineSide)	RY-52B	0.48	32.63	23.59	14.33	10.36	1.917	0.083	Yes	SWG	32	24' 2"	2'	47	(*N3) (*N9) (*Case 1)
7LP1 (7LP1 MAIN LineSide)	7LP1 FDR	0.21	0.95	0.95	0.71	0.71	2	0.000	Yes	PNL	25	3'	1' 6"	4	(*N3) (*N9) (*Case 1)
8LP1 (8LP1 MAIN LineSide)	8LP1 FDR	0.21	0.96	0.96	0.71	0.71	2	0.000	Yes	PNL	25	3'	1' 6"	4	(*N3) (*N9) (*Case 1)
9LP1	9PP1 FDR	0.21	2.16	2.16	1.63	1.63	2	0.000	Yes	PNL	25	5' 3"	1' 6"	9	(*N9) (*Case 1)
9PP1	9PP1 FDR	0.48	19.22	19.22	12.60	12.60	0.05	0.000	Yes	PNL	25	2' 2"	1' 6"	2	(*Case 1)

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
BATTERY DIST PANEL	MaxTripTime @2.0s	0.13		0.00		0.00	2	0.000	No	PNL	25		1' 6"	0	(*N2) (*N9) (*Case 1)
HA	HA FDR	0.48	12.01	12.01	8.44	8.44	0.05	0.000	Yes	PNL	25	1' 8"	1' 6"	1	(*Case 1)
HB (HB MAIN LineSide)	HB FDR	0.48	10.48	10.48	7.51	7.51	0.05	0.000	Yes	PNL	25	1' 6"	1' 6"	1	(*Case 1)
LA	HA BR	0.24	1.33	1.33	1.17	1.17	2	0.000	No	PNL	25	4' 11"	1' 6"	8	(*N9) (*Case 1)
LD	62LP1 MAIN0	0.21	1.51	1.51	1.27	1.27	2	0.000	Yes	PNL	25	4' 5"	1' 6"	7	(*N9) (*Case 1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

NFPA 70E 2015 Annex D4

Incident Energy Analysis - W.B. Casey Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
IEEE 1584 - 2002/2004a Edition Bus + Line Side (Included Line Side + Load Side Contributions) 80% Cleared Fault Threshold Mis-coordination checked Included induction motors for 6.0 cycles Worst Case For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Incident Energy Analysis - Terry R. Hicks Water Production Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
EMCC-1	EMCC-3 (EMCC-1) FDR	0.48	38.37	36.25	22.75	21.49	0.0129	0.000	Yes	MCC	25	1' 5"	1' 6"	1	(*Case 1)
EMCC-2	EMCC-3 (EMCC-1) FDR	0.48	14.13	12.26	7.49	2.69	2	0.000	Yes	MCC	25	7' 11"	1' 6"	18	(*N3) (*N9) (*N16) (*Case 2)
EP1 (EP1 MAIN LineSide)	MCC-2 MAIN	0.48	12.36	11.74	8.65	8.21	0.053	0.000	Yes	PNL	25	1' 9"	1' 6"	2	(*Case 1)
EP2 (EP2 MAIN LineSide)	EP2 FDR	0.24	0.82	0.82	0.83	0.83	2	0.000	Yes	PNL	25	3' 4"	1' 6"	4	(*N9) (*Case 1)
GEN PANEL	GEN PANEL MAIN	0.21	1.37	1.37	1.18	1.13	1.833	0.000	Yes	PNL	25	3' 11"	1' 6"	6	(*N16) (*Case 2)
LP-F1	T-LP-F1 FDR	0.24	1.49	1.49	0.98	0.98	1.949	0.000	No	PNL	25	4' 4"	1' 6"	7	(*N3) (*N5) (*Case 1)
LPF-UV1	T-UV1 FDR	0.21	1.45	1.45	1.23	1.19	1.792	0.000	Yes	PNL	25	4'	1' 6"	6	(*N5) (*N16) (*Case 2)
MCC-1	MCC-1 FDR	0.48	41.48	37.67	18.79	17.06	0.07	0.000	Yes	MCC	25	3' 5"	1' 6"	5	(*N3) (*Case 1)
MCC-2 (MCC-2 MAIN LineSide)	MCC-2 FDR	0.48	25.54	24.25	16.07	15.26	0.07	0.000	Yes	MCC	25	3'	1' 6"	4	(*Case 1)
MCC-4	MCC-4 FDR	0.48	11.03	11.03	6.06	6.06	0.0496	0.000	Yes	MCC	25	1' 4"	1' 6"	1	(*N3) (*Case 2)
P1	MCC-1 FDR	0.48	25.18	22.87	15.88	14.42	0.07	0.000	Yes	PNL	25	3'	1' 6"	4	(*Case 1)
P2 (P2 MAIN LineSide)	MCC-1 FDR	0.21	1.43	1.09	1.22	0.93	2	0.000	Yes	PNL	25	4' 2"	1' 6"	6	(*N9) (*N16) (*Case 2)
P3	MCC-2 MAIN	0.48	20.94	19.83	13.56	12.84	0.053	0.000	Yes	PNL	25	2' 4"	1' 6"	2	(*Case 1)
P4	P4 MAIN	0.21	3.38	3.38	2.23	2.00	2	0.000	Yes	PNL	25	6'	1' 6"	12	(*N9) (*N16) (*Case 2)
P5	P5 MAIN	0.21	3.85	3.37	2.45	2.00	2	0.000	Yes	PNL	25	6'	1' 6"	12	(*N9) (*N16) (*Case 2)
P6	MCC-2 MAIN	0.48	19.76	18.76	12.90	12.25	0.053	0.000	Yes	PNL	25	2' 3"	1' 6"	2	(*Case 1)
P7	MCC-2 MAIN	0.48	8.50	8.07	6.28	5.96	0.053	0.000	Yes	PNL	25	1' 5"	1' 6"	1	(*Case 1)
P8	P8 FDR	0.21	3.40	3.40	2.24	2.24	0.01	0.000	Yes	PNL	25	3"	1' 6"	0	(*Case 1)
P9	P9 FDR	0.48	10.94	10.69	7.79	7.61	0.0145	0.000	Yes	PNL	25	9"	1' 6"	0	(*Case 1)
PP-F1 (PP-F1 MAIN LineSide)	MCC-4 FDR	0.48	10.92	10.92	6.01	6.01	2	0.000	Yes	PNL	25	12' 2"	1' 6"	37	(*N3) (*N9) (*Case 1)
PPF-UV1	UV BLDG (PPF-UV1)FDR	0.48	8.63	8.63	6.36	6.36	0.0122	0.000	Yes	PNL	25	7"	1' 6"	0	(*Case 1)
PPF-UV2	UV BLDG (PPF-UV1)FDR	0.48	8.05	8.05	5.99	5.99	0.0125	0.000	Yes	PNL	25	7"	1' 6"	0	(*N5) (*Case 1)
SB-1 (SB-1 MAIN LineSide)	52-UM UTILITY MAIN	0.48	43.16	35.97	19.44	16.20	2	0.000	Yes	PNL	25	24' 5"	1' 6"	116	(*N3) (*N9) (*Case 1)
SB-1-1 (52-UM UTILITY MAIN LineSide)	SB-1 MAIN	0.48	43.23	7.19	25.19	4.19	0.1	0.000	Yes	PNL	25	28' 11"	1' 6"	154	(*N2) (*N9) (*Case 1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.

Incident Energy Analysis - Terry R. Hicks Water Production Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.														
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.														

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

NFPA 70E 2015 Annex D4

IEEE 1584 - 2002/2004a Edition

Bus + Line Side (Included Line Side + Load Side Contributions)

80% Cleared Fault Threshold

Mis-coordination checked

Included induction motors for 6.0 cycles

Worst Case

For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.

Incident Energy Analysis - W.J. Hooper Water Production Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
02LP1 (02 LP1 MAIN LineSide)	2TX3 FDR	0.21	1.61	1.61	1.02	1.02	0.4223	0.000	Yes	PNL	25	1' 6"	1' 6"	1	(*N3)
02PP1 (02 PP1 MAIN LineSide)	2MCC MAIN 2	0.48	12.72	10.49	8.86	7.31	2	0.000	Yes	PNL	25	13' 8"	1' 6"	45	(*N9)
07LP1 (07LP-1 MAIN LineSide)	7TX-2 FDR	0.21	1.07	1.07	0.77	0.77	0.7586	0.000	Yes	PNL	25	1' 9"	1' 6"	2	(*N3)
07PP1	07PP1 MAIN	0.48	1.87	1.87	1.72	1.72	2	0.000	Yes	PNL	25	5' 5"	1' 6"	10	(*N9)
10LP1	10LP1 MAIN	0.21	5.63	5.63	3.20	3.20	2	0.000	Yes	PNL	25	8'	1' 6"	19	(*N9)
10LP2	10LP2 MAIN	0.21	5.47	5.47	3.13	3.13	0.0167	0.000	Yes	PNL	25	5"	1' 6"	0	
10LP3	10LP3 MAIN	0.21	4.71	4.71	2.82	2.82	0.0167	0.000	Yes	PNL	25	5"	1' 6"	0	
10MCC1	10MCC1 FDR	0.48	16.31	14.97	10.96	10.05	0.0171	0.000	Yes	MCC	25	1'	1' 6"	1	
10MCC2	10MCC2 FDR	0.48	15.46	14.09	10.47	9.54	0.0174	0.000	Yes	MCC	25	1'	1' 6"	1	
10PP1 (10PP1 BR LoadSide)	10PP1 BR	0.48	15.05	15.05	10.23	10.23	0.017	0.000	Yes	PNL	25	1'	1' 6"	1	
10SWBD - LEFT (10SWBD MAIN 1 LineSide)	RY-F3-1	0.48	16.89	13.35	11.29	8.92	1.917	0.083	Yes	PNL	25	16'	1' 6"	58	(*N9)
10SWBD - RIGHT (10SWBD MAIN 2 LineSide)	RY-F3-1	0.48	16.41	11.32	11.01	7.59	1.917	0.083	Yes	PNL	25	15' 9"	1' 6"	57	(*N9)
2MCC - LEFT	2MCC MAIN 1	0.48	15.92	13.13	10.73	8.85	2	0.000	Yes	MCC	25	15'	1' 6"	52	(*N9)
2MCC - RIGHT	2MCC MAIN 2	0.48	15.87	13.09	10.70	8.83	2	0.000	Yes	MCC	25	15'	1' 6"	52	(*N9)
35 LP1	35TX2 FDR	0.21	4.43	4.43	2.70	2.70	2	0.000	Yes	PNL	25	7' 3"	1' 6"	16	(*N5) (*N9)
35 PP1 (35 PP1MAIN LineSide)	RY-35MVC2	0.48	5.56	4.77	4.37	3.74	1.917	0.083	Yes	PNL	25	9' 8"	1' 6"	25	(*N9)
35MVC1	RY-35MVC1	4.16	7.96	6.17	8.53	6.61	0.6614	0.083	Yes	SWG	104	10' 3"	3'	4	
35MVC2	RY-35MVC2	4.16	7.96	6.81	8.53	7.30	0.6267	0.083	Yes	SWG	104	9' 10"	3'	4	
50LP1 (50LP1 MAIN LineSide)	50LP1 FDR	0.21	1.45	1.45	1.23	1.23	1.661	0.000	Yes	PNL	25	3' 11"	1' 6"	6	
50LP2 (50LP2 MAIN LineSide)	50 TX4 FDR	0.21	1.48	1.48	1.25	1.25	2	0.000	Yes	PNL	25	4' 5"	1' 6"	7	(*N9)
50LP3 (50LP3 MAIN LineSide)	50 TX5 FDR	0.21	1.48	1.48	1.25	1.25	2	0.000	Yes	PNL	25	4' 5"	1' 6"	7	(*N9)
50MCC1	50MCC1 FDR	0.48	13.51	13.16	9.33	9.08	0.0167	0.000	Yes	MCC	25	11"	1' 6"	1	
50MCC2	50MCC2 FDR	0.48	14.52	14.16	9.92	9.67	0.0167	0.000	Yes	MCC	25	11"	1' 6"	1	
50PP1	50PP1 MAIN	0.48	12.63	12.63	8.80	8.80	0.0163	0.000	Yes	PNL	25	10"	1' 6"	0	
50PP2	50PP2 MAIN	0.48	12.92	12.92	8.98	8.98	0.0167	0.000	Yes	PNL	25	10"	1' 6"	0	
50SWBD - LEFT (50SWBD MAIN 1 LineSide)	RY-F3-1	0.48	14.73	12.46	10.04	8.49	1.917	0.083	Yes	PNL	25	15' 7"	1' 6"	56	(*N9)
50SWBD - RIGHT (50SWBD MAIN 2 LineSide)	RY-F3-1	0.48	15.31	11.38	10.38	7.71	1.917	0.083	Yes	PNL	25	15' 10"	1' 6"	57	(*N9)
ATS	ATS-N FDR	0.48	6.74	6.74	5.15	5.15	0.0167	0.000	Yes	PNL	25	7"	1' 6"	0	
LP-2	TX-2 FDR	0.21	1.54	1.54	1.29	1.29	2	0.000	Yes	PNL	25	4' 6"	1' 6"	7	(*N9)
LPH-UV1 (LPH-UV1 MAIN LineSide)	PPH UV1 MAIN0	0.21	1.78	1.78	1.42	1.42	2	0.000	Yes	PNL	25	4' 9"	1' 6"	8	(*N9)
MCC 2 INCOMING SWGR	RY-F4-1	0.48	13.43	7.87	9.28	5.43	1.917	0.083	Yes	PNL	25	15'	1' 6"	53	(*N9)
MCC2	RY-F4-1	0.48	12.73	7.46	8.87	5.19	1.917	0.083	Yes	MCC	25	14' 8"	1' 6"	50	(*N9)

Incident Energy Analysis - W.J. Hooper Water Production Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
MV SWGR (RY-MV SWGR MAIN LineSide)	RY-MV SWGR MAIN	4.16	7.97	3.96	8.55	4.25	0.1	0.000	Yes	SWG	104	26'	3'	10	(*N2) (*N9)
OLD 480V COL-MTD PNL	10SWBD MAIN 1	0.48	16.60	14.86	11.12	9.96	0.14	0.000	Yes	PNL	25	3' 6"	1' 6"	5	
OLD COL-MTD PNL	10SWBD MAIN 1	0.48	16.33	14.62	10.97	9.82	0.14	0.000	Yes	PNL	25	3' 6"	1' 6"	5	
PP-3	PP-3 FDR	0.48	13.45	13.45	9.29	9.29	0.0167	0.000	Yes	PNL	25	11"	1' 6"	1	
PP-4	PP-4 FDR	0.48	14.37	14.37	9.83	9.83	0.0167	0.000	Yes	PNL	25	11"	1' 6"	1	
PP-5	10SWBD MAIN 1	0.48	16.09	14.40	10.83	9.69	0.14	0.000	Yes	PNL	25	3' 6"	1' 6"	5	
PP-6	PP-6 FDR	0.48	14.06	14.06	9.65	9.65	0.0167	0.000	Yes	PNL	25	11"	1' 6"	1	
PPH UV1 (PPH UV1 BR LoadSide)	PPH UV1 BR	0.48	11.15	11.15	7.92	7.92	0.017	0.000	Yes	PNL	25	10"	1' 6"	0	
PPH UV2	PPH UV1 MAIN0	0.48	11.89	11.89	8.36	8.36	0.0167	0.000	Yes	PNL	25	10"	1' 6"	0	

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

Incident Energy Analysis - W.J. Hooper Water Production Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
(*N15) - Report as category 0 if fed by one transformer size < 125 kVA															
(*N16) - Trip Time Recalculated															
(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.															
(*N22) - Main Device failed, use upstream device															
PTW options used															
NFPA 70E 2015 Annex D4															
IEEE 1584 - 2002/2004a Edition															
Bus + Line Side (Included Line Side + Load Side Contributions)															
80% Cleared Fault Threshold															
Mis-coordination checked															
Included induction motors for 6.0 cycles															
Worst Case															
For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Incident Energy Analysis - Jonesboro Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
LA (LA MAIN LineSide)	MaxTripTime @2.0s	0.21	1.30	1.30	1.04	1.04	2	0.000	Yes	PNL	25	4' 2"	1' 6"	6	(*N2) (*N9)
MCC	MaxTripTime @2.0s	0.48	21.88	21.88	14.08	12.80	2	0.000	Yes	MCC	25	19' 5"	1' 6"	80	(*N2) (*N9)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

NFPA 70E 2015 Annex D4

Incident Energy Analysis - Jonesboro Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
IEEE 1584 - 2002/2004a Edition															
Bus + Line Side (Included Line Side + Load Side Contributions)															
80% Cleared Fault Threshold															
Mis-coordination checked															
Included induction motors for 6.0 cycles															
Worst Case															
For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Inciident Energy Analysis - Noah's Ark Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
LA	MCC SWBD MAIN	0.24	1.19	0.97	1.08	0.88	2	0.000	Yes	PNL	25	4'	1' 6"	6	(*N9) (*Case 1)
LA OLD BLDG (LA OLD BLDG MAIN LineSide)	T-LA OLD BLDG FDR	0.24	1.50	1.50	0.99	0.99	1.034	0.000	Yes	PNL	25	2' 6"	1' 6"	3	(*N3) (*Case 1)
MAIN SWBD (52-UM UTILITY BREAKER LineSide)	T-UTIL PRI FU	0.48	35.10	28.85	16.29	13.39	1.262	0.000	Yes	PNL	25	16' 4"	1' 6"	60	(*N3) (*Case 1)
MCC	52-UM UTILITY BREAKER	0.48	33.97	27.67	15.84	12.91	0.5	0.000	Yes	MCC	25	9' 3"	1' 6"	24	(*N3) (*N5) (*Case 1)
MCC SWBD (MCC SWBD MAIN LineSide)	52-UM UTILITY BREAKER	0.48	34.05	27.75	20.54	16.74	0.5	0.000	Yes	PNL	25	10' 11"	1' 6"	31	(*Case 1)
OLD PUMP STA MCC	T-UTIL - OLD BLDG PRI FU	0.48	33.15	26.83	15.51	12.56	1.758	0.000	Yes	MCC	25	19' 2"	1' 6"	78	(*N3) (*Case 1)
PA	52-UM UTILITY BREAKER	0.48	24.22	19.73	15.36	12.51	2	0.000	Yes	PNL	25	21' 4"	1' 6"	93	(*N5) (*N9) (*Case 1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

