DOCKETED	
Docket Number:	23-OPT-02
Project Title:	Darden Clean Energy Project
TN #:	255907
Document Title:	Data Response Set 3 Appendix A - SJVACPD Preliminary Draft Permit Application Vol 1
Description:	Volume 1 of the San Joaquin Valley Air Pollution Control District preliminary draft permit application, provided in response to DR AQ-2 as part of Appendix A of Response Set 3
Filer:	Evelyn Langsdale
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Submitter Role:	Applicant Consultant
Submission Date:	4/24/2024 4:02:11 PM
Docketed Date:	4/24/2024

Data Response Set 3 - Appendix A

DR AQ-2 SJVAPCD Preliminary Draft Permit Application - Volume 1

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April 5, 2024
Rincon Project No. 22-12530

Errol Villegas
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1990 East Gettysburg Avenue
Fresno, California 93726
Via email: errol.villegas@valleyair.org

Subject: Preliminary Draft Air Permit Application for Emergency Backup Equipment for the Darden Clean Energy Project Located in Fresno County, California

Dear Mr. Villegas:

Rincon Consultants, Inc. (Rincon) is pleased to provide the San Joaquin Valley Air Pollution Control District (SJVAPCD), on behalf of IP Darden I, LLC and Affiliates (Applicant), the attached preliminary draft air permit application (preliminary permit application) for the Darden Clean Energy Project (Project). The Project is undergoing review by the California Energy Commission (CEC) under the Assembly Bill (AB) 205 Opt-In Application process and this preliminary permit application is being submitted to SJVAPCD as part of that process and in coordination with CEC. Rincon, the Applicant, the CEC and SJVAPCD have met to discuss the approach to this preliminary permit application and we understand that SJVAPCD will review and, if appropriate, provide a concurrence determination to CEC stating that sufficient information has been provided herein to prepare an engineering evaluation in support of application completeness review during the CEQA process so that necessary conditions of approval can be included in CEC's certification. Due to the size of the Project and the stage of the design, there are three (3) options for stationary source locations. Additional information and figures are provided in the attached permit application package. As a result of discussions with the Applicant, CEC, and SJVAPCD, it was agreed that this permit application would be noted as preliminary, subject to change as Project design progresses, and intended to address potentially "worst case" impacts related to emissions and air dispersion.

The Project would include the construction, operation and eventual repower or decommission of a facility located across approximately 9,500 acres in western Fresno County in California, in an air basin under the jurisdiction of the SJVAPCD. The Project would operate 7 days a week, 365 days a year, with an approximate 35-year anticipated lifespan. The primary Project components are:

- 1,150-megawatt (MW) solar photovoltaic (PV) facility (solar facility)
- Up to 4,600 MW-hour battery energy storage system (BESS)
- Up to 800 MW green hydrogen facility
- 34.5-500 kilovolt (kV) grid step-up substation (step-up substation)
- 10- to 15-mile 500 kV generation intertie (gen-tie) line
- Pacific Gas and Electric Company (PG&E)-owned 500 kV utility switchyard along the Los Banos-Midway #2 500 kV transmission line

There are emission sources associated with the operation of the Project that are designed for emergency use. Information related to this emergency equipment is provided below:

- There would be two (2) Power Solutions Int'l (PSI) 8800CAC Emergency Generator Sets, Liquid Petroleum Gas (LPG)-fired, 150-ekW rated. One would be located at either Step-Up Substation Option 1 or 2. The other would be located at the Step-Down Substation, if the Alternate Green Hydrogen site is selected.
- There would be two (2) CAT C18 Fire Pump Engine, diesel-fired, 447-eKW rated. The equipment would be located at one of the three options for the green hydrogen facilities (Option 1, Option 2, or the Alternate Green Hydrogen Site). This equipment is assumed to meet Tier 3 emissions standards.
- There would be two (2) CAT C18 Emergency Generator Set, diesel-fired, 600-eKW rated. The equipment would also be located at one of the three options for the green hydrogen facilities (Option 1, Option 2, or the Alternate Green Hydrogen Site). This equipment is assumed to meet Tier 4 emissions standards.

The attached preliminary permit application package includes the following items for review by the SJVAPCD:

- Introduction and Project Description
- Regulatory Review
- Emissions Analysis
- Air Dispersion Analysis for the Ambient Air Quality Impact Assessment (supporting files to be submitted separately and electronically)
- Health Risk Assessment (HRA)
- Appendix A SJVAPCD Air Permit Application Forms
- Appendix B Emissions Calculations
- Appendix C Ambient Air Quality Analysis Summary
- Appendix D HRA Summary
- Appendix E Manufacturer Specifications and Additional Reference Documents
- Appendix F HRA and Ambient Air Quality Standards Modeling Supplementary Files

We appreciate the SJVAPCD's time reviewing these materials. Please do not hesitate to contact with any questions regarding this preliminary permit application.

Sincerely,
Rincon Consultants, Inc.

Michael Stewart, P.E.
Senior Air Quality Specialist

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Darden Clean Energy Project

Draft Preliminary Air Permit Application Package

submitted on behalf of

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1 Project Description

IP Darden I, LLC and Affiliates (Applicant), wholly owned subsidiaries of Intersect Power, LLC, proposes to construct, operate, and eventually repower or decommission the Darden Clean Energy Project (Project) on approximately 9,500 acres in western Fresno County (Figure 1). The Project would operate 7 days a week, 365 days a year, with an approximate 35-year[1] anticipated lifespan. The primary Project components are:

- 1,150-megawatt (MW) solar photovoltaic (PV) facility (solar facility)
- Up to 4,600 MW-hour battery energy storage system (BESS)
- Up to 800 MW green hydrogen facility
- 34.5-500 kilovolt (kV) grid step-up substation (step-up substation)
- 10- to 15-mile 500 kV generation intertie (gen-tie) line
- Pacific Gas and Electric Company (PG&E)-owned 500 kV utility switchyard along the Los Banos-Midway #2 500 kV transmission line

The Project site and related facilities were selected taking into consideration the Project objectives, engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors.

Figure 1 shows the Project site plan and location of the solar facility, BESS, and green hydrogen facility, as well as the step-up substation, gen-tie line, and utility switchyard. The gen-tie line would extend from the solar facility west to the proposed utility switchyard along PG&E's Los Banos-Midway #2 500 kV transmission line. As shown on Figure 1, two locations (Option 1 and 2 sites) are being considered for the BESS, green hydrogen facility, and step-up substation. In addition, an alternate site is being considered for the green hydrogen facility, located west of Interstate 5 and adjacent to the proposed utility switchyard site (Option 3). If the alternate site is selected, it would include the construction of an additional substation and switchyard.

There are emission sources associated with the operation of the Project designed for emergency use. Design details and specifications for this equipment have not been finalized; however, information related to typical equipment that is likely to be used is provided below:

- There would be two (2) Power Solutions Int'l (PSI) 8800CAC Emergency Generator Sets, Liquid Petroleum Gas (LPG)-fired, 150-ekW rated. One would be located at either Step-Up Substation Option 1 or 2. The other would be located at the Step-Down Substation, if the Alternate Green Hydrogen site is selected.
- There would be two (2) CAT C18 Fire Pump Engine, diesel-fired, 447-eKW rated. The equipment would be located at one of the three options for the green hydrogen facilities (Option 1, Option 2, or the Alternate Green Hydrogen Site). This equipment is assumed to meet Tier 3 emissions standards.
- There would be two (2) CAT C18 Emergency Generator Set, diesel-fired, 600-eKW rated. The equipment would also be located at one of the three options for the green hydrogen facilities (Option 1, Option 2, or the Alternate Green Hydrogen Site). This equipment is assumed to meet Tier 4 emissions standards.

[1] After 35 years, the Project would be repowered or decommissioned.

Table 1, below, summarizes the equipment, including the engine number associated with the Project options discussed above. The equipment was selected as representative of future operating conditions. As discussed with the San Joaquin Valley Air Pollution Control District (SJVAPCD), this is potentially subject to change; however, the summary and technical analysis herein is presented to be conservative and a "worst-case scenario" of Project operations. Engine numbers 1A and 1B correspond to the engine located at Step-Up Substation Option 1 or 2, and engine number 2 corresponds to the engine located at the Step-Down Substation at the Alternate Green Hydrogen site. Engine numbers 3A-C and 4A-C correspond to the emergency diesel engines located at Options 1-3, respectively. This nomenclature is further outlined in Table 1 and Table 3.

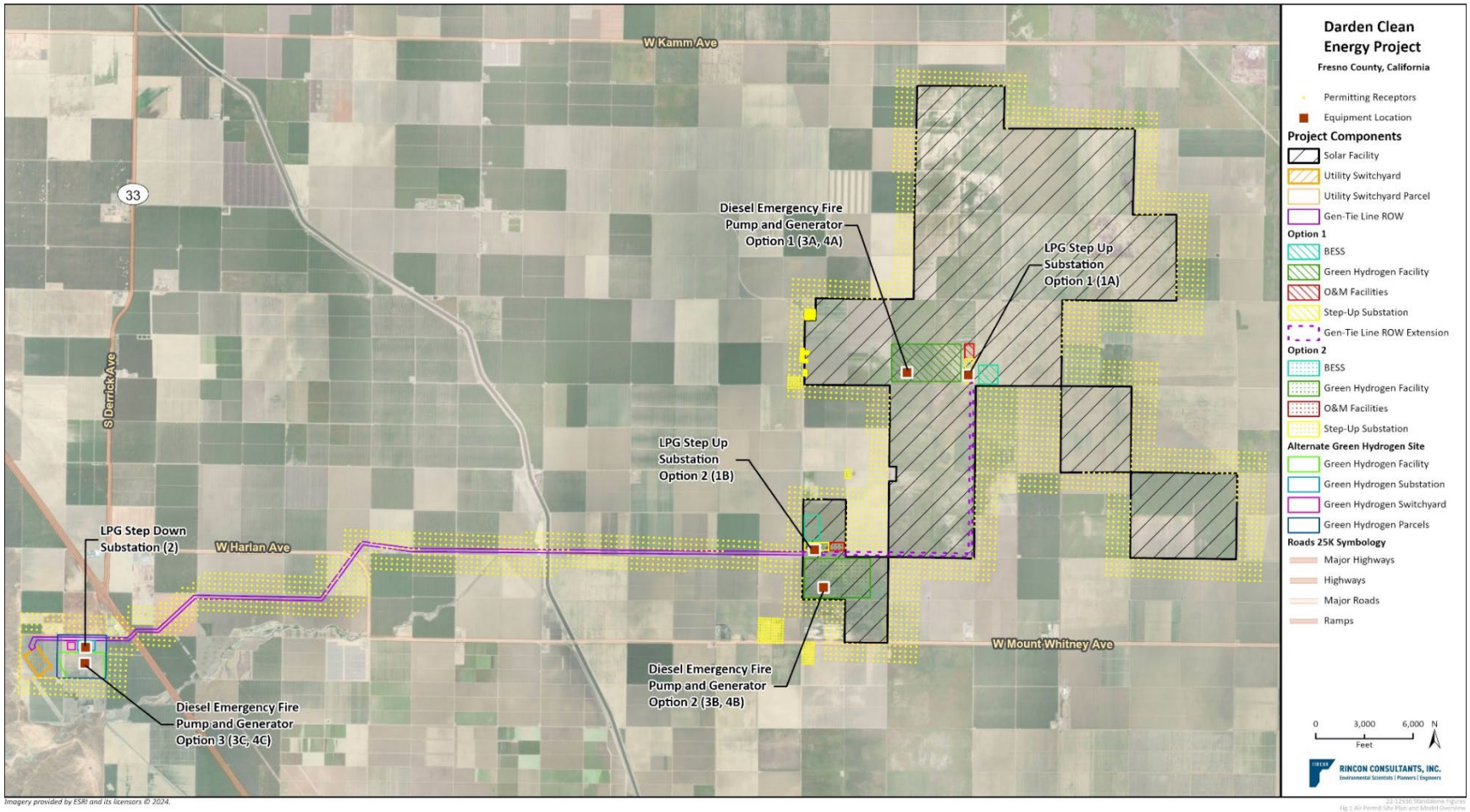
Table 1 Equipment Summary

Engine No.	Make / Model	Location	# of Units	Size (ekW)	Size (bhp)	Fuel
1A	Power Solutions Int'l (PSI) 8800CAC (LPG) Emergency Generator Set	Step Up Substation Option 1	1	150	262	LPG
1B		Step Up Substation Option 2	1	150	262	
2		Step Down Substation	1	150	262	
3A	CAT C18 Fire Pump Engine	Option 1	2	400	536	Diesel
3B		Option 2	2	400	536	
3C		Option 3	2	400	536	
4A	CAT C18 Diesel Emergency Generator Set	Option 1	2	600	805	Diesel
4B		Option 2	2	600	805	
4C		Option 3	2	600	805	

Notes:

ekW = electrical kilowatts; bhp = brake horsepower; LPG = liquified petroleum gas

Figure 1 Emergency Backup Generator Modeling Locations



2 Regulatory Review

The Project equipment is located in Fresno County, California, which is subject to air quality-related rules and regulations promulgated by the United States Environmental Protection Agency (US EPA), the California Air Resources Board (CARB), and the SJVAPCD. This section briefly summarizes applicable rules and regulations, as well as provides an overview of the ambient air quality standards (AAQS), which serve as thresholds for this permit application.

2.1 Federal Regulations

The Project equipment is assumed to meet the federal US EPA requirements, including Standards of Performance for Stationary Compression Ignition Internal Combustion Engines in 40 CFR 60, Subpart IIII, and the National Emission Standards for Hazardous Air Pollutants.

2.2 CARB Regulations

The Project equipment is assumed to meet the state CARB requirements, including the off-road compression ignition engine standards and any other relevant airborne toxic control measures (ATCM).

2.3 SJVAPCD Regulations

The Project equipment would comply with the following applicable SJVAPCD rules and regulations.

Rule 2201 New and Modified Stationary Source Review

This rule applies to all new stationary sources and all modifications to existing stationary sources which are subject to SJVAPCD permit requirements in Regulation II and after construction emit or may emit one or more affected pollutants. Emissions are quantified and control technologies and offset requirements are reviewed as part of this process.

Best Available Control Technology (BACT) Requirements

Unless otherwise exempt, any new emissions unit with a potential to emit (PTE) exceeding 2.0 pounds in any day is subject to BACT requirements. As demonstrated below, the LPG-fired emergency generator sets would emit less than 2.0 pounds per day of any criteria air pollutants; however, it is nonetheless assumed to be equipped with a selective catalytic reduction (SCR) control technology system. Based on the SJVAPCD BACT Clearinghouse, the fire pump engine would meet Tier 3 emission standards as BACT, and the emergency backup generator would meet Tier 4 emission standards as BACT (SJVAPCD 2024c).

Offset Applicability

Per SVJAPCD Rule 2201, Section 4.6.2, the emergency equipment would be exempt from offset requirements.

Other SJVAPCD Rules

The Project would comply with any other applicable SJVAPCD rules, including:

- Rule 4001 – New Source Performance Standards
- Rule 4002 – National Emissions Standards for Hazardous Air Pollutants
- Rule 4101 – Visible Emissions
- Rule 4102 – Nuisance
- Rule 4701 – Internal Combustion Engines – Phase 1

2.4 Ambient Air Quality Standards

Regulation of air pollution is achieved through both national and state AAQS and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act (CAA), the US EPA has identified criteria pollutants and has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter of 10 microns or less (PM_{10}), and particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), and lead. California has adopted more stringent AAQS for most of the criteria air pollutants. Table 2 presents both sets of AAQS (i.e., national and state) and the Air Basin's attainment status for each standard. California also has established state AAQS for sulfates, hydrogen sulfide, and vinyl chloride.

The local background ambient concentrations of PM_{10} and $PM_{2.5}$ exceed the AAQS; therefore, an alternative threshold is required to demonstrate impacts are less than significant. The SJVAPCD has Significant Impact Levels (SILs) for criteria air pollutants that are applicable for Project impacts only (SJVAPCD 2019). These were applied for PM_{10} and $PM_{2.5}$ exhaust because stationary sources would be negligible sources of fugitive PM emissions. The PM_{10} SILs for annual and 24-hour impacts are 1 and 5 micrograms per meter cubed ($\mu g/m^3$), respectively. The $PM_{2.5}$ SILs for annual and 24-hour impacts are 0.2 and 1.2 $\mu g/m^3$, respectively.

Table 2 Ambient Air Quality Standards and Air Basin Attainment Status

		State Standard		National Standard	
Pollutant	**Averaging Time**	**Concentration**	**Attainment Status**	**Concentration**	**Attainment Status**
Ozone	8-Hour 1-Hour	0.070 ppm 0.090 ppm	Nonattainment/ Severe Nonattainment	0.075 ppm –	Nonattainment/ Extreme[1]
Carbon Monoxide	1-Hour 8-Hour	9.0 ppm (10 mg/m^3) 20 ppm (23 mg/m^3)	Attainment/ Unclassified	9.0 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	Attainment/ Unclassified
Nitrogen Dioxide	1-Hour Annual	0.18 ppm (339 $\mu g/m^3$) 0.030 ppm (57 $\mu g/m^3$)	Attainment	0.100 ppm (188 $\mu g/m^3$) 0.053 ppm (100 $\mu g/m^3$)	Attainment/ Unclassified
Sulfur Dioxide	1-Hour 3-Hour[2] 24-Hour Annual	0.25 ppm (655 $\mu g/m^3$) – 0.04 ppm (105 $\mu g/m^3$) –	Attainment	0.075 ppm (196 $\mu g/m^3$) 0.5 ppm (1300 $\mu g/m^3$) 0.14 ppm 0.03 ppm	Attainment/ Unclassified

Pollutant	Averaging Time	State Standard		National Standard	
		Concentration	Attainment Status	Concentration	Attainment Status
Respirable Particulate Matter (PM_{10})	24-Hour Annual	50 μg/m³ 20 μg/m³	Nonattainment	150 μg/m³ –	Attainment
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Annual[3]	– 12 μg/m³	Nonattainment	35 μg/m³ 12 μg/m³	Nonattainment
Lead	30-Day Quarterly	1.5 μg/m³ –	Attainment	– 1.5 μg/m³	No Designation/ Classification

ppm = parts per million

ppb = parts per billion

μg/m³ = micrograms per cubic meter

[1] EPA approved reclassification to extreme nonattainment for the 8-hour ozone standard in 2010. There is no federal standard for 1-hour ozone effective June 15, 2005. (Source: SJVAPCD 2020)

[2] The 3-hour SO_2 NAAQS is a secondary standard and not analyzed in this study. The 24-hour and annual NAAQS also do not apply to this area.

[3] The $PM_{2.5}$ 24-hour standard was revised on February 7, 2024. It goes into effect 60 days from this date. (Source: SJVAPCD 2024a)

2.5 Toxic Air Contaminants

The primary toxic air contaminant (TAC) associated with the emergency backup equipment is diesel particulate matter (DPM). DPM is emitted from the combustion of diesel fuels and is typically quantified as PM_{10}. Emissions of PM_{10} are provided below. Health risk assessments (HRA) are performed using air dispersion modeling and guidance from the Office of Environmental Health Hazard Assessment (OEHHA) when TACs are emitted that may potentially impact sensitive receptors. The Project site is remote, the equipment equipped with emissions controls, and the operation of emergency backup equipment is intermittent such that sensitive receptors are not expected to be impacted. However, an HRA was conducted to confirm a less than significant impact at sensitive receptors, including residences and worker receptors. The HRA was conducted in accordance with SJVAPCD APR 1906, Framework for Performing Health Risk Assessments.

3 Project Emissions

There are emission sources associated with the operation of the Project designed for emergency use. Design specifications for this equipment have not been finalized; however, the manufacturer data associated with the following typical equipment that is likely to be used is provided in Appendix E.

- There would be two (2) Power Solutions Int'l (PSI) 8800CAC Emergency Generator Sets, Liquid Petroleum Gas (LPG)-fired, 150-ekW rated. Emission rates are provided in manufacturer's specifications and the equipment is planned to be equipped with a SCR.
- There would be two (2) CAT C18 Fire Pump Engine, diesel-fired, 447-eKW rated. This equipment is assumed to meet Tier 3 emissions standards.
- There would be two (2) CAT C18 Emergency Generator Set, diesel-fired, 600-eKW rated. This equipment is assumed to meet Tier 4 emissions standards.

Table 3 shows the emission factors assumed for the Project equipment, which are based on manufacturer specifications and US EPA Tier standards. Both controlled and uncontrolled emission rates are presented in Table 3. Each piece of equipment is modeled assuming it would operate up to approximately 100 hours per year for both testing and maintenance (T&M); this assumption results in a conservative, worst-case emissions estimate because the Applicant anticipates testing each piece of equipment only 1-hour per month. The units are assumed to be tested one-at-a-time for T&M purposes (i.e., only one unit is expected to be operated in any given hour for this purpose). This assumption applies to hourly emission rates and the air dispersion modeling studies. For the purposes of the hourly emissions calculations, it was assumed that equipment with SCRs would be operating uncontrolled for 15 minutes (or ¼ of an hour) and would be controlled for the remainder of the hour. However, the SCR specification sheets for the LPG-fired emergency generators sets do not have uncontrolled emissions data and the post catalytic emissions data is presented as an upper boundary, which was used for emissions calculations and considered representative. Diesel particulate filters were assumed to function automatically and would not have a period of uncontrolled emissions. It was assumed that 12 hours of startup/uncontrolled operations would occur per year and the remaining 88 hours would be controlled for the annual emissions calculations. Table 4 presents the hourly emission calculations and Table 5 presents the annual emission calculations.

Table 3 Emission Factors

Engine No.	Emission Factors Source	NO_X Emission Factor (g/bhp-hr)		VOC Emission Factor (g/bhp-hr)		CO Emission Factor (g/bhp-hr)		SO_x Emission Factor (g/bhp-hr)		PM Emission Factor (g/bhp-hr)	
		Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
1A, 1B, 2	Manufacturer Specification Sheets	n/a	1	n/a	0.7	n/a	2	n/a	n/a	n/a	n/a
3A, 3B, 3C	US EPA Tier 3	2.85	2.85	0.15	0.15	2.6	2.6	2.05E-03	2.05E-03	0.15	0.15
4A, 4B, 4C	US EPA Tier 2 / Tier 4	4.56	0.5	0.24	0.14	2.6	2.6	2.05E-03	2.05E-03	0.15	0.022

NO_X = oxides of nitrogen; VOC = volatile organic compounds; CO = carbon monoxide; SO_X =sulfur oxides; PM = particulate matter; g/bhp-hr = grams per brake horsepower-hour

Source: Table A of Appendix A of SCAQMD's Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, for Electric Generation, PM_{10} is 96% of Total PM and $PM_{2.5}$ is 93.7% of Total PM. For the Fire Pump Engines, PM_{10} is 97.6% of Total PM and $PM_{2.5}$ is 96.7% of Total PM (SCAQMD 2006). SO_x Factors from AP-42 Table 3.3-1

Table 4 Hourly Emission Calculations

Engine No.	Emission Factors Source	Max Daily Hours	Max Annual Hours	NO_X lb/hr	VOC lb/hr	CO lb/hr	SO_X lb/hr	PM lb/hr
1A	Manufacturer Specification Sheets	1	100	0.578	0.404	1.155	0	0
1B	Manufacturer Specification Sheets	1	100	0.578	0.404	1.155	0	0
2	Manufacturer Specification Sheets	1	100	0.578	0.404	1.155	0	0
3A	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
3B	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
3C	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
4A	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078
4B	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078
4C	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078

Table 5 Annual Emission Calculations

Engine No.	Emission Factors Source	Max Daily Hours	Max Annual Hours	NO_X lb/yr	VOC lb/yr	CO lb/yr	SO_X lb/yr	PM lb/yr
1A	Spec sheets	1	100	57.8	40.4	115.5	0	0
1B	Spec sheets	1	100	57.8	40.4	115.5	0	0
2	Spec sheets	1	100	57.8	40.4	115.5	0	0
3A	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
3B	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
3C	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
4A	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
4B	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
4C	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
Total Emissions Per Project Option:				**996.6**	**152.2**	**1473.2**	**56.7**	**43.3**

4 Air Dispersion Modeling Analysis

An air dispersion modeling analysis was performed to compare Project impacts to the corresponding SILs, the California Ambient Air Quality Standards (CAAQS) and the NAAQS and to perform a health risk assessment. Air dispersion modeling was conducted using the US EPA approved model, the AMS/EPA Regulatory Model (AERMOD), Version 21112 consistent with the SJVAPCD *Guidance for Air Dispersion Modeling* document (SJVAPCD 2022).