Inciident Energy Analysis - Noah's Ark Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
(*N22) - Main Device failed, use upstream device															
PTW options used NFPA 70E 2015 Annex D4 IEEE 1584 - 2002/2004a Edition Bus + Line Side (Included Line Side + Load Side Contributions) 80% Cleared Fault Threshold Mis-coordination checked Included induction motors for 6.0 cycles Worst Case For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Incident Energy Analysis - Northeast Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
1LP1	1TX3 FDR	0.21	2.12	2.12	1.61	1.61	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N5) (*N9) (*Case 1)
1LP2	1TX4 FDR	0.21	2.12	2.12	1.61	1.61	2	0.000	Yes	PNL	25	5' 2"	1' 6"	9	(*N5) (*N9) (*Case 1)
1LP3	1LP3 MAIN	0.21	1.99	1.99	1.54	1.54	2	0.000	Yes	PNL	25	5'	1' 6"	9	(*N9) (*Case 1)
1LVSG-1 LEFT	1LVSG-1 MAIN 1	0.48	15.99	14.08	10.24	9.02	2	0.000	Yes	SWG	32	20' 10"	2'	38	(*N9) (*Case 1)
1LVSG-1 RIGHT	1LVSG-1 MAIN 2	0.48	16.71	14.69	10.62	9.34	2	0.000	Yes	SWG	32	21' 4"	2'	39	(*N9) (*Case 1)
1MCC-1	1MCC-1 FDR	0.48	14.58	12.67	9.95	6.36	2	0.000	Yes	MCC	25	13' 2"	1' 6"	42	(*N9) (*N16) (*Case 2)
1MCC-2	1MCC-2 FDR	0.48	16.29	14.27	8.46	7.41	1.512	0.000	Yes	MCC	25	12'	1' 6"	36	(*N3) (*Case 1)
1MVSG-1 LEFT	Syn Gen/Mtr Decay @10cycles	12.47	2.41	0.72	2.64	0.79	60	0.000	Yes	SWG	152	138'	3'	50	(*N2) (*N9) (*Case 2)
1MVSG-1 RIGHT	Syn Gen/Mtr Decay @10cycles	12.47	2.41	0.72	2.64	0.79	60	0.000	Yes	SWG	152	138'	3'	50	(*N2) (*N9) (*Case 2)
1PP1 (1PP1 MAIN LineSide)	1MCC-1 FDR	0.48	13.79	12.11	7.33	6.44	2	0.000	Yes	PNL	25	13' 1"	1' 6"	42	(*N3) (*Case 1)
1PP2 (1PP2 MAIN LineSide)	1MCC-2 FDR	0.48	13.67	11.97	7.28	6.38	2	0.000	Yes	PNL	25	13'	1' 6"	42	(*N3) (*N9) (*Case 1)
34LP1 (34LP1 MAIN LineSide)	T-34LP1 MAIN	0.21	1.46	1.46	1.24	1.24	2	0.000	Yes	PNL	25	4' 5"	1' 6"	7	(*N9) (*Case 1)
50PP1	95MCC-1 FDR	0.48	17.20	16.06	8.86	8.27	1.895	0.000	Yes	PNL	25	14' 8"	1' 6"	50	(*N3) (*Case 1)
50PP2	95MCC-2 FDR	0.48	16.83	15.66	8.69	8.09	1.979	0.000	Yes	PNL	25	14' 10"	1' 6"	51	(*N3) (*Case 1)
55LP1 (55LP1 MAIN LineSide)	T-55LP1 FDR	0.21	1.82	1.82	1.45	1.43	1.775	0.000	Yes	PNL	25	4' 6"	1' 6"	7	(*N16) (*Case 2)
55PP1 (55PP1 MAIN LineSide)	95MCC-2 FDR	0.48	11.12	10.35	7.90	7.35	2	0.000	Yes	PNL	25	14' 3"	1' 6"	48	(*N9) (*Case 1)
55PP2	95MCC-2 FDR	0.48	16.83	15.66	8.69	8.09	1.979	0.000	Yes	PNL	25	14' 10"	1' 6"	51	(*N3) (*Case 1)
65LP1	65LP1 FDR	0.21	3.05	3.05	1.61	1.56	1.511	0.000	Yes	PNL	25	4' 4"	1' 6"	7	(*N3) (*N5) (*N16) (*Case 2)
65LP2	65LP2 MAIN	0.21	3.01	3.01	2.06	2.06	2	0.000	Yes	PNL	25	6' 1"	1' 6"	12	(*N9) (*Case 1)
65LP3	65LP3 MAIN	0.21	3.01	3.01	2.06	2.06	2	0.000	Yes	PNL	25	6' 1"	1' 6"	12	(*N9) (*Case 1)
65LVSG-1 LEFT	65LVSG-1 MAIN 1	0.48	18.95	16.30	11.80	10.15	2	0.000	Yes	SWG	32	22' 9"	2'	43	(*N9) (*Case 1)
65LVSG-1 RIGHT	65LVSG-1 RIGHT 1 MAIN	0.48	19.25	16.40	11.95	10.18	2	0.000	Yes	SWG	32	22' 10"	2'	43	(*N9) (*Case 1)
65MCC-1	65MCC-1 FDR	0.48	17.44	14.57	8.96	5.32	2	0.000	Yes	MCC	25	11' 10"	1' 6"	35	(*N3) (*N9) (*N16) (*Case 2)
65MCC-2	65MCC-2 FDR	0.48	17.23	14.57	8.87	5.32	2	0.000	Yes	MCC	25	11' 9"	1' 6"	35	(*N3) (*N9) (*N16) (*Case 2)
65PP1 (65PP1 MAIN LineSide)	65MCC-1 FDR	0.48	14.79	12.36	10.08	6.40	2	0.000	Yes	PNL	25	13' 3"	1' 6"	43	(*N9) (*N16) (*Case 2)
86LP1	RY-86TX1	0.21	1.86	1.52	1.47	1.20	1.917	0.083	Yes	PNL	25	4' 11"	1' 6"	8	(*N9) (*Case 1)
87LP1	RY-86TX1	0.21	1.32	1.08	1.16	0.95	1.917	0.083	Yes	PNL	25	4' 2"	1' 6"	6	(*N9) (*Case 1)
87PP1	RY-86TX1	0.48	13.70	11.24	9.44	7.74	1.917	0.083	Yes	PNL	25	15' 10"	1' 6"	57	(*N9) (*Case 1)
95LP1 (95LP1 MAIN LineSide)	95LP1 FDR	0.21	1.82	1.82	1.45	1.43	1.771	0.000	Yes	PNL	25	4' 6"	1' 6"	7	(*N16) (*Case 2)
95LP2 (95LP2 MAIN LineSide)	95MCC-2 FDR	0.21	1.80	1.68	1.44	1.34	2	0.000	Yes	PNL	25	4' 10"	1' 6"	8	(*N9) (*Case 1)
95LVSG-1 LEFT	95LVSG-1 LEFT MAIN 1	0.48	18.08	16.89	11.34	10.60	2	0.000	Yes	SWG	32	23' 1"	2'	44	(*N9) (*Case 1)
95LVSG-1 RIGHT	95LVSG-1 RIGHT MAIN 2	0.48	17.85	16.64	11.22	10.46	2	0.000	Yes	SWG	32	22' 11"	2'	43	(*N9) (*Case 1)

Incident Energy Analysis - Northeast Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
95MCC-1	95MCC-1 FDR	0.48	17.84	16.65	9.14	8.53	1.782	0.000	Yes	MCC	25	14' 4"	1' 6"	49	(*N3) (*Case 1)
95MCC-2	95MCC-2 FDR	0.48	17.43	16.23	8.96	8.34	1.863	0.000	Yes	MCC	25	14' 7"	1' 6"	50	(*N3) (*Case 1)
95PP1 (95PP1 MAIN LineSide)	95MCC-1 FDR	0.48	16.64	15.53	8.61	8.04	2	0.000	Yes	PNL	25	14' 11"	1' 6"	52	(*N3) (*N9) (*Case 1)
96LP1 (96LP1 MAIN LineSide)	96LP1 FDR	0.21	1.68	1.68	1.36	1.35	1.975	0.000	Yes	PNL	25	4' 7"	1' 6"	8	(*N16) (*Case 2)
96LVSG-1 SEC 1	96LVSG-1 SEC 1 MAIN	0.48	13.88	13.03	9.10	8.54	2	0.000	Yes	SWG	32	19' 7"	2'	34	(*N9) (*Case 1)
96LVSG-1 SEC 2	96LVSG-1 SEC 2 MAIN	0.48	15.35	13.28	9.90	8.56	2	0.000	Yes	SWG	32	19' 8"	2'	35	(*N9) (*Case 1)
96MCC-1	96MCC-1 MAIN	4.16	4.29	3.91	4.65	4.24	2	0.000	Yes	SWG	104	22' 2"	3'	8	(*N9) (*Case 1)
96MCC-2	96MCC-2 MAIN	4.16	4.65	3.86	5.03	4.17	2	0.000	Yes	SWG	104	22' 3"	3'	8	(*N9) (*Case 1)
96MCC-3	96MCC-3 FDR	0.48	12.74	12.24	8.87	6.02	2	0.000	Yes	PNL	25	12' 8"	1' 6"	40	(*N9) (*N16) (*Case 2)
96MCC-4	96MCC-4 FDR	0.48	14.92	14.47	7.85	7.61	1.433	0.000	Yes	MCC	25	10' 9"	1' 6"	30	(*N3) (*Case 1)
96PP1 (96PP1 MAIN LineSide)	96MCC-3 FDR	0.48	12.34	11.88	6.67	6.42	2	0.000	Yes	PNL	25	12' 7"	1' 6"	39	(*N3) (*N9) (*Case 1)
96TX1 PRI	RY-1TX1	12.47	3.85	2.22	3.23	1.86	1.917	0.083	Yes	SWG	152	9' 10"	3'	4	(*N3) (*N9) (*Case 1)
97LP1 (97LP1 MAIN LineSide)	97LP1 FDR	0.21	1.65	1.65	1.35	1.33	2	0.000	Yes	PNL	25	4' 7"	1' 6"	8	(*N9) (*N16) (*Case 2)
97LP2 (97LP2 MAIN LineSide)	97MCC-2 FDR	0.21	1.74	1.48	1.40	1.19	2	0.000	Yes	PNL	25	4' 9"	1' 6"	8	(*N9) (*Case 1)
97MCC-1	97MCC-1 FDR	0.48	9.92	9.58	7.17	6.92	2	0.000	Yes	MCC	25	13' 2"	1' 6"	42	(*N9) (*Case 1)
97MCC-2	97MCC-2 FDR	0.48	11.34	9.68	8.03	6.85	2	0.000	Yes	MCC	25	13' 3"	1' 6"	43	(*N9) (*Case 1)
97PP1 (97PP1 MAIN LineSide)	97MCC-1 FDR	0.48	9.47	9.14	6.88	6.64	2	0.000	Yes	PNL	25	12' 11"	1' 6"	41	(*N9) (*Case 1)
ATS 55PP1	95MCC-2 FDR	0.48	16.83	15.66	8.69	8.09	1.979	0.000	Yes	PNL	25	14' 10"	1' 6"	51	(*N3) (*Case 1)
COMPOST STG SHED	RY-86TX1	0.21	2.75	2.25	1.93	1.58	1.917	0.083	Yes	PNL	25	5' 10"	1' 6"	11	(*N9) (*Case 1)
G1 LOAD CENTER	G1 LOAD CENTER MAIN	0.21	2.91	2.91	2.01	2.01	2	0.000	Yes	PNL	25	6'	1' 6"	12	(*N9) (*Case 1)
G2 LOAD CENTER	G2 LOAD CENTER MAIN	0.21	1.66	1.66	1.36	1.36	2	0.000	Yes	PNL	25	4' 8"	1' 6"	8	(*N9) (*Case 1)
LC	RY-86TX1	0.21	3.41	2.83	2.25	1.87	1.917	0.083	Yes	PNL	25	6' 6"	1' 6"	13	(*N9) (*Case 1)
MCC-3	RY-86TX1	0.48	13.40	10.73	9.26	5.83	2.917	0.083	Yes	MCC	25	16' 9"	1' 6"	62	(*N9) (*N16) (*Case 2)
MCC-4	RY-86TX1	0.48	13.81	10.93	9.50	5.91	2.917	0.083	Yes	MCC	25	16' 9"	1' 6"	63	(*N9) (*N16) (*Case 2)
PANEL XXX	RY-86TX1	0.48	12.64	10.37	8.81	7.23	1.917	0.083	Yes	PNL	25	15' 2"	1' 6"	53	(*N9) (*Case 1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.

Incident Energy Analysis - Northeast Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.														
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.														

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

NFPA 70E 2015 Annex D4

IEEE 1584 - 2002/2004a Edition

Bus + Line Side (Included Line Side + Load Side Contributions)

80% Cleared Fault Threshold

Mis-coordination checked

Included induction motors for 6.0 cycles

Worst Case

For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.

Incident Energy Analysis - RL Jackson Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
63LP1 (63LP1 MAIN LineSide)	63LP1 FDR	0.21	0.85	0.85	0.85	0.83	2	0.000	Yes	PNL	25	3' 5"	1' 6"	5	(*N9) (*N16) (*Case 2)
63PP1	63PP1 FDR	0.48	16.25	16.25	8.44	3.69	0.19	0.000	Yes	PNL	25	3' 4"	1' 6"	4	(*N3) (*N16) (*Case 2)
63PP2	63PP2 FDR	0.48	22.87	22.87	14.62	14.62	0.025	0.000	Yes	PNL	25	1' 7"	1' 6"	1	(*Case 1)
63SWGR1 (63SWGR1 MAIN LineSide)	ATS 1 N BREAKER	0.48	30.89	25.64	17.72	14.71	2	0.000	Yes	SWG	32	30' 8"	2'	67	(*N9) (*Case 1)
63SWGR2 (63SWGR2 MAIN LineSide)	ATS 2 N BREAKER	0.48	50.57	36.58	26.72	19.33	2	0.000	Yes	SWG	32	38' 4"	2'	93	(*N9) (*Case 1)
63SWGR3 (63SWGR3 MAIN LineSide)	ATS 3 N BREAKER	0.48	50.57	36.58	26.72	19.33	2	0.000	Yes	SWG	32	38' 4"	2'	93	(*N9) (*Case 1)
TRANSFER SWITCH 1	ATS 1 N BREAKER	0.48	35.25	30.14	21.16	18.09	2	0.000	Yes	PNL	25	26' 2"	1' 6"	130	(*N9) (*Case 1)
TRANSFER SWITCH 2 (ATS 2 N BREAKER LineSide)	ATS 2 N BREAKER	0.48	52.91	13.71	29.94	7.76	0.1	0.000	Yes	PNL	25	30' 6"	1' 6"	167	(*N2) (*N9) (*Case 1)
TRANSFER SWITCH 3 (ATS 3 N BREAKER LineSide)	63SWGR3 MAIN	0.48	52.91	13.71	29.94	7.76	0.1	0.000	Yes	PNL	25	30' 6"	1' 6"	167	(*N2) (*N9) (*Case 1)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

Incident Energy Analysis - RL Jackson Water Reclamation Facility

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table (*Case X) = Case resulting in greatest Incident Energy
(*N15) - Report as category 0 if fed by one transformer size < 125 kVA															
(*N16) - Trip Time Recalculated															
(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.															
(*N22) - Main Device failed, use upstream device															
PTW options used															
NFPA 70E 2015 Annex D4															
IEEE 1584 - 2002/2004a Edition															
Bus + Line Side (Included Line Side + Load Side Contributions)															
80% Cleared Fault Threshold															
Mis-coordination checked															
Included induction motors for 6.0 cycles															
Worst Case															
For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Incident Energy Analysis - Shoal Creek Reservior Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
HP1	MCC-7 MAIN	0.48	15.88	12.26	8.27	6.39	0.3	0.000	Yes	PNL	25	4' 5"	1' 6"	7	(*N3)
LA (LA MAIN LineSide)	T-XF1 FDR	0.21	1.40	1.40	1.20	1.20	2	0.000	Yes	PNL	25	4' 3"	1' 6"	7	(*N9)
MCC-7 (MCC-7 MAIN LineSide)	MCC-7 MAIN	0.48	17.43	3.99	11.60	2.65	0.1	0.000	Yes	MCC	25	16' 8"	1' 6"	62	(*N2) (*N9)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

Incident Energy Analysis - Shoal Creek Reservior Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
NFPA 70E 2015 Annex D4															
IEEE 1584 - 2002/2004a Edition															
Bus + Line Side (Included Line Side + Load Side Contributions)															
80% Cleared Fault Threshold															
Mis-coordination checked															
Included induction motors for 6.0 cycles															
Worst Case															
For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

Incident Energy Analysis - Smith Reservior Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
LA (LA MAIN LineSide)	MCC-3 SWBD MAIN	0.21	1.38	1.03	1.19	0.89	2	0.000	Yes	PNL	25	4' 3"	1' 6"	7	(*N9)
MCC-3	MCC-3 SWBD MAIN	0.48	23.43	17.48	14.93	11.14	0.07	0.000	Yes	MCC	25	3' 2"	1' 6"	4	
MCC-3 SWBD (MCC-3 SWBD MAIN LineSide)	MCC-3 SWBD MAIN	0.48	23.44	5.98	14.94	3.81	0.1	0.000	Yes	PNL	25	19' 4"	1' 6"	79	(*N2) (*N9)

PPE Description - Reference NFPA 70E - 2015, Table H.3(b)

0.0 - 1.2 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall. Other PPE: Faceshield, hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
1.2 - 12.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2: long-sleeve shirt and pants or coverall and face shield and balaclava or arc flash suit hood and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
12.0 - 40.0 cal/cm^2	Minimum Arc Rating of **calculated** cal/cm^2 for clothing system: long-sleeve shirt and pants or coverall and/or suit jacket and suit pants and arc flash suit hood and gloves and jacket, parka, rainwear or hard hat liner (as needed). Other PPE: Hardhat and safety glasses or goggles and ear canal inserts and heavy duty leather gloves and leather footwear.
40.0 - 999.0 cal/cm^2	No safe PPE exists. Do not work on live.

Notes

(*N1) - Out of IEEE 1584 Range, Lee Equation Used

(*N2) < 80% Cleared Fault Threshold

(*N3) - Arcing Current Low Tolerances Used

(*N5) - Miscoordinated, Upstream Device Tripped

(*N6) - Special Instantaneous Protection

(*N7) - Trip Time Unlink w/ TCC

(*N9) - Max Arcing Duration Reached

(*N11) - Out of IEEE 1584 Range, Lee Equation Used. Applicable for Open Air only. Existing Equipment type is not Open Air!

(*N15) - Report as category 0 if fed by one transformer size < 125 kVA

(*N16) - Trip Time Recalculated

(*N21) - Equipment Evaluation Failed, OVERDUTIED EQUIPMENT FOUND - Inappropriate to provide arc-flash hazard results.

(*N22) - Main Device failed, use upstream device

PTW options used

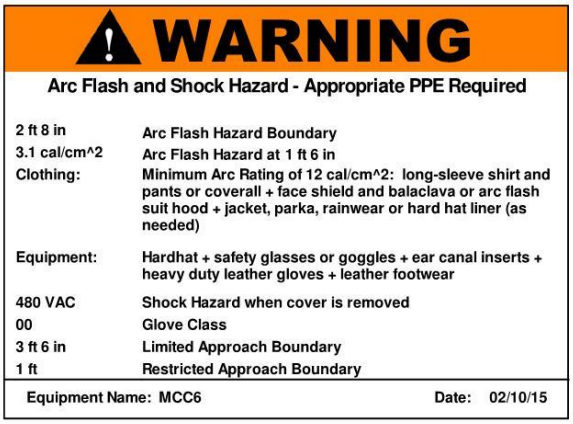
Incident Energy Analysis - Smith Reservior Pump Station

Bus Name	Protective Device Name	Bus (kV)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time (sec.)	Grd	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	(*N) = notes - see end of table
NFPA 70E 2015 Annex D4 IEEE 1584 - 2002/2004a Edition Bus + Line Side (Included Line Side + Load Side Contributions) 80% Cleared Fault Threshold Mis-coordination checked Included induction motors for 6.0 cycles Worst Case For additional information refer to NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.															

G.3. ARC-FLASH HAZARD WARNING LABEL TERMS DEFINED

NFPA 70E-2015™, Article 130.5(D) requires electrical equipment be field marked with a label containing specific information. The labels provided with this report meet the NFPA 70E-2015 ™ requirements.

Below is an image of a typical label. For some projects, the labels may look differently and the information may be arranged differently.



Below are the explanations for information provided on the Arc-Flash Hazard warning labels.

Arc-Flash Hazard Warning Label - Explanation of Terms

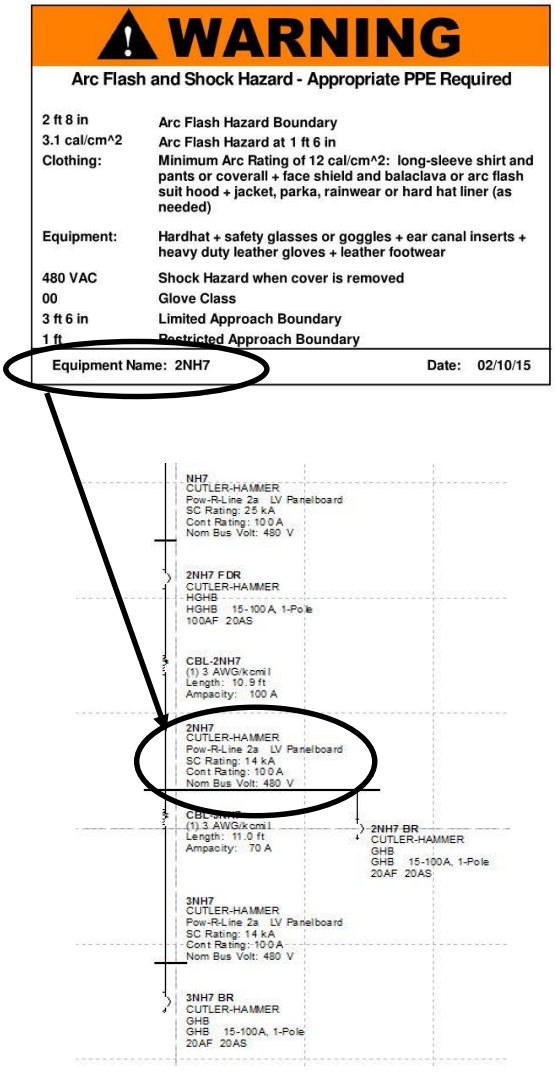
Term	Explanation
Arc Flash Hazard Boundary	This is a distance from an arcing fault within which unprotected skin could receive a second degree burn if an electrical arc-flash were to occur. A second degree burn is generally considered the distance where the incident energy equals 1.2 cal/cm^2.
Available Incident Energy	Incident energy measured in cal/cm^2 at the working distance.
Voltage	Nominal voltage to which personnel will be exposed.
Glove Class	This is the glove class which an employee is required to wear when working on energized equipment.
Limited Approach	An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists [B1].
Restrictive Approach	An approach limit at a distance from an exposed energized electrical conductor or circuit part within which there is an increased risk of shock, due to electrical arc-over combined with inadvertent movement, for personnel working in close proximity to the energized electrical conductor or circuit part [B1].
Equipment Name	This is the identification of the electrical equipment as depicted on the Study single line. This is the electrical equipment to which the arc-flash label is to be applied.
Date	This is the date of the issuance of the Study report.
[B1] NFPA 70E - 2015™	

G.4. ARC-FLASH HAZARD WARNING LABEL INSTALLATION

In June 2016 TRC Engineers applied the arc-flash hazard warning labels to the electrical power distribution equipment at the CCWA facilities addressed in this Assessment. Each label was applied to the equipment identified in the *Equipment Name* field of the warning label. The *Equipment Name* on the warning label matches the equipment name (shown as a bus) on the study one-line diagram, found in Appendix I.

Labels were placed on the equipment in such a way as to be visible from the point of normal approach. Labels were applied to the exterior of the equipment except for operating room isolation panels. At the owner's request, labels for those panels were applied to the interior side of the panel door.

As an example, the arc-flash hazard warning label shown below would be installed on panel 2NH7.



Labels should be properly maintained to ensure legibility and readability. Under normal conditions labels will last five to seven years, depending on environmental conditions. A damaged label should be replaced.

G.5. ARC-FLASH HAZARD WARNING LABEL IMAGES

The following pages contain images of the warning labels produced for this project.