Meteorological data from the Mendota station for years 2007 through 2011 were used in AERMOD. The Project site is rural and that assumption was included in the modeling. A wide-ranging receptor grid was dispersed throughout the Project site, including fenceline receptors to capture hourly impacts. Please refer to Figure 1 for a depiction of the receptor grid. The equipment were modeled as point sources with stack parameters provided by the SJVAPCD. Although the sources were modeled as point sources, building downwash effects were not included. This is because Project designs are still preliminary, and locations of the emission sources and any potential structures are still unknown. The AERMOD point sources stack parameter assumptions, as provided by the SJVAPCD, are summarized below in Table 6.

Table 6 AERMOD Point Source Stack Parameters Summary

Engine No.	SJVAPCD Source ID	UTM X	UTM Y	Release Height (m)	Stack Diameter (m)	Temp (K)	Gas Velocity (m/s)	Gas Flow Rate (cfm)
1A	275_DE	749650	4040200	2.43	0.12	795.31	50.25	1204.2
1B	275_DE	746900	4036800	2.43	0.12	795.31	50.25	1204.2
2	275_DE	733300	4034400	2.43	0.12	795.31	50.25	1204.2
3A	600_DE	748500	4040200	3.71	0.16	793.56	92.45	3938.6
3B	600_DE	747100	4036100	3.71	0.16	793.56	92.45	3938.6
3C	600_DE	733300	4034100	3.71	0.16	793.56	92.45	3938.6
4A	825_DE	748500	4040200	6.07	0.19	784.00	87.68	5267.5
4B	825_DE	747100	4036100	6.07	0.19	784.00	87.68	5267.5
4C	825_DE	733300	4034100	6.07	0.19	784.00	87.68	5267.5

m = meters; m/s = meters per second; cfm = cubic feet per minute
SJVAPCD stack parameters provided via email on 2/15/2024.
UTM = Universal Transvers Mercator Coordinate; coordinate locations are based on assumed equipment locations.

4.1 Ambient Air Quality Analysis

The hourly emission rate for NO_X was incorporated into AERMOD to function with the Tier 2 ARM2 NO_X to NO_2 conversion option. The model assumed the default ARM2 options. The hourly NO_X emission rate was also applied to the annual analysis, which is very conservative. A separate model run was used with a unitized 1 gram per second (g/s) emission rate to obtain unitized ground-level concentrations for each design value for each of the criteria air pollutants. The unitized concentration outputs, the X/Q in units of $\mu g/m^3/g/s$, are provided in Appendix C. Actual ground level concentrations of the criteria air pollutants (besides NO_2), in $\mu g/m^3$, can be calculated by multiplying the X/Q by the corresponding pollutant emission rate, in g/s.

Modeled impacts are presented in the tables below. The results are combined with background concentration data obtained from nearby monitors, averaged over the most recently available three years. NO_2 and CO background data were provided by the Fresno-Foundary monitor and SO_2 background data were provided by the Fresno-Garland Station monitor.

Unless otherwise noted, the following assumptions were incorporated into the results processing:

- For the 1-hour analyses, it is assumed that only one emissions unit was operating at a time.
- For the longer-term analyses, it was assumed that each of the emissions units from each Project option would operate simultaneously.

The NO_2 AERMOD results are presented in Table 7. As shown therein, modeled concentrations would not result in an exceedance of the NAAQS and the CAAQS.

Table 7 NO_2 AERMOD Results

		NAAQS		CAAQS	
Engine No.	Model Source Group	Annual (ug/m3)	1-Hr (ug/m3)	Annual (ug/m3)	1-Hr (ug/m3)
1A	1A_LPG	1.2	7.2	1.2	7.4
1B	1B_LPG	0.2	10.0	0.2	10.3
2	2_LPG	0.6	9.0	0.6	9.9
3A	3A_FIRE	0.9	22.2	0.9	27.5
3B	3B_FIRE	7.9	49.7	7.9	54.7
3C	3C_FIRE	5.7	42.4	5.7	47.5
4A	4A_EMER	0.7	13.9	0.7	18.5
4B	4B_EMER	5.2	32.4	5.2	35.1
4C	4C_EMER	3.7	27.6	3.7	27.9
Background Concentration (ug/m3):		34.8	123.4	34.8	123.4
Maximum Impacts (ug/m3):		42.8	173.0	42.8	178.0
Standard (ug/m3):		100	188	57	339
Exceed?		No	No	No	No

The CO AERMOD results are presented in Table 8. As shown therein, modeled concentrations would not result in an exceedance of the NAAQS and the CAAQS.

Table 8 CO AERMOD Results

		NAAQS		CAAQS	
Engine No.	Model Source Group	1-Hr (µg/m³)	8-Hr (µg/m³)	1-Hr (µg/m³)	8-Hr (µg/m³)
1A	1A_LPG	16.0	12.1	16.4	12.6
1B	1B_LPG	22.6	17.8	22.9	19.1
2	2_LPG	21.7	14.4	21.9	17.3
3A	3A_FIRE	27.8	12.2	27.8	13.1
3B	3B_FIRE	54.4	38.1	55.4	38.9
3C	3C_FIRE	43.1	28.2	48.1	31.4
4A	4A_EMER	30.6	13.0	35.3	13.3
4B	4B_EMER	65.2	45.6	67.0	48.5
4C	4C_EMER	53.2	35.9	53.2	35.9
Background Concentration (µg/m³):		3,987	3,987	2,864	3,987
Maximum Impacts (µg/m³):		4,029	4087	3052	4054
Standard (µg/m³):		40,000	10,000	23,000	10,000
Exceed?		No	No	No	No

Note: Max impacts for 8-Hour calculations conservatively based on combining all equipment potentially operating in a single day (including duplicates for the Project options).

The SO_2 AERMOD results are presented in Table 9. As shown therein, modeled concentrations would not result in an exceedance of the NAAQS and the CAAQS.

Table 9 SO_2 AERMOD Results

		NAAQS	CAAQS	
Engine No.	Model Source Group	1-Hr (µg/m³)	1-Hr (µg/m³)	24-Hr (µg/m³)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.02	0.02	0.00
3B	3B_FIRE	0.04	0.04	0.02
3C	3C_FIRE	0.03	0.04	0.01
4A	4A_EMER	7.3	8.8	1.3
4B	4B_EMER	16.0	16.8	7.4
4C	4C_EMER	13.3	13.3	5.4
Background Concentration (µg/m³):		42	42	42
Maximum Impacts (µg/m³):		53	58	59
Standard (µg/m³):		196	655	105
Exceed?		No	No	No

The PM_{10} AERMOD results are presented in Table 10. Modeled concentrations were compared to the SJVAPCD SILs because the regional background PM_{10} is above the NAAQS. Therefore, a comparison to the SIL was used for significance determination purposes. As shown in Table 10, modeled concentrations would not exceed the SILs.

Table 10 PM_{10} AERMOD Results

		NAAQS	CAAQS	
Engine No.	Model Source Group	24-Hr (µg/m³)	Annual (µg/m³)	24-Hr (µg/m³)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.20	0.0006	0.28
3B	3B_FIRE	1.32	0.0052	1.43
3C	3C_FIRE	0.90	0.0037	0.96
4A	4A_EMER	0.03	0.0001	0.04
4B	4B_EMER	0.22	0.0009	0.24
4C	4C_EMER	0.16	0.0006	0.17
Background Concentration (µg/m³):			*Exceeds Standard*	
Maximum Impacts (µg/m³):		1.32	0.006	1.68
Standard (µg/m³):		150	20	50
Exceed?		n/a	n/a	n/a
SJVAPCD SIL (µg/m³):		n/a	1	5
Exceed?		n/a	No	No

Note: Max impacts for 24-Hour and annual calculations based on combining all equipment from each option. Maximum impacts at fenceline areas below the SIL, even though a member of the public would not be at one of these receptors for a 24-hour period.

The $PM_{2.5}$ AERMOD results are presented in Table 11. Similar to PM_{10}, modeled impacts were compared to the SJVAPCD SILs because the regional background $PM_{2.5}$ is above the NAAQS. Therefore, a comparison to the SIL was used for significance determination purposes. As shown in Table 11, modeled concentrations would not exceed the SILs.

Table 11 $PM_{2.5}$ AERMOD Results

		NAAQS		CAAQS
Engine No.	Model Source Group	Annual (µg/m³)	24-Hr (µg/m³)	Annual (µg/m³)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.0006	0.274	0.0006
3B	3B_FIRE[1]	0.0051	0.184	0.0051
3C	3C_FIRE[1]	0.0037	0.028	0.0037
4A	4A_EMER	0.0001	0.042	0.0001
4B	4B_EMER	0.0009	0.235	0.0009
4C	4C_EMER	0.0006	0.170	0.0006
Background Concentration (µg/m³):			*Exceeds Standard*	
Maximum Impacts (µg/m³):		0.005	0.42	0.006
Standard (µg/m³):		12	12	35
Standard[2] (µg/m³):		9	n/a	n/a
Exceed?		n/a	n/a	n/a

Engine No.	Model Source Group	NAAQS Annual (µg/m³)	NAAQS 24-Hr (µg/m³)	CAAQS Annual (µg/m³)
SJVAPCD SIL (µg/m³):		n/a	1.2	0.2
Exceed?		n/a	No	No

Notes:

The maximum modeled impacts were used for PM2.5 24-hour calculations to demonstrate compliance with the SJVAPCD SIL. Maximum impacts at fenceline areas are below the SIL; however, a member of the public would not be at one of these receptors for a 24-hour period.

[1] The fire pump engine for Option 2 and 3 exceeds at the fenceline for the 24-hour averaging period. Therefore, a refinement was implemented to review the nearby sensitive receptors (similar to the HRA) to find a location where a member of the public could be exposed for 24 hours.

[2] The PM2.5 24-hour standard was revised on February 7, 2024. It goes into effect 60 days from this date.

4.2 Health Risk Assessment

The health risk assessment was conducted to determine cancer risk and non-cancer chronic and acute risk. Unitized emission rates were input into AERMOD and plotfiles were generated for each source for the highest hourly values and the annual average values. Hourly and annual TAC emissions were calculated for the equipment using speciation profiles developed by CARB and the US EPA.[2] The plotfiles and TAC emissions were input into the CARB Hotspots Analysis and Reporting Program Version 2 (HARP2). HARP2 is a program that assists with the calculations required to conduct an HRA. The speciated TAC emissions input into the HARP2 model are presented in Table 12, below.

Table 12 Speciated TAC Emissions

Engine #:	1,2		3		4		
Compound	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr	
DieselExhPM	0.00E+00	0.00E+00	3.46E-01	3.46E+01	7.49E-02	7.49E+00	
1,3-Butadiene	1.44E-04	1.44E-02	6.74E-04	6.74E-02	1.11E-03	6.82E-02	
Acetaldehyde	1.81E-03	1.81E-01	2.63E-02	2.63E+00	4.33E-02	2.66E+00	
Acetylene	4.81E-04	4.81E-02	--	--	--	--	*
Acrolein	1.99E-03	1.99E-01	--	--	--	--	
Ethane	2.24E-02	2.24E+00	--	--	--	--	*
Ethylene	1.57E-02	1.57E+00	--	--	--	--	*
Formaldehyde	9.92E-03	9.92E-01	5.32E-02	5.32E+00	8.78E-02	5.39E+00	
Methane	7.13E-02	7.13E+00	--	--	--	--	
N-Butane	5.67E-04	5.67E-02	--	--	--	--	*
Propane	2.66E-01	2.66E+01	--	--	--	--	*
Propylene	7.00E-03	7.00E-01	9.22E-03	9.22E-01	1.52E-02	9.33E-01	
Unknown	6.65E-03	6.65E-01	--	--	--	--	*
Benzene	--	--	7.10E-03	7.10E-01	1.17E-02	7.18E-01	
Ethylbenzene	--	--	1.10E-03	1.10E-01	1.81E-03	1.11E-01	

[2] Diesel engine speciation factors were provided to Rincon by the California Energy Commission, which are based on CARB Speciation Profiles Used in ARB Modeling. LPG engine speciation factors were obtained from the US EPA Speciation Profiles and Toxic Emission Factors for Non-road Engines. EPA-420-R-15-019.

Engine #:	1,2		3		4	
Compound	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr
n-Hexane	--	--	5.68E-04	5.68E-02	9.37E-04	5.74E-02
Methanol	--	--	1.06E-04	1.06E-02	1.76E-04	1.08E-02
Methyl Ethyl Ketone	--	--	5.32E-03	5.32E-01	8.78E-03	5.39E-01
Naphthalene	--	--	3.19E-04	3.19E-02	5.27E-04	3.23E-02
Styrene	--	--	2.13E-04	2.13E-02	3.51E-04	2.15E-02
Toluene	--	--	5.32E-03	5.32E-01	8.78E-03	5.39E-01
m-Xylene	--	--	2.16E-03	2.16E-01	3.57E-03	2.19E-01
o-Xylene	--	--	1.21E-03	1.21E-01	1.99E-03	1.22E-01
p-Xylene	--	--	3.55E-04	3.55E-02	5.85E-04	3.59E-02

Note:

* indicates chemical species that do not have a cancer potency factor or a reference exposure level.

These emission values were input into HARP to determine cancer, chronic and acute health risk.

All Project options were included in a single HARP2 run, which results in a conservative risk assessment. These HRA results are presented below in Table 13 for residential receptors and Table 14 for worker receptors. As shown therein, the Project would not result in cancer and non-cancer health risk impacts.

Table 13 Maximum Residential Health Risk

	Risk Value	Units	Threshold	Exceed?	Receptor #	UTM X	UTM Y
Cancer Risk	0.13	per million	20	No	3685	746912.3	4035004
Chronic Risk	0.00003	unitless	1	No	3685	746912.3	4035004
Acute Risk	0.020	unitless	1	No	3698	747420	4038275

Table 14 Maximum Worker Health Risk

	Risk Value	Units	Threshold	Exceed?	Receptor #	UTM X	UTM Y
Cancer Risk	0.38	per million	20	No	4282	747354	4035878
Chronic Risk	0.001	unitless	1	No	4282	747354	4035878
Acute Risk	0.036	unitless	1	No	4281	747192.5	4035874

5 Conclusion

The Project would not cause or contribute to any exceedance of any AAQS or cause health risk impacts. The equipment would be installed with the corresponding BACT.

6 References

San Joaquin Valley Air Pollution Control District (SJVAPCD). March 2019. APR 1925 Policy for District Rule 2201 AAQA Modeling. Available here: https://www.valleyair.org/policies_per/Policies/APR-1925.pdf (accessed March 2024).

____. September 2022. Guidance for Air Dispersion Modeling. Available here: https://ww2.valleyair.org/media/zlbhrg22/modeling_guidance.pdf (accessed March 2024).

____. 2024a. Ambient Air Quality Standards & Attainment Status. Available here: https://ww2.valleyair.org/air-quality-information/ambient-air-quality-standards-valley-attainmnet-status/ (accessed March 2024)

____. 2024b. Current District Rules and Regulations. Available here: https://ww2.valleyair.org/rules-and-planning/current-district-rules-and-regulations/ (accessed March 2024).

____. 2024c. District BACT Clearinghouse. Chapter 3.0 Internal Combustion Engines. Available here: https://ww2.valleyair.org/media/brmofcan/chapter3.pdf (accessed March 2024).

South Coast Air Quality Management District (SCAQMD). October 2006. Final –Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds. Available at: https://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf (accessed March 2024)

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Appendix A

SJVAPCD Air Permitting Forms

San Joaquin Valley Air Pollution Control District

www.valleyair.org

Checklist for Permit Applications:

To avoid unnecessary delays, please review the following checklist before submitting your Authority to Construct/Permit to Operate Application.

Checklist for Complete Applications (include the following)	
☒	1. A signed Authority to Construct/Permit to Operate Application.
☒	2. Include a site map that identifies the location(s) where the new/modified unit(s) will operate and the approximate property lines. This is required for any proposal for new equipment, an increase in emissions from existing units, or change in location of emission points.
☒	3. Any applicable supplemental application forms. Supplemental application forms can be found here: http://www.valleyair.org/busind/pto/ptoforms/1ptoformidx.htm
☒	4. Equipment listing (including a list of electric motors with hp rating).
☒	5. Include a short project description, including a process flow schematic identifying emission points.
☒	6. Process parameters (describe throughput, operating schedule, fuel rate, raw material usage, etc.).
☒	7. Identify control equipment/technology.
☒	8. Any additional information required to calculate emissions.
☐	9. $87 filing fee for each permit unit. *Note: Permit application processing time will be billed at the applicable District hourly labor rate*

Detailed Authority to Construct (ATC) and Permit to Operate (PTO) Application Instructions can be found here:

PDF Format: http://www.valleyair.org/busind/pto/ptoforms/atcappinstruct.pdf
Word Format: http://www.valleyair.org/busind/pto/ptoforms/WordDocs/atcappinstruct.doc

Applications may be submitted either by mail or in person at any of the regional offices listed below. The District is pleased to provide businesses with assistance in all aspects of the permitting process. Any business is welcome to call the **Small Business Assistance (SBA) Hotline** or to visit the SBA Office located in each of the regional offices. No appointment is necessary. For more information, please call the SBA Hotline serving the county in which your business is located.

Northern Region Office
(Serving San Joaquin, Stanislaus, and Merced Counties):

4800 Enterprise Way
Modesto, California 95356-8718
(209) 557-6400
FAX: (209) 557-6475
SBA Hotline: (209) 557-6446

Central Region Office
(Serving Madera, Fresno, and Kings Counties):

1990 E Gettysburg Avenue
Fresno, California 93726-0244
(559) 230-5900
FAX: (559) 230-6061
SBA Hotline: (559) 230-5888

Southern Region Office
(Serving Tulare and Kern Counties):

34946 Flyover Court
Bakersfield, California 93308
(661) 392-5500
FAX: (661) 392-5585
SBA Hotline: (661) 392-5665

San Joaquin Valley Air Pollution Control District
Authority to Construct/Permit to Operate Application Form

www.valleyair.org

1. PERMIT TO BE ISSUED TO: IP Darden I, LLC and Affiliates

2. MAILING ADDRESS:
STREET or P O BOX: 9450 SW Gemini Drive PMB #68743
CITY: Beaverton STATE: OR ZIP CODE: 97008-7105

3. LOCATION WHERE THE EQUIPMENT WILL BE OPERATED: See Attachment
☐ *Check box if same as mailing address and skip to next section.*
STREET: _____ CITY: _____
If a physical address is not available:
ZIP CODE: 1/4 SECTION: TOWNSHIP: RANGE:

4. IS EQUIPMENT WITHIN 1,000 FT OF A SCHOOL?
☐ YES ☒ NO

5. GENERAL NATURE OF BUSINESS:
Solar Electricity Generation & Storage

6. S.I.C. CODE OF FACILITY:
491

7. TITLE V PERMIT HOLDERS ONLY: Do you request a COC (EPA Review) prior to receiving your ATC?
☐ YES *If yes, please complete and attach a Compliance Certification form (TVFORM-009)*
☐ NO

8. DESCRIPTION OF EQUIPMENT OR MODIFICATION FOR WHICH APPLICATION IS MADE:
(*Please include permit #s if known, a site map, a Supplemental Application Form if available, and use additional sheets if necessary*)

The project will install internal combustion engines for emergency uses, including 2 LPG-fired 150 kW PSI 8800CAC emergency generators, 2 diesel-fired 400 kW CAT C18 emergency fire pump engines, and 2 diesel-fired 600 kW CAT C18 emergency generators.

9. IS THE EQUIPMENT OR MODIFICATION ALREADY INSTALLED OR COMPLETED?
☐ YES *Please provide date of installation:* _____
☒ NO *Please provide expected date of installation or modification:* Jan 2028

10. DO YOU REQUEST A PERIOD TO REVIEW THE DRAFT AUTHORITY TO CONSTRUCT (ATC) PERMIT PRIOR TO ATC ISSUANCE?
Please note that requesting a review period will delay issuance of your final permit by a corresponding number of working days. See instructions for more information on this review
☐ 3-day review
☒ 10-day review
☐ No review requested

11. IS THIS APPLICATION FOR THE CONSTRUCTION OF A NEW FACILITY?
☒ YES *If "Yes", please complete the CEQA Information form:* https://ww2.valleyair.org/media/cc4pofrd/ceqa-supp-information-form.docx
☐ NO *If "No", is the proposed equipment or project allowed by either:*
- the Conditional Use Permit or other Land Use Permit? ☐ YES ☐ NO
- or by Right? ☐ YES ☐ NO

12. IS THIS APPLICATION SUBMITTED AS THE RESULT OF EITHER A NOTICE OF VIOLATION (NOV) OR A NOTICE TO COMPLY (NTC)? ☐ YES ☒ NO *If yes, NOV/NTC #:* _____

13. APPLICANT NAME: IP Darden I, LLC and Affiliates
TITLE: _____
SIGNATURE: _____ DATE: _____

14. APPLICANT CONTACT INFORMATION:
PHONE #: _____
CELL PHONE #: _____
E-MAIL: _____

15. ***Optional Section:*** *DO YOU WANT TO RECEIVE INFORMATION ABOUT EITHER OF THE FOLLOWING VOLUNTARY PROGRAMS?*
☐ *"**HEALTHY AIR LIVING (HAL)** BUSINESS PARTNER"* ☐ *"**INSPECT**"*

FOR APCD USE ONLY:

DATE STAMPS	FILING FEE RECEIVED:$	CHECK #:	DATE PAID:
	PROJECT #:	FACILITY ID #:	

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

This form must be accompanied by a completed Authority to Construct/Permit to Operate Application form

Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

Engine Manufacturer: PSI | Engine Tier Rating: n/a

Engine Model: PSI 8.8L T CAC | Engine Year of Manufacture: tbd

Engine Serial Number: tbd

EPA Certification Family Number: N P S I B 8 . **8** 0 E M T

Engine's Type of Combustion: ☐ Rich-Burn ☐ Lean-Burn ☐ 4-Stroke ☐ 2-Stroke

Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): _____ bhp

Engine's Rated Power Output for the Process the Engine Serves: 230.12 bhp

Process Data

Process the Engine Serves: Emergency Backup Power

Electrical Power Generation Only

Generator Manufacturer: Marathon | Model: 431CSL6208

Power Output: 150 kW

Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No

Fuel Data

Fuel Type: ☐ Diesel ☐ Natural Gas ☒ LPG/Propane ☐ Gasoline ☐ Other: _____

For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal,
For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu

Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)

Fuel Consumption at Maximum Rated Output: _____ gal/hr, or 695 scf/hr

Rule 4702 Type of Use

☒ **Emergency Standby** - Limited exclusively to power primary mechanical or an electrical generator during periods of unscheduled power outages beyond the control of the operator, and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a pump for a municipal water supply.
  - ☐ I request the higher opacity limit of 40% with the corresponding operational limits of 30 minutes per week and 2 hours per month for maintenance and testing. (CH&SC 41701.6)
  - ☐ I request the lower opacity limit of 20%.
- ☐ This engine is specifically used to provide power at a health care facility. (CH&SC 1250)
  - ☐ This engine is subject to Office of Statewide Health Planning and Development (OSHPD) requirements.

☐ **Special Case Emergency** - Limited exclusively to preserve or protect property, human life, or public health during a disaster or a state emergency (e.g. fire or flood) and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a direct-drive firewater pump.
  - ☐ This firewater pump engine is subject to National Fire Protection Association (NFPA) requirements.

☐ **Low Use** - Limited to ≤ 200 hr/yr of operation for **ALL** purposes combined, including maintenance and testing.

Hour Meter

Note: All engines are required to have either a nonresettable elapsed time meter or an alternate device, method, or technique, approved by the APCO, for determining elapsed operating time.

☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☐ Turbocharger	☐ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☒ Non-Selective Catalytic Reduction: Manufacturer: EMIT Model: RE-1450-T Control Efficiencies: NO_X 50+ %, SO_X _____ %, PM_{10} n/a %, CO 50+ %, VOC 30+ %	
	☐ Particulate Filter - Manufacturer: _____ Model: _____ Control Efficiency: _____ %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	< 1.00		
	Volatile Organic Compounds (VOC)	< 0.70		
	NO_x + NMHC			
	Particulate Matter (PM_{10})	n/a		
	Carbon Monoxide	< 2.00		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☐ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
	Direction to nearest Residence	_____	Direction from the stack to the receptor, i.e. Northeast or South.
	Distance to nearest Business	_____ feet	Distance measured from the proposed stack location to the nearest boundary of the nearest office building, factory, store, etc.
	Direction to nearest Business	_____	Direction from the stack to the receptor, i.e. North or Southwest.
Stack Parameters **Note: Stack parameters may be listed on the permit as enforceable permit conditions*	Release Height *(See Note*)*	_____ feet above grade	
	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

This form must be accompanied by a completed Authority to Construct/Permit to Operate Application form

Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

Engine Manufacturer: PSI | Engine Tier Rating: n/a

Engine Model: PSI 8.8L T CAC | Engine Year of Manufacture: tbd

Engine Serial Number: tbd

EPA Certification Family Number: N P S I B 8 . **8** 0 E M T

Engine's Type of Combustion: ☐ Rich-Burn ☐ Lean-Burn ☐ 4-Stroke ☐ 2-Stroke

Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): _____ bhp

Engine's Rated Power Output for the Process the Engine Serves: 230.12 bhp

Process Data

Process the Engine Serves: Emergency Backup Power

Electrical Power Generation Only

Generator Manufacturer: Marathon | Model: 431CSL6208

Power Output: 150 kW

Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No

Fuel Data

Fuel Type: ☐ Diesel ☐ Natural Gas ☒ LPG/Propane ☐ Gasoline ☐ Other: _____

For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal,
For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu

Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)

Fuel Consumption at Maximum Rated Output: _____ gal/hr, or 695 scf/hr

Rule 4702 Type of Use

☒ **Emergency Standby** - Limited exclusively to power primary mechanical or an electrical generator during periods of unscheduled power outages beyond the control of the operator, and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a pump for a municipal water supply.
  - ☐ I request the higher opacity limit of 40% with the corresponding operational limits of 30 minutes per week and 2 hours per month for maintenance and testing. (CH&SC 41701.6)
  - ☐ I request the lower opacity limit of 20%.
- ☐ This engine is specifically used to provide power at a health care facility. (CH&SC 1250)
  - ☐ This engine is subject to Office of Statewide Health Planning and Development (OSHPD) requirements.

☐ **Special Case Emergency** - Limited exclusively to preserve or protect property, human life, or public health during a disaster or a state emergency (e.g. fire or flood) and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a direct-drive firewater pump.
  - ☐ This firewater pump engine is subject to National Fire Protection Association (NFPA) requirements.

☐ **Low Use** - Limited to ≤ 200 hr/yr of operation for **ALL** purposes combined, including maintenance and testing.

Hour Meter

Note: All engines are required to have either a nonresettable elapsed time meter or an alternate device, method, or technique, approved by the APCO, for determining elapsed operating time.

☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☐ Turbocharger	☐ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☒ Non-Selective Catalytic Reduction: Manufacturer: EMIT Model: RE-1450-T Control Efficiencies: NO_X 50+ %, SO_X _____ %, PM_{10} n/a %, CO 50+ %, VOC 30+ %	
	☐ Particulate Filter - Manufacturer: _____ Model: _____ Control Efficiency: _____ %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	< 1.00		
	Volatile Organic Compounds (VOC)	< 0.70		
	NO_x + NMHC			
	Particulate Matter (PM_{10})	n/a		
	Carbon Monoxide	< 2.00		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☐ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
	Direction to nearest Residence	_____	Direction from the stack to the receptor, i.e. Northeast or South.
	Distance to nearest Business	_____ feet	Distance measured from the proposed stack location to the nearest boundary of the nearest office building, factory, store, etc.
	Direction to nearest Business	_____	Direction from the stack to the receptor, i.e. North or Southwest.
Stack Parameters **Note: Stack parameters may be listed on the permit as enforceable permit conditions*	Release Height *(See Note*)*	_____ feet above grade	
	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

This form must be accompanied by a completed Authority to Construct/Permit to Operate Application form

Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

Engine Manufacturer: CAT	Engine Tier Rating: 3
Engine Model: C18	Engine Year of Manufacture: tbd
Engine Serial Number: tbd	
EPA Certification Family Number: **Please refer to attached spec sheets.**	
Engine's Type of Combustion: ☐ Rich-Burn ☐ Lean-Burn ☐ 4-Stroke ☐ 2-Stroke	
Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): 600_____ bhp	
Engine's Rated Power Output for the Process the Engine Serves: 536_____ bhp	

Process Data

Process the Engine Serves: Fire Pump		
Electrical Power Generation Only	Generator Manufacturer:	Model:
	Power Output: _____ kW	
Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No		

Fuel Data

Fuel Type: ☒ Diesel ☐ Natural Gas ☐ LPG/Propane ☐ Gasoline ☐ Other: _____
For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal, For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu
Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)
Fuel Consumption at Maximum Rated Output: 30.6_____ gal/hr, or _____ scf/hr

Rule 4702 Type of Use

☐ **Emergency Standby** - Limited exclusively to power primary mechanical or an electrical generator during periods of unscheduled power outages beyond the control of the operator, and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a pump for a municipal water supply.
  - ☐ I request the higher opacity limit of 40% with the corresponding operational limits of 30 minutes per week and 2 hours per month for maintenance and testing. (CH&SC 41701.6)
  - ☐ I request the lower opacity limit of 20%.
- ☐ This engine is specifically used to provide power at a health care facility. (CH&SC 1250)
  - ☐ This engine is subject to Office of Statewide Health Planning and Development (OSHPD) requirements.

☒ **Special Case Emergency** - Limited exclusively to preserve or protect property, human life, or public health during a disaster or a state emergency (e.g. fire or flood) and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☒ This engine is specifically used to power a direct-drive firewater pump.
  - ☐ This firewater pump engine is subject to National Fire Protection Association (NFPA) requirements.

☐ **Low Use** - Limited to ≤ 200 hr/yr of operation for **ALL** purposes combined, including maintenance and testing.

Hour Meter

Note: All engines are required to have either a nonresettable elapsed time meter or an alternate device, method, or technique, approved by the APCO, for determining elapsed operating time.

☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☒ Turbocharger	☒ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☐ Non-Selective Catalytic Reduction: Manufacturer: _____ Model: _____ Control Efficiencies: NO_X %, SO_X _____ %, PM_{10} %, CO %, VOC %	
	☐ Particulate Filter - Manufacturer: _____ Model: _____ Control Efficiency: _____ %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	0.15		
	Volatile Organic Compounds (VOC)	2.85		
	NO_x + NMHC	3.0		
	Particulate Matter (PM_{10})	0.15		
	Carbon Monoxide	2.6		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☒ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
	Direction to nearest Residence	_____	Direction from the stack to the receptor, i.e. Northeast or South.
	Distance to nearest Business	_____ feet	Distance measured from the proposed stack location to the nearest boundary of the nearest office building, factory, store, etc.
	Direction to nearest Business	_____	Direction from the stack to the receptor, i.e. North or Southwest.
Stack Parameters **Note: Stack parameters may be listed on the permit as enforceable permit conditions*	Release Height *(See Note*)*	_____ feet above grade	
	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

This form must be accompanied by a completed Authority to Construct/Permit to Operate Application form

Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

Engine Manufacturer: CAT	Engine Tier Rating: 3
Engine Model: C18	Engine Year of Manufacture: tbd
Engine Serial Number: tbd	
EPA Certification Family Number: **Please refer to attached spec sheets.**	
Engine's Type of Combustion: ☐ Rich-Burn ☐ Lean-Burn ☐ 4-Stroke ☐ 2-Stroke	
Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): 600_____ bhp	
Engine's Rated Power Output for the Process the Engine Serves: 536_____ bhp	

Process Data

Process the Engine Serves: Fire Pump		
Electrical Power Generation Only	Generator Manufacturer:	Model:
	Power Output: _____ kW	
Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No		

Fuel Data

Fuel Type: ☒ Diesel ☐ Natural Gas ☐ LPG/Propane ☐ Gasoline ☐ Other: _____
For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal, For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu
Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)
Fuel Consumption at Maximum Rated Output: 30.6_____ gal/hr, or _____ scf/hr

Rule 4702 Type of Use

☐ **Emergency Standby** - Limited exclusively to power primary mechanical or an electrical generator during periods of unscheduled power outages beyond the control of the operator, and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a pump for a municipal water supply.
  - ☐ I request the higher opacity limit of 40% with the corresponding operational limits of 30 minutes per week and 2 hours per month for maintenance and testing. (CH&SC 41701.6)
  - ☐ I request the lower opacity limit of 20%.
- ☐ This engine is specifically used to provide power at a health care facility. (CH&SC 1250)
  - ☐ This engine is subject to Office of Statewide Health Planning and Development (OSHPD) requirements.

☒ **Special Case Emergency** - Limited exclusively to preserve or protect property, human life, or public health during a disaster or a state emergency (e.g. fire or flood) and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☒ This engine is specifically used to power a direct-drive firewater pump.
  - ☐ This firewater pump engine is subject to National Fire Protection Association (NFPA) requirements.

☐ **Low Use** - Limited to ≤ 200 hr/yr of operation for **ALL** purposes combined, including maintenance and testing.

Hour Meter

Note: All engines are required to have either a nonresettable elapsed time meter or an alternate device, method, or technique, approved by the APCO, for determining elapsed operating time.

☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☒ Turbocharger	☒ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☐ Non-Selective Catalytic Reduction: Manufacturer: _____ Model: _____ Control Efficiencies: NO_X %, SO_X _____ %, PM_{10} %, CO %, VOC %	
	☐ Particulate Filter - Manufacturer: _____ Model: _____ Control Efficiency: _____ %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	0.15		
	Volatile Organic Compounds (VOC)	2.85		
	NO_x + NMHC	3.0		
	Particulate Matter (PM_{10})	0.15		
	Carbon Monoxide	2.6		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☒ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
	Direction to nearest Residence	_____	Direction from the stack to the receptor, i.e. Northeast or South.
	Distance to nearest Business	_____ feet	Distance measured from the proposed stack location to the nearest boundary of the nearest office building, factory, store, etc.
	Direction to nearest Business	_____	Direction from the stack to the receptor, i.e. North or Southwest.
Stack Parameters **Note: Stack parameters may be listed on the permit as enforceable permit conditions*	Release Height *(See Note*)*	_____ feet above grade	
	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

This form must be accompanied by a completed Authority to Construct/Permit to Operate Application form

Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

Engine Manufacturer: CAT	Engine Tier Rating: 4
Engine Model: C18	Engine Year of Manufacture: tbdt
Engine Serial Number: tbd	
EPA Certification Family Number: **Please refer to attached spec sheets.**	
Engine's Type of Combustion: ☐ Rich-Burn ☐ Lean-Burn ☐ 4-Stroke ☐ 2-Stroke	
Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): 805_____ bhp	
Engine's Rated Power Output for the Process the Engine Serves: 805 bhp	

Process Data

Process the Engine Serves: Emergency Backup Power		
Electrical Power Generation Only	Generator Manufacturer: CAT	Model:
	Power Output: 600 kW	
Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No		

Fuel Data

Fuel Type: ☒ Diesel ☐ Natural Gas ☐ LPG/Propane ☐ Gasoline ☐ Other: _____

For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal,
For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu

Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)

Fuel Consumption at Maximum Rated Output: 42.7 gal/hr, or _____ scf/hr

Rule 4702 Type of Use

☒ **Emergency Standby** - Limited exclusively to power primary mechanical or an electrical generator during periods of unscheduled power outages beyond the control of the operator, and limited to 20 - 100 hr/yr (depending on the engine's PM_{10} emission factor) for maintenance and testing operation.

- ☐ This engine is specifically used to power a pump for a municipal water supply.
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  - ☐ I request the lower opacity limit of 20%.
- ☐ This engine is specifically used to provide power at a health care facility. (CH&SC 1250)
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- ☐ This engine is specifically used to power a direct-drive firewater pump.
  - ☐ This firewater pump engine is subject to National Fire Protection Association (NFPA) requirements.

☐ **Low Use** - Limited to ≤ 200 hr/yr of operation for **ALL** purposes combined, including maintenance and testing.

Hour Meter

Note: All engines are required to have either a nonresettable elapsed time meter or an alternate device, method, or technique, approved by the APCO, for determining elapsed operating time.

☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☒ Turbocharger	☒ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☒ Non-Selective Catalytic Reduction: Manufacturer: tbd Model: tbd Control Efficiencies: NO_X 89 %, SO_X _____ %, PM_{10} n/a %, CO n/a %, VOC 42 %	
	☒ Particulate Filter - Manufacturer: tbd Model: tbd Control Efficiency: 85 %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	4.56		
	Volatile Organic Compounds (VOC)	0.24		
	NO_x + NMHC	4.80		
	Particulate Matter (PM_{10})	0.022		
	Carbon Monoxide	2.6		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☒ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
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	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley Air Pollution Control District

Supplemental Application Form

Emergency/Low-Use IC Engines

Please complete one form for each engine.

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Permit to be issued to: IP Darden I, LLC and Affiliates
Location where the equipment will be operated: See Attachment
Installation date: tbd

EQUIPMENT DESCRIPTION

Engine Details

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Engine Model: C18	Engine Year of Manufacture: tbdt
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Maximum Intermittent Brake Horsepower Rating of the Engine (per the Engine Data Plate): 805_____ bhp	
Engine's Rated Power Output for the Process the Engine Serves: 805 bhp	

Process Data

Process the Engine Serves: Emergency Backup Power		
Electrical Power Generation Only	Generator Manufacturer: CAT	Model:
	Power Output: 600 kW	
Will this equipment be used in an electric utility rate reduction program? ☐ Yes ☒ No		

Fuel Data

Fuel Type: ☒ Diesel ☐ Natural Gas ☐ LPG/Propane ☐ Gasoline ☐ Other: _____

For "Other" fuels only: Higher Heating Value: _____ Btu/scf, or _____ Btu/gal,
For "Other" fuels only: An Ultimate Fuel Analysis or the combustion F-Factor _____dscf/MMBtu

Sulfur Content: _____ gr/100 scf (gaseous fuel) or _____ % by weight (liquid fuel)

Fuel Consumption at Maximum Rated Output: 42.7 gal/hr, or _____ scf/hr

Rule 4702 Type of Use

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Hour Meter

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☒ Equipped with a Nonresettable Elapsed Operating Time Meter

☐ Alternate Method (please provide details): _____

EMISSIONS CONTROL

Emissions Control Equipment (Check all that apply)	☐ Positive Crankcase Ventilation	☐ 90% Efficient crankcase emission control device
	☒ Turbocharger	☒ Intercooler/Aftercooler
	☐ Automatic Air/Fuel Ratio or O_2 Controller - Manufacturer: _____	
	☒ Non-Selective Catalytic Reduction: Manufacturer: tbd Model: tbd Control Efficiencies: NO_X 89 %, SO_X _____ %, PM_{10} n/a %, CO n/a %, VOC 42 %	
	☒ Particulate Filter - Manufacturer: tbd Model: tbd Control Efficiency: 85 %	
	☐ Other (please specify):	

EMISSIONS DATA

Note: See District BACT and District Rule 4702 requirements for applicability to proposed engine at http://www.valleyair.org/busind/pto/bact/chapter3.pdf and http://www.valleyair.org/rules/currntrules/r4702.pdf.

	Pollutant	(g/bhp-hr)	(g/kW-hr)	(ppmvd)
Emissions Data	Nitrogen Oxides (NO_x)	4.56		
	Volatile Organic Compounds (VOC)	0.24		
	NO_x + NMHC	4.80		
	Particulate Matter (PM_{10})	0.022		
	Carbon Monoxide	2.6		
	% O_2, dry basis, if corrected to other than 15%: _____ %			
Source of Data	☒ Manufacturer's Specifications ☐ Emissions Source Test ☒ CARB/EPA Certification ☐ Other _____ **Note: please provide copies of all sources of emissions data.**			

HEALTH RISK ASSESSMENT DATA

Operating Hours	Maximum Operating Schedule: _____ hours per day, and _____ hours per year		
Receptor Data	Distance to nearest Residence	_____ feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment house, dormitory, etc.
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	Stack Diameter *(See Note*)*	_____ inches at point of release	
	Rain Cap *(See Note*)*	☐ Flapper-type ☐ Fixed-type ☐ None ☐ Other: _____	
	Stack Orientation *(See Note*)*	☐ Vertical ☐ Horizontal ☐ Other: _____ ° from vert. or _____ ° from horiz.	
Exhaust Data	Flowrate: _____ acfm	Temperature: _____ °F	
Transportable	Is this engine transportable? ☐ Yes ☒ No		
Facility Location	☐ Urban (area of dense population) ☒ Rural (area of sparse population)		

Please refer to attached modeling reference files.

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

CEQA Supplemental Information Form

This form must be accompanied by a complete Authority to Construct/Permit to Operate Application form.

Facility Name: Darden Clean Energy Project			
Location where the equipment will be operated: See attachment			
	Check "Yes" or "No" as applicable.	**Yes**	**No**
1.	Has a public agency (e.g., City or County) prepared and certified an environmental review document (e.g., Negative Declaration, Mitigated Negative Declaration, Environmental Impact Report) under the California Environmental Quality Act (CEQA) that assesses the impacts of this project or another project of which it is part of or related to? *If "YES", please provide the following:* • A statement from the public agency confirming this project has undergone environmental review, • A copy of the certified environmental document (e.g. Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report), and • A copy of the public agency's signed Notice of Determination including proof of payment of Fish & Wildlife fees.	☐ **Skip to Line 4 below**	☒
2.	Is this project specifically exempted from CEQA by a public agency (e.g., City or County)? *If "YES", please provide the following:* • A statement from the public agency confirming this project is exempt from CEQA; and • A copy of the public agency's signed Notice of Exemption, if applicable.	☐ **Skip to Line 4 below**	☒
3.	Is a public agency in the process of preparing an environmental review document for this project? Please provide the following: • A statement from the public agency identifying whether or not this project is undergoing environmental review.	☒	☐
4.	Please submit this completed CEQA Supplemental Information Form and necessary additional documentation identified above to the District.		

Assessor's Parcel Numbers within the Project Site

Assessor's Parcel Numbers	Section(s)-Township-Range	County
Solar Facility, and Options 1 and 2 Step-up Substation and BESS		
040-070-31ST	S22 – 16S – 16E	Fresno County
040-070-32ST	S22 – 16S – 16E	Fresno County
040-110-15ST	S35 – 16S – 16E	Fresno County
040-110-16ST	S34 – 16S – 16E	Fresno County
040-110-20ST	S36 – 16S – 16E	Fresno County
040-110-21ST	S26 – 16S – 16E	Fresno County
040-110-23ST	S26 – 16S – 16E	Fresno County
040-110-25ST	S26 – 16S – 16E	Fresno County
040-110-27ST	S27 – 16S – 16E	Fresno County
040-110-28ST	S27 – 16S – 16E	Fresno County
040-110-29ST	S27 – 16S – 16E	Fresno County
040-110-30ST	S27 – 16S – 16E	Fresno County
040-110-31ST	S26 – 16S – 16E	Fresno County
040-110-32ST	S26 – 16S – 16E	Fresno County
040-110-34ST	S25 – 16S – 16E	Fresno County
050-020-47ST	S4 – 17S – 16E	Fresno County
050-030-04ST	S2 – 17S – 16E	Fresno County
050-030-05ST	S2 – 17S – 16E	Fresno County
050-030-07ST	S2 – 17S – 16E	Fresno County
050-030-08ST	S2 – 17S – 16E	Fresno County
050-030-10ST	S2 – 17S – 16E	Fresno County
050-030-21ST	S3 – 17S – 16E	Fresno County
050-030-24ST	S12 – 17S – 16E	Fresno County
050-030-25ST	S12 – 17S – 16E	Fresno County
050-030-26ST	S10 – 17S – 16E	Fresno County
050-030-27ST	S10 – 17S – 16E	Fresno County
050-030-29ST	S10 – 17S – 16E	Fresno County
050-030-30ST	S3 – 17S – 16E	Fresno County
050-030-31ST	S3 – 17S – 16E	Fresno County
050-030-32ST	S02, 03 – 17S – 16E	Fresno County
050-030-33ST	S3 – 17S – 16E	Fresno County
050-030-49ST	S10 – 17S – 16E	Fresno County
050-060-45ST	S21 – 17S – 16E	Fresno County
050-060-46ST	S16 – 17S – 16E	Fresno County
050-060-47ST	S16 – 17S – 16E	Fresno County
050-060-48ST	S16 – 17S – 16E	Fresno County
050-070-02T	S15 – 17S – 16E	Fresno County
050-070-41ST	S15 – 17S – 16E	Fresno County
050-070-42ST	S15 – 17S – 16E	Fresno County
050-070-43ST	S15 – 17S – 16E	Fresno County
050-070-64ST	S15 – 17S – 16E	Fresno County

050-080-01ST	S18 – 17S – 17E	Fresno County
Gen-tie Line Easement and Extension		
045-160-24S	S25 – 17S – 14E	Fresno County
045-160-23S	S25 – 17S – 14E	Fresno County
045-160-22S	S25 – 17S – 14E	Fresno County
045-171-01	S30 – 17S – 15E	Fresno County
045-080-47S	S19 – 17S – 15E	Fresno County
045-080-38S	S19 – 17S – 15E	Fresno County
045-080-17S	S20 – 17S – 15E	Fresno County
045-080-49S	S21 – 17S – 15E	Fresno County
045-080-09S	S16 – 17S – 15E	Fresno County
045-070-51S	S15 – 17S – 15E	Fresno County
045-070-49S	S15 – 17S – 15E	Fresno County
045-070-04	S14 – 17S – 15E	Fresno County
045-070-44S	S14 – 17S – 15E	Fresno County
045-070-45S	S14 – 17S – 15E	Fresno County
045-070-26ST	S13 – 17S – 15E	Fresno County
045-070-37S	S13 – 17S – 15E	Fresno County
045-070-35S	S13 – 17S – 15E	Fresno County
050-060-27S	S18 – 17S – 16E	Fresno County
050-060-38S	S17 – 17S – 16E	Fresno County
050-060-24S	S17 – 17S – 16E	Fresno County
050-060-48ST	S16 – 17S – 16E	Fresno County
050-060-20S	S16, 21 -17S – 16E	Fresno County
050-070-43ST	S15 – 17S – 16E	Fresno County
050-070-02T	S15 – 17S – 16E	Fresno County
050-070-42ST	S15 – 17S – 16E	Fresno County
050-030-27ST	S10 – 17S – 16E	Fresno County
050-030-26ST	S10 – 17S – 16E	Fresno County
050-030-21ST	S3 – 17S – 16E	Fresno County
Green Hydrogen Facility (Option 1 and Option 2)		
050-030-21ST	S3 – 17S – 16E	Fresno County
050-060-45ST	S21 – 17S – 16E	Fresno County
Green Hydrogen Facility (Alternate)		
045-160-18S	S25 – 17S – 14E	Fresno County
045-160-21S	S25 – 17S – 14E	Fresno County
045-160-22S	S25 – 17S – 14E	Fresno County
045-160-23S	S25 – 17S – 14E	Fresno County
Utility Switchyard		
045-160-24S	S25 – 17S – 14E	Fresno County

Appendix B

Emissions Calculations

Darden Clean Energy Project

Equipment Summary

Engine Information

Engine No.	Make / Model	Location	# of Units	Size (ekW)	Size (bhp)	Fuel	Reference File Name
1A	Power Solutions Int'l (PSI) 8800CAC (LPG) Emergency Generator Set	Step Up Substation Option 1	1	150	262	LPG	Oberon MTU GS150 submittal file Rev. 1.pdf
1B		Step Up Substation Option 2	1	150	262		
2		Step Down Substation	1	150	262		
3A	CAT C18 Fire Pump Engine	Option 1	2	400	536	Diesel	C18FP_EM0067 Perf Data.pdf
3B		Option 2	2	400	536		
3C		Option 3	2	400	536		
4A	CAT C18 Diesel Emergency Generator Set	Option 1	2	600	805	Diesel	600kw C18_LEHE1581-02.pdf
4B		Option 2	2	600	805		
4C		Option 3	2	600	805		

Notes: ekW = electrical kilowatts; bhp = brake horsepower; LPG = liquified petroleum gas

Emission Rates

				NOx Emission Factor (g/bhp-hr)		VOC Emission Factor (g/bhp-hr)		CO Emission Factor (g/bhp-hr)		SOx Emission Factor (g/bhp-hr)		PM Emission Factor (g/bhp-hr)		NH3	CO2	CH4	N2O
Engine No.	Emission Factors Source	Max Daily Hours	Max Annual Hours	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Controlled		g/bhp-hr	
1A, 1B, 2	Spec Sheets	1	100	n/a	1	n/a	0.7	n/a	2	n/a	n/a	n/a	n/a	n/a	*	*	*
3A, 3B, 3C	US EPA Tier 3	1	100	2.85	2.85	0.15	0.15	2.6	2.6	2.05E-03	2.05E-03	0.15	0.15	n/a	568	0.023	0.005
4A, 4B, 4C	US EPA Tier 2 / Tier 4	1	100	4.56	0.5	0.24	0.14	2.6	2.6	2.05E-03	2.05E-03	0.15	0.022	n/a	568	0.023	0.005

Notes: US EPA = United States Environmental Protection Agency; NOx = oxides of nitrogen; VOC = volatile organic compounds; CO = carbon monoxide; SOx = sulfur oxides; PM = particulate matter; NH3 = ammonia; CO2 = carbon dioxide; CH4 = methane; N2O = nitrous oxides; g/bhp-hr = grams per brake horsepower-hour

* The LPG engine has emission factors based on fuel flow rates as provided by the US EPA's 2023 Emission Factor for Greenhouse Gas Inventories. The engine fuel consumption at 100% rating is 695 ft3/hr (or 19.7 m3/hr).