Single phase panels, which are not within the scope of IEEE 1584™, were labeled according to the table Table 130.5(C)(A)(b) in NFPA 70E – 2015™. An image of a typical single phase panel label appears on the following pages.

G.5.1 Blalock Pump Station

G.5.2 W.B. Casey Water Reclamation Facility

G.5.3 Terry R. Hicks Water Production Facility

G.5.4 W.J. Hooper Water Production Facility

G.5.5 RL Jackson Water Reclamation Facility

G.5.6 Jonesboro Pump Station

G.5.7 Noah's Ark Pump Station

G.5.8 Northeast Water Reclamation Facility

G.5.9 Shoal Creek Reservoir Pump Station

G.5.10 Smith Reservoir Pump Station

G.5.1 Blalock Pump Station

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 3 in	Arc Flash Hazard Boundary
6.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: GEN PANEL Date: 05/19/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 5 in	Arc Flash Hazard Boundary
2.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-4 Date: 05/19/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 in	Arc Flash Hazard Boundary
0.04 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LB Date: 05/19/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 8 in	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: SWITCHBOARD Date: 05/19/16

G.5.2 W.B. Casey Water Reclamation Facility

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 3 in	Arc Flash Hazard Boundary
9.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 9LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 30LP2 SEC 1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 3 in	Arc Flash Hazard Boundary
9.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 61LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 30LP1 SEC 1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 30LP2 SEC 2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 11 in	Arc Flash Hazard Boundary
8.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LA Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 30LP1 SEC 2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 5 in	Arc Flash Hazard Boundary
7.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LD Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 3 in	Arc Flash Hazard Boundary
6.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 60LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft	Arc Flash Hazard Boundary
3.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 7LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft	Arc Flash Hazard Boundary
3.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 8LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 8 in	Arc Flash Hazard Boundary
3.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60MCC2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 8 in	Arc Flash Hazard Boundary
3.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60MCC1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 4 in	Arc Flash Hazard Boundary
2.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60PP2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft 6 in	Arc Flash Hazard Boundary
2.5 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 60MCC3 LEFT Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 4 in	Arc Flash Hazard Boundary
2.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 132CP Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft 6 in	Arc Flash Hazard Boundary
2.5 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 60MCC3 RIGHT Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 4 in	Arc Flash Hazard Boundary
2.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60PP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 4 in	Arc Flash Hazard Boundary
2.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 62PP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 2 in	Arc Flash Hazard Boundary
2.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 9PP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 2 in	Arc Flash Hazard Boundary
1.6 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 62LS1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft	Arc Flash Hazard Boundary
1.6 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 62LS2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 1 in	Arc Flash Hazard Boundary
1.6 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 62LS3 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 9 in	Arc Flash Hazard Boundary
1.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 30PP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 8 in	Arc Flash Hazard Boundary
1.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: HA Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 5 in	Arc Flash Hazard Boundary
1.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 20PP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 6 in	Arc Flash Hazard Boundary
1.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: HB Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 6 in	Arc Flash Hazard Boundary
1.0 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 60 SWGR1-2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft	Arc Flash Hazard Boundary
0.81 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 60 SWGR1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 in	Arc Flash Hazard Boundary
0.12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 62LP1 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 1 in	Arc Flash Hazard Boundary
0.72 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 30PP2 Date: 06/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 in	Arc Flash Hazard Boundary
0.11 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 20LP1 Date: 06/25/16

⚠ WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

0 in	Arc Flash Hazard Boundary
	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
125 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: BATTERY DIST PANEL Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 8 in	Arc Flash Hazard Boundary
62 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 61MCC1 Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 10 in	Arc Flash Hazard Boundary
57 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 61PP1 Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 7 in	Arc Flash Hazard Boundary
62 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 61MCC2 Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

24 ft 6 in	Arc Flash Hazard Boundary
48 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60SWGR2 LEFT Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

24 ft 4 in	Arc Flash Hazard Boundary
48 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 60SWGR2 RIGHT Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

24 ft	Arc Flash Hazard Boundary
47 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 62SWGR1 LEFT Date: 06/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

24 ft 2 in	Arc Flash Hazard Boundary
47 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 62SWGR1 RIGHT Date: 06/25/16

G.5.3 Terry R. Hicks Water Production Facility

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 5 in	Arc Flash Hazard Boundary
1.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: EMCC-1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 9 in	Arc Flash Hazard Boundary
1.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: EP1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

7 ft 11 in	Arc Flash Hazard Boundary
18 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: EMCC-2 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 4 in	Arc Flash Hazard Boundary
4.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: EP2 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 11 in	Arc Flash Hazard Boundary
5.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: GEN PANEL Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft	Arc Flash Hazard Boundary
6.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LPF-UV1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 4 in	Arc Flash Hazard Boundary
6.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LP-F1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 5 in	Arc Flash Hazard Boundary
4.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft	Arc Flash Hazard Boundary
3.9 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-2 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft	Arc Flash Hazard Boundary
3.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: P1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 4 in	Arc Flash Hazard Boundary
0.96 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-4 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 2 in	Arc Flash Hazard Boundary
6.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: P2 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 4 in	Arc Flash Hazard Boundary
2.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: P3 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft	Arc Flash Hazard Boundary
12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: P5 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft	Arc Flash Hazard Boundary
12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: P4 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 3 in	Arc Flash Hazard Boundary
2.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: P6 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 5 in	Arc Flash Hazard Boundary
1.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: P7 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 in	Arc Flash Hazard Boundary
0.37 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: P9 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 in	Arc Flash Hazard Boundary
0.07 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: P8 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

12 ft 2 in	Arc Flash Hazard Boundary
37 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PP-F1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

7 in	Arc Flash Hazard Boundary
0.25 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PPF-UV1 Date: 07/17/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

7 in	Arc Flash Hazard Boundary
0.24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PPF-UV2 Date: 07/17/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

28 ft 11 in	Arc Flash Hazard Boundary
154 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: SB-1-1 Date: 07/17/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

24 ft 5 in	Arc Flash Hazard Boundary
116 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: SB-1 Date: 07/17/16

G.5.4 W.J. Hooper Water Production Facility

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 8 in	Arc Flash Hazard Boundary
25 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 35 PP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

7 ft 3 in	Arc Flash Hazard Boundary
16 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 35 LP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

8 ft	Arc Flash Hazard Boundary
19 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 10LP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

26 ft	Arc Flash Hazard Boundary
9.8 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: MV SWGR Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 5 in	Arc Flash Hazard Boundary
9.7 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 07PP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 6 in	Arc Flash Hazard Boundary
7.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LP-2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 9 in	Arc Flash Hazard Boundary
8.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LPH-UV1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 5 in	Arc Flash Hazard Boundary
7.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 50LP2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 5 in	Arc Flash Hazard Boundary
7.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 50LP3 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 6 in	Arc Flash Hazard Boundary
4.9 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD 480V COL-MTD PNL Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 11 in	Arc Flash Hazard Boundary
5.7 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 50LP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 6 in	Arc Flash Hazard Boundary
4.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD COL-MTD PNL Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 6 in	Arc Flash Hazard Boundary
4.7 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PP-5 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 10 in	Arc Flash Hazard Boundary
3.8 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 35MVC2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 ft 3 in	Arc Flash Hazard Boundary
3.9 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 35MVC1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 9 in	Arc Flash Hazard Boundary
1.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 07LP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 6 in	Arc Flash Hazard Boundary
1.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 02LP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft	Arc Flash Hazard Boundary
0.61 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 10MCC2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft	Arc Flash Hazard Boundary
0.62 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 10MCC1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft	Arc Flash Hazard Boundary
0.58 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 10PP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 in	Arc Flash Hazard Boundary
0.55 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50MCC2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 in	Arc Flash Hazard Boundary
0.53 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PP-6 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 in	Arc Flash Hazard Boundary
0.54 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PP-4 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 in	Arc Flash Hazard Boundary
0.51 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50MCC1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 in	Arc Flash Hazard Boundary
0.51 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PP-3 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 in	Arc Flash Hazard Boundary
0.47 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50PP1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 in	Arc Flash Hazard Boundary
0.49 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50PP2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 in	Arc Flash Hazard Boundary
0.46 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PPH UV2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 in	Arc Flash Hazard Boundary
0.44 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PPH UV1 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 in	Arc Flash Hazard Boundary
0.16 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 10LP2 Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

7 in	Arc Flash Hazard Boundary
0.27 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: ATS Date: 06/20/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 in	Arc Flash Hazard Boundary
0.14 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall
Equipment:	Faceshield, hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 10LP3 Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft	Arc Flash Hazard Boundary
58 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 10SWBD - LEFT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 9 in	Arc Flash Hazard Boundary
57 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 10SWBD - RIGHT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 10 in	Arc Flash Hazard Boundary
57 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50SWBD - RIGHT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 7 in	Arc Flash Hazard Boundary
56 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50SWBD - LEFT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft	Arc Flash Hazard Boundary
53 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC 2 INCOMING SWGR Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft	Arc Flash Hazard Boundary
52 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 2MCC - RIGHT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft	Arc Flash Hazard Boundary
52 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 2MCC - LEFT Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 8 in	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC2 Date: 06/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 8 in	Arc Flash Hazard Boundary
45 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 02PP1 **Date: 06/20/16**

G.5.6 Jonesboro Pump Station

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 2 in	Arc Flash Hazard Boundary
6.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LA Date: 05/20/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 5 in	Arc Flash Hazard Boundary
80 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC **Date: 05/20/16**

G.5.7 Noah's Ark Pump Station

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

2 ft 6 in	Arc Flash Hazard Boundary
2.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LA OLD BLDG Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 3 in	Arc Flash Hazard Boundary
24 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 ft 11 in	Arc Flash Hazard Boundary
31 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC SWBD Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 4 in	Arc Flash Hazard Boundary
60 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MAIN SWBD Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 4 in	Arc Flash Hazard Boundary
60 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MAIN SWBD Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 2 in	Arc Flash Hazard Boundary
78 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: OLD PUMP STA MCC Date: 06/01/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

21 ft 4 in	Arc Flash Hazard Boundary
93 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PA Date: 06/01/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 0 in	Arc Flash Hazard Boundary per NFPA 70E - 2015, Table D.2.1
8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Minimum Arc Rating of 8 cal/cm^2: long-sleeve shirt and pants or coverall + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
240 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)
Avoid Contact	Restricted Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)

Label applicable to single phase AC panels as per NFPA 70E - 2015, Table 130.7(C)(15)(A)(b)

Equipment Name: LA **Date: 06/01/16**

G.5.8 Northeast Water Reclamation Facility

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 1LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft	Arc Flash Hazard Boundary
8.7 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 1LP3 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 2 in	Arc Flash Hazard Boundary
9.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 1LP2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

20 ft 10 in	Arc Flash Hazard Boundary
38 cal/cm^2	Arc Flash Hazard at a working distance of 2 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1LVSG-1 LEFT Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

21 ft 4 in	Arc Flash Hazard Boundary
39 cal/cm^2	Arc Flash Hazard at a working distance of 2 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1LVSG-1 RIGHT Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 5 in	Arc Flash Hazard Boundary
6.9 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 34LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

12 ft	Arc Flash Hazard Boundary
36 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1MCC-2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 6 in	Arc Flash Hazard Boundary
7.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 55LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 4 in	Arc Flash Hazard Boundary
6.7 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 65LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft 1 in	Arc Flash Hazard Boundary
12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 65LP3 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft 1 in	Arc Flash Hazard Boundary
12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 65LP2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 ft 10 in	Arc Flash Hazard Boundary
35 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 65MCC-1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

11 ft 9 in	Arc Flash Hazard Boundary
35 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 65MCC-2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 2 in	Arc Flash Hazard Boundary
6.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 87LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 11 in	Arc Flash Hazard Boundary
8.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 86LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 6 in	Arc Flash Hazard Boundary
7.2 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 95LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 10 in	Arc Flash Hazard Boundary
8.1 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 95LP2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

19 ft 7 in	Arc Flash Hazard Boundary
34 cal/cm^2	Arc Flash Hazard at a working distance of 2 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 96LVSG-1 SEC 1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 7 in	Arc Flash Hazard Boundary
7.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 96LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

19 ft 8 in	Arc Flash Hazard Boundary
35 cal/cm^2	Arc Flash Hazard at a working distance of 2 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 96LVSG-1 SEC 2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

22 ft 2 in	Arc Flash Hazard Boundary
8.4 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 96MCC-1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

10 ft 9 in	Arc Flash Hazard Boundary
30 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 96MCC-4 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

22 ft 3 in	Arc Flash Hazard Boundary
8.4 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
4160 VAC	Shock Hazard when cover is removed
1	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 96MCC-2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

12 ft 7 in	Arc Flash Hazard Boundary
39 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt + pants or coverall and/or suit + arc flash suit hood + gloves + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + arc-rated gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 96PP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

9 ft 10 in	Arc Flash Hazard Boundary
3.8 cal/cm^2	Arc Flash Hazard at a working distance of 3 ft
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 96TX1 PRI Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 9 in	Arc Flash Hazard Boundary
7.8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 97LP2 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 7 in	Arc Flash Hazard Boundary
7.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 97LP1 Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

5 ft 10 in	Arc Flash Hazard Boundary
11 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: COMPOST STG SHED Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

6 ft	Arc Flash Hazard Boundary
12 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: G1 LOAD CENTER Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 8 in	Arc Flash Hazard Boundary
7.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: G2 LOAD CENTER Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 2 in	Arc Flash Hazard Boundary
42 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1MCC-1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

138 ft	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 3 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 1MVSG-1 RIGHT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

138 ft	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 3 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
12470 VAC	Shock Hazard when cover is removed
2	Glove Class
5 ft	Limited Approach Boundary
2 ft 2 in	Restricted Approach Boundary

Equipment Name: 1MVSG-1 LEFT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 1 in	Arc Flash Hazard Boundary
42 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft	Arc Flash Hazard Boundary
42 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 1PP2 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 10 in	Arc Flash Hazard Boundary
51 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50PP2 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 8 in	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 50PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 3 in	Arc Flash Hazard Boundary
48 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 55PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 10 in	Arc Flash Hazard Boundary
51 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 55PP2 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

22 ft 10 in	Arc Flash Hazard Boundary
43 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 65LVSG-1 RIGHT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

22 ft 9 in	Arc Flash Hazard Boundary
43 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 65LVSG-1 LEFT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 3 in	Arc Flash Hazard Boundary
43 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 65PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 10 in	Arc Flash Hazard Boundary
57 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 87PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

22 ft 11 in	Arc Flash Hazard Boundary
43 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 95LVSG-1 RIGHT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

23 ft 1 in	Arc Flash Hazard Boundary
44 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 95LVSG-1 LEFT Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 4 in	Arc Flash Hazard Boundary
49 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 95MCC-1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 7 in	Arc Flash Hazard Boundary
50 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 95MCC-2 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

12 ft 8 in	Arc Flash Hazard Boundary
40 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 96MCC-3 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 11 in	Arc Flash Hazard Boundary
52 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 95PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 2 in	Arc Flash Hazard Boundary
42 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 97MCC-1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

13 ft 3 in	Arc Flash Hazard Boundary
43 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 97MCC-2 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

14 ft 10 in	Arc Flash Hazard Boundary
51 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: ATS 55PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

12 ft 11 in	Arc Flash Hazard Boundary
41 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 97PP1 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 9 in	Arc Flash Hazard Boundary
62 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-3 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 9 in	Arc Flash Hazard Boundary
63 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-4 Date: 07/25/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

15 ft 2 in	Arc Flash Hazard Boundary
53 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: PANEL XXX Date: 07/25/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 0 in	Arc Flash Hazard Boundary per NFPA 70E - 2015, Table D.2.1
8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Minimum Arc Rating of 8 cal/cm^2: long-sleeve shirt and pants or coverall + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)
Avoid Contact	Restricted Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)

Label applicable to single phase AC panels as per NFPA 70E - 2015, Table 130.7(C)(15)(A)(b)

Equipment Name: LC **Date: 07/22/16**

G.5.5 RL Jackson Water Reclamation Facility

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 5 in	Arc Flash Hazard Boundary
4.5 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: 63LP1 Date: 06/02/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

1 ft 7 in	Arc Flash Hazard Boundary
1.3 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 63PP2 Date: 06/02/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 4 in	Arc Flash Hazard Boundary
4.4 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 63PP1 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

30 ft 8 in	Arc Flash Hazard Boundary
67 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 63SWGR1 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

38 ft 4 in	Arc Flash Hazard Boundary
93 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 63SWGR3 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

38 ft 4 in	Arc Flash Hazard Boundary
93 cal/cm^2	Arc Flash Hazard at 2 ft
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: 63SWGR2 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

26 ft 2 in	Arc Flash Hazard Boundary
130 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: TRANSFER SWITCH 1 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

30 ft 6 in	Arc Flash Hazard Boundary
167 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: TRANSFER SWITCH 2 Date: 06/02/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

30 ft 6 in	Arc Flash Hazard Boundary
167 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: TRANSFER SWITCH 3 Date: 06/02/16

G.5.9 Shoal Creek Reservoir Pump Station

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 5 in	Arc Flash Hazard Boundary
7.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: HP1 Date: 07/18/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

16 ft 8 in	Arc Flash Hazard Boundary
62 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-7 **Date: 07/18/16**

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 0 in	Arc Flash Hazard Boundary per NFPA 70E - 2015, Table D.2.1
8 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Minimum Arc Rating of 8 cal/cm^2: long-sleeve shirt and pants or coverall + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)
Avoid Contact	Restricted Approach Boundary per NFPA 70E - 2015, Table 130.4 (D)(a)

Label applicable to single phase AC panels as per NFPA 70E - 2015, Table 130.7(C)(15)(A)(b)

Equipment Name: LA **Date: 07/18/16**

G.5.10 Smith Reservoir Pump Station

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

4 ft 3 in	Arc Flash Hazard Boundary
6.6 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
Avoid Contact	Restricted Approach Boundary

Equipment Name: LA Date: 06/06/16

WARNING

Arc Flash and Shock Hazard - Appropriate PPE Required

3 ft 2 in	Arc Flash Hazard Boundary
4.0 cal/cm^2	Arc Flash Hazard at a working distance of 1 ft 6 in
Clothing:	Clothing system Minimum Arc Rating of cal/cm^2 noted above: Long-sleeve shirt and pants or coverall or arc flash suit + face shield and balaclava or arc flash suit hood + jacket, parka, rainwear or hard hat liner (as needed)
Equipment:	Hardhat + safety glasses or goggles + ear canal inserts + heavy duty leather gloves + leather footwear
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-3 Date: 06/06/16

DANGER

Arc Flash and Shock Hazard
NO SAFE PPE EXISTS
DO NOT WORK ON LIVE!

19 ft 4 in	Arc Flash Hazard Boundary
79 cal/cm^2	Arc Flash Hazard at 1 ft 6 in
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
	DO NOT WORK ON LIVE!
480 VAC	Shock Hazard when cover is removed
00	Glove Class
3 ft 6 in	Limited Approach Boundary
1 ft	Restricted Approach Boundary

Equipment Name: MCC-3 SWBD **Date: 06/06/16**

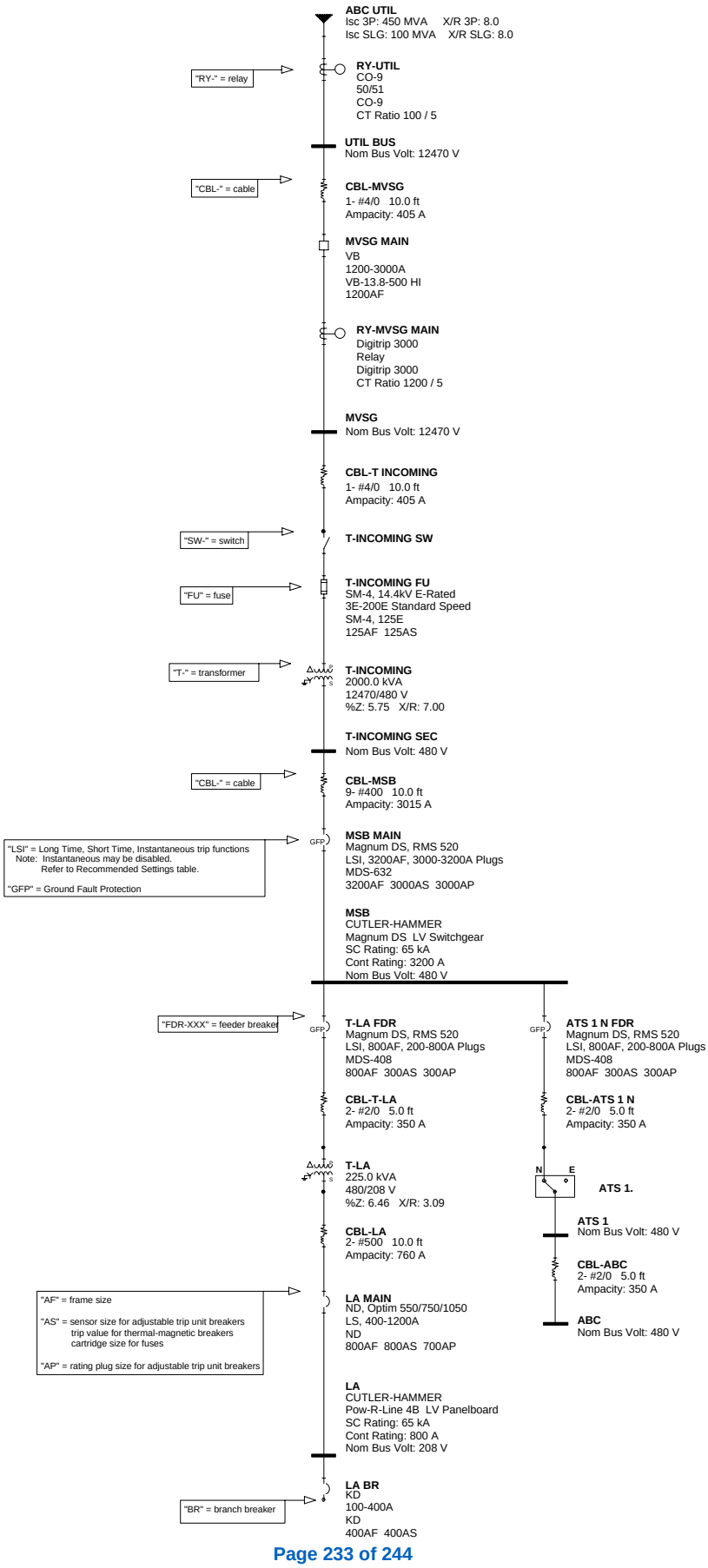
APPENDIX H: STUDY SINGLE LINES

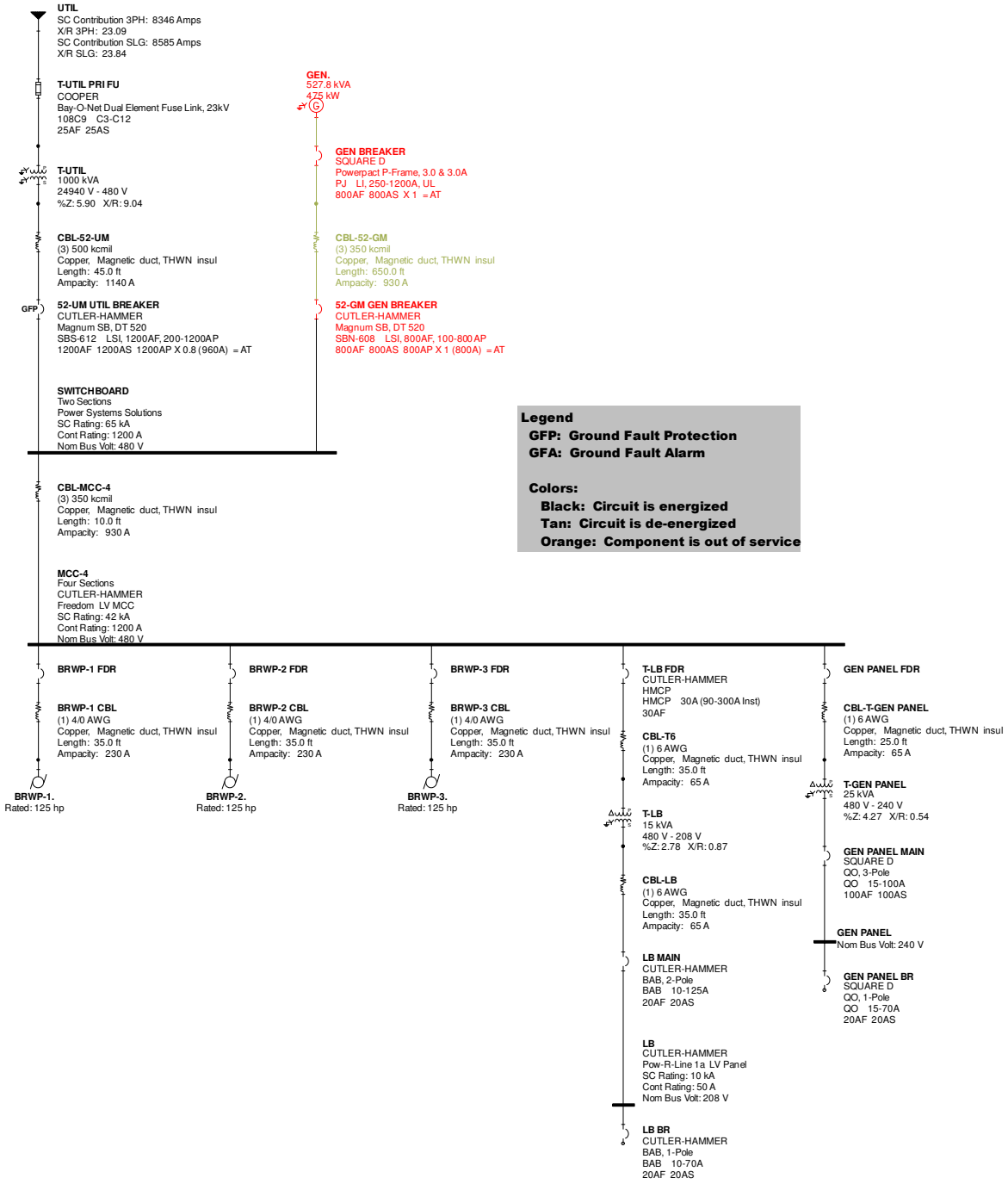
The following Study single lines are impedance diagrams, used for calculations required by this Arc Flash Risk Assessment. Equipment and components are modeled to a level of detail sufficient to obtain accurate results for the analysis contained in this report. The following paragraphs provide additional information on how the study single line (impedance diagram) differs from a typical facility electrical single line.

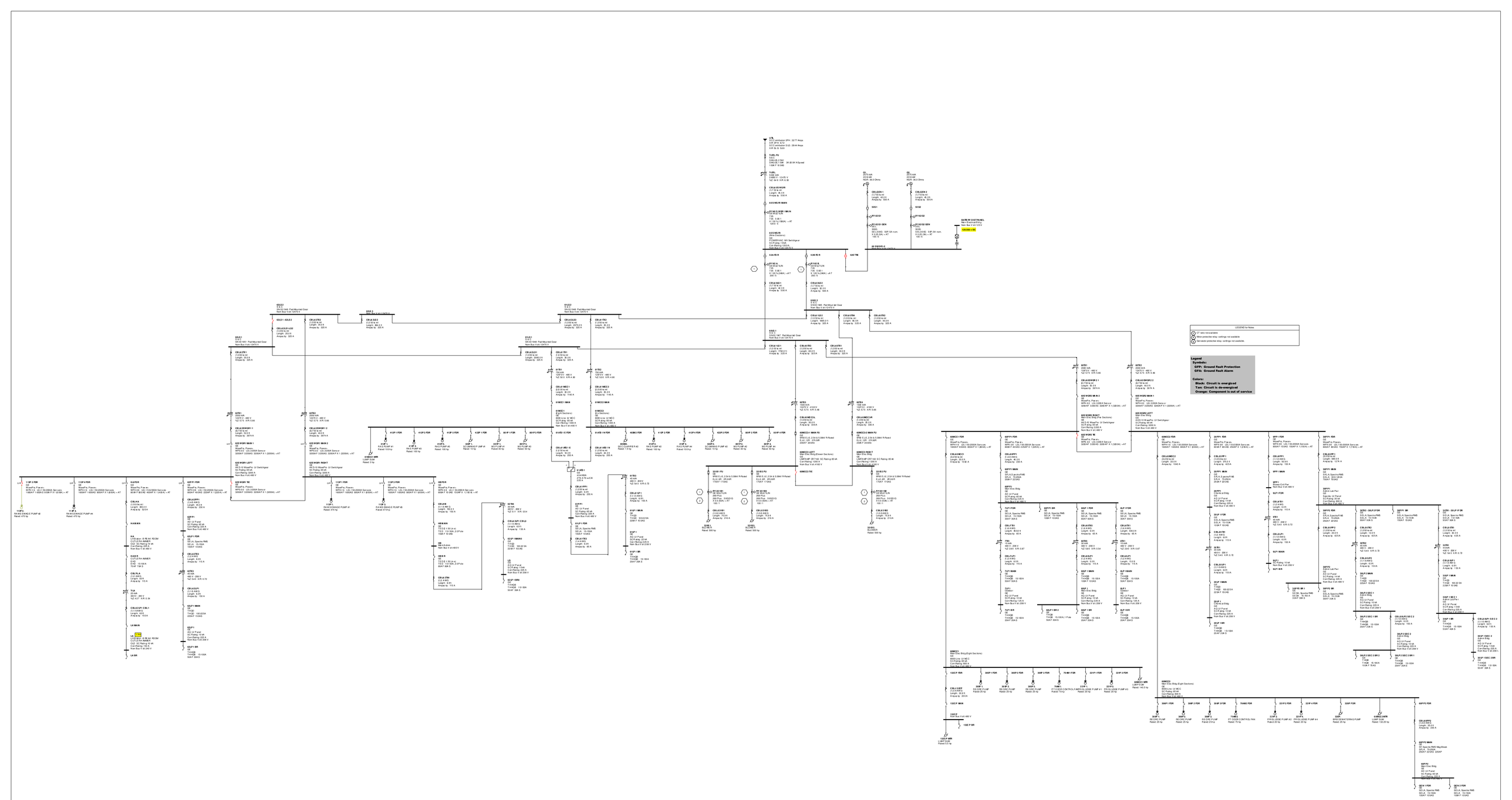
The study's system model contains at least one of each breaker or fuse type in a switchgear, panelboard, switchboard, or motor control center. The study's system model, graphically depicted by the single line on the following pages, may not contain all breakers or fuses which are physically present in the equipment. For example, a panel may contain numerous type BAB 20A, 3P breakers but the study system model may depict only one typical type BAB breaker.

The equipment in the study single line was named as per the equipment nameplates found in the field during data collection and/or as per information contained on the facility electrical riser diagrams, design drawings, or single lines. Other system components, such as conductors, are named as per the attached single line legend.

LEGEND FOR ONE-LINE INFORMATION

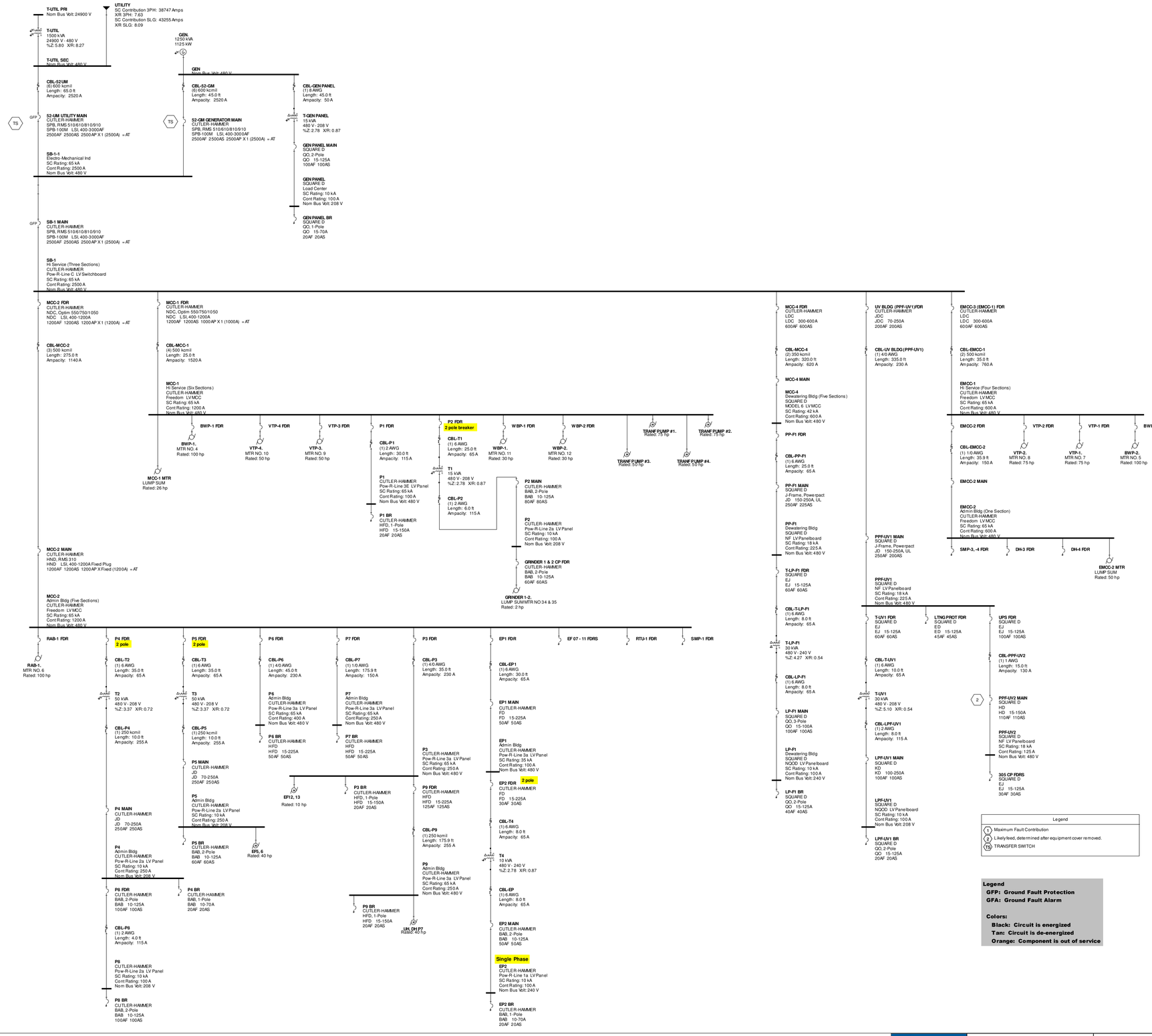


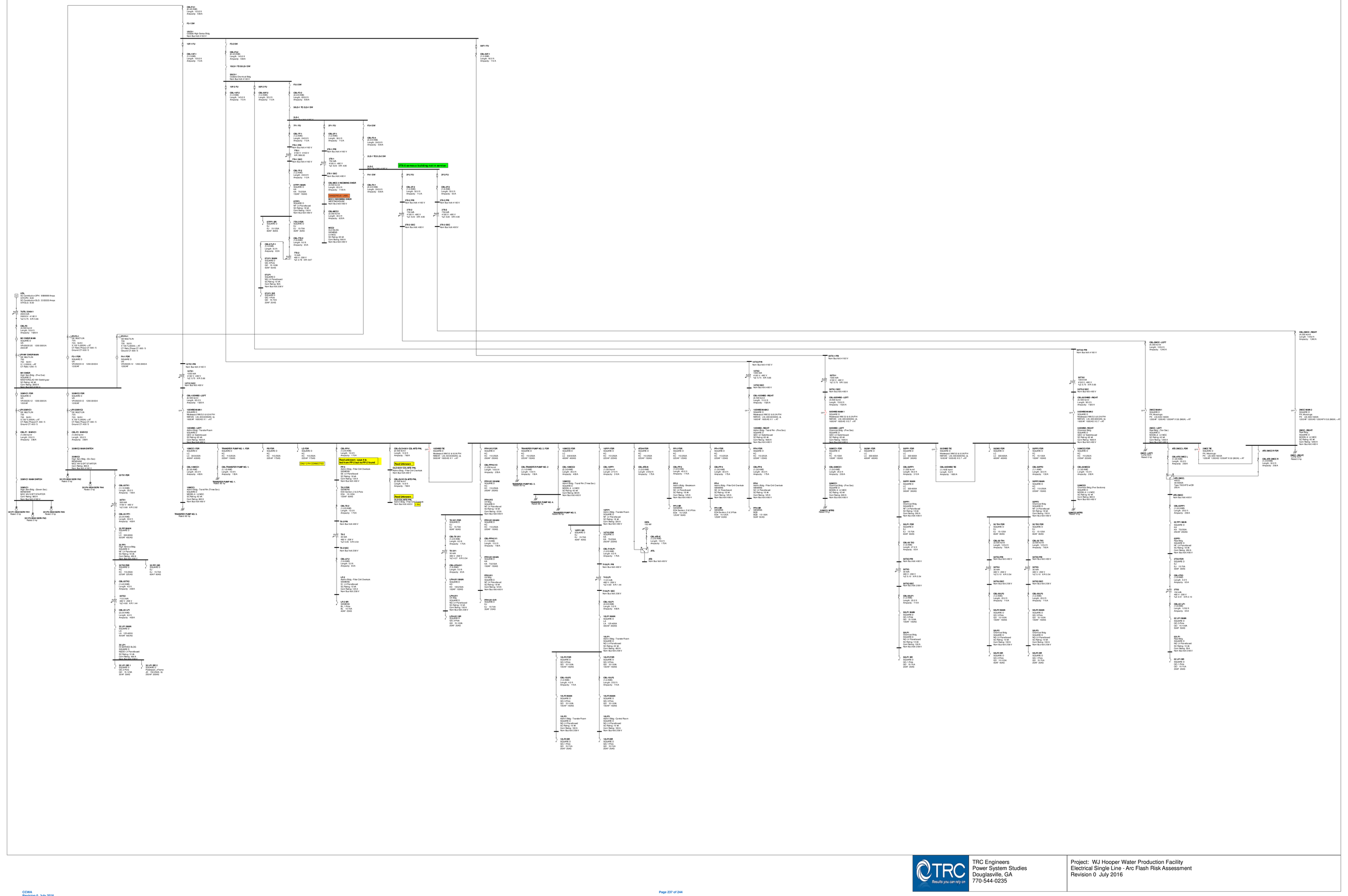

UTIL
SC Contribution 3PH: 8346 Amps
X/R 3PH: 23.09
SC Contribution SLG: 8585 Amps
X/R SLG: 23.84
T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C9 C3-C12
25AF 25AS
T-UTIL
1000 kVA
24940 V - 480 V
%Z: 5.90 X/R: 9.04
CBL-52-UM
(3) 500 kcmil
Copper, Magnetic duct, THWN insul
Length: 45.0 ft
Ampacity: 1140 A
GFP
52-UM UTIL BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS 1200AP X 0.8 (960A) = AT
SWITCHBOARD
Two Sections
Power Systems Solutions
SC Rating: 65 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
GEN.
527.8 kVA
475 kW
GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
800AF 800AS X 1 = AT
CBL-52-GM
(3) 350 kcmil
Copper, Magnetic duct, THWN insul
Length: 650.0 ft
Ampacity: 930 A
52-GM GEN BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBN-608 LSI, 800AF, 100-800AP
800AF 800AS 800AP X 1 (800A) = AT
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service
CBL-MCC-4
(3) 350 kcmil
Copper, Magnetic duct, THWN insul
Length: 10.0 ft
Ampacity: 930 A
MCC-4
Four Sections
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 42 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
BRWP-1 FDR
BRWP-1 CBL
(1) 4/0 AWG
Copper, Magnetic duct, THWN insul
Length: 35.0 ft
Ampacity: 230 A
BRWP-1.
Rated: 125 hp
BRWP-2 FDR
BRWP-2 CBL
(1) 4/0 AWG
Copper, Magnetic duct, THWN insul
Length: 35.0 ft
Ampacity: 230 A
BRWP-2.
Rated: 125 hp
BRWP-3 FDR
BRWP-3 CBL
(1) 4/0 AWG
Copper, Magnetic duct, THWN insul
Length: 35.0 ft
Ampacity: 230 A
BRWP-3.
Rated: 125 hp
T-LB FDR
CUTLER-HAMMER
HMCP
HMCP 30A (90-300A Inst)
30AF
CBL-T6
(1) 6 AWG
Copper, Magnetic duct, THWN insul
Length: 35.0 ft
Ampacity: 65 A
T-LB
15 kVA
480 V - 208 V
%Z: 2.78 X/R: 0.87
CBL-LB
(1) 6 AWG
Copper, Magnetic duct, THWN insul
Length: 35.0 ft
Ampacity: 65 A
LB MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
20AF 20AS
LB
CUTLER-HAMMER
Pow-R-Line 1a LV Panel
SC Rating: 10 kA
Cont Rating: 50 A
Nom Bus Volt: 208 V
LB BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS
GEN PANEL FDR
CBL-T-GEN PANEL
(1) 6 AWG
Copper, Magnetic duct, THWN insul
Length: 25.0 ft
Ampacity: 65 A
T-GEN PANEL
25 kVA
480 V - 240 V
%Z: 4.27 X/R: 0.54
GEN PANEL MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS
GEN PANEL
Nom Bus Volt: 240 V
GEN PANEL BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS



TRC Engineers

Project: W.B. Casey Water Reclamation Facility - Electrical One-Line for Arc Flash Risk Assessment
Revision 0 July 2016