Per Table A of Appendix A of SCAQMD's *Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Threshold* s, for Electric Generation, PM10 is 96% of Total PM and PM2.5 is 93.7% of Total PM. For the Fire Pump Engines, PM10 is 97.6% of Total PM and PM2.5 is 96.7% of Total PM

SOx Factors from AP-42 Table 3.3-1

Darden Clean Energy Project

Criteria Pollutant Emissions Summary

Emission Calculations, Hourly

Engine No.	Emission Factors Source	Max Daily Hours	Max Annual Hours	NOx lb/hr	VOC lb/hr	CO lb/hr	SOx lb/hr	PM lb/hr
1A	Spec sheets	1	100	0.578	0.404	1.155	0	0
1B	Spec sheets	1	100	0.578	0.404	1.155	0	0
2	Spec sheets	1	100	0.578	0.404	1.155	0	0
3A	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
3B	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
3C	US EPA Tier 3	1	100	6.741	0.355	6.149	0.005	0.355
4A	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078
4B	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078
4C	US EPA Tier 2 / Tier 4	1	100	5.375	0.585	9.224	2.311	0.078

Note: Assuming 0.25 hr uncontrolled and 0.75 hr controlled for Tier 4 equipment. Except for PM, assuming no startup time required and 100% emissions controlled through DPF.

Emission Calculations, Annual

Engine No.	Emission Factors Source	Max Daily Hours	Max Annual Hours	NOx lb/yr	VOC lb/yr	CO lb/yr	SOx lb/yr	PM lb/yr
1A	Spec sheets	1	100	57.8	40.4	115.5	0	0
1B	Spec sheets	1	100	57.8	40.4	115.5	0	0
2	Spec sheets	1	100	57.8	40.4	115.5	0	0
3A	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
3B	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
3C	US EPA Tier 3	1	100	674.1	35.5	614.9	0.5	35.5
4A	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
4B	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
4C	US EPA Tier 2 / Tier 4	1	100	207.0	35.9	627.2	56.2	7.8
		Total Emissions Per Project Option:		**996.6**	**152.2**	**1473.2**	**56.7**	**43.3**

Note: Assuming 12 startup events for T&M, the remaining 88 hours assumed controlled for the Tier 4 equipment.

Darden Clean Energy Project

Speciated Toxic Air Contaminant (TAC) Calculations

TAC Speciation Factors

Source	Emission Type	Fraction	Chemical
LPG Engines	**Exhaust VOC**	0.000357	1,3-Butadiene
		0.004466	Acetaldehyde
		0.001189	Acetylene
		0.004924	Acrolein
		0.05549	Ethane
		0.038902	Ethylene
		0.024523	Formaldehyde
		0.176432	Methane
		0.001402	N-Butane
		0.658555	Propane
		0.017313	Propylene
		0.016448	Unknown
Diesel Engines	**Exhaust PM**	1	Diesel PM
	Exhaust VOC	0.0019	1,3-Butadiene
		0.074	Acetaldehyde
		0.02	Benzene
		0.0031	Ethylbenzene
		0.15	Formaldehyde
		0.0016	n-Hexane
		3.00E-04	Methanol
		0.015	Methyl Ethyl Ketone
		9.00E-04	Naphthalene
		0.026	Propylene
		6.00E-04	Styrene
		0.015	Toluene
		6.10E-03	m-Xylene
		0.0034	o-Xylene
		1.00E-03	p-Xylene

Sources:

Diesel engine speciation factors were provided to Rincon by the CEC, which are based on CARB speciation factors.

LPG engine speciation factors were obtained from the US EPA Speciation Profiles and Toxic Emission Factors for Non-road Engines. EPA-420-R-15-019.

Notes:

LPG = liquified petroleum gas; VOC = volatile organic compounds; PM = particulate matter

TAC Emissions Calculation Summary

Engine #:	1,2		3		4		
Compound	lb/day	lb/yr	lb/day	lb/yr	lb/day	lb/yr	
DieselExhPM	0.00E+00	0.00E+00	3.46E-01	3.46E+01	7.49E-02	7.49E+00	
1,3-Butadiene	1.44E-04	1.44E-02	6.74E-04	6.74E-02	1.11E-03	6.82E-02	
Acetaldehyde	1.81E-03	1.81E-01	2.63E-02	2.63E+00	4.33E-02	2.66E+00	
Acetylene	4.81E-04	4.81E-02	--	--	--	--	*
Acrolein	1.99E-03	1.99E-01	--	--	--	--	
Ethane	2.24E-02	2.24E+00	--	--	--	--	*
Ethylene	1.57E-02	1.57E+00	--	--	--	--	*
Formaldehyde	9.92E-03	9.92E-01	5.32E-02	5.32E+00	8.78E-02	5.39E+00	
Methane	7.13E-02	7.13E+00	--	--	--	--	
N-Butane	5.67E-04	5.67E-02	--	--	--	--	*
Propane	2.66E-01	2.66E+01	--	--	--	--	*
Propylene	7.00E-03	7.00E-01	9.22E-03	9.22E-01	1.52E-02	9.33E-01	
Unknown	6.65E-03	6.65E-01	--	--	--	--	*
Benzene	--	--	7.10E-03	7.10E-01	1.17E-02	7.18E-01	
Ethylbenzene	--	--	1.10E-03	1.10E-01	1.81E-03	1.11E-01	
n-Hexane	--	--	5.68E-04	5.68E-02	9.37E-04	5.74E-02	
Methanol	--	--	1.06E-04	1.06E-02	1.76E-04	1.08E-02	
Methyl Ethyl Ketone	--	--	5.32E-03	5.32E-01	8.78E-03	5.39E-01	
Naphthalene	--	--	3.19E-04	3.19E-02	5.27E-04	3.23E-02	
Styrene	--	--	2.13E-04	2.13E-02	3.51E-04	2.15E-02	
Toluene	--	--	5.32E-03	5.32E-01	8.78E-03	5.39E-01	
m-Xylene	--	--	2.16E-03	2.16E-01	3.57E-03	2.19E-01	
o-Xylene	--	--	1.21E-03	1.21E-01	1.99E-03	1.22E-01	
p-Xylene	--	--	3.55E-04	3.55E-02	5.85E-04	3.59E-02	

Note: * indicates chemical species that do not have a cancer potency factor or a reference exposure level.

These emission values were input into HARP to determine cancer, chronic and acute health risk.

Appendix C

Ambient Air Quality Analysis Summary

Darden Clean Energy Project

AERMOD Unitized Outputs

AERMOD Unitized Outputs

			H1H			H2H			H4H	H6H	H8H
Engine No.	Model Source Group	Annual (ug/m3)	1-Hr (ug/m3)	8-Hr (ug/m3)	24-Hr (ug/m3)	1-Hr (ug/m3)	3-Hr (ug/m3)	8-Hr (ug/m3)	1-Hr (ug/m3)	24-Hr (ug/m3)	24-Hr (ug/m3)
1A	1A_LPG	18.02625	112.55497	86.36024	50.31153	109.65669	105.33497	82.948	109.44786	45.16411	42.78806
1B	1B_LPG	3.51009	157.44721	131.28687	62.99968	155.38786	141.68557	122.54952	154.95697	55.28396	50.90834
2	2_LPG	8.89647	150.53662	118.6971	60.74479	149.36814	123.71599	98.70178	144.41023	50.82497	50.03529
3A	3A_FIRE	1.16466	35.93321	16.90934	6.34583	35.82206	24.79946	15.80507	33.58211	4.48461	4.27243
3B	3B_FIRE	10.37307	71.53676	50.2601	32.87553	70.24235	63.92992	49.17627	69.82051	30.26794	29.286
3C	3C_FIRE	7.39949	62.1011	40.55469	22.06612	55.59765	52.72234	36.3486	55.50095	20.58288	20.40451
4A	4A_EMER	1.0825	30.3708	11.44285	4.57366	26.37041	17.24129	11.19564	25.16424	3.52654	3.3891
4B	4B_EMER	8.539	57.61656	41.69033	25.50555	56.07664	52.53164	39.22341	55.06311	23.81824	22.76236
4C	4C_EMER	6.00144	45.78913	30.88841	18.41104	45.7343	43.82566	30.86374	45.69175	16.41991	16.18124

Note: ug/m3 = micrograms per meter cubed; H1H = high first high; H2H = high second high; H4H = high fourth high; H6H = high sixth high; H8H = high eighth high

The unitized rates for the time period and output rank is designed to match the standards for the NAAQS & CAAQS.

Did not use unitized H8H for 1-Hr NOx; actual emissions input into model.

Darden Clean Energy Project

AAQS Results Summary

AERMOD NOx Outputs

		NAAQS		CAAQS	
Engine No.	Model Source Group	Annual (ug/m3)	1-Hr (ug/m3)	Annual (ug/m3)	1-Hr (ug/m3)
1A	1A_LPG	1.2	7.2	1.2	7.4
1B	1B_LPG	0.2	10.0	0.2	10.3
2	2_LPG	0.6	9.0	0.6	9.9
3A	3A_FIRE	0.9	22.2	0.9	27.5
3B	3B_FIRE	7.9	49.7	7.9	54.7
3C	3C_FIRE	5.7	42.4	5.7	47.5
4A	4A_EMER	0.7	13.9	0.7	18.5
4B	4B_EMER	5.2	32.4	5.2	35.1
4C	4C_EMER	3.7	27.6	3.7	27.9
Background Concentration (ug/m3):		34.8	123.4	34.8	123.4
Maximum Impacts (ug/m3):		42.8	173.0	42.8	178.0
Standard (ug/m3):		100	188	57	339
Exceed?		No	No	No	No

AERMOD CO Results Calculations

		NAAQS		CAAQS	
Engine No.	Model Source Group	1-Hr (ug/m3)	8-Hr (ug/m3)	1-Hr (ug/m3)	8-Hr (ug/m3)
1A	1A_LPG	16.0	12.1	16.4	12.6
1B	1B_LPG	22.6	17.8	22.9	19.1
2	2_LPG	21.7	14.4	21.9	17.3
3A	3A_FIRE	27.8	12.2	27.8	13.1
3B	3B_FIRE	54.4	38.1	55.4	38.9
3C	3C_FIRE	43.1	28.2	48.1	31.4
4A	4A_EMER	30.6	13.0	35.3	13.3
4B	4B_EMER	65.2	45.6	67.0	48.5
4C	4C_EMER	53.2	35.9	53.2	35.9
Background Concentration (ug/m3):		3,987	2,864	3,987	2,864
Maximum Impacts (ug/m3):		4087	3052	4054	3203
Standard (ug/m3):		40,000	10,000	23,000	10,000
Exceed?		No	No	No	No

Note: Max impacts for 8-Hour calculations conservatively based on combining all equipment potentially operating in a single day (including duplicates for the project options).

AERMOD SOx Results Calculations

Engine No.	Model Source Group	NAAQS 1-Hr (ug/m3)	CAAQS 1-Hr (ug/m3)	CAAQS 24-Hr (ug/m3)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.02	0.02	0.00
3B	3B_FIRE	0.04	0.04	0.02
3C	3C_FIRE	0.03	0.04	0.01
4A	4A_EMER	7.3	8.8	1.3
4B	4B_EMER	16.0	16.8	7.4
4C	4C_EMER	13.3	13.3	5.4
	Background Concentration (ug/m3):	42	42	42
	Maximum Impacts (ug/m3):	58	59	50
	Standard (ug/m3):	196	655	105
	Exceed?	No	No	No

AERMOD PM10 Results Calculations

Engine No.	Model Source Group	NAAQS 24-Hr (ug/m3)	CAAQS Annual (ug/m3)	CAAQS 24-Hr (ug/m3)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.20	0.0006	0.28
3B	3B_FIRE	1.32	0.0052	1.43
3C	3C_FIRE	0.90	0.0037	0.96
4A	4A_EMER	0.03	0.0001	0.04
4B	4B_EMER	0.22	0.0009	0.24
4C	4C_EMER	0.16	0.0006	0.17
	Background Concentration (ug/m3):		*Exceeds Standard*	
	Maximum Impacts (ug/m3):	1.32	0.006	1.68
	Standard (ug/m3):	150	20	50
	Exceed?	n/a	n/a	n/a
	SJVAPCD SIL (ug/m3):	n/a	1	5
	Exceed?	n/a	No	No

Max impacts for 24-Hour and annual calculations based on combining all equipment from each option. Maximum impacts at fenceline areas are below the SIL; however, a member of the public would not be at one of these receptors for a 24-hour period.

AERMOD PM2.5 Results Calculations

Engine No.	Model Source Group	NAAQS Annual (ug/m3)	NAAQS 24-Hr (ug/m3)	CAAQS Annual (ug/m3)
1A	1A_LPG	0	0	0
1B	1B_LPG	0	0	0
2	2_LPG	0	0	0
3A	3A_FIRE	0.0006	0.274	0.0006
3B	3B_FIRE*	0.0051	0.184	0.0051
3C	3C_FIRE*	0.0037	0.028	0.0037
4A	4A_EMER	0.0001	0.042	0.0001
4B	4B_EMER	0.0009	0.235	0.0009
4C	4C_EMER	0.0006	0.170	0.0006
Background Concentration (ug/m3):			*Exceeds Standard*	
Maximum Impacts (ug/m3):		0.005	0.42	0.006
Standard (ug/m3):		12	12	35
Standard** (ug/m3):		9	n/a	n/a
Exceed?		n/a	n/a	n/a
SJVAPCD SIL (ug/m3):		n/a	1.2	0.2
Exceed?		n/a	No	No

Used the H1H for PM2.5 24-hour calculations to demonstrate compliance with the SJVAPCD SIL.

Max impacts for 24-Hour and annual calculations based on combining all equipment from each option. Maximum impacts at fenceline areas below the SIL, even though a member of the public would not be at one of these receptors for a 24-hour period.

*However, the fire pump engine for Option B and C exceeds at the fenceline for the 24-hour averaging period. Therefore, a refinement was implemented to review the nearby sensitive receptors (similar to the HRA) to find a location where a member of the public could be exposed for 24 hours.

**The PM2.5 24-hour standard was revised on February 7, 2024. It goes into effect 60 days from this date.

Appendix D

Health Risk Assessment Summary

Darden Clean Energy Project

Health Risk Assessment Summary

Maximum Residential Health Risk

	Risk Value	Units	Threshold	Exceed?	Receptor #	UTM X	UTM Y
Cancer Risk	0.13	per million	20	No	3685	746912.3	4035004
Chronic Risk	0.00003	unitless	1	No	3685	746912.3	4035004
Acute Risk	0.020	unitless	1	No	3698	747420	4038275

Maximum Worker Health Risk

	Risk Value	Units	Threshold	Exceed?	Receptor #	UTM X	UTM Y
Cancer Risk	0.38	per million	20	No	4282	747354	4035878
Chronic Risk	0.001	unitless	1	No	4282	747354	4035878
Acute Risk	0.036	unitless	1	No	4281	747192.5	4035874

Ref: SJVAPCD APR 1906.

Appendix E

Manufacturer Specifications and Additional Reference Documents

BERON SOLAR SUBSTATION
MTU LP GENER TOR
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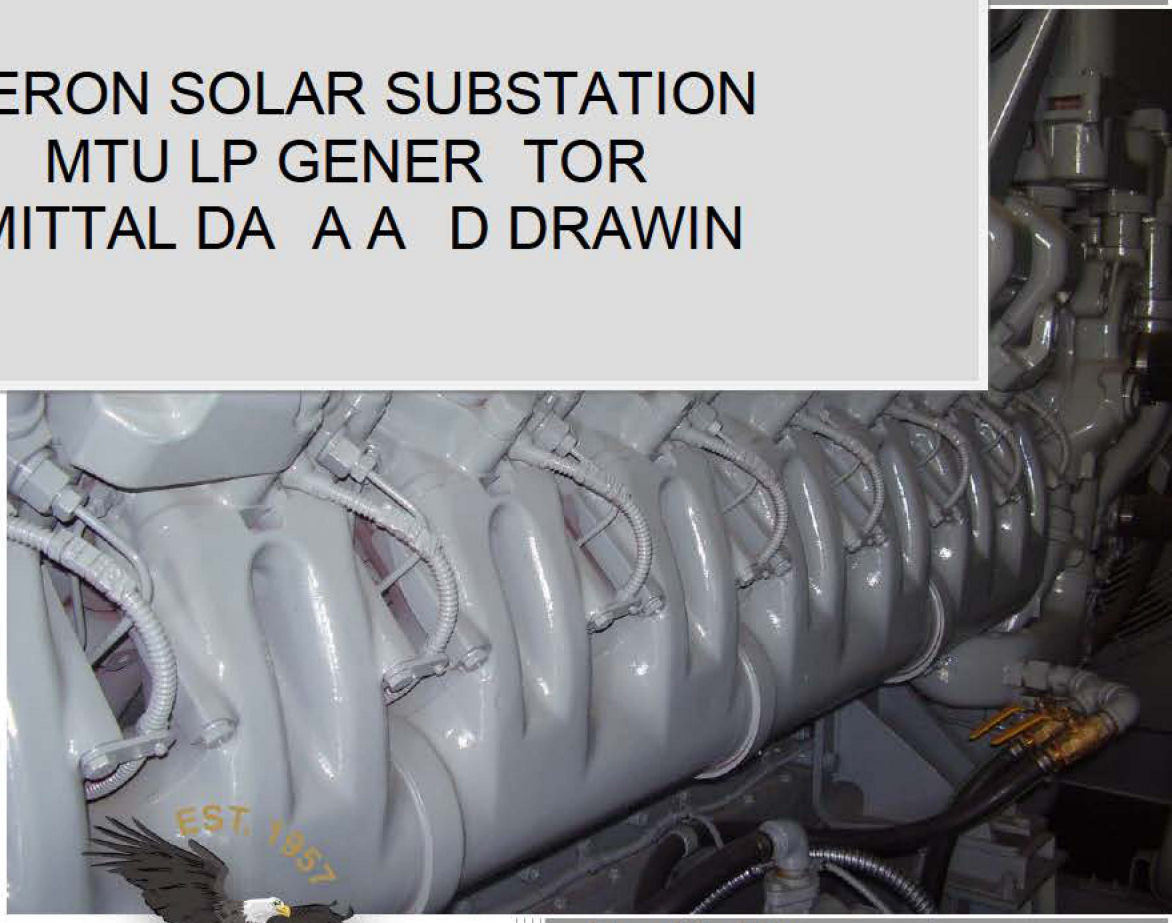


INTERSTATE
Pride in Service

Provided by:

Interstate Power Systems

12568 Highview Avenue

Lakeville, MN 55044

Power Generation

PERFORMANCE ASSURANCE CERTIFICATION

A Rolls-Royce solution

TESTING PROCEDURES

Prototype

We have been producing superior generator sets for more than six decades. Understanding the importance of reliable, cost-effective products, we have developed industry-leading test procedures to ensure we exceed this criteria. Our testing program confirms that our customers will receive products of the highest quality.

Our Performance Assurance Certification (PAC) certifies that every MTU generator set undergoes rigorous prototype testing including the following:

Prototype Test Procedures

- **Rated Load (NFPA 110)**
  All generator set models will produce the nameplate-rated load within the design tolerance of the generator set.
- **Extended-run Testing**
  All generator set prototypes have been subjected to extended run-time testing.
- **Transient Response Analysis (ISO 8528-5)**
  All new generator set models have undergone transient response analysis per ISO 8528-5.
- **Torsional Analysis**
  All generator set models have undergone torsional stress analysis.
- **Engine Cooling System**
  All generator set models will cool sufficiently within the ambient design conditions per each model.
- **Anticipatory Alarms and Shutdowns**
  The pre-alarms and alarms function appropriately to protect the generator set from any foreseen unnecessary failures.
- **Vibrational Analysis (ISO 8528-9)**
  All new generator set models have undergone vibration analysis to ensure that each engine-generator coupling is balanced and that there is no destructive resonant vibration.
- **Noise Analysis (ISO 8528-10)**
  All generator sets undergo airborne noise analysis using the enveloping surface method.

Prototype Test Standards

MTU generator sets are compliant with many different codes and standards. Our validation philosophy and performance are regularly reviewed to ensure continuity with these codes and standards: *UL2200, CSA, EPA, NFPA 99—Health Care Facilities, NFPA 70—National Electrical Code, NFPA 110—Standard for Emergency and Standby Power Systems, Department of Labor and Industry, NEMA MG 1—Motors and Generators, and MIL-STD-705-c.*

Factory Acceptance

Our factory testing is performed with the same extreme diligence and attention to detail that is given to the prototype testing process. Every MTU generator set receives a complete factory acceptance test that certifies and ensures the system will function in accordance to every specific application.

Test metering has an accuracy of 1.3% or better. This metering is calibrated a minimum of once per year and is directly traceable to the Bureau of Standards.

Factory acceptance testing procedures

- **Insulation Resistance Inspection** (301.1c)*
- **High Potential Test** (302.1b)*
- **Alternator Overspeed** (1 min.)*
- **Engine Inspection**
- **Generator Inspection**
- **Resistances Inspection** (401.1b)
  - Exciter Field Stator
  - Alternator Armatures
- **Mounting and Coupling Inspection**
- **Engine Fuel Oil System Inspection**
- **Engine Lube Oil System Inspection**
- **Engine Cooling System Inspection**
- **DC Charging System Inspection**
- **Circuit Breaker Inspection**
- **Anticipatory Alarms and Shutdowns Inspection** (505.2b, 515.1b, 515.2b)
- **Optional Equipment Inspection** (513.2a)
- **Load Test Inspection**
  - Full Nameplate-Rated Load
  - No-Load Inspection
  - MAX Load @ 1.0 P.F. (640.1d)
  - MAX Load @ 0.8 P.F.
  - Block Loads @ 0–25%, 0–50%, 0–75%, 0–100%
- **Phase Balance and Sequence Inspection** (507.1d, 508.1d, 516.1a)

** Performed by Alternator OEM*

OPTIONAL TESTING

Factory Acceptance

Extended-run factory acceptance testing

In some cases, extended-run testing may be requested. Unless specified otherwise, extended-run testing will be performed in the following manner:

- Full nameplate-rated load
- Standard readings taken every 15 or 30 minutes

Standard readings recorded during load test inspection

- Run Time
- AC Voltage
- AC Amperage
- kVA
- kWe
- Power Factor
- Frequency
- Exciter Field Voltage
- Exciter Field Current
- Lube Oil Pressure
- Engine Coolant Temperature
- Ambient Temperature

Witnessed factory acceptance testing

Witnessed factory tests must be scheduled and approved at least four weeks prior to the generator set's scheduled shipping date. Any requests for witnessed factory testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

Witnessed extended-run factory acceptance testing

Witnessed extended-run tests must be scheduled and approved at least four weeks prior to the generator set's scheduled ship date. Any requests for witnessed extended-run testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

Additional factory acceptance testing

Additional testing is available upon request. The following is a list of supplementary tests which can be performed on MTU generator sets. Non-standard testing is subject to additional charges.