T-UTIL PRI
Nom Bus Volt: 24900 V
UTILITY
SC Contribution 3PH: 38747 Amps
XR 3PH: 7.63
SC Contribution SLG: 43255 Amps
XR SLG: 8.09
T-UTIL
1500 kVA
24900 V - 480 V
%Z: 5.80 XR: 8.27
GEN
1250 kVA
1125 kW
T-UTIL SEC
Nom Bus Volt: 480 V
GEN
Nom Bus Volt: 480 V
CBL-52-UM
(6) 600 kcmil
Length: 65.0 ft
Ampacity: 2520 A
CBL-52-GM
(6) 600 kcmil
Length: 45.0 ft
Ampacity: 2520 A
CBL-GEN PANEL
(1) 8 AWG
Length: 45.0 ft
Ampacity: 50 A
GFP
TS
52-UM UTILITY MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS 2500AP X 1 (2500A) = AT
TS
52-GM GENERATOR MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS 2500AP X 1 (2500A) = AT
T-GEN PANEL
15 kVA
480 V - 208 V
%Z: 2.78 XR: 0.87
GEN PANEL MAIN
SQUARE D
QO, 2-Pole
QO 15-125A
100AF 100AS
SB-1-1
Electro-Mechanical Ind
SC Rating: 65 kA
Cont Rating: 2500 A
Nom Bus Volt: 480 V
GEN PANEL
SQUARE D
Load Center
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
GEN PANEL BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS
GFP
SB-1 MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
2500AF 2500AS 2500AP X 1 (2500A) = AT
SB-1
Hi Service (Three Sections)
CUTLER-HAMMER
Pow-R-Line C LV Switchboard
SC Rating: 65 kA
Cont Rating: 2500 A
Nom Bus Volt: 480 V
MCC-2 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS 1200AP X 1 (1200A) = AT
MCC-1 FDR
CUTLER-HAMMER
NDC, Optim 550/750/1050
NDC LSI, 400-1200A
1200AF 1200AS 1000AP X 1 (1000A) = AT
CBL-MCC-2
(3) 500 kcmil
Length: 275.0 ft
Ampacity: 1140 A
CBL-MCC-1
(4) 500 kcmil
Length: 25.0 ft
Ampacity: 1520 A
MCC-1
Hi Service (Six Sections)
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
BWP-1 FDR
BWP-1.
MTR NO. 4
Rated: 100 hp
VTP-4 FDR
VTP-4.
MTR NO. 10
Rated: 50 hp
VTP-3 FDR
VTP-3.
MTR NO. 9
Rated: 50 hp
P1 FDR
CBL-P1
(1) 2 AWG
Length: 30.0 ft
Ampacity: 115 A
P2 FDR
2 pole breaker
CBL-T1
(1) 6 AWG
Length: 25.0 ft
Ampacity: 65 A
WBP-1 FDR
WBP-1.
MTR NO. 11
Rated: 30 hp
WBP-2 FDR
WBP-2.
MTR NO. 12
Rated: 30 hp
TRANF PUMP #1.
Rated: 75 hp
TRANF PUMP #2.
Rated: 75 hp
T1
15 kVA
480 V - 208 V
%Z: 2.78 XR: 0.87
CBL-P2
(1) 2 AWG
Length: 6.0 ft
Ampacity: 115 A
MCC-1 MTR
LUMP SUM
Rated: 26 hp
P1
CUTLER-HAMMER
Pow-R-Line 3E LV Panel
SC Rating: 65 kA
Cont Rating: 100 A
Nom Bus Volt: 480 V
P2 MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
80AF 80AS
P1 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS
P2
CUTLER-HAMMER
Pow-R-Line 2a LV Panel
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
GRINDER 1 & 2 CP FDR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
60AF 60AS
GRINDER 1-2.
LUMP SUM MTR NO 34 & 35
Rated: 2 hp
MCC-2 MAIN
CUTLER-HAMMER
HND, RMS 310
HND LSI, 400-1200A Fixed Plug
1200AF 1200AS 1200AP X Fixed (1200A) = AT
MCC-2
Admin Bldg (Five Sections)
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
RAB-1 FDR
RAB-1.
MTR NO. 6
Rated: 100 hp
P4 FDR
2 pole
CBL-T2
(1) 6 AWG
Length: 35.0 ft
Ampacity: 65 A
P5 FDR
2 pole
CBL-T3
(1) 6 AWG
Length: 35.0 ft
Ampacity: 65 A
P6 FDR
CBL-P6
(1) 4/0 AWG
Length: 45.0 ft
Ampacity: 230 A
P7 FDR
CBL-P7
(1) 1/0 AWG
Length: 175.9 ft
Ampacity: 150 A
P3 FDR
CBL-P3
(1) 4/0 AWG
Length: 35.0 ft
Ampacity: 230 A
EP1 FDR
CBL-EP1
(1) 6 AWG
Length: 30.0 ft
Ampacity: 65 A
EF 07 - 11 FDRS
RTU-1 FDR
SMP-1 FDR
T2
50 kVA
480 V - 208 V
%Z: 3.37 XR: 0.72
T3
50 kVA
480 V - 208 V
%Z: 3.37 XR: 0.72
P6
Admin Bldg
CUTLER-HAMMER
Pow-R-Line 3a LV Panel
SC Rating: 65 kA
Cont Rating: 400 A
Nom Bus Volt: 480 V
P7
Admin Bldg
CUTLER-HAMMER
Pow-R-Line 3a LV Panel
SC Rating: 65 kA
Cont Rating: 250 A
Nom Bus Volt: 480 V
P3
CUTLER-HAMMER
Pow-R-Line 3a LV Panel
SC Rating: 65 kA
Cont Rating: 250 A
Nom Bus Volt: 480 V
EP1 MAIN
CUTLER-HAMMER
FD
FD 15-225A
50AF 50AS
CBL-P4
(1) 250 kcmil
Length: 10.0 ft
Ampacity: 255 A
CBL-P5
(1) 250 kcmil
Length: 10.0 ft
Ampacity: 255 A
P6 BR
CUTLER-HAMMER
HFD
HFD 15-225A
50AF 50AS
P7 BR
CUTLER-HAMMER
HFD
HFD 15-225A
50AF 50AS
EP1
Admin Bldg
CUTLER-HAMMER
Pow-R-Line 3a LV Panel
SC Rating: 35 kA
Cont Rating: 100 A
Nom Bus Volt: 480 V
EP12, 13
Rated: 10 hp
P3 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS
P9 FDR
CUTLER-HAMMER
HFD
HFD 15-225A
125AF 125AS
EP2 FDR
2 pole
CUTLER-HAMMER
FD
FD 15-225A
30AF 30AS
CBL-T4
(1) 6 AWG
Length: 8.0 ft
Ampacity: 65 A
P4 MAIN
CUTLER-HAMMER
JD
JD 70-250A
250AF 250AS
P5 MAIN
CUTLER-HAMMER
JD
JD 70-250A
250AF 250AS
P5 BR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
60AF 60AS
EP5, 6
Rated: 40 hp
CBL-P9
(1) 250 kcmil
Length: 175.9 ft
Ampacity: 255 A
P9
Admin Bldg
CUTLER-HAMMER
Pow-R-Line 3a LV Panel
SC Rating: 65 kA
Cont Rating: 250 A
Nom Bus Volt: 480 V
T4
10 kVA
480 V - 240 V
%Z: 2.78 XR: 0.87
CBL-EP
(1) 6 AWG
Length: 8.0 ft
Ampacity: 65 A
P4
Admin Bldg
CUTLER-HAMMER
Pow-R-Line 2a LV Panel
SC Rating: 10 kA
Cont Rating: 250 A
Nom Bus Volt: 208 V
P4 BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS
P9 BR
CUTLER-HAMMER
HFD, 1-Pole
HFD 15-150A
20AF 20AS
LN_P4 P7
Rated: 40 hp
EP2 MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
50AF 50AS
Single Phase
EP2
CUTLER-HAMMER
Pow-R-Line 1a LV Panel
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 240 V
P8 FDR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
100AF 100AS
CBL-P8
(1) 2 AWG
Length: 4.0 ft
Ampacity: 115 A
P8
CUTLER-HAMMER
Pow-R-Line 2a LV Panel
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
P8 BR
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
100AF 100AS
EP2 BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS
MCC-4 FDR
CUTLER-HAMMER
LDC
LDC 300-600A
600AF 600AS
CBL-MCC-4
(2) 350 kcmil
Length: 320.0 ft
Ampacity: 620 A
MCC-4 MAIN
MCC-4
Dewatering Bldg (Five Sections)
SQUARE D
MODEL 6 LV MCC
SC Rating: 42 kA
Cont Rating: 600 A
Nom Bus Volt: 480 V
PP-FI FDR
CBL-PP-FI
(1) 6 AWG
Length: 25.0 ft
Ampacity: 65 A
PP-FI MAIN
SQUARE D
J-Frame, Powe-pact
JD 150-250A, UL
250AF 225AS
PP-FI
Dewatering Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 225 A
Nom Bus Volt: 480 V
T-LP-FI FDR
SQUARE D
EJ
EJ 15-125A
60AF 60AS
CBL-T-LP-FI
(1) 6 AWG
Length: 8.0 ft
Ampacity: 65 A
T-LP-FI
30 kVA
480 V - 240 V
%Z: 4.27 XR: 0.54
CBL-LP-FI
(1) 6 AWG
Length: 8.0 ft
Ampacity: 65 A
LP-FI MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS
LP-FI
Dewatering Bldg
SQUARE D
NQOD LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 240 V
LP-FI BR
SQUARE D
QO, 2-Pole
QO 15-125A
40AF 40AS
UV BLDG (PPF-UV1)FDR
CUTLER-HAMMER
JDC
JDC 70-250A
200AF 200AS
CBL-UV BLDG (PPF-UV1)
(1) 1/0 AWG
Length: 335.0 ft
Ampacity: 230 A
PPF-UV1 MAIN
SQUARE D
J-Frame, Powe-pact
JD 150-250A, UL
250AF 200AS
PPF-UV1
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 225 A
Nom Bus Volt: 480 V
T-UV1 FDR
SQUARE D
EJ
EJ 15-125A
60AF 60AS
LTNG PROT FDR
SQUARE D
ED
ED 15-125A
45AF 45AS
CBL-T-UV1
(1) 6 AWG
Length: 10.0 ft
Ampacity: 65 A
T-UV1
30 kVA
480 V - 208 V
%Z: 5.10 XR: 0.54
CBL-LPF-UV1
(1) 2 AWG
Length: 8.0 ft
Ampacity: 115 A
LPF-UV1 MAIN
SQUARE D
KD
KD 100-250A
100AF 100AS
LPF-UV1
SQUARE D
NQOD LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
LPF-UV1 BR
SQUARE D
QO, 2-Pole
QO 15-125A
20AF 20AS
EMCC-3 (EMCC-1) FDR
CUTLER-HAMMER
LDC
LDC 300-600A
600AF 600AS
CBL-EMCC-1
(2) 500 kcmil
Length: 35.0 ft
Ampacity: 760 A
EMCC-1
Hi Service (Four Sections)
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 600 A
Nom Bus Volt: 480 V
EMCC-2 FDR
VTP-2 FDR
VTP-1 FDR
BWP-2 FDR
CBL-EMCC-2
(1) 1/0 AWG
Length: 35.0 ft
Ampacity: 150 A
VTP-2.
MTR NO. 8
Rated: 75 hp
VTP-1.
MTR NO. 7
Rated: 75 hp
BWP-2.
MTR NO. 5
Rated: 100 hp
EMCC-2 MAIN
EMCC-2
Admin Bldg (One Section)
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 600 A
Nom Bus Volt: 480 V
SMP-3, -4 FDR
DH-3 FDR
DH-4 FDR
EMCC-2 MTR
LUMP SUM
Rated: 50 hp
UPS FDR
SQUARE D
EJ
EJ 15-125A
100AF 100AS
CBL-PPF-UV2
(1) 1 AWG
Length: 130 A
2
PPF-UV2 MAIN
SQUARE D
HD
HD 15-150A
110AF 110AS
PPF-UV2
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
305 CP FDRS
SQUARE D
EJ
EJ 15-125A
30AF 30AS
Legend
1 Maximum Fault Contribution
2 Likely feed, determined after equipment cover removed.
TS TRANSFER SWITCH
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service


UTIL
TO: Quadrature-SPH: 9999999 Amps
4.00 PH: 8.00
TO: Quadrature-SLG: 3100333 Amps
4.00 SLG: 8.00
TOTIL 334561
Normal Bldg
3300V 4.160 V
%Z 5.75 X/R 5.66
CBL-PI
(1/0 AWG) kcmil
Length: 102.0 ft
Ampacity: 130 A
MV SWGR MAIN
SQUARE D
MV
VR-050535-20 1200-3000A
3000 kW
PFWR-1
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 600 : 5
Ground CT: 600 :5
PFWR-1
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 600 : 5
Ground CT: 600 :5
PFWR-1
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 600 : 5
Ground CT: 600 :5
PFWR GWCR MAIN
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 600 : 5
Ground CT: 600 :5
MV SWGR
High Side Bldg - (Fire 5 ea)
SQUARE D
MV-SWGR-LAD MV Switchgear
SC Rating: 40 kA
Cont Rating: 3000 A
Nom Bus Volt: 4160 V
350PCI FDR
SQUARE D
PCI
VR-050535-12 1200-3000A
1200kW
350MCC FDR
SQUARE D
MCC
VR-050535-12 1200-3000A
1200kW
350MCC FDR
SQUARE D
MCC
VR-050535-12 1200-3000A
1200kW
PF-350PCI
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 400 : 5
Ground CT: 400 :5
PF-350PCI2
GE MULTILIN
735
LO: 50/51
X 100 % (600A) = AT
CT Ratio Phase CT: 400 : 5
Ground CT: 400 :5
CBL-FI 350PCI
(1/250 kcmil
Length: 202.0
Ampacity: 338 A
350MCI MAIN SWITCH
350MCI
High Serv Bldg - (Gov Sec)
SQUARE D
MCC MV-S*ST STARTER
SC Rating: 40 kA
Nom Bus Volt: 4160 V
CBL-351TI1
(1/1.0 AWG
Length: 1.0 ft
Ampacity: 11.0 A
351TI1 FDR
SQUARE D
PI
LC 300-600A
600AT 600AS
351TI1
(111.0 kVA)
480 V / 277 V
Ampacity: 11.0 A
307V1
300 kW
480 V / 208 V
%Z 5.90 X/R 2.52
CBL-351 PP1
(2/3.0 AWG
Length: 1.0 ft
Ampacity: 145 A
351PP1 MAIN
SQUARE D
PI
KA 70/250A
150AF 150AS
351PP1 BR
SQUARE D
PI
EJ 15/125A
80AF 80AS
351PP1 BR
SQUARE D
PI
EJ 15/125A
80AF 80AS
351PP2 BR
SQUARE D
PI
EJ 15/125A
80AF 80AS
351PP3 BR
SQUARE D
PI
EJ 15/125A
80AF 80AS
351PP4 BR
SQUARE D
PI
EJ 15/125A
80AF 80AS
351PI HIGH SERV PW2
Rated: 0 hp
351PI HIGH SERV PW1
Rated: 0 hp
351PP4 HIGH/SERV PW4
Rated: 0 hp
351PS HIGH/SERV PW5
Rated: 0 hp
351PI HIGH SERV PW3
Rated: 0 hp
351TI1 FDR
SQUARE D
PI
LC 300-600A
600AT 600AS
351TI1
(112.5 kVA
480 V / 208 V
%Z 4.60 X/R 1.44
CBL-351TI1
(2/3.0 AWG
Length: 0.0 ft
Ampacity: 145 A
351TI2 FDR
SQUARE D
PI
KC 110-250A
225AF 225AS
CBL-351TI2
(1/4.0 AWG
Length: 43 ft
Ampacity: 130 A
351TI2
112.5 kVA
480 V / 208 V
%Z 4.60 X/R 1.44
CBL-351LP1
(2/3.0 AWG
Length: 0.0 ft
Ampacity: 145 A
351LP1 MAIN
SQUARE D
PI
LA 125-400A
400AF 400AS
351LP1
PI SERVICE BLDG
SQUARE D
MLO, NEMA 3 enclosed
SC Rating: 14 kA
Cont Rating: 400 A
Nom Bus Volt: 208 V
351LP1 BR 1
SQUARE D
QO, 3-Pole
QO 15/125A
30AF 30AS
351LP1 BR 2
SQUARE D
Powerpact, J-Frame
EJ 15/125A
250AF 250AS
CBL-FI 1
(1/0 AWG
Length: 102.0 ft
Ampacity: 130 A
FI-1
10LS-1
Outside High Sales Bldg
Nom Bus Volt: 4160 V
10F-1 FU
CBL-10F-1
(1/.0 AWG
Length: 10.0 ft
Ampacity: 112 A
FI-2 SW
CBL-FI-2
(1/.0 AWG)
Length: 1413.0 ft
Ampacity: 126 A
10LS-1 TO 50LS-1 SW
50LS-1
Outside Chi-Hi-cal Bldg
Nom Bus Volt: 4160 V
10F-2 FU
CBL-10F-2
(1/.0 AWG)
Length: 14.0 ft
Ampacity: 112 A
50F-2 FU
CBL-50F-2
(1/.0 AWG)
Length: 20.0 ft
Ampacity: 112 A
FI-3 SW
CBL-FI-3
(1/.0 AWG)
Length: 3033.0 ft
Ampacity: 500 A
50LS-1 TO 2LS-1 SW
2LS-1
Bldg 2 - Main
Nom Bus Volt: 4160 V
50F-1 FU
CBL-FI-1
(1/.0 AWG)
Length: 2403.0 ft
Ampacity: 112 A
FI-4 SW
CBL-FI-4
(2/#3/0 AWG)
Length: 3443.0 ft
Ampacity: 500 A
2LS-1 TO2LS-2 SW
2LS-2
Bldg 2 - Main
Nom Bus Volt: 4160 V
2F-1 FU
CBL-2F-1
(1/.0 AWG
Length: 20.0 ft
Ampacity: 112 A
2F-2 FU
CBL-2F-2
(1/.0 AWG)
Length: 50.0 ft
Ampacity: 112 A
2F-3 FU
CBL-2F-3
(1/.0 AWG)
Length: 50.0 ft
Ampacity: 65 A
2TX-1 PRI
Nom Bus Volt: 4160 V
2TX-1 SEC
Nom Bus Volt: 480 V
2TX-2 PRI
Nom Bus Volt: 4160 V
2TX-2 SEC
Nom Bus Volt: 480 V
2TX-3 PRI
Nom Bus Volt: 4160 V
2TX-3 SEC
Nom Bus Volt: 480 V
2TX-4 PRI
Nom Bus Volt: 4160 V
2TX-4 SEC
Nom Bus Volt: 480 V
2TX-5 PRI
Nom Bus Volt: 4160 V
2TX-5 SEC
Nom Bus Volt: 480 V
2TX-6 is across a building not in service
2TX-6 PRI
Nom Bus Volt: 4160 V
2TX-6 SEC
Nom Bus Volt: 480 V
2TX-7 PRI
Nom Bus Volt: 4160 V
2TX-7 SEC
Nom Bus Volt: 480 V
CBL-FI-5
(1/.0 AWG)
Length: 1053.0 ft
Ampacity: 130 A
50F-1 FU
CBL-50F-1
(1/.0 AWG)
Length: 40.0 ft
Ampacity: 112 A
50F-2 FU
CBL-50F-2
(1/.0 AWG)
Length: 40.0 ft
Ampacity: 112 A
50F-3 FU
CBL-50F-3
(1/.0 AWG)
Length: 40.0 ft
Ampacity: 112 A
CBL-5MCC - RIGHT
(4/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 290 A
CBL-5MCC - LEFT
(4/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 240 A
10TX1 PRI
Nom Bus Volt: 4160 V
10TX1
10 MVA
4160 V - 480 V
%Z 5.75 X/R 5.66
10TX1 SEC
Nom Bus Volt: 480 V
CBL-10SWBD -LEFT
(#/.500 kcmil
Length: 65.0 ft
Ampacity: 1 920 A
10SWBD MAIN 1
SQUARE D
Masterpact NW52 & 63A PH
NW16S LSI, 400-800/640 LA
1600AF 1600AS X1 - xAT
10SWBD -LEFT
SQUARE D
MCC, 42 MCC
Cont Rating: 1600 A
Nom Bus Volt: 480 V
10MCCI FDR
SQUARE D
MCC
LC 3200-6300A
400AF 400AS
CBL-10MCCI
(2/.00 AWG
Length: 20.0 ft
Ampacity: 400 A
10MCCI
Admin Bldg - Transf Rm (Fl nse Sec)
SQUARE D
MODEL 6, 14 MCC
SC Rating: 42 kA
Cont Rating: 800 A
Nom Bus Volt: 480 V
TRANSFER PUMP NO. 1. FDR
SQUARE D
PI
KC 110-250A
225AF 150AS
CBL-TRANSFER PUMP NO. 1.
(1/.00 AWG
Length: 10.0 ft
Ampacity: 130 A
TRANSFER PUMP NO. 1.
Rated: 60 hp
PB FDR
SQUARE D
PI
KC 110-250A
225AF 175AS
LD FDR
SQUARE D
PI
KC 110-250A
225AF 175AS
ONLY FPV CONNECTED
CBL-PF-4
(1/.0 AWG
Length: 20.0 ft
Ampacity: 112 A
Feed unknown - euro 3 ft
feed can PF-2 but no PF-2 found
PF-4
Admin Bldg - Filter Cntl Overlook
SIEMENS
SE LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
TX-2 PRI
Nom Bus Volt: 480 V
CBL-TX-2
(1/0.0 AWG
Length: 10.0 ft
Ampacity: 170 A
TX-2 PRI
Nom Bus Volt: 480 V
TX-2
30 kVA
480 V - 208 V
%Z 5.05 X/R 0.54
TX-2 SEC
Nom Bus Volt: 208 V
CBL-LP-2
(1/.0 AWG)
Length: 0.0 ft
Ampacity: 0.0 A
LP-2
Admin Bldg - Filter Cntl Overlook
SIEMENS
ML LV Panelboard
SC Rating: 10 kA
Cont Rating: 125 A
Nom Bus Volt: 208 V
LP-2 BR
SIEMENS
ED, 3 Pole
BL 15/70A
40AF 20AS
PFPV1 FOR
SQUARE D
PI
KC 110-250A
250AF 250AS
CBL-PPHV1
(1/.0 AWG)
Length: 1053.0 ft
Ampacity: 238 A
PPHV1
(1/.0 AWG)
Length: 1053.0 ft
Ampacity: 238 A
PPHV1 MAIN
SQUARE D
PI
KC 110-250A
250AF 250AS
PPHV1 BRAN
SQUARE D
PI
KC 110-250A
225AF 150AS
CBL-PPHV1
(1/.0 AWG)
Length: 113.0 ft
Ampacity: 130 A
PPHV2
UV Bldg
SQUARE D
NF LV Panelboard
SC Rating: 14 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
PPHV2 MAIN
SQUARE D
PI
KA 70/250A
150AF 150AS
PPHV2 BRAN
SQUARE D
PI
KA 70/250A
150AF 150AS
PPHV2 BR
SQUARE D
EJ 15/70A
30AF 30AS
PPHV3 FOR
SQUARE D
PI
KC 110-250A
250AF 250AS
CBL-PPHV3
(1/.0 AWG)
Length: 113.0 ft
Ampacity: 130 A
PPHV3
(1/.0 AWG)
Length: 113.0 ft
Ampacity: 130 A
PPHV3 MAIN
SQUARE D
PI
KC 110-250A
250AF 250AS
PPHV3 BRAN
SQUARE D
PI
KA 70/250A
150AF 150AS
PPHV3 BR
SQUARE D
EJ 15/70A
30AF 30AS
TRANSFER PUMP NO. 2. FDR
SQUARE D
PI
KC 110-250A
225AF 150AS
CBL-TRANSFER PUMP NO. 2.
(1/.0 AWG
Length: 113.0 ft
Ampacity: 130 A
TRANSFER PUMP NO. 2.
Rated: 60 hp
TRANSFER PUMP NO. 3. FDR
SQUARE D
PI
KC 110-250A
225AF 150AS
CBL-TRANSFER PUMP NO. 3.
(1/.0 AWG
Length: 113.0 ft
Ampacity: 130 A
TRANSFER PUMP NO. 3.
Rated: 60 hp
10MCCI FDR
SQUARE D
MCC
LC 3200-6300A
400AF 400AS
CBL-10MCCI
(2/.00 AWG
Length: 20.0 ft
Ampacity: 400 A
10MCCI
Admin Bldg - Transf Rm (Fl nse Sec)
SQUARE D
MODEL 6, 14 MCC
SC Rating: 42 kA
Cont Rating: 800 A
Nom Bus Volt: 480 V
TRANSFER PUMP NO. 4.
Rated: 60 hp
10PP1 FOR
SQUARE D
PI
KC 110-250A
225AF 225AS
CBL-10PP1
(2/.00 kcmil
Length: 2712 ft
Ampacity: 0.0 A
10PP1
(112.5 kVA)
Admin Bldg - Transfer Room
SQUARE D
NF LV Panelboard
SC Rating: 14 kA
Cont Rating: 225 A
Nom Bus Volt: 480 V
10TX2 FDR
SQUARE D
PI
KA 70/250A
250AF 225AS
CBL-51SLP1
(1/250 AWG)
Length: 8.0 ft
Ampacity: 115 A
51SLP1 PRI
Nom Bus Volt: 480 V
51SLP1
112.5 kVA
480 V - 208 V
%Z 4.60 X/R 1.44
51SLP1 MAIN
SQUARE D
QO, 3-Pole
QO 100A
100AF 100AS
51SLP1
Admin Bldg - Control Room
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
51SLP1 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
ATS-4 FDR
SQUARE D
PI
KC 110-250A
225AF 150AS
CBL-ATS-4
(1/.0 AWG)
Length: 2453.0 ft
Ampacity: 175 A
GEN.
100 kW
ATS-E
1120 kVA
480 V - 1600 A
Ampacity: 175 A
ATS
Nom Bus Volt: 480 V
FP-3 FDR
SQUARE D
PI
KC 110-250A
225AF 125AS
CBL-FP-3
(1/.0 AWG)
Length: 1.0 ft
Ampacity: 175 A
FP-3
Admin Bldg - Breakroom
SIEMENS
SE LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
FP-3 BR
SIEMENS
ED4 Series, 2 & 3-Pole
ED4 15/125A
125AF 50AS
FP-4 FDR
SQUARE D
PI
KC 110-250A
225AF 125AS
CBL-FP-4
(1/.0 AWG)
Length: 30.0 ft
Ampacity: 175 A
FP-4
Admin Bldg - Filter Cntl Overlook
SIEMENS
SE LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
FP-4 BR
SIEMENS
ED4 Series, 2 & 3-Pole
ED4 15/125A
125AF 50AS
FP-5 FDR
SQUARE D
PI
KC 110-250A
225AF 125AS
CBL-FP-5
(1/.0 AWG)
Length: 30.0 ft
Ampacity: 175 A
FP-5
Admin Bldg - Filter Cntl Overlook
SIEMENS
SE LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
FP-5 BR
SIEMENS
ED, 3 Pole
ED 15/125A
50AF 50AS
10TX2 PRI
Nom Bus Volt: 4160 V
10TX2
10 MVA
4160 V - 480 V
%Z 5.75 X/R 5.66
10TX2 SEC
Nom Bus Volt: 480 V
CBL-10SWBD -RIGHT
(#/.500 kcmil
Length: 110.0 ft
Ampacity: 1 920 A
10SWBD MAIN 2
SQUARE D
Masterpact NW52 & 6.0A PH
NW16S LSI, 400-800/640 LA
1600AF 1600AS X1 - xD
10SWBD -RIGHT
SQUARE D
MCC, (Tand Rm -(Fire Sec)
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
PP4 FDR
SQUARE D
PI
KC 110-250A
225AF 125AS
CBL-PP-4
(1/.00 AWG
Length: 30.0 ft
Ampacity: 175 A
PP-4
Admin Bldg - Filter Cntl Overlook
SIEMENS
SE LV Panelboard
SC Rating: 18 kA
Cont Rating: 125 A
Nom Bus Volt: 480 V
PP-4 BR
SIEMENS
ED, 3 Pole
ED 15/125A
50AF 50AS
50TX4 PRI
Nom Bus Volt: 4160 V
50TX4
1000 kVA
4160 V - 480 V
%Z 5.75 X/R 5.66
50TX4 SEC
Nom Bus Volt: 480 V
CBL-5SWBD -LEFT
(#/.500 kcmil
Length: 65.0 ft
Ampacity: 1 920 A
5SWBD MAIN 1
SQUARE D
Masterpact NW52 & 6.0A PH
NW16S LSI, 400-800/640 LA
1600AF 1600AS X1 - xD
5SWBD -LEFT
SQUARE D
MCC, (Tand Rm -(Fire Sec)
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
50MCCI FDR
SQUARE D
PI
LC 300-600A
400AF 400AS
CBL-50MCCI
(1/.0 AWG
Length: 20.0 ft
Ampacity: 225 A
50MCCI
Chemical Bldg - (Fire Sec)
SQUARE D
MODEL 6, 14 MCC
SC Rating: 42 kA
Cont Rating: 800 A
Nom Bus Volt: 480 V
50MCCI MTRS
Rated: 0 hp
50ZN1 FDR
SQUARE D
PI
LC 300-600A
400AF 400AS
50PP1 FDR
SQUARE D
PI
LC 300-600A
300AF 300AS
CBL-50PP1
(1/.000 kcmil
Length: 50.0 ft
Ampacity: 0.0 A
50PP1
Chemical Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 300 A
Nom Bus Volt: 480 V
50LP1 FDR
SQUARE D
PI
EJ 15/70A
60AF 60AS
CBL-50 TX3
(1/0 AWG)
Length: 27.0 ft
Ampacity: 65 A
50TX3 PRI
Nom Bus Volt: 480 V
50TX3
30 MVA
480 V - 208 V
%Z 5.10 X/R 0.54
50TX3 SEC
Nom Bus Volt: 208 Y
CBL-50LP1
(1/3 AWG
Length: 20.0 ft
Ampacity: 115 A
50LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15/100A
100AF 100AS
50LP1
Chemical Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
50LP1 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
50TX2 PRI
Nom Bus Volt: 4160 V
50TX2
10 MVA
4160 V - 480 V
%Z 5.75 X/R 5.66
50TX2 SEC
Nom Bus Volt: 480 V
CBL-5SWBD -RIGHT
(#/.500 kcmil
Length: 110.0 ft
Ampacity: 1 920 A
5SWBD MAIN 2
SQUARE D
Masterpact NW52 & 6.0A PH
NW16S LSI, 400-800/640 LA
1600AF 1600AS X1 - xD
5SWBD -RIGHT
SQUARE D
MCC, (Tand Rm -(Fire Sec)
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
50MCCI TIE
SQUARE D
Masterpact NW52 & 6.0A PH
NW16S LSI, 400-800/640 LA
1600AF 1600AS X1 - xD
50MCCI
Chemical Bldg
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
50MCCI MTRS
Rated: 0 hp
50ZN2 FDR
SQUARE D
PI
LC 300-600A
400AF 400AS
50PP2 FDR
SQUARE D
PI
KC 110-250A
150AF 150AS
CBL-50PP2
(1/.0 AWG
Length: 32.0 ft
Ampacity: 130 A
50PP2 MAIN
SQUARE D
PI
KC 110-250A
225AF 150AS
50PP2
Chemical Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 150 A
Nom Bus Volt: 480 V
50 TX4 FDR
SQUARE D
PI
EJ 15/125A
80AF 80AS
CBL-50 TX4
(2/.000 kcmil
Length: 1053.0 ft
Ampacity: 760 A
50TX4 PRI
Nom Bus Volt: 4160 V
50TX4
1000 kVA
4160 V - 480 V
%Z 5.10 X/R 5.64
50TX4 SEC
Nom Bus Volt: 208 Y
CBL-50LP2
(1/3 AWG
Length: 20.0 ft
Ampacity: 115 A
50LP2 MAIN
SQUARE D
QO, 3-Pole
QO 15/125A
125AF 100AS
50LP2
Chemical Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
50LP2 BR
SQUARE D
QO, 3-Pole
QO 15/125A
40AF 40AS
50TX3 PRI
Nom Bus Volt: 4160 V
50TX3
30 MVA
4160 V - 480 V
%Z 5.10 X/R 5.64
50TX3 SEC
Nom Bus Volt: 480 V
CBL-50LP1
(2/3 AWG
Length: 20.0 ft
Ampacity: 115 A
50LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15/100A
100AF 100AS
50LP1
Chemical Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
50LP1 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
50PP3 FDR
SQUARE D
PI
KC 110-250A
150AF 150AS
CBL-50PP3
(1/.0 AWG
Length: 32.0 ft
Ampacity: 130 A
50PP3 MAIN
SQUARE D
PI
KC 110-250A
225AF 150AS
50PP3
Chemical Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 150 A
Nom Bus Volt: 480 V
50 TX5 FDR
SQUARE D
PI
EJ 15/125A
80AF 80AS
CBL-50 TX5
(2/.000 kcmil
Length: 1253.0 ft
Ampacity: 760 A
50TX5 PRI
Nom Bus Volt: 480 V
50TX5
30 MVA
480 V - 208 V
%Z 5.10 X/R 0.54
50TX5 SEC
Nom Bus Volt: 208 Y
CBL-50LP3
(1/3 AWG
Length: 20.0 ft
Ampacity: 115 A
50LP3 MAIN
SQUARE D
QO, 3-Pole
QO 15/100A
100AF 100AS
50LP3
Chemical Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
50LP3 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
5MCC MAIN 1
SQUARE D
PX, Mcxology
MAIN LUG - 1600A
1200AF 1200AS 1200AP X 0.66 (960A) = AT
5MCC - LEFT
SQUARE D
MCC, (Tand Sec)
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
5MCC MAIN 2
SQUARE D
PX, Mcxology
MAIN LUG - 1600A
1200AF 1200AS 1200AP X 0.66 (960A) = AT
5MCC - RIGHT
SQUARE D
MCC, (Tand Sec)
SQUARE D
MCC, 42 MCC
SC Rating: 42 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V
ATS 5MCC-1 FDR
ATS 5MCC-1
(1.00 AWG
Length: 10.0 ft
Ampacity: 230 A
5MCC-1 MCC 1
(1.00 AWG
Length: 10.0 ft
Ampacity: 230 A
ATS 5MCC-1
ASCO
Closed Trans
Size 7000ATS w/CB
200 A
CBL-5SPP1
(1/3.0 AWG
Length: 20.0 ft
Ampacity: 230 A
5MCC TIE
SQUARE D
PX, 120,000-1600A
1200AF 1200AS 1200AP X 0.66 (960A) = AT
ATS 5MCC-R FDR
ATS 5MCC-R
(1.00 AWG
Length: 30.0 ft
Ampacity: 230 A
5MCC-RIGHT
Rated: 0 hp
5MCC-LEFT
Rated: 0 hp
5SP1 FDR
SQUARE D
PI
KC 110-250A
225AF 200AS
CBL-5SP1
(1/.0 AWG
Length: 10.0 ft
Ampacity: 238 A
5SP1
Raw Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 90A
Nom Bus Volt: 208 Y
5SP1 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
5MCC FDR
SQUARE D
PI
KC 110-250A
150AF 150AS
CBL-5MCC1
(1/.0 AWG
Length: 20.0 ft
Ampacity: 225 A
5MCC1
Chemical Bldg - (Fire Sec)
SQUARE D
MODEL 6, 14 MCC
SC Rating: 42 kA
Cont Rating: 800 A
Nom Bus Volt: 480 V
5MCC1 MTRS
Rated: 0 hp
5MCC1 FDR
SQUARE D
PI
LC 300-600A
400AF 400AS
5SPP1 FDR
SQUARE D
PI
KC 110-250A
150AF 150AS
CBL-5SPP2
(1/.0 AWG
Length: 32.0 ft
Ampacity: 130 A
5SPP2 MAIN
SQUARE D
PI
KC 110-250A
225AF 150AS
5SPP2
Chemical Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 150 A
Nom Bus Volt: 480 V
5SLP1 FDR
SQUARE D
PI
EJ 15/70A
60AF 60AS
CBL-5SLP1
(1/.0 AWG
Length: 27.0 ft
Ampacity: 65 A
5SLP1 MAIN
SQUARE D
QO, 3-Pole
QO 15/100A
100AF 100AS
5SLP1
Chemical Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 Y
5SLP1 BR
SQUARE D
QO, 3-Pole
QO 15/125A
20AF 20AS
5MCC-LEFT
Rated: 0 hp
5MCC-RIGHT
Rated: 0 hp
CBL-5MCC - RIGHT
(#/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 290 A
CBL-5MCC - LEFT
(#/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 240 A
5SP1 FDR
SQUARE D
PI
KC 110-250A
225AF 200AS
CBL-5MCC2
(1/.000 kcmil
Length: 10.0 ft
Ampacity: 238 A
5MCC2
Chemical Bldg (Fire Sections)
SQUARE D
MODEL 6, 14 MCC
SC Rating: 42 kA
Cont Rating: 800 A
Nom Bus Volt: 480 V
5MCC2 MTRS
Rated: 0 hp
CBL-5MCC - RIGHT
(#/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 290 A
CBL-5MCC - LEFT
(#/.500 kcmil
Length: 1053.0 ft
Ampacity: 1 240 A
32 PP1 MAIN
SQUARE D
PI
KA 70/250A
250AF 200AS
32PP1
Chemical Bldg
SQUARE D
NF LV Panelboard
SC Rating: 18 kA
Cont Rating: 200 A
Nom Bus Volt: 480 V
37X3 FDR
SQUARE D
PI
EJ 15/70A
30AF 30AS
CBL-37X3
(1/.0 AWG
Length: 42 ft
Ampacity: 65A
37X3
112.5 kVA
480 V / 208 V
%Z 4.51 X/R 0.10
CBL-62 LP1
(2/3.0 AWG
Length: 1252.0 ft
Ampacity: 65 A
62 LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15/100A
30AF 30AS
62LP1
Raw Bldg
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 90A
Nom Bus Volt: 208 Y
62 LP1 BR
SQUARE D
QO, 1-Pole
QO 15/15A
20AF 20AS
TRC Engineers
Power System Studies
Douglasville, GA
770-544-0235
Project: WJ Hooper Water Production Facility
Electrical Single Line - Arc Flash Risk Assessment
Revision 0 July 2016
CCWA
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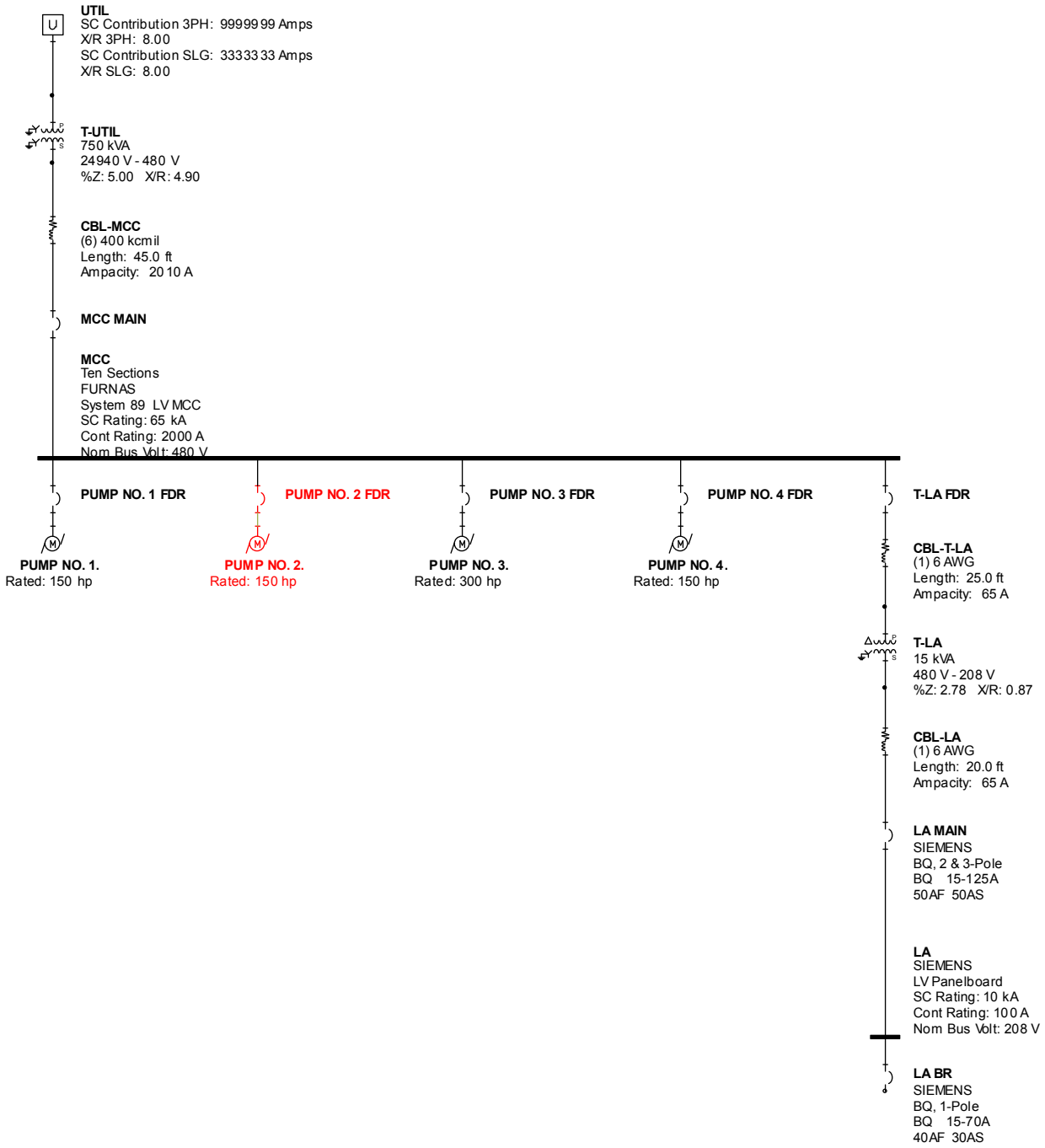
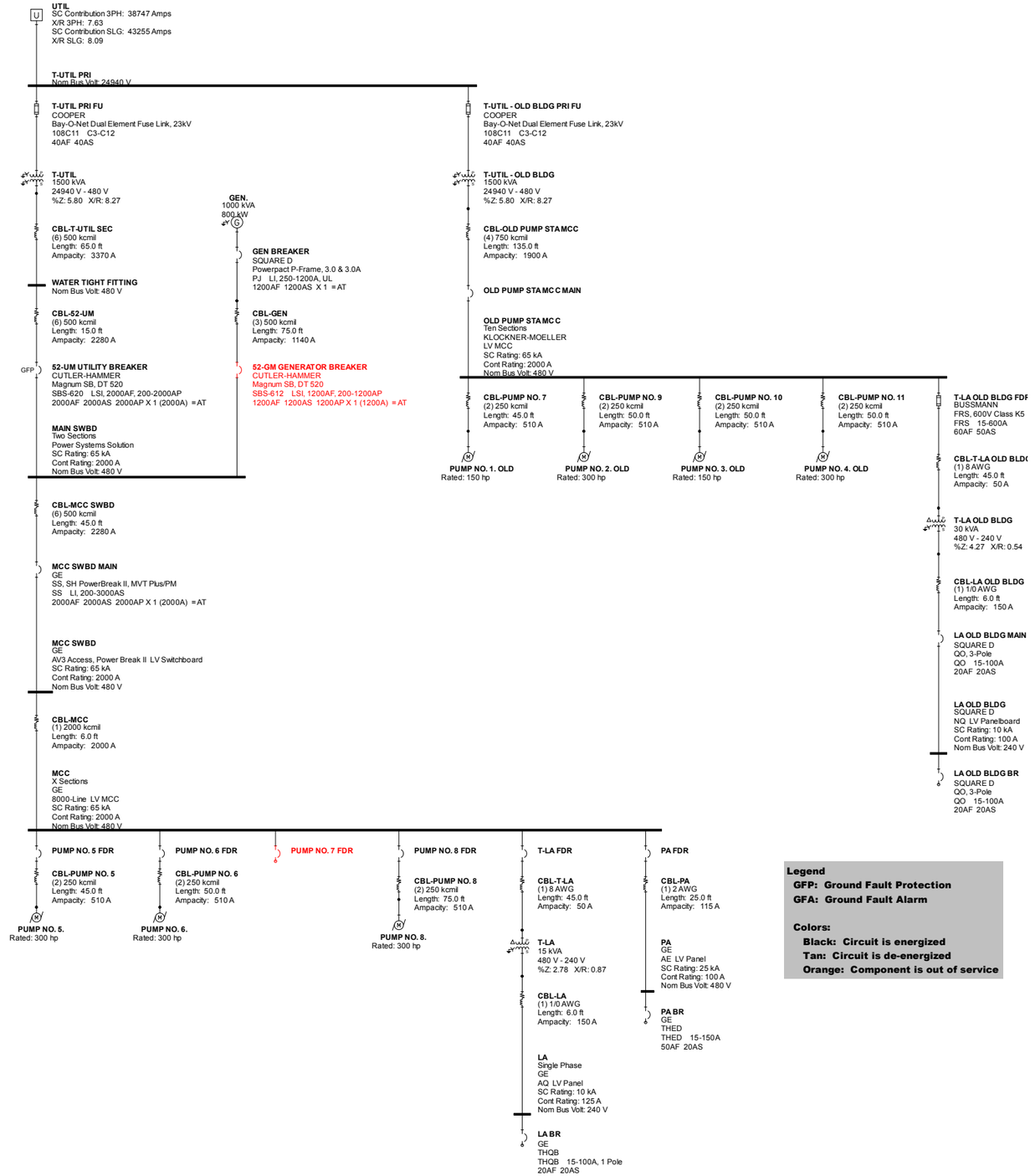