Additional testing procedures

- **Start and Stop Test** (MIL-STD-705c 503.1c)
- **Remote Start and Stop Test** (MIL-STD-705c 503.2c)
- **Overspeed Protective Device Test** (MIL-STD-705c 505.2b)
- **Insulation Resistance Test** (MIL-STD-705c 301.1c)*
- **Open Circuit Saturation Curve Test** (MIL-STD-705c 410.1b)
- **Temperature Rise Test** (MIL-STD-705c 680.1c)
- **Frequency Range Adjust Test** (MIL-STD-705c 511.2c)
- **Low Oil Pressure Protective Device Test** (MIL-STD-705c 515.1b)
- **Over-temperature Protective Device Test** (MIL-STD-705c 515.2b)
- **Controls, Direction, and Rotation Test** (MIL-STD-705c 516.1a)
- **Frequency and Voltage Regulation, Stability, and Transient Response** (MIL-STD-705c 608.1b)
- **Voltage and Frequency Regulation** (MIL-STD-705c 614.1b)
- **Voltage Dip and Rise for Rated Load Test** (MIL-STD-705c 619.2c)
- **Regulator Range Test** (511.1d)
- **Maximum Power Test** (MIL-STD-705c 640.1d)
- **Fuel Consumption Test**
- **Vibration and Mechanical Balance Test** (ISO 8528-9)
- **Sound Test** (ISO 8528-10)

** Testing conducted by generator OEM*

Subject to change | Edition 07/20 | ENC 2080-02

Rolls-Royce Group
www.mtu-solutions.com

CERTIFICATE OF COMPLIANCE

Certificate Number	AU3559
Report Reference	AU3559-20110603
Issue Date	2020-JULY-13
Issued to:	MTU America Inc 100 Power Dr Mankato MN 56001-4790
This certificate confirms that representative samples of	ENGINE GENERATORS See Addendum Page
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 2200, Stationary Engine Generator Assemblies
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	AU3559
Report Reference	AU3559-20110603
Issue Date	2020-JULY-13

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Stationary engine generator assemblies for outdoor use and indoor use, Models:

Model Series G, followed by S or P, may be followed by two zeroes, followed by 130, 150, 175, 200, 235, 260, 300, 350, 355 or 400, followed by N, L, or V, followed by 6, followed by C or S, followed by R, P, J, N, G or D, followed by A, followed by S, followed by 0, followed by 98, followed by 3 or 4. May have additional prefix or suffix letters or numbers.

Models G, followed by G, followed by 06, 08, 10, or 12, followed by R or V, followed by K, followed by a three digit number. May have additional prefix or suffix letters or numbers.

Models 6, 8, 10, or 12, followed by R or V, followed by a four digit number, followed by G, followed by S, followed by a number ranging from 150 to 650. May have additional prefix or suffix letters or numbers.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Prototype Test Summary (PTS)

A Rolls-Royce solution

Prototype testing is administered to validate the electrical and mechanical design integrity of the generator set. The results indicated below summarize testing performed on the prototype of the specified generator set model. This form of testing is only conducted on standard factory prototype generator sets. *Results may vary.*

GENERATOR SET MODEL(S):	***mtu*** 8V0110 GS150

Rep. Prototype Model:	***mtu*** 8V0110 GS150	**Test Date:**	10/20/2020
kW:	150	**kVA:**	240
Voltage:	240	**Hz:**	60

ENGINE/GENERATOR

Engine Manufacturer:	PSI	**Engine Model:**	PSI 8.8L T CAC
Engine Fuel:	Natural Gas		
Generator Manufacturer:	Marathon	**Generator Model:**	431CSL6208
Voltage Regulator Model:	SE350	**PMG Equipped:**	☐ Yes ☒ No

OPTIONS

Enclosure Level:	Level 3	**Silencer:**	Unit Mounted – L3 system
Air Filtration:	Standard		

TEST SUMMARY

TEST	TEST RESULT
Transient Performance *Certifies that the engine generator-set model has undergone transient response analysis per ISO 8528-5*	**NFPA-110 One Step:** ☒ 100% ☐ Other. Specify: ____ % **Full Load Acceptance:** Voltage Dip: 42.1 % Recovery Time: 3.37 seconds Frequency Dip: 14.4 % Recovery Time: 3.69 seconds
Steady State Performance *Certifies that voltage deviation and harmonics are within acceptance tolerance range per ISO-8528-5 at full load*	**Frequency Regulation:** 0.22 +/- % Regulation Overall 60.27 Maximum Hz 60.01 Minimum Hz **Voltage Regulation:** 0.26 +/- % Regulation Overall 242.7 Maximum AC Volts 241.5 Minimum AC Volts
Torsional Analysis *Certifies that the generator set has undergone torsional stress analysis and is not subjected to torsional stresses that could be harmful to the unit*	☒ Complete
Cooling System *Certifies that all generator set models will cool sufficiently within the ambient design conditions per each model at referenced enclosure level*	48 °C (118.4 °F) Maximum Ambient Temperature 191 m^3/min (6.738 SCFM) Radiator Air Flow
Sound Data *Certifies that sound data is within the acceptable tolerance range per ISO 8528-10 at referenced enclosure level*	74.5 dBA @ 7 m (23 ft) at full rated load *The sound value is representative of the specified prototype at the time of testing and is subject to alteration due to technological advances. Please contact your **mtu** representative for the most recent enclosure and sound data.*
Vibrational Analysis *Certifies that new generator set models have undergone vibration analysis to ensure that each generator coupling is balanced and there is no destructive resonant vibration per ISO 8528-9*	☒ Complete

Subject to change. 2021-10

ROLLS-ROYCE SOLUTIONS AMERICA INC.

Two (2) Year / 3,000 Hour Basic Limited Warranty
Standby (3D) / Prime (3B) / Data Center Continuous Power (3F)

Rolls-Royce Solutions America Inc. ("RRSA") issues the following express Limited Warranty subject to the following terms, conditions, and limitations:

An original consumer ("Owner") who purchases an RRSA engine generator set ("Product") is entitled to coverage under this Limited Warranty. RRSA warrants to the Owner that the Product is free of defects in material and workmanship and will perform under normal use and service from valid start-up performed by RRSA. Any nonconformity to the foregoing is defined as a Warrantable Defect. This Limited Warranty applies to Product shipped by RRSA after January 1, 2014.

1. Disclaimers

LIMITATION OF WARRANTIES: THIS LIMITED WARRANTY IS GIVEN EXPRESSLY AND IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, FREEDOM FROM INFRINGEMENT OR THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, OR ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, REPRESENTATIONS, OR WARRANTIES NOT SPECIFIED HEREIN.

THIS LIMITED WARRANTY, THE OBLIGATIONS OF RRSA AND THE RIGHTS AND REMEDIES OF THE OWNER SET FORTH IN THIS LIMITED WARRANTY ARE EXCLUSIVE AND ARE EXPRESSLY IN LIEU OF, AND THE OWNER HEREBY WAIVES AND RELEASES ALL OTHER OBLIGATIONS, WARRANTIES (INCLUDING WARRANTY AGAINST REDHIBITORY DEFECTS), REPRESENTATIONS OR LIABILITIES, EXPRESS OR IMPLIED, ARISING BY LAW IN CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, INCLUDING BUT NOT LIMITED TO ANY CLAIMS ARISING OUT OF, CONNECTED WITH OR RESULTING FROM THE PERFORMANCE OF THIS LIMITED WARRANTY OR FROM THE DESIGN, MANUFACTURE, SALE, REPAIR, LEASE OR USE OF THE PRODUCT, ANY COMPONENT THEREOF AND SERVICES DELIVERED OR RENDERED HEREUNDER OR OTHERWISE.

IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY, ALLEGED NEGLIGENCE, OR OTHERWISE, SHALL RRSA BE SUBJECT TO LIABILITY FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING WITHOUT LIMITATION, DAMAGE TO THE PRODUCT, OR OTHER PROPERTY, COMMERCIAL LOSSES, LOST PROFITS, LOSS OF USE, INCONVENIENCE, LOSS OF TIME, COST OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, DOWNTIME, OR CLAIMS OF CUSTOMERS.

RRSA'S AGGREGATE TOTAL LIABILITY RELATING TO THE SYSTEM AND/OR PRODUCT UNDER THIS LIMITED WARRANTY OR UNDER ANY OTHER CLAIM (IN CONTRACT, TORT, OR OTHERWISE) MADE IN CONNECTION WITH THE SALE OR USAGE OF THE SYSTEM AND/OR PRODUCT IS LIMITED TO THE DOLLAR AMOUNT OF THE OWNER'S ORIGINAL PAYMENT MADE FOR THE SYSTEM AND/OR PRODUCT.

2. Limited Warranty Periods

Limited Warranty Period. The Limited Warranty Period for a Warrantable Defect in the Product is twenty-four (24) months after the first commissioning of the Product. In all cases, the Limited Warranty period will expire not later than thirty-six (36) months from the date of shipment from the RRSA Mankato, MN facility or after 3,000 operation hours, whichever occurs first.

Accessories Coverage Period. The Accessories Coverage Period for a Warrantable Defect in cords, receptacles, cord reels, gas flex pipes, housing lights, space heaters, and associated equipment ("Accessories") is twelve (12) months from the date of shipment from RRSA Mankato, MN facility.

RRSA warranty obligations under this Limited Warranty are contingent upon distributor completing the following:

(a) The RRSA warranty and the *Start-Up Validation and Pre-Inspection Form*. Return both to RRSA within sixty (60) days of the start-up date; and
(b) The engine registration form (when applicable). Return to the manufacturer as stated in the engine registration form instructions.

3. RRSA Responsibilities

If a Warrantable Defect is found during the Limited Warranty Period and/or the Accessories Coverage Period, and provided the Owner has complied with its obligations under Section 4, RRSA will, during normal working hours, through an RRSA authorized distributor, dealer, or service outlet, perform some or all of the following:

(a) Repair or replace, at the sole election of RRSA, the defective part with a new or remanufactured replacement part;
(b) Provide reasonable or customary labor needed to correct the Warrantable Defect;
(c) Provide technician travel time of 400 miles to and from the closest RRSA authorized distributor, dealer, or service outlet to the Product location;
(d) Part removal and re-installation, if necessary and as solely determined by RRSA.

The obligation to repair or replace defective parts by RRSA does not include responsibility for reimbursement of incidental or consequential costs. If RRSA repairs or replaces an Accessory, part, or Product under this Limited Warranty, the repaired or replaced Accessory, part, or Product assumes the unexpired portion of the warranty period remaining from the original Accessory, part, or Product. Repair or replacement of an Accessory, part, or Product will not extend the term of the original Limited Warranty Period or Accessories Coverage Period. Parts or Product replaced shall become the property of RRSA.

Failure of RRSA to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.

4. Owner Responsibilities

During the Limited Warranty Period and Accessories Coverage Period, the Owner is responsible for, and RRSA will not reimburse for the following:

(a) Battery;
(b) Premium or overtime labor costs;
(c) Labor and material costs for Product removal and reinstallation;
(d) Any special access fees required to gain access to RRSA equipment, without limitation, training or safety policy requirement to gain access;
(e) Transportation costs or travel expenses related to delivery of the Product to the designated distributor, dealer, or service outlet;
(f) Incidental and consequential costs, damages, or administrative expenses of whatever nature;
(g) Non-Product repairs, vehicle damage, “downtime” expenses, cargo damage, fines, lost income, any business costs of any kind, Owner’s travel expenses, and other losses resulting from a Warrantable Defect;
(h) Shipping charges for replacement parts/Products in excess of those which are usual and customary; or
(i) Local taxes, if applicable.

In addition, Owner must:

(a) Operate, use, and maintain the Product in accordance with the applicable Owner’s manual and/or any other manuals specified by RRSA, including without limitation handling, inspection, servicing, or operating instructions;

(b) Promptly notify RRSA or its authorized representative of a Warrantable Defect and make the Product available for repair;
(c) Comply with RRSA or its authorized representative's reasonable directions regarding the timing, sequence, and location of warranty repairs and make the Product available for inspection;
(d) Perform all required maintenance and maintain and provide proof that all required maintenance has been performed;
(e) Use RRSA specified parts, components, and consumables;
(f) Promptly return to RRSA all parts replaced under this Limited Warranty;
(g) Comply with RRSA long term storage guidelines, if applicable, and maintain and provide proof of compliance;
(h) Routinely exercise the Product in accordance with operating instructions;
(i) Install the Product in accordance with the installation guide provided; and
(j) Reimburse RRSA for all costs incurred in providing warranty service where, following examination, the request or claim for warranty coverage proves to be unfounded or excluded, as well as all incidental costs including those incurred investigating the claim.

5. Limitations

RRSA is not responsible, and this Limited Warranty is not available under any circumstances, for any of the following:

(a) Failure of Owner to fulfill its obligations under Section 4;
(b) Failure of Owner to follow RRSA instructions for Product stored by Owner longer than 180 days from date of shipment from the RRSA Mankato, MN facility;
(c) Defects caused by adjustments made by Owner to the fuel system or governor system;
(d) Defects which were obvious or capable of being identified by reasonable inspection and were not reported to RRSA within a reasonable time;
(e) Rental equipment used during warranty work;
(f) Defects caused or potentially caused by service work performed by non-RRSA authorized service providers and/or the use of non-genuine RRSA parts;
(g) Defects resulting from natural wear and tear, external action, negligence, natural disasters, accidents, incorrect use, improper handling or storage, inadequate corrosion-proofing, incorrect assembly or installation, or modification of the Product;
(h) Defects resulting from abuse or neglect, including unauthorized modifications to the Product;
(i) Repair or any use or installation which RRSA, in its sole discretion, determines to be improper;
(j) Defects caused by incorrect maintenance;
(k) Defects resulting from Owner's delay in making the Product available after being notified of a potential problem or Owner's failure to take immediate measures to avoid or mitigate damage;
(l) Damage caused by shipping;
(m) Repair of parts sold by RRSA that are warranted directly to the Owner by the respective part's manufacturer;
(n) Misapplication of the Product;
(o) Diesel engine "wet stacking" due to lightly loaded diesel engines;
(p) Acts of nature or acts of God;
(q) Any failure, other than those resulting from a defect in material or factory workmanship of the Product;
(r) Use of the Product for purposes other than those for which it was intended, including without limitation use of the Product under extraordinary operating conditions not made known to RRSA in writing at the time of the order; or
(s) Material provided by or a design specified by the Owner.

6. Software Warranty. Where software is included in the Product, RRSA warrants to the Owner that 1) the software will be substantially free from material program errors and material defects in material and workmanship, and that 2) it shall

function substantially in accordance with RRSA specification at the time of dispatch from the RRSA manufacturing facility. RRSA does not warrant that the software is error-free or free from "bugs" as commonly categorized by the computer industry. RRSA shall, during the Limited Warranty Period, endeavor to remedy at its cost, in its sole discretion, by repair or replacement of any material program errors or material defects of which Owner has promptly notified RRSA. RRSA, at its option, may elect to provide the most current software at no cost, and in such case RRSA will not cover the cost to install the applicable updated software. RRSA shall have no obligation with respect to any nonconformities resulting from unauthorized modifications to the software or any Owner interfacing.

7. **Emissions Warranty.** The Product may be covered under an emissions warranty specified by the U.S. Environmental Protection Agency and/or the California Air Resources Board. The terms of the warranty, if applicable, may be accessed by following the link: https://www.mtu-solutions.com/eu/en/technical-information/emissions-warranty.html. Any such Emissions Warranty is incorporated herein by reference in its entirety to the extent and with the same force as if fully set forth herein. The Product, if certified, may only be certified to comply with the required country or region-specific emission regulations. Where applicable, the Product is only certified to those specific emission regulations/standards which are clearly stated in the respective RRSA defined technical specifications. IT IS THE OWNER'S SOLE RESPONSIBILITY TO ENSURE THAT THE EXPORT/IMPORT, INSTALLATION, AND USE OF THE PRODUCT(S) COMPLIES WITH THE APPLICABLE EMISSION REGULATIONS IN THE COUNTRY OR REGION WHERE THE PRODUCT(S) WILL BE USED.

8. The Owner is entitled to rectify the defect or to have it rectified by third parties only in urgent cases where operational safety is at risk or in order to prevent disproportionately extensive damage; provided that Owner has informed RRSA and obtained prior written consent from RRSA. In such cases, RRSA shall, in its sole discretion, reimburse the costs incurred by the Owner up to an amount equivalent to the costs RRSA would have incurred had it remedied the defect itself.

9. This Limited Warranty gives the Owner specific legal rights, and the Owner may also have other rights, which vary from state to state. Some states do not allow warranty duration limitations and/or certain exclusions or limitation of incidental or consequential damages. Therefore, the previously expressed exclusion(s) may not apply to Owner. If any one or more of the provisions contained in this Limited Warranty shall be invalid, illegal, or unenforceable in any respect, the validity, legality, or enforceability of the remaining provisions contained therein shall not in any way be affected or impaired thereby.

10. This Limited Warranty is governed by the laws of the State of Michigan without regard to its conflicts of law principles and excluding the United Nations Convention for the International Sale of Goods. Any and all disputes between the parties that may arise pursuant to the sale or use of the Product shall be heard and determined before an appropriate state of federal court located in Oakland County, Michigan. The Owner acknowledges that such court has the jurisdiction to interpret and enforce the provisions herein, and Owner waives any and all objections that it may have as to personal jurisdiction or venue in any of the above courts.

11. In order to obtain performance of an RRSA warranty obligation, the Owner should contact the nearest RRSA authorized distributor, dealer, or service outlet for instructions. To find the location of the nearest RRSA authorized distributor, dealer, or service outlet call +1 248-560-8000 or write to: Rolls-Royce Solutions America Inc. Warranty Department, 39525 MacKenzie Drive, Novi, MI 48377.

Power Solutions International, Inc.
201 Mittel Drive
Wood Dale, IL 60191
www.psiengines.com

0 Hour Non-Deteriorated Emissions Data for Permitting Customers

PSI EPA Engine Family XPSIB8.80EMT "X" denotes generic model year

PSI Engine Model Description PSI-8.8L Turbo Emergency Stationary

	8.8L Turbo LPG	8.8L Turbo NG
Displacement	8.8L	8.8L
Test Speed (rpm)	1800	1800
	g/KW-hr	**g/HP-hr**
BSCO	1.297	0.215
BSCO2	761.1	454.87
BSCH4	NA	0.048
BSTHC	0.028	NA
BSNMHC	NA	0.002
BSNOx	0.019	0.025
BSTHC+NOx	0.047	NA
BSNMHC+NOx	NA	NA
BSFC (kg/kw-hr)	0.253	0.211

Weighted compositie emissions from ISO 8178 D2 (LPG) & D1 (NG) test cycles
BSFC is the weighted composite fuel consumption over the emission test cycle
LPG Emission Data Units in g/KW-hr
NG Emission Data Units in g/HP-hr

SK36231A

PREP RED FOR:
Inters ate P wer Systems

QUOTE: GCP-031121-1001

APPLICATION INFORMATION

Driver:	Engine
Make:	MTU
Model:	8.8L
Horsepower:	262
RPM:	1800
Compression Ratio:	10.0:1
Exhaust Flow Rate:	1176
Exhaust Temperature:	1200
Reference:	MTU Spec
Fuel:	Gas
Annual Operating Hours:	8760

EQUIPMENT

Housing	EAS-1450-0505F-2C4E
	14.5" Combo Housing, Critical Grade Silencer
	2 Element Capacity, Carbon Steel Construction
	5" Bottom Inlet, 5" End Outlet
Mounting	14.5" Wrap Around Bracket
Catalyst	RE-1450-T NSCR, Round 14.5"x3.5"
Elements Required	(2) Elements Required to meet Reductions
Minimum Exhaust Temp	1000*F

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr
NOx:	N/A
CO:	N/A
THC:	N/A
NMHC:	N/A
NMNEHC:	N/A
HCHO:	N/A
Oxygen:	0.50%

POST CATALYST EMISSIONS DATA

	g/bhp-hr
NOx:	< 1.00
CO:	< 2.00
VOC:	< 0.70

Jason Martindale
Direct:505.592.131
jmartindale@emittechnologies.com

PREPARE FOR:
Interstate Power Systems

QUOTE: GCP-031121-1001

ITEM #	*DESCRIPTION*	*QUANTITY*
1001-01	EAS-1450-0505F-2C4E Combo Housing	1
1001-02	14.5" Wrap Around Brackets	2
1001-03	RE-1450-T 14.5" NSCR Catalyst Element	2

WARRANTY

EMIT Technologies,Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of one (1) year from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from improper use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with an HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 2 years from installation, or 17,000 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures.

Unless otherwise stated the exhaust temperature operating range at the converter inlet is 600°F minimum for oxidation catalyst and 750°F for NSCR catalyst and 1250°F maximum.

If a high temperature shut down switch is not installed, thermal deactivation of catalyst at temperatures above 1300 °F is not covered.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent.

Engine lubrication oil shall contain less than 0.6% ash (by weight) with a maximum allowable specific oil consumption of 0.01 gal/bhp-hr. The maximum ash loading on the catalyst shall be limited to 350 g/m3. Phosphorous and zinc additives are limited to 0.03% (by weight).

The catalyst must not be exposed to the following known poisoning agents, including: iron, nickel, sodium, chromium, arsenic, zinc, lead, phosphorous, silicon, potassium, magnesium, copper, tin, and mercury. Total poison concentrations in the gas are limited to 0.3 ppm.

Shipment - Promised shipping dates are approximate and are not guaranteed and are from the point of manufacture. EMIT Technologies,Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies,Inc. shall not be responsible for goods damaged or lost in transit.

PAYMENT TERMS AND ADVANCE PAYMENT REQUIREMENT

Terms: Credit is extended to purchaser for net 30 time period. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at a rate of 1.5% per month from the invoice date.

Advance Payment Requirement: Proposals with a project value of $100,000 or greater, and 60 days or greater time to completion, will require an advance payment of 30% of the total value. The advance payment will be invoiced to the customer upon receipt of the customer's purchase order. Advance payment is due 30 days after the date of the invoice. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at teh rate of 1.5% per month from the invoice date. Failure to pay this invoice may delay completion of the project outlined in this proposal.

Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions,Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2022 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Power Solutions International, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: NPSIB8.80EMT-009

Effective Date: 08/02/2021

Expiration Date: 12/31/2022

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 08/02/2021

Revision Date: N/A

Manufacturer: Power Solutions International, Inc.
Engine Family: NPSIB8.80EMT
Mobile/Stationary Certification Type: Stationary
Fuel : LPG/Propane
Natural Gas (CNG/LNG)
Emission Standards :
Stationary Part 1048
NMHC + NOx (g/kW-hr) : 2.7
HC + NOx (g/kW-hr) : 2.7
CO (g/kW-hr) : 4.4
Part 60 Subpart JJJJ Table 1
CO (g/Hp-hr) : 4.0
VOC (g/Hp-hr) : 1.0
NOx (g/Hp-hr) : 2.0
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

December 15, 2021

Mr. Mark Holt
Rolls-Royce Solutions America, Inc.
100 Power Dr.
Mankato, MN 56001

Dear Mark Holt,

The South Coast Air Quality Management District (South Coast AQMD) has extended Certified Equipment Permits (CEPs) to December 31, 2022 for the stationary emergency internal combustion (IC) engine models listed in the attached table. However, please be reminded that many of these certified diesel-fueled IC engines may not meet Rule 1470 requirements if installed at or near a sensitive receptor or near school grounds and, therefore, may require an aftertreatment system such as a diesel particulate filter in the exhaust stream.

Please note that the South Coast AQMD does not endorse or warrant any specific equipment or manufacturer. Modification of the equipment listed here will void this certification.

If you have additional questions or need further clarification on the CEP program, please feel free to contact CJ Chang at (909) 396-3293, cchang@aqmd.gov; or Susan Tsai at (909) 396-2529, stsai@aqmd.gov.

Sincerely,

David Ono
Senior Engineering Manager
Engineering and Permitting

DO:GI:ST:CC

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Certified ICE-Emergency Generators

Rolls-Royce Solutions America, Inc.