UTIL
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 3333333 Amps
X/R SLG: 8.00
T-UTIL
750 kVA
24940 V - 480 V
%Z: 5.00 X/R: 4.90
CBL-MCC
(6) 400 kcmil
Length: 45.0 ft
Ampacity: 2010 A
MCC MAIN
MCC
Ten Sections
FURNAS
System 89 LV MCC
SC Rating: 65 kA
Cont Rating: 2000 A
Nom Bus Volt: 480 V
PUMP NO. 1 FDR
PUMP NO. 2 FDR
PUMP NO. 3 FDR
PUMP NO. 4 FDR
T-LA FDR
PUMP NO. 1.
Rated: 150 hp
PUMP NO. 2.
Rated: 150 hp
PUMP NO. 3.
Rated: 300 hp
PUMP NO. 4.
Rated: 150 hp
CBL-T-LA
(1) 6 AWG
Length: 25.0 ft
Ampacity: 65 A
T-LA
15 kVA
480 V - 208 V
%Z: 2.78 X/R: 0.87
CBL-LA
(1) 6 AWG
Length: 20.0 ft
Ampacity: 65 A
LA MAIN
SIEMENS
BQ, 2 & 3-Pole
BQ 15-125A
50AF 50AS
LA
SIEMENS
LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
LA BR
SIEMENS
BQ, 1-Pole
BQ 15-70A
40AF 30AS


UTIL
SC Contribution 3PH: 38747 Amps
X/R 3PH: 7.63
SC Contribution SLG: 43255 Amps
X/R SLG: 8.09
T-UTIL PRI
Nom Bus Volt: 24940 V
T-UTIL PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C11 C3-C12
40AF 40AS
T-UTIL
1500 kVA
24940 V - 480 V
%Z: 5.80 X/R: 8.27
GEN.
1000 kVA
800 kW
CBL-T-UTIL SEC
(6) 500 kcmil
Length: 65.0 ft
Ampacity: 3370 A
GEN BREAKER
SQUARE D
Powerpact P-Frame, 3.0 & 3.0A
PJ LI, 250-1200A, UL
1200AF 1200AS X 1 =AT
WATER TIGHT FITTING
Nom Bus Volt: 480 V
CBL-52-UM
(6) 500 kcmil
Length: 15.0 ft
Ampacity: 2280 A
CBL-GEN
(3) 500 kcmil
Length: 75.0 ft
Ampacity: 1140 A
GFP
52-UM UTILITY BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-620 LSI, 2000AF, 200-2000AP
2000AF 2000AS 2000AP X 1 (2000A) =AT
52-GM GENERATOR BREAKER
CUTLER-HAMMER
Magnum SB, DT 520
SBS-612 LSI, 1200AF, 200-1200AP
1200AF 1200AS 1200AP X 1 (1200A) =AT
MAIN SWBD
Two Sections
Power Systems Solution
SC Rating: 65 kA
Cont Rating: 2000 A
Nom Bus Volt: 480 V
CBL-MCC SWBD
(6) 500 kcmil
Length: 45.0 ft
Ampacity: 2280 A
MCC SWBD MAIN
GE
SS, SH PowerBreak II, MVT Plus/PM
SS LI, 200-3000AS
2000AF 2000AS 2000AP X 1 (2000A) =AT
MCC SWBD
GE
AV3 Access, Power Break II LV Switchboard
SC Rating: 65 kA
Cont Rating: 2000 A
Nom Bus Volt: 480 V
CBL-MCC
(1) 2000 kcmil
Length: 6.0 ft
Ampacity: 2000 A
MCC
X Sections
GE
8000-Line LV MCC
SC Rating: 65 kA
Cont Rating: 2000 A
Nom Bus Volt: 480 V
PUMP NO. 5 FDR
CBL-PUMP NO. 5
(2) 250 kcmil
Length: 45.0 ft
Ampacity: 510 A
PUMP NO. 5.
Rated: 300 hp
PUMP NO. 6 FDR
CBL-PUMP NO. 6
(2) 250 kcmil
Length: 50.0 ft
Ampacity: 510 A
PUMP NO. 6.
Rated: 300 hp
PUMP NO. 7 FDR
PUMP NO. 8 FDR
CBL-PUMP NO. 8
(2) 250 kcmil
Length: 75.0 ft
Ampacity: 510 A
PUMP NO. 8.
Rated: 300 hp
T-LA FDR
CBL-T-LA
(1) 8 AWG
Length: 45.0 ft
Ampacity: 50 A
T-LA
15 kVA
480 V - 240 V
%Z: 2.78 X/R: 0.87
CBL-LA
(1) 1/0 AWG
Length: 6.0 ft
Ampacity: 150 A
LA
Single Phase
GE
AQ LV Panel
SC Rating: 10 kA
Cont Rating: 125 A
Nom Bus Volt: 240 V
LA BR
GE
THQB
THQB 15-100A, 1 Pole
20AF 20AS
PA FDR
CBL-PA
(1) 2 AWG
Length: 25.0 ft
Ampacity: 115 A
PA
GE
AE LV Panel
SC Rating: 25 kA
Cont Rating: 100 A
Nom Bus Volt: 480 V
PA BR
GE
THED
THED 15-150A
50AF 20AS
T-UTIL - OLD BLDG PRI FU
COOPER
Bay-O-Net Dual Element Fuse Link, 23kV
108C11 C3-C12
40AF 40AS
T-UTIL - OLD BLDG
1500 kVA
24940 V - 480 V
%Z: 5.80 X/R: 8.27
CBL-OLD PUMP STA MCC
(4) 750 kcmil
Length: 135.0 ft
Ampacity: 1900 A
OLD PUMP STA MC C MAIN
OLD PUMP STA MC C
Ten Sections
KLOCKNER-MOELLER
LV MCC
SC Rating: 65 kA
Cont Rating: 2000 A
Nom Bus Volt: 480 V
CBL-PUMP NO. 7
(2) 250 kcmil
Length: 45.0 ft
Ampacity: 510 A
PUMP NO. 1. OLD
Rated: 150 hp
CBL-PUMP NO. 9
(2) 250 kcmil
Length: 50.0 ft
Ampacity: 510 A
PUMP NO. 2. OLD
Rated: 300 hp
CBL-PUMP NO. 10
(2) 250 kcmil
Length: 50.0 ft
Ampacity: 510 A
PUMP NO. 3. OLD
Rated: 150 hp
CBL-PUMP NO. 11
(2) 250 kcmil
Length: 50.0 ft
Ampacity: 510 A
PUMP NO. 4. OLD
Rated: 300 hp
T-LA OLD BLDG FDR
BUSSMANN
FRS, 600V Class K5
FRS 15-600A
60AF 50AS
CBL-T-LA OLD BLDG
(1) 8 AWG
Length: 45.0 ft
Ampacity: 50 A
T-LA OLD BLDG
30 kVA
480 V - 240 V
%Z: 4.27 X/R: 0.54
CBL-LA OLD BLDG
(1) 1/0 AWG
Length: 6.0 ft
Ampacity: 150 A
LA OLD BLDG MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
20AF 20AS
LA OLD BLDG
SQUARE D
NQ LV Panelboard
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 240 V
LA OLD BLDG BR
SQUARE D
QO, 3-Pole
QO 15-100A
20AF 20AS
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service

Cont'd on Page 2

Cont'd on Page 2

CBL-95TX2 - 65TX2
(3) 2/0 AWG
Length: 575.0 ft
Ampacity: 555 A

95TX2 PRI
Nom Bus Volt: 12470 V

65TX1 PRI
Nom Bus Volt: 12470 V

65TX1 FU

65TX1
1000 kVA
12470 V - 480 V
%Z: 5.75 X/R: 5.66

CBL-6SLVSG-1 RIGHT
(5) 500 kcmil
Length: 810 ft
Ampacity: 1900 A

65LVSG-1 RIGHT 1 MAIN
GE
WavePro, MVT PlusPM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS 1600AP X 0.95 (1520A) = AT

65LVSG-1 RIGHT
Chemical Feed Facility - (Five Sec)
GE
AKD-10 WavePro LV Switchgear
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V

65M CC-1 FDR
GE
WavePro, MVT PlusPM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS 1000AP X 0.8 (800A) = AT

65LVSG-1 TIE
GE
WavePro, MVT PlusPM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS 1600AP X 0.75 (1200A) = AT

CBL-6SMCC-1
(3) 500 kcmil
Length: 20.0 ft
Ampacity: 1140 A

65M CC-1
Chemical Feed Facility - (Eight Sec)
GE
E9000 LV MCC
SC Rating: 65 kA
Cont Rating: 1200A
Nom Bus Volt: 480 V

65M CC-1 MTR
MOTOR LUMP SUM
Rated: 45.25 hp

403P1 FDR
403P1
INTERMEDIATE PUMP 1
Rated: 90 hp

403P3 FDR
403P3.
INTERMEDIATE PUMP 3
Rated: 90 hp

403P5 FDR
403P5.
INTERMEDIATE PUMP 5
Rated: 90 hp

322P1 FDR
322P1.
RAS PUMP 1
Rated: 30 hp

322P3 FDR
322P3.
RAS PUMP 3
Rated: 30 hp

322P5 FDR
322P5.
RAS PUMP 5
Rated: 30 hp

65TX2 (R SIDE LOOP) FDR

RY-65TX2
GE MULTILIN
MIF II
MIF II 50P,51P, ANSI
X 1 (100A) = AT
100 / 5

CBL-65TX2
(1) 4/0 AWG
Length: 750.0 ft
Ampacity: 235 A

65TX2 PRI
Nom Bus Volt: 12470 V

65TX2 FU

65TX2
1500 kVA
12470 V - 480 V
%Z: 5.75 X/R: 5.66

CBL-6SLVSG-1 LEFT
(5) 500 kcmil
Length: 84.3 ft
Ampacity: 1900 A

65LVSG-1 MAIN 1
GE
WavePro, MVT PlusPM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS 1600AP X 0.95 (1520A) = AT

65LVSG-1 LEFT
Chemical Feed Facility
GE
AKD-10 WavePro LV Switchgear
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V

65MCC-2 FDR
GE
WavePro, MVT PlusPM (RMS-9D)
WPH-16 LI, 150-3200A Sensors
1600AF 1600AS 1600AP X 0.8 (800A) = AT

CBL-6SMCC-2
(3) 500 kcmil
Length: 15.0 ft
Ampacity: 1140 A

65MCC-2
Chemical Feed Facility - (Eight Sec)
GE
E9000 LV MCC
SC Rating: 65 kA
Cont Rating: 1200 A
Nom Bus Volt: 480 V

65MCC-2 MTR
MOTOR LUMP SUM
Rated: 45.75 hp

403P2 FDR
403P2.
INTERMEDIATE PUMP 2
Rated: 90 hp

403P4 FDR
403P4.
INTERMEDIATE PUMP 4
Rated: 90 hp

403P6 FDR
403P6.
INTERMEDIATE PUMP 6
Rated: 90 hp

322P2 FDR
322P2.
RAS PUMP 2
Rated: 30 hp

322P4 FDR
322P4
RAS PUMP 4
Rated: 30 hp

313 M4,

333CP FDR

332CP FDR

65-EF-2 FDR

65EDH-1 FDR

692P2 FDR

613P2 FDR

451 M2, M4, M6 FDR

324P1 FDR

T-34LP1 FDR

CBL-T34LP1
(1) 6 AWG
Length: 205.0 ft
Ampacity: 65 A

T-34LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
90AF 90AS

T34LP1
30 kVA
480 V - 208 V
%Z: 4.27 X/R: 0.54

3-4LP1 MAIN
SQUARE D
QO, 3-Pole
QO 15-100A
100AF 100AS

3-4LP1
Outside
Nom Bus Volt: 208 V

3-4LP1 BR
SQUARE D
QO, 1-Pole
QO 15-70A
20AF 20AS

65TX4 FDR

CBL-6 STX4
(1) 6 AWG
Length: 3.5.0 ft
Ampacity: 65 A

65TX4
45 kVA
480 V - 208 V
%Z: 3.37 X/R: 0.72

CBL-6 SLP3
(1) 4/0 AWG
Length: 30.0 ft
Ampacity: 230 A

65LP3 MAIN
GE
THQD
THQD 100-225A
225AF 175AS

65LP3
Chemical Feed Facility
GE
AQ LV Panel
SC Rating: 10 kA
Cont Rating: 225 A
Nom Bus Volt: 208 V

65LP3 BR
GE
THHQB
THHQB 15-100A
20AF 20AS

65TX5 FDR

CBL-6 STX5
(1) 6 AWG
Length: 35.0 ft
Ampacity: 65 A

65TX5
45 kVA
480 V - 208 V
%Z: 3.37 X/R: 0.72

CBL-6 SLP2
(1) 4/0 AWG
Length: 30.9 ft
Ampacity: 230 A

65LP2 MAIN
GE
THQD
THQD 100-225A
225AF 175AS

65LP2
Chemical Feed Facility
GE
AQ LV Panel
SC Rating: 10 kA
Cont Rating: 225 A
Nom Bus Volt: 208 V

65LP2 BR
GE
THHQB
THHQB 15-100A
20AF 20AS

65PP1 FDR

CBL-6 SPP1
(1) 4/0 AWG
Length: 45.0 ft
Ampacity: 230 A

65PP1 MAIN
GE
SGHA, Spectra RMS
SGHA 125-800A
400AF 225AS

65PP1
Chemical Feed Facility
GE
AQ LV Panel
SC Rating: 35 kA
Cont Rating: 225 A
Nom Bus Volt: 480 V

65LP1 FDR
GE
FB, 2 & 3-Pole 480V
FBN 15-100A
60AF 60AS

CBL-6 STX3
(1) 6 AWG
Length: 20.0 ft
Ampacity: 65 A

65TX3
45 kVA
480 V - 208 V
%Z: 3.37 X/R: 0.72

CBL-6 SLP1
(1) 4/0 AWG
Length: 30.9 ft
Ampacity: 230 A

65LP1 MAIN
GE
THQD
THQD 100-225A
225AF 175AS

65LP1
Chemical Feed Facility
GE
AQ LV Panel
SC Rating: 10 kA
Cont Rating: 225 A
Nom Bus Volt: 208 V

65LP1 BR
GE
THHQB
THHQB 15-100A
20AF 20AS

CBL-6STX1 - 86TX2
(1) 4/0 AWG
Length: 600.0 ft
Ampacity: 235 A

86TX2 PRI
Nom Bus Volt: 12470 V

86TX2 FU

86TX2
750 kVA
12470 V - 480 V
%Z: 5.00 X/R: 4.90

CBL-6MCC-3
(4) 350 kcmil
Length: 146.0 ft
Ampacity: 1240 A

MCC-3 MAIN

MCC-3
DANGEROUS
Solids Bldg (Rooteen Sec)
FURNAS
SYSTEM 89 LV MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V

MCC-3 MTRS
Lump Sum
Rated: 1.00 hp

TLC FDR

TLC
45 kVA
480 V - 208 V
%Z: 3.37 X/R: 0.72

LC
Nom Bus Volt: 208 V

Single Phase

CBL-6STX1 - 86TX1
(1) 4/0 AWG
Length: 30.0 ft
Ampacity: 235 A

86TX1 PRI
Nom Bus Volt: 12470 V

86TX1 FU

86TX1
750 kVA
12470 V - 480 V
%Z: 5.00 X/R: 4.90

CBL-MCC-4
(4) 350 kcmil
Length: 146.0 ft
Ampacity: 1240 A

MCC-4 MAIN

MCC-4
DANGEROUS
Solids Bldg (Nine Sec)
FURNAS
SYSTEM 89 LV MCC
SC Rating: 42 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V

96LP1 FDR

CBL-96LP1TX
(3) 350 kcmil
Length: 30.9 ft
Ampacity: 930 A

96LP1TX
30 kVA
480 V - 208 V
%Z: 4.27 X/R: 0.54

CBL-96LP1
(3) 350 kcmil
Length: 30.9 ft
Ampacity: 930 A

96LP1 MAIN

96LP1
LIGHTING PANEL
Nom Bus Volt: 208 V

96LP1 BR

106B2 FDR

106B2.
CELL #2 BLOWER
Rated: 40 hp

106P2 FDR

106P2
REORC #2 PUMP
Rated: 40 hp

108P1 FDR

108P1
TWAS PUMP #1
Rated: 40 hp

108P2 FDR

108P2
TWAS PUMP #2
Rated: 40 hp

87P1 FDR

CBL-87P P1
(1) 1 AWG
Length: 15.9 ft
Ampacity: 130 A

87P P1 MAIN

87P P1
Nom Bus Volt: 480 V

87LP1 FDR

CBL-87TX
(1) 1 AWG
Length: 15.9 ft
Ampacity: 130 A

87TX
15 kVA
480 V - 208 V
%Z: 2.78 X/R: 0.87

CBL-87LP1
(1) 6 AWG
Length: 15.9 ft
Ampacity: 65 A

87LP1 MAIN

87LP1
Nom Bus Volt: 208 V

87LP1 BR

PANEL XXX FDR

CBL-PANEL XXX
(1) 1/0 AWG
Length: 30.9 ft
Ampacity: 150 A

PANEL XXX MAIN

PANEL XXX
Nom Bus Volt: 480 V

COMPOSTSTG SHED FDR

CBL-COMPOSTTX
(1) 1/0 AWG
Length: 15.9 ft
Ampacity: 150 A

COMPOSTTX
45 kVA
480 V - 208 V
%Z: 3.37 X/R: 0.72

CBL-COMPOSTSTG SHED
(1) 6 AWG
Length: 15.9 ft
Ampacity: 65 A

COMPOSTSTG SHED MAIN

COMPOSTSTG SHED
Nom Bus Volt: 208 V

COMPOSTSTG SHED BR

120CP1 FDR

120CP2 FDR

111CP1 FDR

111CP2 FDR

103CP1 FDR

103CP2 FDR

107CP1 FDR

107CP2 FDR

TLB FDF

BRIDGE CRAIN FDR

B7P P1 FDR

T30KVA FDR

UTIL
SC Contribution 3PH: 3090 Amps
X/R 3PH: 7.74
SC Contribution SLG: 2911 Amps
X/R SLG: 6.94

RY-UTIL
SEL
351R
SEL-351R 50P,51P,67, 1A nom.
X 1.8 (360 A) = AT
200 / 1

UTILSERVICE POINT
Nom Bus Volt: 12470 V

CBL-52N1
(1) 4/0 AWG
Length: 9.5.0 ft
Ampacity: 235 A

52N1 UTIL M AIN

RY-52N1
GE MULTILIN
750
750 50/51
X 1 (600 A) = AT
600 / 5

1MVS G-1 LEFT
(Eight Sections)
Power Lynx
MV Switchgear
Cont Rating: 1200 A
Nom Bus Volt: 12470 V

1MVS G-1 TIE

RY-1MVSG-1 TIE
GE MULTILIN
MIF II
MIF II 50P,51P, ANSI
X 1 (100 A) = AT
100 / 5

G1
2575 kVA
2318 kW
WAR: 36.0 Ohms

CBL-52G1
(1) 4/0 AWG
Length: 65.0 ft
Ampacity: 235 A

52G1 GEN MAIN 1

RY-GEN 1
GE MULTILIN
489
489 50/51
X 1 (100 A) = AT
100 / 5

1MVS G-1 RIGHT
Power Lynx
MV Switchgear
Cont Rating: 1200 A
Nom Bus Volt: 12470 V