Engine Mfg.	Model	Engine Rating	Appl. No.
MTU America	10V1600G80S	752 BHP	578846
MTU America	18V2000G76S	1839 BHP	578847
Mercedes-Benz	OM 924 LA	197.1 BHP	580124
Mercedes-Benz	OM 926 LA	331.2 BHP	580125
MTU America	6R1600G70S	419 BHP	518630
MTU America	6R1600G80S	460 BHP	518631
MTU America	8V1600G70S	548 BHP	518632
MTU America	8V1600G80S	601 BHP	518633
MTU America	12V1600G70S	822 BHP	503822
MTU America	12V1600G80S	896 BHP	503820
MTU America	12V2000G45 TB/TD (R1238A37)	952 BHP	495350
MTU America	12V2000G85 TB/TD (R1238A37)	1086 BHP	495342
MTU America	16V2000G45 TB/TD (R1638A37)	1227 BHP	495344
MTU America	16V2000G85 TB/TD (R1638A37)	1354 BHP	495345
MTU America	G43D (20V-4000 G43 3D, 20V-4000 G83 3B)	3674 BHP	470538
MTU America	G83L (20V-4000 G83L)	4680 BHP	470536
MTU America	G83L (20V-4000 G83L, 20V-4000 G83 3D)	4036 BHP	470537
MTU America	T1238A36 (12V-4000 G83)	2561 BHP	470532
MTU America	T1238A36 (12V-4000 G83, 12V-4000 G43)	2328 BHP	470534
MTU America	T1638A36 (16V-4000 G83 3D)	3353 BHP	470533
MTU America	T1638A36 (16V-4000 G43 3D, 16V-4000 G83 3B)	3058 BHP	608239

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Certified ICE-Emergency Generators

Rolls-Royce Solutions America, Inc.

Engine Mfg.	Model	Engine Rating	Appl. No.
MTU America	12V2000G45TB	1045 BHP	551794
MTU America	12V2000G85TB	1194 BHP	608240
MTU America	16V2000G45TB	1354 BHP	551796
MTU America	16V2000G85TB	1495 BHP	551797
MTU America	16V4000G83L	3674 BHP	551792
MTU America	16V2000G86S	1839 BHP	608241
MTU America	10V1600G70S	685 BHP	602447
MTU America	12V4000G14S	2038 BHP	608244
MTU America	12V4000G24S	2328 BHP	608247
MTU America	12V4000G74S	2328 BHP	608248
MTU America	12V4000G84S	2561 BHP	608249
MTU America	16V4000G14S	2709 BHP	608250
MTU America	16V4000G24S	3058 BHP	608251
MTU America	20V4000G64S	3674 BHP	608253
MTU America	20V4000G44S	4036 BHP	608260
MTU America	16V4000G74S	3058 BHP	608263
MTU America	20V4000G94S	4680 BHP	608264
MTU America	20V4000G74S	4036 BHP	608265
MTU America	20V4000G24S	3674 BHP	608267
MTU America	20V4000G14S	3339 BHP	608268
MTU America	16V4000G84S	3353 BHP	608269
MTU America	16V4000G94S	3674 BHP	608270

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Certified ICE-Emergency Generators

Rolls-Royce Solutions America, Inc.

Engine Mfg.	Model	Engine Rating	Appl. No.
Power Solutions Int'l (PSI)	8800CAC (LPG)	230.12 BHP	629447
Power Solutions Int'l (PSI)	8800CAC (Nat Gas)	261.47 BHP	629474
Rolls-Royce	20V4000G94S	4680 BHP	630151
Rolls-Royce	20V4000G74S	4036 BHP	630155
Rolls-Royce	16V4000G74S	3058 BHP	630156
Rolls-Royce	20V4000G44S	4036 BHP	630157
Rolls-Royce	20V4000G24S	3674 BHP	630159
Rolls-Royce	20V4000G14S	3339 BHP	630162
Rolls-Royce	18V2000G76S	1839 BHP	630163
Rolls-Royce	16V4000G94S	3674 BHP	630164
Rolls-Royce	16V4000G84S	3353 BHP	630165
Rolls-Royce	16V4000G74S	3058 BHP	630166
Rolls-Royce	16V4000G24S	3058 BHP	630167
Rolls-Royce	16V4000G14S	2709 BHP	630168
Rolls-Royce	16V2000G86S	1839 BHP	630169
Rolls-Royce	12V4000G74S	2328 BHP	630170
Rolls-Royce	12V4000G24S	2328 BHP	630171
Rolls-Royce	12V4000G14S	2038 BHP	630172
Rolls-Royce	10V1600G80S	752 BHP	630215
Rolls-Royce	10V1600G70S	685 BHP	630216
Rolls-Royce	12V1600G80S	896 BHP	630223
Rolls-Royce	12V1600G70S	822 BHP	630225
Rolls-Royce	12V4000G84S	2561 BHP	608227

Rolls-Royce Solutions America Inc.

39525 MacKenzie Dr.
Novi, MI 48377, USA
T +1 248 560 8000

660 Bettis Academy Rd.
Graniteville, SC 29829, USA
T +1 803 663 8831

100 Power Dr.
Mankato, MN 56001, USA
T +1 507 625 7973

09/03/2021

The attached South Coast Air Quality Management District Certified Equipment Permits (CEP) are for the Power Solutions International (PSI) PSI 8.8 L TCAC engine used in the Rolls-Royce Solutions America Inc. Genset model No. 8V0110 GS150. The PSI engine model No. in the SCAQMD permits is 8800CAC. This is the 8.8 L TCAC engine; However, the PSI US EPA certificate of conformity application uses the model No. 8800CAC and therefore this is the model No. information which must be provided in the SCAQMD CEP.

SCAQMD now requires separate permits for the same engine if the power ratings are different therefore there are two permits for the PSI engine model No. 8800 CAC (8.8 L TCAC). One if for the engine using natural gas (NG) fuel and the other permit if for the engine running on liquid propane gas (LPG).

Mark Holt

Emissions Expert
Rolls-Royce Solutions America Inc..
100 Power Drive
Mankato, MN 56001

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

CERTIFIED EQUIPMENT PERMIT (CEP)
(NOT A PERMIT TO CONSTRUCT OR OPERATE)

Granted on August 25, 2021

ID 180910

Legal Owner or Operator:
Rolls-Royce Solutions America, Inc.
39525 MacKenzie Dr.
Novi, MI 48377
Attn: Mark Holt

Equipment Location: SAME AS ABOVE

The equipment described below and as shown on the approved plans and specifications are subject to the special condition or conditions listed.

Equipment Description

Internal Combustion Engine, Power Solutions International (PSI), Model No. 8800CAC, LPG-Fueled, 8-Cylinder, Turbocharged and Aftercooled, Rated at 230.12 BHP, Equipped with Air/Fuel Ratio Controller and Three-Way Catalyst, Driving an Emergency Electrical Generator.

Manufacturer Condition

1. **This Certified Equipment Permit (CEP) is not a Permit to Construct or Operate.** The person constructing, installing or operating the equipment at each specific site shall obtain all necessary permit(s) to construct and permit(s) to operate and comply with any other District rules and regulations including the requirements of Regulation XIII.

End User Conditions

1. Operation of this equipment shall be in compliance with all data and specifications submitted with the application under which this permit was issued, unless otherwise noted below.

2. This equipment shall be properly maintained and kept in good operating condition at all times.

3. This engine shall be fired with LPG only.

ORIGINAL

CERTIFIED EQUIPMENT PERMIT (CEP)
(NOT A PERMIT TO CONSTRUCT OR OPERATE)

4. The engine shall not be operated unless its exhaust is vented to the non-selective catalytic reduction unit which is in full operation and which is in good operating condition at all times.

5. The engine shall not be operated without the use of an air-to-fuel ratio controller which shall be maintained and kept in proper operating condition at all times.

6. This engine shall not be operated more than 200 hours in any one year, which includes no more than 50 hours in any one year and no more than 4.2 hours in any one month for maintenance and testing purposes

7. An operational non-resettable totalizing timer shall be installed and maintained to indicate the engine elapsed operating time.

8. The operation of this engine beyond 50 hours per year allotted for engine maintenance and testing shall be allowed only during emergencies resulting in an interruption of service of the primary power supply or during stage II or III electrical emergencies declared by the electrical grid operator. This engine may be used as part of an interruptible electric service program.

9. The operator shall maintain accurate maintenance records of the date of catalyst cleaning or replacement, oxygen sensor replacement, and their associated total hour reading on the non-resettable totalizing time meter, to determine the engine elapsed operating time, and records of engine tune-ups.

10. The operator shall keep a log of engine operations documenting the total time the engine is operated each month and specific reason for operation as:

    A. Emergency use.
    B. Maintenance and testing.
    C. Other (describe the reason for operating).

    In addition, each time the engine is manually started, the log shall include the date of operation, the specific reason for operation, and the totalizing hour meter reading (in hours and tenths of hours) at the beginning and end of operation.

11. On or before January 15th of each year, the operator shall record in the engine operating log the following:

    A. The total hours of operation for the previous calendar year, and
    B. The total hours of engine operation for maintenance and testing for the previous calendar year.

CERTIFIED EQUIPMENT PERMIT (CEP)
(NOT A PERMIT TO CONSTRUCT OR OPERATE)

Engine operating log shall be retained on site for a minimum of five calendar years and shall be made available to the Executive Officer or representative upon request.

12. This engine shall comply with the NMHC, NOx, CO, and PM emission limits to be determined at the time of issuance of the end-user permit.

13. Sulfur content of LPG fuel supplied to the engine shall not exceed 40 ppm by volume measured over a 4-hour average period.

14. This engine shall be operated in compliance with all applicable requirements of the Code of Federal Regulations Title 40 Part 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engine.

Please notify CJ Chang at (909) 396-3293 (cchang@aqmd.gov) when South Coast AQMD information packets are needed or if you have any questions concerning the Certification/Registration Program.

This Certified Equipment Permit is based on the plans, specifications, and data submitted as it pertains to the release of air contaminants and control measures to reduce air contaminants. No approval or opinion concerning safety and other factors in design, construction or operation of the equipment is expressed or implied.

This Certified Equipment Permit will become invalid if this application is cancelled. THIS PERMIT SHALL EXPIRE ON December 31, 2021 unless an extension is granted by the Executive Officer.

By _____

GEORGE ILLES
Supervising Air Quality Engineer

ORIGINAL

CERTIFIED EQUIPMENT PERMIT (CEP)
(NOT A PERMIT TO CONSTRUCT OR OPERATE)

Engine operating log shall be retained on site for a minimum of five calendar years and shall be made available to the Executive Officer or representative upon request.

12. This engine shall comply with the NMHC, NOx, CO, and PM emission limits to be determined at the time of issuance of the end-user permit.

13. Sulfur content of natural gas fuel supplied to the engine shall not exceed 16 ppm by volume.

14. This engine shall be operated in compliance with all applicable requirements of the Code of Federal Regulations Title 40 Part 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engine.

Please notify CJ Chang at (909) 396-3293 (cchang@aqmd.gov) when South Coast AQMD information packets are needed or if you have any questions concerning the Certification/Registration Program.

This Certified Equipment Permit is based on the plans, specifications, and data submitted as it pertains to the release of air contaminants and control measures to reduce air contaminants. No approval or opinion concerning safety and other factors in design, construction or operation of the equipment is expressed or implied.

This Certified Equipment Permit will become invalid if this application is cancelled. THIS PERMIT SHALL EXPIRE ON December 31, 2021 unless an extension is granted by the Executive Officer.

By _____

GEORGE ILLES
Supervising Air Quality Engineer

ORIGINAL

MTU ONSITE ENERGY GS150 LP VAPOR GENERATOR
GENERATOR: 130 kW, 130kVA, 541 amps, 1800 RPM
VOLTAGE: 120/240v 1 phase
ENGINE: PSI 8.8, LP Vapor, EPA Certified

Selected Features Included:
Steel Sub Base, Battery Cables, Battery Rack, Flex Fuel Connector, Oil Drain Extension, Lube Oil and Anti-freeze
Electronic Isochronous Governor + / - .25%
UL2200 Listed, Prototype Tested, Factory Tested
130 Degree Rise Standby Alternator, Permanent Magnet
2 Year / 3,000 Hour Standby Limited Warranty

CONTROL PANEL: Basler DGC-1510 Control Panel
The expanded Digital Genset Controller utilizes microprocessor based technology to provide a versatile system for genset control, protection, monitoring and event logging. 4 Relay Board.

ENCLOSURE: Level 2 Sound Attenuated Weatherproof Enclosure includes bolt together sheet metal enclosure constructed with 14-gauge material, lockable hinged doors, keyed alike, a fixed storm proof air intake louver and expanded metal air discharge, muffler support brackets and exhaust piping allowing the muffler to be mounted internally, including rain cap. 79 dBA at 23'.

COOLING SYSTEM: Unit Mounted Radiator, 50 Degree Rise

CIRCUIT BREAKER: Square D, 80% rated, LSI, 2-400 Amps

BATTERY: Lead Acid Battery, Acid Resistant Steel Rack

BLOCK HEATER: 2,000 Watts, Mounted and Wired, Isolation Valves

VIBRATION ISOLATION: Neoprene Vibration Pads, Integral Vibration Isolation

BATTERY CHARGER: 12v, 6 Amps, mounted and wired

MUFFLER: Critical Grade Muffler Mounted Inside Enclosure

MISC: One Owner's Manual, Standard Color ANSI Gray

CONTROL EQUIPMENT

Catalyst Housing
Model: EAS-1200-0404F-2C4E
Manufacturer: EMIT Technologies, Inc
Element Size: Round 12" x 3.5"
Housing Type: 2 Element Capacity
Catalyst Installation: Accessible Housing
Construction: 10 gauge Carbon Steel
Sample Ports: 6 (0.5" NPT)
Inlet Connections: 4" Flat Face Flange
Outlet Connections: 4" Flat Face Flange
Configuration: Side In / End Out
Silencer: Integrated
Silencer Grade: Critical
Insertion Loss: 25-30 dBA
Catalyst Element
Model: RE-1200-T
Catalyst Type: NSCR, Standard Precious Group Metals
Substrate Type: BRAZED
Manufacturer: EMIT Technologies, Inc
Element Quantity: 1
Element Size: Round 12" x 3.5"

Gas Generator Set

mtu 8V0110 GS150

150 kWe/60 Hz/Standby/208 - 600V

System ratings

Voltage (L-L)	240V †	240V †	208V †	240V †	480V †	600V	380V †
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
Natural Gas (NG)							
Amps	625	625	520	451	226	180	285
kW/kVA	150/150	150/150	150/187.5	150/187.5	150/187.5	150/187.5	150/187.5
Liquid Propane (LP)							
Amps	542	542	451	391	195	156	247
kW/kVA	130/130	130/130	130/162.5	130/162.5	130/162.5	130/162.5	130/162.5
NG and LP							
skVA@30% voltage Dip	196	187	296	296	394	315	282
Generator model	431PSL6224	431CSL6206	431PSL6202	431PSL6202	431PSL6202	431CSL6240	431PSL6204
Temp rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD	12 LEAD DOUBLE DELTA	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE	12 LEAD WYE

† UL 2200 offered

Note: This unit is available with a dual fuel configuration.

Certifications and standards

- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- Seismic certification – optional
  - 2018 IBC certification
  - OSHPD pre-approval
- UL 2200 – optional (refer to *System ratings* for availability)
- CSA – optional
  - CSA C22.2 No. 100
  - CSA C22.2 No. 14
- Performance Assurance Certification (PAC)
  - Generator set tested to ISO 8528-5 for transient response
  - Verified product design, quality and performance integrity
  - All engine systems are prototype and factory tested
- Power rating
  - Accepts rated load in one step per NFPA 110

A Rolls-Royce solution

Standard features*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- PSI 8.8L TCAC engine
  - 8.8 liter displacement
  - 4-cycle
- 3-way catalyst
- Optional fuels: LP liquid and dual fuel
- Engine-generator resilient mounted
- Complete range of accessories
- Cooling system
  - Integral set-mounted
  - Engine-driven fan
- Generator
  - Brushless, rotating field generator
  - 2/3 pitch windings
  - 300% short circuit capability
- Digital control panel(s)
  - UL recognized, CSA Certified, NFPA 110
  - Complete system metering
  - LCD display

Standard equipment*

Engine

- Air cleaner
- Oil pump
- Oil drain extension and shut-off valve
- Full flow oil filter
- Jacket water pump
- Thermostat
- Blower fan and fan drive
- Radiator - unit mounted
- Electric starting motor - 12V
- Governor - electronic isochronous
- Base - formed steel
- SAE flywheel and bell housing
- Charging alternator - 12V
- Battery rack and cables
- Flexible exhaust connection
- Liquid cooled, ball bearing turbcharger
- EPA certified engine

Generator

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
- Self-ventilated
- Superior voltage waveform
- Solid state, volts-per-hertz regulator
- ± 1% voltage regulation no load to full load
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 130 °C maximum standby temperature rise
- 1-bearing, sealed
- Flexible coupling
- Full amortisseur windings
- 125% rotor balancing
- 3-phase voltage sensing
- 100% of rated load - one step
- 5% maximum total harmonic distortion

Digital control panel(s)

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Windows®-based software
- Multilingual capability
- Communications to remote annunciator
- Programmable input and output contacts
- UL recognized, CSA certified, CE approved
- Event recording
- IP 54 front panel rating with integrated gasket
- NFPA 110 compatible

* Represents standard product only. Consult your local ***mtu*** Distributor for additional configurations.

Application data

Engine

Manufacturer	PSI
Model	8.8L TCAC
Type	4-cycle
Aspiration	turbocharged, intercooled
Arrangement	8-V
Displacement: L (in^3)	8.8 (535)
Bore: cm (in)	11.05 (4.35)
Stroke: cm (in)	11.43 (4.5)
Compression ratio	10:1
Rated rpm	1,800
Engine governor	Bosch
Maximum power (NG): kWm (bhp)	195.0 (261.5)
Maximum power (LP): kWm (bhp)	171.6 (230.1)
Steady state frequency band	± 0.75%
Air cleaner	dry

Liquid capacity

Total oil system: L (gal)	9.0 (2.38)
Engine jacket water capacity: L (gal)	13.4 (3.5)
System coolant capacity: L (gal)	25.5 (6.7)

Electrical

Electric volts DC	12
Cold cranking amps under -17.8 °C (0 °F)	925
Batteries: group size	31
Batteries: quantity	1

Fuel inlet - vaporous supply

Fuel supply connection size	2” NPT
Fuel supply pressure: mm H_20 (in. H_20)	178–279 (7–11)

Fuel inlet - liquid supply

Fuel supply connection size	#6 (3/8”) female SAE 45° flare
Maximum fuel supply pressure: kPa (PSI)	2,150 (312)

Fuel consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of power rating: m^3/hr (ft^3/hr)	56.2 (1,986)	19.7 (695)
At 75% of power rating: m^3/hr (ft^3/hr)	43.9 (1,549)	15.1 (534)
At 50% of power rating: m^3/hr (ft^3/hr)	31.8 (1,121)	11.0 (389)

Cooling - radiator system

	NG and LPG
Ambient capacity of radiator: °C (°F)	48 (118.4)*
Maximum restriction of cooling air: intake and discharge side of radiator: kPa (in. H_20)	0.12 (0.5)
Water pump capacity: L/min (gpm)	125 (33.0)
Heat rejection to coolant: kW (BTUM)	88.3 (5,021)
Heat radiated to ambient: kW (BTUM)	41.1 (2,337)
Heat rejected to charge air cooler: kW (BTUM)	13.8 (782)
Fan power: kW (hp)	11.9 (16.0)

* Installation of gravity exhaust louvers reduces the ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

Air requirements

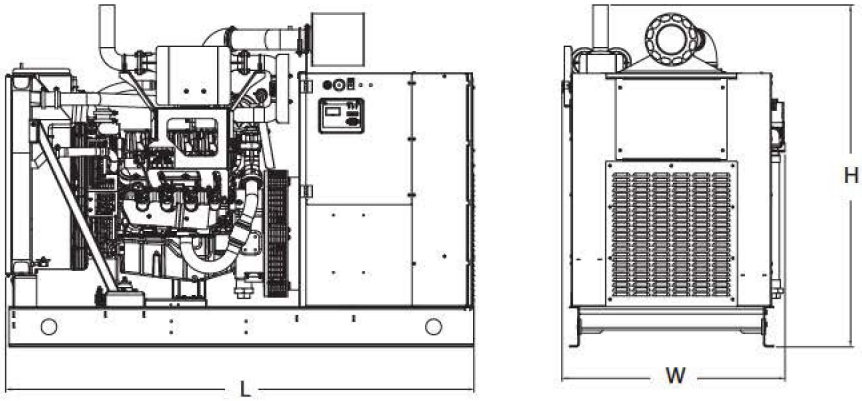
	NG and LPG
Aspirating: *m^3/min (SCFM)	10.33 (365)
Air flow required for radiator cooled unit: *m^3/min (SCFM)	229.8 (8,115)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m^3/min (SCFM)	211.6 (7,473)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

Exhaust system

	NG and LPG
Gas temperature (stack): °C (°F)	649 (1,200)
Gas volume at stack temperature: m^3/min (CFM)	33.3 (1,176)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H_20)	10.2 (41)

Weights and dimensions



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight
Open Power Unit (OPU)	2,388 x 1,137 x 1,740 mm (94 x 44.8 x 68.5 in)	1,520–1,800 kg (3,350–3,950 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

Sound data

Unit type	Standby full load (NG)	Standby full load (LP)
Level 0 (OPU): dB(A)	86.5	86.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

Emissions data

Fuel type	THC + NO_x	CO
Natural gas	N/A	0.22
Liquid propane	0.035	0.95

— All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

Rating definitions and conditions

— Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.
— Nominal ratings at standard conditions: 25 °C and 300 meters (77 °F and 1,000 feet).
— Deration factor:
  - Consult your local ***mtu*** Distributor for altitude derations.
  - Consult your local ***mtu*** Distributor for temperature derations.

C/F = Consult Factory/***mtu*** Distributor

Digital Generator Set Controller Data Sheet

MGC-1500 Series

The MGC-1500 Series controllers include the following models which are described throughout this document.*

— MGC-1510
— MGC-1520

MGC Series Generator Set Controllers are rugged, reliable, and easy-to-use digital generator set control systems. The MGC-1500 Series is perfectly focused, combining rugged construction and microprocessor technology to offer a product that will hold up to almost any environment and is flexible enough to meet your application's needs.

PRODUCT HIGHLIGHTS

— Three-phase generator metering
— Engine metering
— Generator set control
— Engine and generator protection
— BESTCOMS*Plus*®
  - Windows®-based software for optional remote operation (Software can be downloaded at www.mtu-solutions.com)
  - Programming and setup software
  - Intuitive and powerful
  - Remote control and monitoring
  - Programmable logic
  - USB communications
— Suitable for rental generator sets with high/low sensing, single or three phase override, wye/delta/grounded delta configurable, and alternate frequency override (50/60 Hz)
— Resistive sender inputs for oil pressure and coolant temperature
— Multilingual capability
— SAE J1939 Engine Control Unit (ECU) communications (Refer to *Configuration Options*)
— Remote annunciation with RDP-110
— Event recording (up to 30 events in non-volatile memory)
— Extremely rugged, fully potted design
— Seven programmable contact inputs with Input 1 programmed to recognize an emergency stop
— Start, run, and prestart relays with four programmable outputs
— UL recognized, CSA certified, CE approved
— IP56 rating per IEC 60529
— NFPA-110 compatible
— Microprocessor based
— Complete system metering
— Expandable to meet customer needs

* Please refer to the last page of this data sheet for available MGC-1500 series configuration options. The MGC Series Controller Comparison Data Sheet is a available as a reference for all MGC series configuraton options..

A Rolls-Royce solution

DIAGRAM

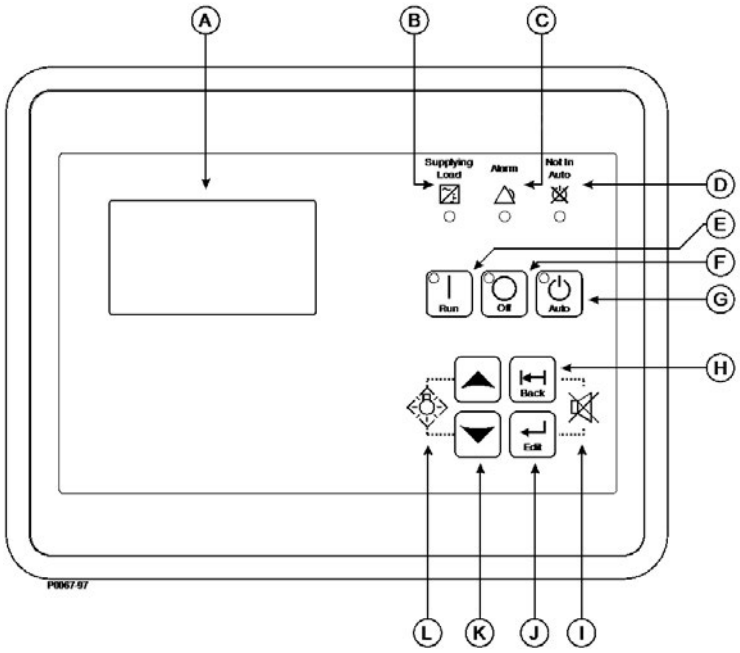


Figure 1: Front Panel Descriptions

A. Liquid crystal display
B. Supplying load indicator
C. Alarm indicator
D. Not in auto indicator
E. Run pushbutton and mode indicator
F. Off pushbutton and mode indicator
G. Auto pushbutton and mode indicator
H. Back pushbutton
I. Alarm silence pushbutton combination
J. Edit pushbutton
K. Arrow pushbuttons
L. Lamp test pushbutton combination

FUNCTIONS

Generator set protection

Generator ANSI codes
- Overvoltage (59)
- Overfrequency (81O)
- Voltage phase imbalance (47)
- Undervoltage (27)
- Underfrequency (81U)
- Overcurrent (50)

All generator set protection features are programmable as alarms, pre-alarms, status, or not used.

Alarms (shutdowns)
- Low oil pressure
- High coolant temperature
- Low coolant temperature
- Overspeed
- Overcrank
- Coolant temp sender fail (non-ECU engines)
- Oil pressure sender fail (non-ECU engines)
- Emergency stop
- Critical low fuel level (refer to *Configuration Options*)

Pre-alarms (warnings)
- Low oil pressure
- Low coolant temperature
- Weak battery voltage
- Low fuel level
- High fuel level
- High coolant temperature
- Battery overvoltage

All alarms and pre-alarms can be enabled or disabled via the BESTCOMSPlus® PC software or the front panel.
Additional custom alarms and pre-alarms are available upon request.

FUNCTIONS, continued

Generator set metering

— Generator parameters include voltage, current, real power (watts), apparent power (VA), and power factor. The view can be programmed to display up to 20 parameters using the scrolling and time delay feature.
— Engine parameters include oil pressure, coolant temperature, RPM, battery voltage, fuel level, engine runtime, and various SAE J1939 supported parameters.

Engine control

— Cranking control: cycle or continuous (quantity and duration fully programmable)
— Engine cooldown: smart cooldown function saves time and fuel
— Successful start counter: counts and records successful engine starts
— Timers:
  - Engine cooldown timer
  - Engine maintenance timer
  - Pre-alarm time delays for weak/low battery voltage
  - Alarm time delay for overspeed
  - Alarm time delay for sender failure
  - Arming time delays after crank disconnect:
    - Low oil pressure
    - High coolant temperature
  - Pre-crank delay
  - Continuous or cycle cranking time delay
  - Programmable logic timers

Event recording

The MGC-1500 Series has an event recorder that provides a record of alarms, pre-alarms, engine starts, engine runtime loaded, engine runtime unloaded, last run date, and many other events that are all date and time stamped to help the user determine the cause and effect of issues related to the generator set. Contains up to 30 event records each retaining numerous occurrences in memory. Time, date, and engine hour detail are available for the most current 30 occurrences within each event record.

Transfer switch control (Mains failure)

(Refer to *Configuration Options*)

The MGC-1500 Series has the ability to detect a mains failure via a single- or three-phase bus input. A mains failure is established when any one of the following conditions are met:

— Any phase of bus voltage falls below the dead bus threshold
— Any phase of bus voltage is unstable due to overvoltage or undervoltage
— Any phase of bus voltage is unstable due to overfrequency or underfrequency

When conditions are met, the MGC-1500 Series will start the generator set and, when ready, will send generator and mains breaker commands to apply power to the load from the generator set. The MGC-1500 Series implements open or closed breaker transitions to and from the mains. When the mains returns and is considered stable, the MGC-1500 Series will transfer the load back to the mains and stop the engine.

USB port

The USB communication port can be used with BESTCOMS*Plus*® software to quickly configure an MGC-1500 Series with the desired settings or retrieve metering values and event log records.

Programmable logic

The MGC-1500 Series offers a very powerful, yet easy-to-use, programmable logic scheme, BESTlogic™*Plus,* for custom programming of the various inputs, outputs, alarms, and pre-alarms. It allows these elements to be integrated into a complete logic scheme so that the user can meet even the most complex specification. The Programmable logic control includes the selection of logic gates and timers with drag-and-drop technology to make it fast and simple.

Remote display panel annunciation

(Refer to *Configuration Options*)

The MGC-1500 Series can communicate to a remote display panel, Model RDP-110. This requires only two wires to annunciate many of the alarms and pre-alarms required by NFPA-110 Level I and II. External power is required.

SAE J1939 communications

(Refer to *Configuration Options*)

SAE J1939 CANBus communications allows the MGC-1500 Series to communicate with the ECU to gather critical engine information like oil pressure, engine coolant temperature, RPM, battery voltage, and much more. By utilizing the ECU, the addition of analog engine senders is no longer required. This can save substantial money for the installer. It also eliminates any errors or discrepancies between the ECU data and the data displayed on the MGC-1500 Series that may be present due to analog sender inaccuracies or incompatibility. An additional benefit is access to the ECU's diagnostic troubleshooting codes (DTCs). The DTCs provide information about the engine's operating conditions and communicate these via SAE J1939 to the MGC-1500 Series, eliminating the need for hand-held service tools to diagnose simple engine issues.

SPECIFICATIONS

Operating power
- Nominal: 12 or 24 VDC
- Range: 6 to 32 VDC
- Power consumption:
  - Sleep mode: 4.5 W
  - Normal operational mode: 6.5 W - Run mode, LCD heater off, three relays energized
  - Maximum operational mode: 14 W - Run mode, LCD heater on, seven relays energized
  - Battery ride-through: Withstands cranking ride-through down to 0 V for 50 ms (typical)

Current sensing (5 Amp CT inputs)
- Continuous rating: 0.1 to 5.0 Aac
- One second rating: 25 Aac
- Burden: 1 VA

Voltage sensing
- Range: 12 to 576 V rms, line-to-line
- Frequency range: 10 to 72 Hz
- Burden: 1 VA
- One second rating: 720 V rms

Contact sensing/input contacts
Contact sensing inputs include one emergency stop input and seven programmable inputs. The emergency stop input accepts normally closed, dry contacts. The remote emergency stop is limited to 75 ft. standard. Extended runs are available with an optional relay. All programmable inputs accept normally open, dry contacts. The factory may utilize up to three of these inputs.

Engine system inputs
- Fuel level sensing resistance range: 5 to 250 Ω nominal
- Coolant temperature sensing resistance range: 5 to 2,750 Ω nominal
- Oil pressure sensing resistance range: 5 to 250 Ω nominal
- Engine speed sensing:
  - Magnetic pickup or CANBus
    - Magnetic pickup voltage range: 3 to 35 V peak (6 to 70 V peak to peak)
    - Magnetic pickup frequency range: 32 to 10,000 Hz

Output contacts
- (7) total outputs: (3) 5 A @ 28 VDC and (4) 2 A @ 28 VDC
- The factory utilizes the following on each generator set which can be reprogrammed as needed:
  - (3) 5 A @ 28 VDC for Pre-start, Start, and Run
  - (4) 2 A @ 28 VDC for general purpose

Metering
Generator voltage (rms)
- Metering range: 12 to 576 VAC (direct measurement), up to 9,999 VAC (with appropriate voltage transformer)
- Accuracy: ±1% of programmed rated voltage or ±2 VAC (subject to accuracy of voltage transformer when used)

Generator current (rms)
- Generator current is measured at the secondary windings of 5 A CTs.
- Metering range: 0 to 5,000 Aac
- CT primary range: 1-5,000 Aac, in primary increments of 1 Aac
- Accuracy: ±3% of programmed rated current or ±3 Aac (subject to accuracy of CTs)

Generator frequency
- Metering range: 10 to 72 Hz
- Accuracy: ±0.25% or 0.05 Hz

Apparent power
- Indicates total kVA and individual line kVA (four-wire, line-to-neutral or three-wire, line-to-line)
- Accuracy: ±5% of the full-scale indication or ±4 kVA

Power factor
- Metering range: 0.2 leading to 0.2 lagging
- Accuracy: ±0.02

Real power
- Indicates total kW and individual line kW (four-wire, line-to-neutral or three-wire, line-to-line)
- Accuracy: ±5% of the full-scale indication or ±4 kW

Oil pressure
- Metering range: 0 to 150 psi or 0 to 1,034 kPa
- Accuracy: ±3% of actual indication or ±2 psi or ±12 kPa (subject to accuracy of sender)

Coolant temperature
- Metering range: 0 °C to 204 °C (32 °F to 410 °F)
- Accuracy: ±3% or actual indication or ±2° (subject to accuracy of sender).

Fuel level
- Metering range: 0 to 100%
- Accuracy: ±3% (subject to accuracy of sender)

Battery voltage
- Metering range: 6 to 32 VDC
- Accuracy: ±3% of actual indication or ±0.2 VDC

Engine RPM
- Metering range: 0 to 4,500 rpm
- Accuracy: ±2% of actual indication or ±2 rpm

Engine run time
- Engine run time is retained in non-volatile memory
- Metering range: 0 to 99,999 h; update interval: 6 min
- Accuracy: ±1% of actual indication or ±12 min

SPECIFICATIONS, continued

Metering, continued

Maintenance timer
- Maintenance timer indicates the time remaining until generator set service is due. Value is retained in non-volatile memory.
- Metering range: 0 to 5,000 h; update interval: 6 min
- Accuracy: ±1% or actual indication or ±12 min

Generator protection functions

Overvoltage (59) and undervoltage (27)
- Pickup range: 70 to 576 VAC
- Activation delay range: 0 to 30 s

Overfrequency (81O) and underfrequency (81U)
- Pickup range: 45 to 66 Hz
- Pickup increment: 0.1 Hz
- Activation delay range: 0 to 30 s

Phase imbalance (47)
- Pickup range: 5 to 100 VAC
- Pickup increment: 1 VAC
- Activation delay range: 0 to 30 s
- Activation delay increment: 0.1 s

Overcurrent (51)
- Pickup range: 0.18 to 1.18 Aac (1 A current sensing)
- Time dial range: 0 to 7,200 s (fixed time curve)

Environmental
- Temperature
  - Operating: -40 °C to 70 °C (-40 °F to 158 °F)
  - Storage: -40 °C to 85 °C (-40 °F to 185 °F)
- Humidity: IEC 68-2-38
- Salt fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
- Ingress protection: IEC IP54 for front panel
- Shock: 15 G in three perpendicular planes
- Vibration: swept over the following ranges for 12 sweeps in each of three mutually perpendicular planes with each 15-minute sweep.
  - 5 to 29 to 5 Hz at 1.5 G peak for 5 min
  - 29 to 52 to 29 Hz at 0.036” DECS-A for 2.5 min
  - 52 to 500 to 52 Hz at 5 G peak for 7.5 min

Agency approvals
- UL/CSA approvals: “cURus” approved to UL 6200 and CSA C22.2 No.14
- NFPA Compliance: complies with NFPA Standard 110, standard for emergency and standby power
- CE Marked: complies with applicable EC directives

ADDITIONAL SPECIFICATIONS

Battery backup for real time clock
The MGC-1500 Series provides a real-time clock with capacitor backup that is capable of operating the clock for up to 24 hours after power is removed from the controller. As the capacitor nears depletion, an internal backup battery takes over and maintains timekeeping. The battery will maintain the clock for approximately 10 years, depending on conditions. The battery is not replaceable. The clock is used by the events recorder function to timestamp events, and the exercise timer is used to start and stop the generator set when the exercise feature is utilized.

Breaker management
The MGC-1500 Series is capable of controlling the generator breaker and the mains breaker. The status of the breakers is determined by using BESTlogic™Plus programmable logic to set up the GENBRK and MAINSBRK logic blocks. These logic blocks have outputs that can be configured to energize an output contact and control a breaker, as well as inputs for breaker control and status. The MGC-1500 Series will attempt to close a breaker only after verifying that it can be closed. If the breaker cannot be closed, the close request will be ignored. Only one breaker can be closed at a time. Synchronization is required before closing the breaker to a live bus. Closure to a dead bus can be performed after meeting dead bus threshold and timing requirements set by the user.

OPTIONAL ACCESSORIES

(Refer to *Configuration Options*)

Contact Expansion Module 2020 (CEM-2020)

The CEM-2020 is a remote device that provides additional MGC-1500 Series contact inputs and outputs, giving the user flexibility to use the same model MGC-1500 Series generator set controller for simple functions or more complicated applications that require contact functionality or duplication of contacts for remote annunciation. Its features include:

- **10 Contact Inputs:** the CEM-2020 provides 10 programmable contact inputs with the same functionality as the contact inputs on the MGC-1500 Series.
- **24 Contact Outputs:** the CEM-2020 provides 24 Form C programmable output contacts with the same functionality as the output contacts on the MGC-1500 Series. The output ratings of the Form C contacts are:

Output No.	Rating (Cont.)	Additional Information
5-16	1 A @ 30 VDC	This is a gold flash contact for low current circuits.
17-28	4 A @ 30 VDC	

Table 1: Output Ratings Form C Contacts

- **Communications via CANBus:** the CEM-2020 communicates to the MGC-1500 Series via SAE J1939 CANBus communications and allows the user to program the functionality of these inputs and outputs in the BESTCOMSPlus® software.
- The user can add labels for the inputs and outputs that appear in BESTCOMS®Plus, on the front panel, and in programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the MGC-1500 Series. The CEM-2020 module has all of the environmental ratings of the MGC-1500 Series, including a model for UL Class1 Div2 applications. The CEM-2020 terminals accept a maximum wire size of 12 AWG, while the chassis ground requires 12 AWG wire. Flexibility is one of the benefits of the MGC-1500 Series, and this add-on module enhances that benefit even further.

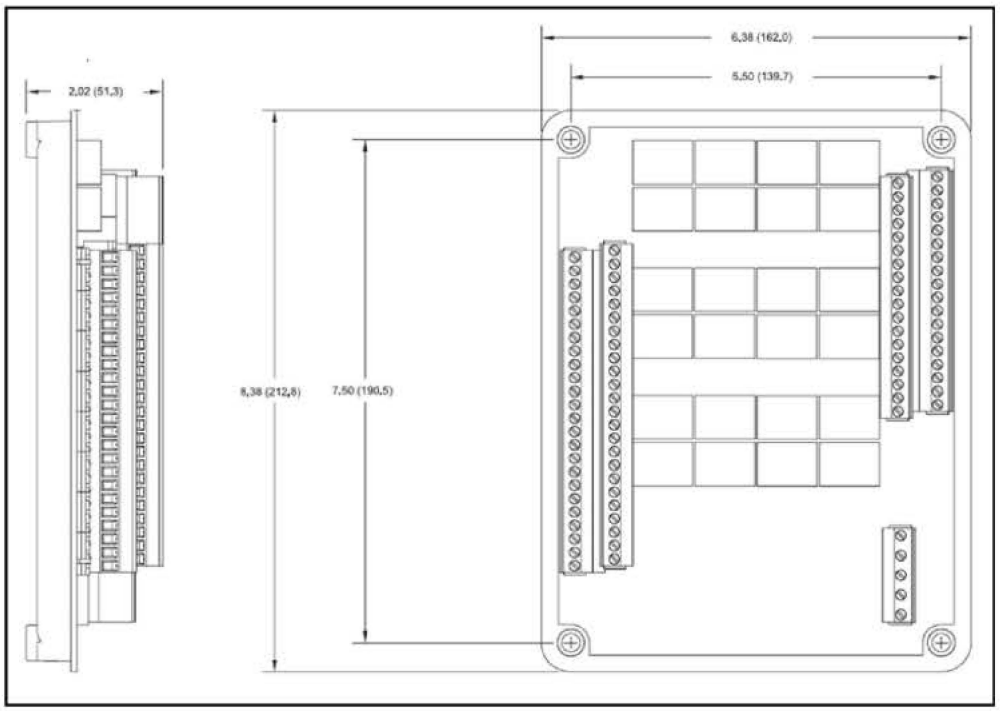


Figure 2: CEM-2020 Overall Dimensions

CONFIGURATION OPTIONS

Generator protection

	MGC-1510	MGC-1520
Standard		
Phase Imbalance (47)	X	X
Overcurrent (50)	X	X
Overvoltage (59)	X	X
Undervoltage (27)	X	X
Underfrequency (81U)	X	X
Overfrequency (81O)	X	X
Reverse Power (32)		
Loss of Excitation (40Q)		
Enhanced		
Overcurrent (51)		
Vector Shift (78)		
Rate of Change of Frequency (81R)		
Ground Fault		

Note: Numbers in parentheses above are ANSI standard device numbers denoting which features the controllers support.

Inputs

	MGC-1510	MGC-1520
Controller		
Digital	7	7
Analog (Dedicated)	3	-
Analog	-	-
CEM		
Digital	-	10
AEM		
Analog	-	-
TC	-	-
RTD	-	-

Outputs

	MGC-1510	MGC-1520
Controller		
Digital Form A, 30 Amp	-	-
Digital Form A, 5 Amp	3	3
Digital Form A, 2 Amp	4	4
Analog	-	-
CEM		
Digital Form C, 4 Amp	-	12
Digital Form C, 1 Amp	-	12
AEM		
Analog	-	-
External to Controllers (CEM)		
Digital Form C, 10 Amp (Interposing Relay)	-	10

Communication

	MGC-1510	MGC-1520
ModBus RTU (RS-485)		
ModBus TCP-IP		
RDP-110	X	X
CANBus		X
Modem Interface (RS-232)		
Ethernet		

Metering

	MGC-1510	MGC-1520
Bus 1 Voltage		
Single Phase	X	X
Three Phase	X	X
Bus 2 Voltage		
Single Phase		
Three Phase		
Current Transformers		
Generator	3	3
Auxiliary	-	-

LC-50

Integrated gas mixer, throttle body, and programmable speed control/ actuator

- Integrated, bi-directional actuator and programmable speed control
- Suitable for gaseous engines
- OEM configurable
- Venturi mixer has superior mixing with no moving parts
- Eliminates external linkages
- Reduces total engine assembly costs
- Optional positioner mode
- Five sizes available
- Optional air/fuel ratio trim valve
- Sealed ball-bearing throttle body design
- Optional external throttle position switch

APPLICATION

The LC-50 is designed for use on gaseous fueled industrial engines between 5 and 100 kW (7 and 134 hp). The throttle and venturi sizes are between 24 and 50 mm. Applications include power generation, refrigeration units, pumps, irrigation, and mobile industrial.

The mixer can be used with propane and natural gas and requires a zero pressure regulator. The throttle body incorporates the proven Woodward LCS speed control, which operates the throttle plate. The LC-50 can be programmed via the RS-232 port of a PC/laptop to a variety of configurations, as follows:

- isochronous speed control
- droop
- auxiliary input
- dual dynamics
- adjustable ramp time
- self-tuning
- overspeed/underspeed protection
- remote speed setting
- three speed select
- error relay driver

DESCRIPTION

The LC-50 provides a building block approach to total engine management. This modular design consists of a die-cast aluminum throttle body, mixer, plus a fully programmable integrated digital speed control and bi-directional actuator.

This unique design includes a venturi style annular ring mixer with no moving parts for superior mixing. The throttle body incorporates a corrosion-protected, plated steel shaft, plate, and a sealed ball-bearing design for durability and long life. An internal throttle return spring is standard to close the throttle in the event of power failure.

The LC-50 modular design reduces total engine assembly cost, eliminates external linkages, lowers inventory and part number proliferation. The programmable controller offers security to your configuration.

The LC-50 is compatible with Woodward's venturi-style mixer and other brands of gas mixers using suitable adapters (see LCS product specification 03225 for actuator details and operating parameters).

Woodward
Industrial Controls
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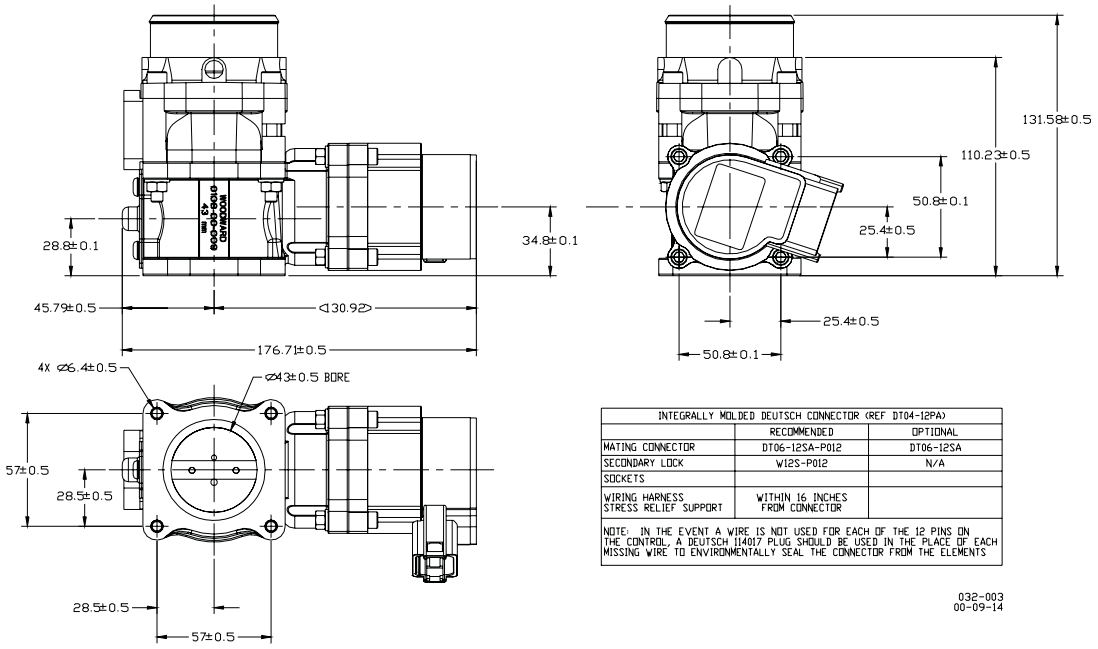
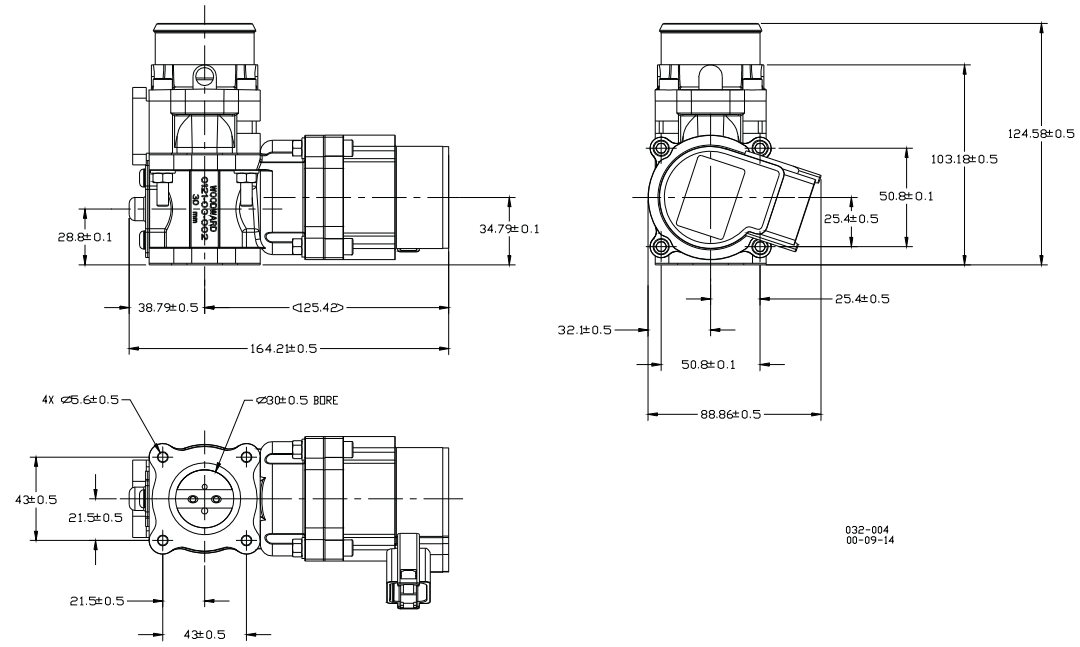
Ph: +1 (815) 877-7441

www.woodward.com



INTEGRALLY MOLDED DEUTSCH CONNECTOR (REF DT04-12PA)		
	RECOMMENDED	OPTIONAL
MATING CONNECTOR	DT06-12SA-P012	DT06-12SA
SECONDARY LOCK	W12S-P012	N/A
SOCKETS		
WIRING HARNESS STRESS RELIEF SUPPORT	WITHIN 16 INCHES FROM CONNECTOR	
NOTE: IN THE EVENT A WIRE IS NOT USED FOR EACH OF THE 12 PINS ON THE CONTROL, A DEUTSCH 114017 PLUG SHOULD BE USED IN THE PLACE OF EACH MISSING WIRE TO ENVIRONMENTALLY SEAL THE CONNECTOR FROM THE ELEMENTS		

Representative Drawing of 43 mm LC-50
(Do not use for construction)



Representative Drawing of 30 mm LC-50
(Do not use for construction)

Technical Manual 26135

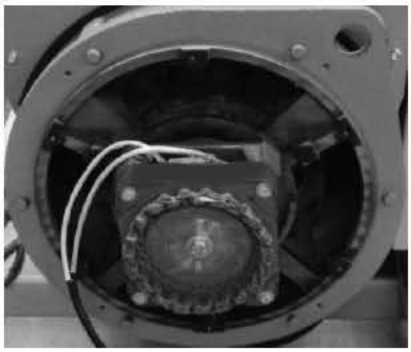
For more information contact:

Generator System Data Sheet

Permanent Magnet Generator (PMG)

DESCRIPTION

A permanent magnet generator (PMG) is standard on 450 kW and larger units and is available as an optional accessory on most units smaller than 450 kW. The PMG is an improved method of supplying power to the voltage regulator and adds distinct advantages over the alternative shunt type power supply.