G2
2575 kVA
2318 kW
WAR: 36.0 Ohms

CBL-52G2
(1) 4/0 AWG
Length: 85.0 ft
Ampacity: 235 A

52G1 GEN MAIN 2

RY-GEN 2
GE MULTILIN
489
489 50/51
X 1 (100 A) = AT
100 / 5

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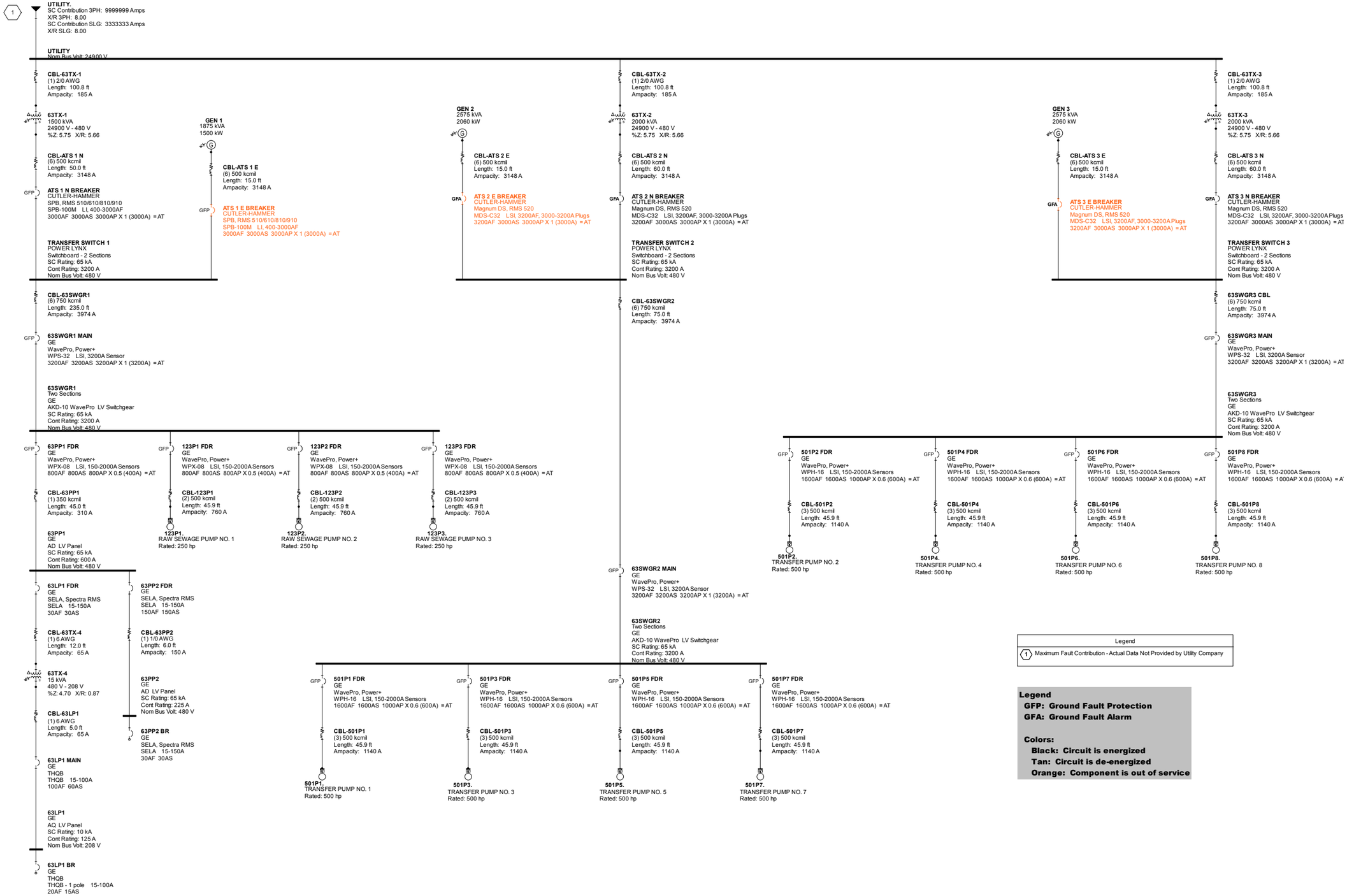
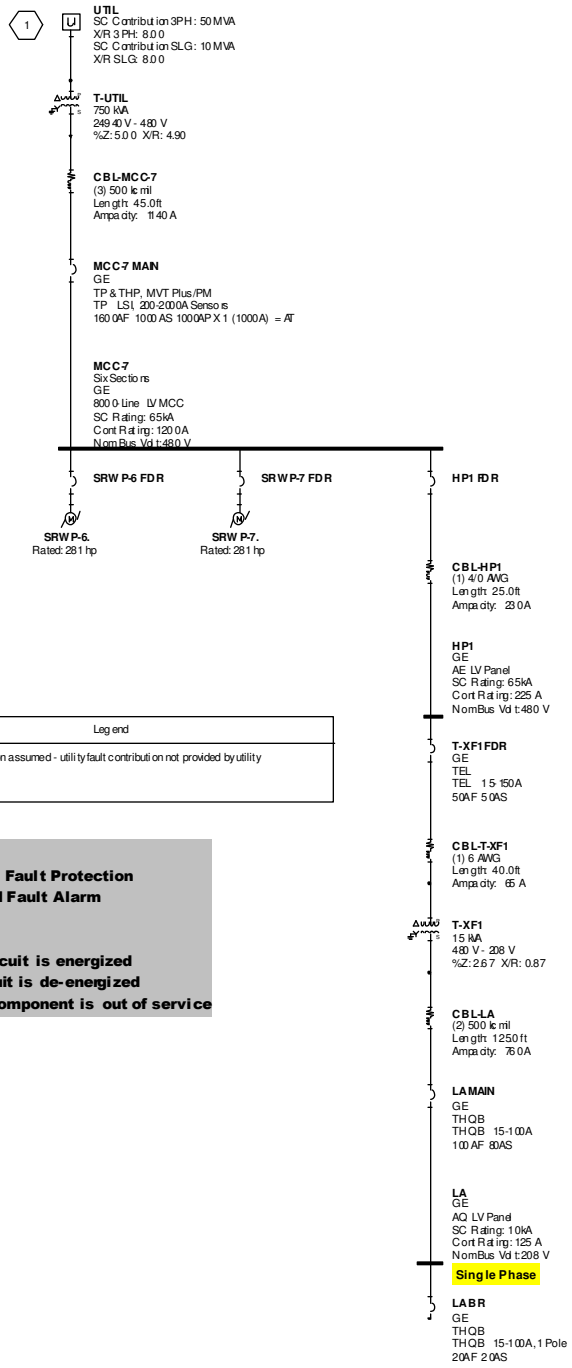
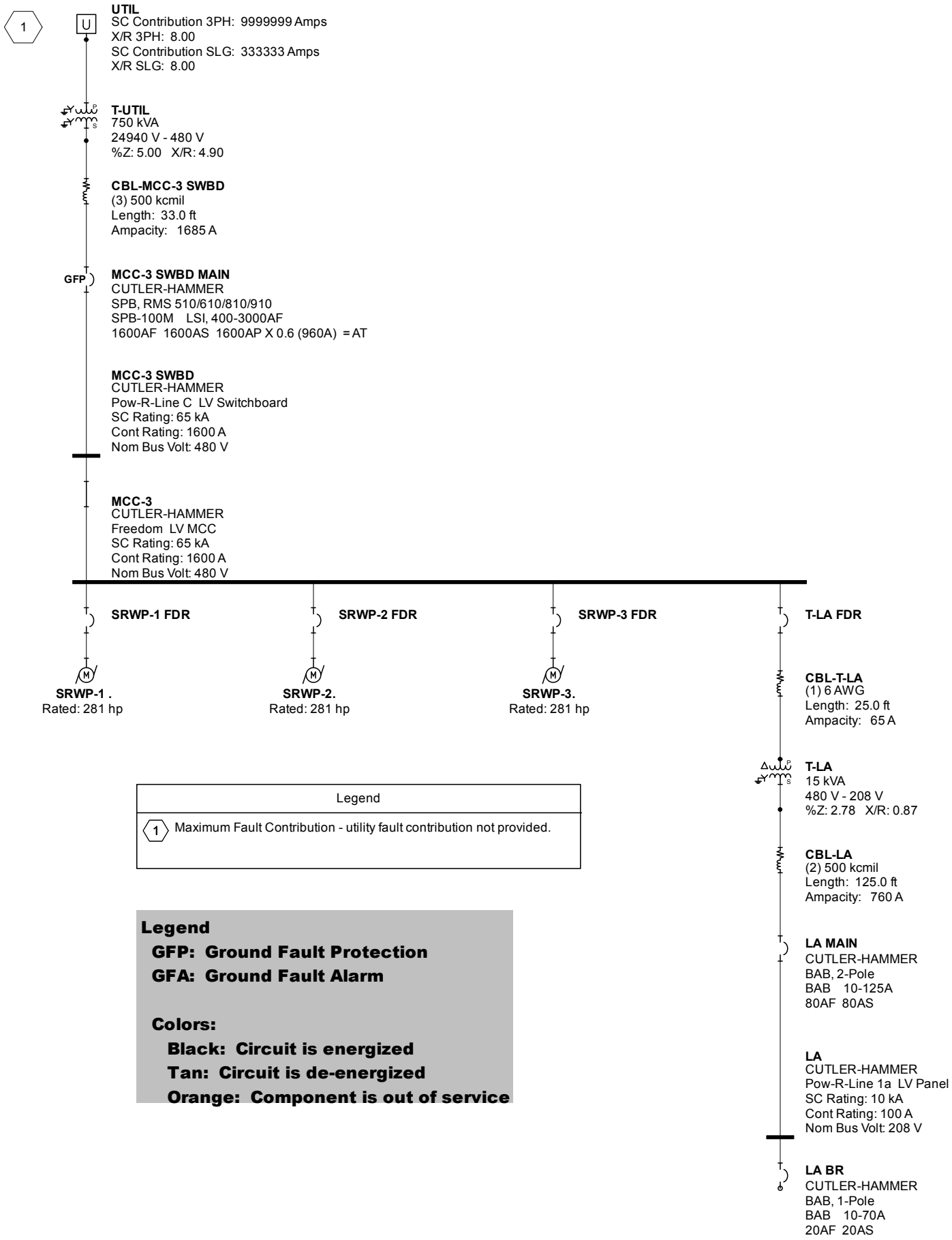

1
UTILITY.
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 3333333 Amps
X/R SLG: 8.00
UTILITY
Nom Bus Volt: 24900 V
CBL-63TX-1
(1) 2/0 AWG
Length: 100.8 ft
Ampacity: 185 A
63TX-1
1500 kVA
24900 V - 480 V
%Z: 5.75 X/R: 5.66
CBL-ATS 1 N
(6) 500 kcmil
Length: 50.0 ft
Ampacity: 3148 A
GFP
ATS 1 N BREAKER
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LI, 400-3000AF
3000AF 3000AS 3000AP X 1 (3000A) = AT
TRANSFER SWITCH 1
POWER LYNX
Switchboard - 2 Sections
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
GEN 1
1875 kVA
1500 kW
CBL-ATS 1 E
(6) 500 kcmil
Length: 15.0 ft
Ampacity: 3148 A
GFP
ATS 1 E BREAKER
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LI, 400-3000AF
3000AF 3000AS 3000AP X 1 (3000A) = AT
GEN 2
2575 kVA
2060 kW
CBL-ATS 2 E
(6) 500 kcmil
Length: 15.0 ft
Ampacity: 3148 A
GFA
ATS 2 E BREAKER
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000-3200A Plugs
3200AF 3000AS 3000AP X 1 (3000A) = AT
CBL-63TX-2
(1) 2/0 AWG
Length: 100.8 ft
Ampacity: 185 A
63TX-2
2000 kVA
24900 V - 480 V
%Z: 5.75 X/R: 5.66
CBL-ATS 2 N
(6) 500 kcmil
Length: 60.0 ft
Ampacity: 3148 A
GFA
ATS 2 N BREAKER
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000-3200A Plugs
3200AF 3000AS 3000AP X 1 (3000A) = AT
TRANSFER SWITCH 2
POWER LYNX
Switchboard - 2 Sections
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
GEN 3
2575 kVA
2060 kW
CBL-ATS 3 E
(6) 500 kcmil
Length: 15.0 ft
Ampacity: 3148 A
GFA
ATS 3 E BREAKER
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000-3200A Plugs
3200AF 3000AS 3000AP X 1 (3000A) = AT
CBL-63TX-3
(1) 2/0 AWG
Length: 100.8 ft
Ampacity: 185 A
63TX-3
2000 kVA
24900 V - 480 V
%Z: 5.75 X/R: 5.66
CBL-ATS 3 N
(6) 500 kcmil
Length: 60.0 ft
Ampacity: 3148 A
GFA
ATS 3 N BREAKER
CUTLER-HAMMER
Magnum DS, RMS 520
MDS-C32 LSI, 3200AF, 3000-3200A Plugs
3200AF 3000AS 3000AP X 1 (3000A) = AT
TRANSFER SWITCH 3
POWER LYNX
Switchboard - 2 Sections
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
CBL-63SWGR1
(6) 750 kcmil
Length: 235.0 ft
Ampacity: 3974 A
GFP
63SWGR1 MAIN
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS 3200AP X 1 (3200A) = AT
63SWGR1
Two Sections
GE
AKD-10 WavePro LV Switchgear
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
CBL-63SWGR2
(6) 750 kcmil
Length: 75.0 ft
Ampacity: 3974 A
63SWGR2 MAIN
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS 3200AP X 1 (3200A) = AT
63SWGR2
Two Sections
GE
AKD-10 WavePro LV Switchgear
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
CBL-63SWGR3 CBL
(6) 750 kcmil
Length: 75.0 ft
Ampacity: 3974 A
63SWGR3 MAIN
GE
WavePro, Power+
WPS-32 LSI, 3200A Sensor
3200AF 3200AS 3200AP X 1 (3200A) = AT
63SWGR3
Two Sections
GE
AKD-10 WavePro LV Switchgear
SC Rating: 65 kA
Cont Rating: 3200 A
Nom Bus Volt: 480 V
63PP1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS 800AP X 0.5 (400A) = AT
CBL-63PP1
(1) 350 kcmil
Length: 45.0 ft
Ampacity: 310 A
63PP1
GE
AD LV Panel
SC Rating: 65 kA
Cont Rating: 600 A
Nom Bus Volt: 480 V
123P1 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS 800AP X 0.5 (400A) = AT
CBL-123P1
(2) 500 kcmil
Length: 45.9 ft
Ampacity: 760 A
123P1.
RAW SEWAGE PUMP NO. 1
Rated: 250 hp
123P2 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS 800AP X 0.5 (400A) = AT
CBL-123P2
(2) 500 kcmil
Length: 45.9 ft
Ampacity: 760 A
123P2.
RAW SEWAGE PUMP NO. 2
Rated: 250 hp
123P3 FDR
GE
WavePro, Power+
WPX-08 LSI, 150-2000A Sensors
800AF 800AS 800AP X 0.5 (400A) = AT
CBL-123P3
(2) 500 kcmil
Length: 45.9 ft
Ampacity: 760 A
123P3.
RAW SEWAGE PUMP NO. 3
Rated: 250 hp
63PP2 FDR
GE
SELA, Spectra RMS
SELA 15-150A
150AF 150AS
CBL-63PP2
(1) 1/0 AWG
Length: 6.0 ft
Ampacity: 150 A
63PP2
GE
AD LV Panel
SC Rating: 65 kA
Cont Rating: 225 A
Nom Bus Volt: 480 V
63PP2 BR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS
63LP1 FDR
GE
SELA, Spectra RMS
SELA 15-150A
30AF 30AS
CBL-63TX-4
(1) 6 AWG
Length: 12.0 ft
Ampacity: 65 A
63TX-4
15 kVA
480 V - 208 V
%Z: 4.70 X/R: 0.87
CBL-63LP1
(1) 6 AWG
Length: 5.0 ft
Ampacity: 65 A
63LP1 MAIN
GE
THQB
THQB 15-100A
100AF 60AS
63LP1
GE
AQ LV Panel
SC Rating: 10 kA
Cont Rating: 125 A
Nom Bus Volt: 208 V
63LP1 BR
GE
THQB
THQB - 1 pole 15-100A
20AF 15AS
501P1 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P1
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P1.
TRANSFER PUMP NO. 1
Rated: 500 hp
501P3 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P3
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P3.
TRANSFER PUMP NO. 3
Rated: 500 hp
501P5 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P5
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P5.
TRANSFER PUMP NO. 5
Rated: 500 hp
501P7 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P7
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P7.
TRANSFER PUMP NO. 7
Rated: 500 hp
501P2 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P2
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P2.
TRANSFER PUMP NO. 2
Rated: 500 hp
501P4 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P4
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P4.
TRANSFER PUMP NO. 4
Rated: 500 hp
501P6 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = AT
CBL-501P6
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P6.
TRANSFER PUMP NO. 6
Rated: 500 hp
501P8 FDR
GE
WavePro, Power+
WPH-16 LSI, 150-2000A Sensors
1600AF 1600AS 1000AP X 0.6 (600A) = A
CBL-501P8
(3) 500 kcmil
Length: 45.9 ft
Ampacity: 1140 A
501P8.
TRANSFER PUMP NO. 8
Rated: 500 hp
Legend
1 Maximum Fault Contribution - Actual Data Not Provided by Utility Company
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service


UTIL
SC Contribution 3PH: 50 MVA
X/R 3 PH: 8.0 0
SC Contribution SLG: 10 MVA
X/R SLG: 8.0 0
T-UTIL
750 kVA
249 40 V - 480 V
%Z: 5.0 0 X/R: 4.90
CBL-MCC-7
(3) 500 kcmil
Length: 45.0ft
Ampacity: 1140 A
MCC-7 MAIN
GE
TP & THP, MVT Plus/PM
TP LSI, 200-2000A Sensors
1600AF 1000 AS 1000AP X 1 (1000A) = AT
MCC-7
Six Sections
GE
800 0-Line LV MCC
SC Rating: 65kA
Cont Rating: 120 0A
Nom Bus Volt: 480 V
SRW P-6 FDR
SRW P-7 FDR
HP1 FDR
SRW P-6.
Rated: 281 hp
SRW P-7.
Rated: 281 hp
CBL-HP1
(1) 4/0 AWG
Length: 25.0ft
Ampacity: 230 A
HP1
GE
AE LV Panel
SC Rating: 65kA
Cont Rating: 225 A
Nom Bus Volt: 480 V
T-XF1 FDR
GE
TEL
TEL 15 150A
50AF 50AS
CBL-T-XF1
(1) 6 AWG
Length: 40.0ft
Ampacity: 65 A
T-XF1
15 kVA
480 V - 208 V
%Z: 2.67 X/R: 0.87
CBL-LA
(2) 500 kcmil
Length: 125.0 ft
Ampacity: 760 A
LA MAIN
GE
THQB
THQB 15-100A
100 AF 80AS
LA
GE
AQ LV Panel
SC Rating: 10kA
Cont Rating: 125 A
Nom Bus Volt: 208 V
Single Phase
LA BR
GE
THQB
THQB 15-100A, 1 Pole
20AF 20AS
Legend
1 Fault contribution assumed - utility fault contribution not provided by utility company.
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service


1
U
UTIL
SC Contribution 3PH: 9999999 Amps
X/R 3PH: 8.00
SC Contribution SLG: 333333 Amps
X/R SLG: 8.00
T-UTIL
750 kVA
24940 V - 480 V
%Z: 5.00 X/R: 4.90
CBL-MCC-3 SWBD
(3) 500 kcmil
Length: 33.0 ft
Ampacity: 1685 A
GFP
MCC-3 SWBD MAIN
CUTLER-HAMMER
SPB, RMS 510/610/810/910
SPB-100M LSI, 400-3000AF
1600AF 1600AS 1600AP X 0.6 (960A) = AT
MCC-3 SWBD
CUTLER-HAMMER
Pow-R-Line C LV Switchboard
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
MCC-3
CUTLER-HAMMER
Freedom LV MCC
SC Rating: 65 kA
Cont Rating: 1600 A
Nom Bus Volt: 480 V
SRWP-1 FDR
SRWP-2 FDR
SRWP-3 FDR
T-LA FDR
SRWP-1 .
Rated: 281 hp
SRWP-2.
Rated: 281 hp
SRWP-3.
Rated: 281 hp
CBL-T-LA
(1) 6 AWG
Length: 25.0 ft
Ampacity: 65 A
T-LA
15 kVA
480 V - 208 V
%Z: 2.78 X/R: 0.87
CBL-LA
(2) 500 kcmil
Length: 125.0 ft
Ampacity: 760 A
LA MAIN
CUTLER-HAMMER
BAB, 2-Pole
BAB 10-125A
80AF 80AS
LA
CUTLER-HAMMER
Pow-R-Line 1a LV Panel
SC Rating: 10 kA
Cont Rating: 100 A
Nom Bus Volt: 208 V
LA BR
CUTLER-HAMMER
BAB, 1-Pole
BAB 10-70A
20AF 20AS
Legend
1 Maximum Fault Contribution - utility fault contribution not provided.
Legend
GFP: Ground Fault Protection
GFA: Ground Fault Alarm
Colors:
Black: Circuit is energized
Tan: Circuit is de-energized
Orange: Component is out of service