FEATURES

Improved transient response

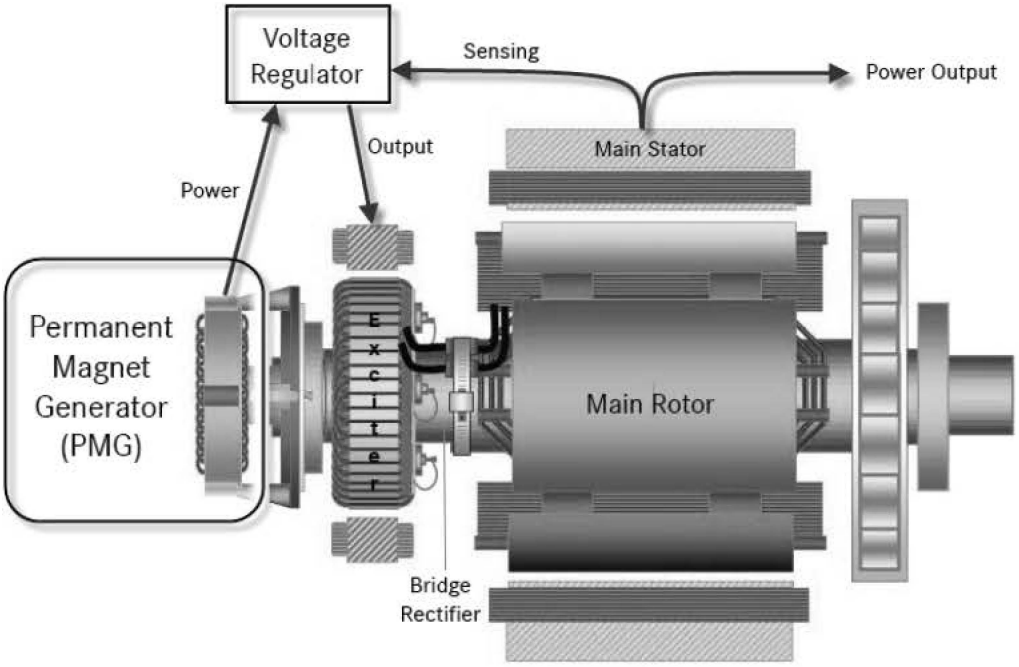
When a generator is subject to a large step load, the generator's terminal voltage experiences a sudden voltage dip. With a shunt style regulator, reduced voltage means the regulator's ability to increase excitation is reduced and voltage recovery will take longer. Power from a PMG is only dependent on the speed of rotation so voltage regulator power, and therefore excitation power, is not compromised during a load step.

300% short circuit capability

The PMG enables the generator to provide up to 300% short circuit current for 10 seconds. This is important when a fault occurs to ensure current continues to flow long enough for downstream breakers to trip and clear the fault. When a fault occurs with a shunt type regulator, the sudden drop in voltage indicates the regulator has no power to increase excitation to keep current flowing. Without current flow, the downstream breakers may not trip.

Resistant to the effects of harmonics

A PMG is also beneficial in applications with harmonic producing loads. When rectifier-type loads are present and cause voltage wave form notching, the disrupted voltage wave form can affect voltage regulator operation on shunt powered regulators. Unlike a shunt regulator, the PMG supplies the regulator with a power source which is isolated from the electrical system.



Generator Equipped with PMG

EXCITATION SYSTEM COMPARISON CHART

	AREP	Permanent Magnet Generator (PMG)
Motor starting capability	High	High
Short circuit current capability	300% at 60 Hz	300% at 60 Hz
Susceptibility to non-linear loads	Minimum	Minimum
Number of components	Minimum	Maximum
Retrofitability	No	Yes
Generator length	Minimum	Maximum
Stator design	Special	Standard with PM attachment
Voltage buildup	Uses residual magnetism and permanent magnet inserts on some frames	Positive from permanent magnets

marathon® Generators

DVR® 2400
DIGITAL VOLTAGE REGULATOR

NEW FEATURES
- USB 2.0 access through front panel
- Euro style connector for low voltage connections
- Event Logging
- PMG voltage metering
- Polarity configuration for external inputs
- Configurable cut-in and cut-out frequencies
- Retain/reset configuration of remote adjust

FOUR DIGIT HMI DISPLAY
From intial setup to monitoring regulator status, this display provides innovative, fast and easy setup.

REGULATION MODES
Single and Three phase (AVR), Manual Field Current Regulation (FCR), Reactive Power Regulation (VAR) and Power Factor Regulation (PF). All modes compatible with control by external devices.

GENERATOR SOFT START
Controlled increase to rated voltage limits overshoot during voltage build-up in AVR modes.

TRUE RMS VOLTAGE SENSING - SINGLE OR THREE PHASE
Directly sense 100 to 600 Volts at 50/60 Hz. Circuitry senses true RMS voltage for superior regulation.

SINGLE PHASE POWER METERING

FRAME SIZE SPECIFIC PID SELECTION
Simply select the appropriate frame size and your gains are set.

ROBUST GENERATOR PROTECTION FEATURES
9 different Alarm and Shutdown protection features, many are customizable for your application including:
- Field Over & Under Excitation
- Instantaneous Field Over Current
- Generator Over & Under Voltage
- Generator Voltage Imbalance
- Generator Loss of Sensing

REGAL®

DVR®2400 DIGITAL VOLTAGE REGULATOR

SPECIFICATIONS

Voltage Regulation - 0.25% over load range at rated power factor and constant generator frequency.

Output Power - 100 Vdc, 4.0 Adc continuous rating and 190 Vdc, 7.5 Adc forcing capability for one minute.

Exciter Field DC Resistance - 18 to 25Ω Range

Remote Voltage Adjustment - ±30% of nominal via analog input, ±15% via external contacts.

Input Power - 180 to 240 Vac, 250 to 300 Hz PMG power supply

Regulator Sensing - 100 to 600 Vac, 50/60 Hz, 1-phase/3phase

Operating Temperature - From -40°C to +70°C (-40°F to + 158°F)

Storage Temperature - From -40°C to +85°C (-40°F to +185°F)

Ingress Protection - IP52 (front side mounted in conduit box along with swing cover); IP10 (rear side with protective cover)

Shock - 20G in 3 perpendicular planes

Vibration - 2.5G at 5 to 26 Hz; 0.050" double amplitude (27 to 52 Hz); 7G at 53 to 500 Hz

Weight - 3.5 lb. (1361 g)

Humidity Testing - Per MIL-STD-705B, Method 711-D

Salt Fog Testing - Per MIL-STD-810E

EMI Compatibility

Immunity

Meets EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) -Part 6-2: Generic standards- immunity for industrial environments.

Emission

- Meets EN 61000-6-4: 2007 Electromagnetic compatibility (EMC) - Part 6-4: Generic Standards - emmission standard for industrial environments

EMI Compatibility Tests

Immunity

- Electrostatic Discharge (ESD): IEC 61000-4-2
- Radiated RF: IEC 61000-4-3
- Electrical Fast Transient (EFT) /Burst: IEC 61000-4-4
- Conducted RF: IEC 61000-4-6
- Power Frequency and Magnetic Field: IEC 61000-4-8

Emission

- Radiated RF: EN 61000-6-4: 2007, 30 MHz to 1000 MHz

marathon® Generators

Regal Beloit America, Inc.
100 East Randolph Street
Wausau, WI 54402-8003
PH: 715-675-3359

www.marathonelectric.com

REGAL®

MAGNAPLUS®

MARATHON ELECTRIC
SYNCHRONOUS AC GENERATOR
TYPICAL SUBMITTAL DATA

Basic Model: **431CSL6202/431PSL6202** Date: **6/15/17**

Kilowatt ratings at	**1800 RPM**		**60 Hertz**			**12 Leads**		
kW (kVA)	**3 Phase**		**0.8 Power Factor**			**Dripproof or Open Enclosure**		
	Class B	**Class F**				**Class H**		
Voltage*	**80º C ① Continuous**	**90º C ① Lloyds**	**95º C ① ABS**	**105º C † British Standard**	**105º C ① Continuous**	**130º C ① Standby**	**125º C † British Standard**	**125º C ① Continuous**	**150º C ① Standby**
240/480	125 (156)	131 (164)	135 (169)	142 (178)	142 (178)	155 (194)	145 (181)	151 (189)	160 (200)
230/460	125 (156)	132 (165)	136 (170)	143 (179)	143 (179)	155 (194)	145 (181)	152 (190)	160 (200)
220/440	125 (156)	132 (165)	136 (170)	143 (179)	143 (179)	153 (191)	145 (181)	151 (189)	160 (200)
208/416	125 (156)	130 (163)	133 (166)	140 (175)	140 (175)	151 (189)	141 (176)	147 (184)	155 (194)
190/380	115 (144)	120 (150)	123 (154)	130 (163)	130 (163)	140 (175)	132 (165)	135 (169)	145 (181)

① *Rise by resistance method, Mil-Std-705, Method 680.1b.* † *Rating per BS 5000.*

Submittal Data: 240/480 Volts*, 194 kVA, 1800 RPM, 60 Hz, 3 Phase

Mil-Std-705B Method	**Description**	**Value**
301.1b	Insulation Resistance	> 1.5 Meg
302.1a	High Potential Test	
	Main Stator	2000 Volts
	Main Rotor	1500 Volts
	Exciter Stator	1500 Volts
	Exciter Rotor	1500 Volts
	PMG Stator	1500 Volts**
401.1a	Stator Resistance, Line to Line	
	High Wye Connection	0.0718 Ohms
	Rotor Resistance	0.598 Ohms
	Exciter Stator	18.5 Ohms
	Exciter Rotor	0.116 Ohms
	PMG Stator	2.1 Ohms**
410.1a	No Load Exciter Field Amps	
	at 480 Volts Line to Line	0.6 A DC
420.1a	Short Circuit Ratio	0.405
421.1a	Xd Synchronous Reactance	3.195 pu
422.1a	X2 Negative Sequence	
	Reactance	0.268 pu
423.1a	X0 Zero Sequence Reactance	0.05 pu
425.1a	X'd Transient Reactance	0.19 pu
426.1a	X"d Subtransient Reactance	0.182 pu
--	Xq Quadrature Synchronous	
	Reactance	1.478 pu
427.1a	T'd Transient Short Circuit	
	Time Constant	0.048 sec.
428.1a	T"d Subtransient Short Circuit	
	Time Constant	0.005 sec.
430.1a	T'do Transient Open Circuit	
	Time Constant	1.34 sec.
432.1a	Ta Short Circuit Time	
	Constant of Armature Winding	0.014 sec.

Mil-Std-705B Method	**Description**	**Value**
505.3b	Overspeed	2250 RPM
507.1c	Phase Sequence CCW-ODE	ABC
508.1c	Voltage Balance, L-L or L-N	0.2%
601.4a	L-L Harmonic Maximum - Total	5.0%
	(Distortion Factor)	
601.4a	L-L Harmonic Maximum - Single	3.0%
601.1c	Deviation Factor	5.0%
---	TIF (1960 Weightings)	<50
652.1a	Shaft Current	< 0.1 ma
652.1a	Main Stator Capacitance to	
	Ground	0.015 mfd
	Additional Prototype Mil-Std Methods are Available on Request.	
--	Generator Frame	431
--	Type‡, Brushless	
--	Insulation	Class H
--	Coupling - Single Bearing	Flexible
--	Amortisseur Windings	Full
--	Cooling Air Volume	1280 CFM
--	Exciter	Rotating
--	Voltage Regulator	SE350***
--	Voltage Regulation	1%***
--	Sensing	1 Phase***

* Voltage refers to wye (star) connection, unless otherwise specified.

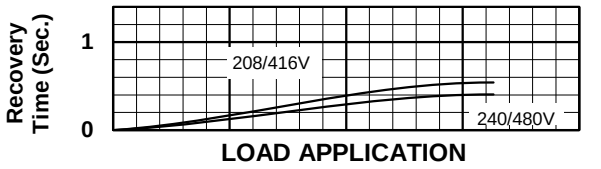
**Not supplied as standard equipment.

***DVR®2000E+ voltage regulator supplied with PMG option. DVR®2000E+ voltage regulation 1/4%, 1 or 3 Phase sensing.

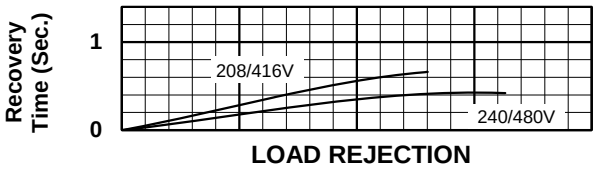
MARATHON ELECTRIC
SYNCHRONOUS AC GENERATOR
TYPICAL SUBMITTAL DATA

Basic Model: **431CSL6202/431PSL6202** Date: **6/27/17**

60 HERTZ



LOAD APPLICATION



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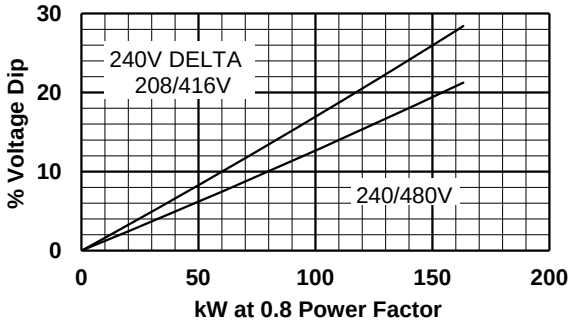
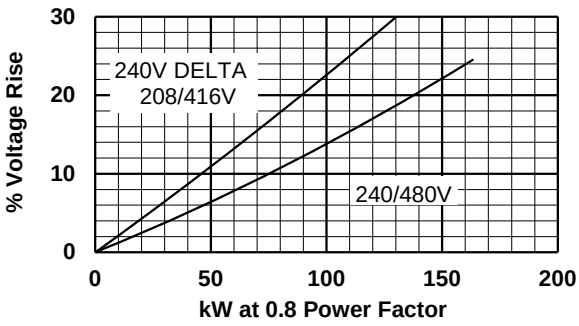
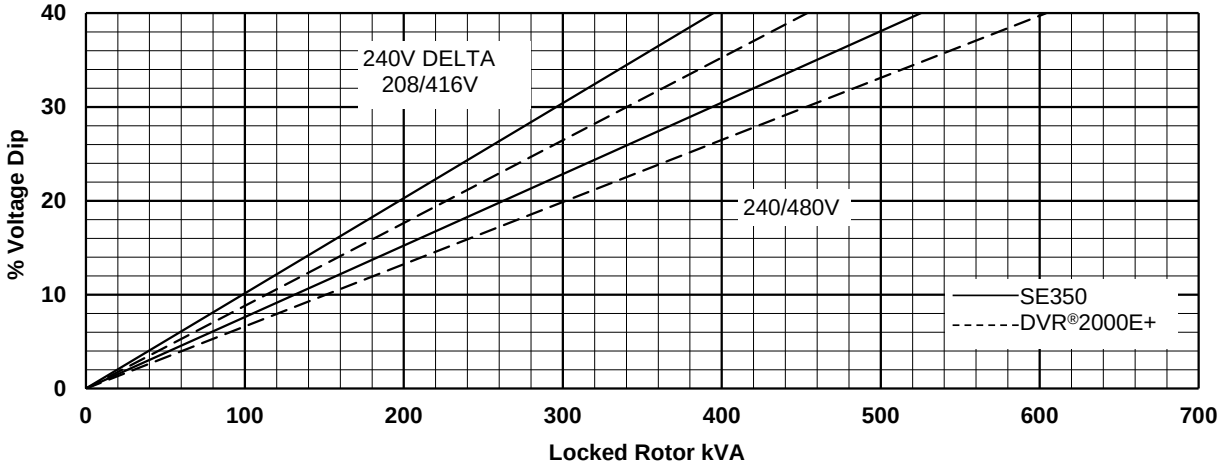
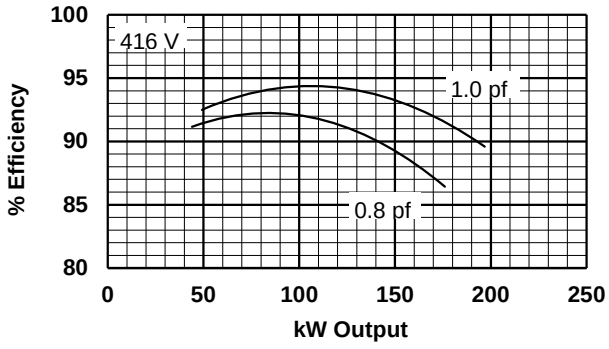


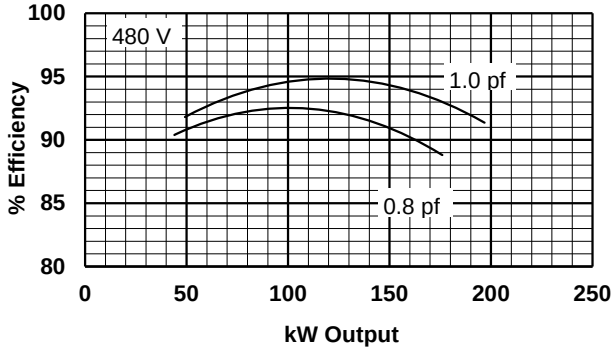


TYPICAL MOTOR STARTING CHARACTERISTICS



TYPICAL GENERATOR EFFICIENCY





Voltage refers to wye (star) connection, unless otherwise specified.

Product data sheet
Characteristics

LDL36400U33X
PowerPact L Circuit Breaker,Micrologic3.3S,400A,3P,600V,14kA

Main

Product or component type	Circuit breaker
Range of product	PowerPact L
Trip unit technology	Electronic standard Micrologic 3.3 S LSI
Breaking capacity code	D

Complementary

Protection technology	Current limiter
Line Rated Current	400 A
Poles description	3P
Breaking capacity	18 kA at 480 V AC 25 kA at 240 V AC 14 kA at 600 V AC
System Voltage	600 V AC
[Ics] rated service short-circuit breaking capacity	80 %
Mounting mode	Unit mount
Electrical connection	Lugs load Lugs line
AWG gauge	AWG 2/0...500 kcmil (aluminium/copper) 2
Terminal identifier	AL600LS52K3
Height	11.3 in
Width	5.5 in
Depth	6.61 in

Environment

Product certifications	UL listed NMX

	CCC CSA CE

Ordering and shipping details

Category	01116 - L ELEC TRIP UNIT MOUNT BREAKER/SW
Discount Schedule	DE2
GTIN	00785901954354
Nbr. of units in pkg.	1
Package weight(Lbs)	15
Returnability	Y
Country of origin	US

Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1132 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold
Product environmental profile	Available
Product end of life instructions	Available

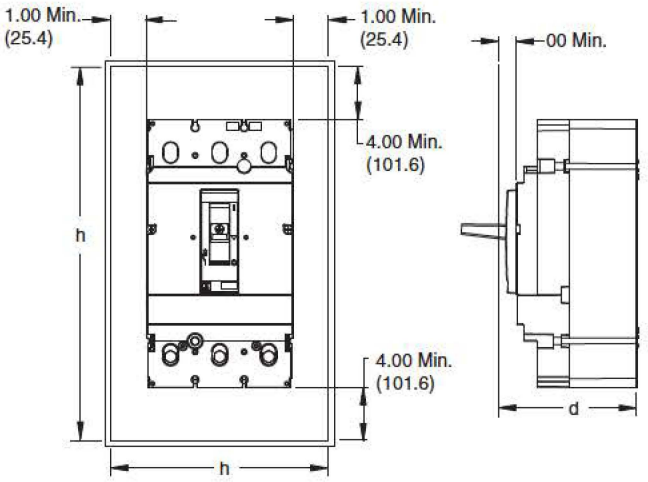
Contractual warranty

Warranty period	18 months

Circuit Breaker Enclosures and Enclosure Accessories

- Square D™ brand circuit breaker enclosures are UL Listed/CSA Certified and are suitable for use as service entrance equipment, except as footnoted.
- The short circuit rating of an enclosed circuit breaker is equal to the rating of the circuit breaker installed, except as footnoted.
- Circuit breakers are ordered and shipped separately for field installation.

Table 113: Minimum Enclosure Dimensions



Circuit Breaker	Amperage	Enclosure Dimensions (h x w x d)	
		Standard (80%)	100% Rated
HD/HG /HJ/HL	15–150 A	15.6 x 6.12 x 3.49 in. (396 x 155 x 89 mm)	15.6 x 6.12 x 3.49 in. (396 x 155 x 89 mm)
HR		18.13 x 8.63 x 4.13 in. (461 x 219 x 105 mm)	62 x 22.5 x 14 in. (1575 x 572 x 356 mm)
JD/JG/ JJ/JL[1]	150–250 A	18.72 x 6.12 x 3.49 in. (476 x 155 x 89 mm)	18.72 x 6.12 x 3.49 in. (476 x 155 x 89 mm)
JR		28.5 x 12.38 x 5.38 in. (724 x 314 x 137 mm)	62 x 22.5 x 14 in. (1575 x 572 x 356 mm)
LD/LG/ LJ/LL	250–600 A	35.48 x 12.00 x 4.45 in. 901 x 305 x 113 mm)	35.48 x 12.00 x 4.45 in. (901 x 305 x 113 mm)
LR		40.5 x 13.75 x 4.33 in. (1030 x 350 x 110 mm)	40.5 x 13.75 x 4.33 in. (1030 x 350 x 110 mm)

1 Minimum enclosure insulation required if circuit breaker side < 4.13 in. (105 mm) from metal.

Table 114: Circuit Breaker Enclosure Catalog Numbers

Circuit Breaker			Enclosure Cat. No.				
Cat. No. Prefix	Rating	Poles	NEMA 1 Flush	NEMA 1 Surface	NEMA 3R[1]	NEMA 4, 4X, 5, 3, 3R Stainless Steel	NEMA 12/3R, 5 (Without Knockouts)[2]
HDL,HGL,HJL,HLL	15–150 A	2, 3	J250F	J250S	J250R	J250DS	J250AWK
JDL,JGL,JJL,JLL	150–250 A	2, 3					
HDL	15–100 A	3	—	HD100S[3, 4, 5]	—	—	—
JDL	150–250 A	3	—	JD250S[3, 5, 6]	—	—	—

1 Enclosures with NRB or RB suffix have provisions for 3/4 in. through 2-1/2 in. bolt-on hubs in top endwall. Enclosures with R suffix have blank endwalls and require field cut opening.

2 Suitable for rainproof NEMA 3R application by removing drain screw from bottom endwall.

3 Copper wire only.

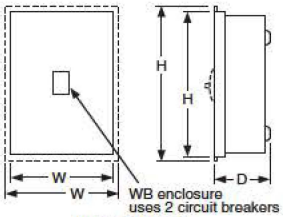
4 Maximum short circuit current rating is 25 kA, 240 Vac.

5 Order service ground kit PKOGTA2 if required.

6 Maximum short circuit current rating is 18 kA, 480 Vac.

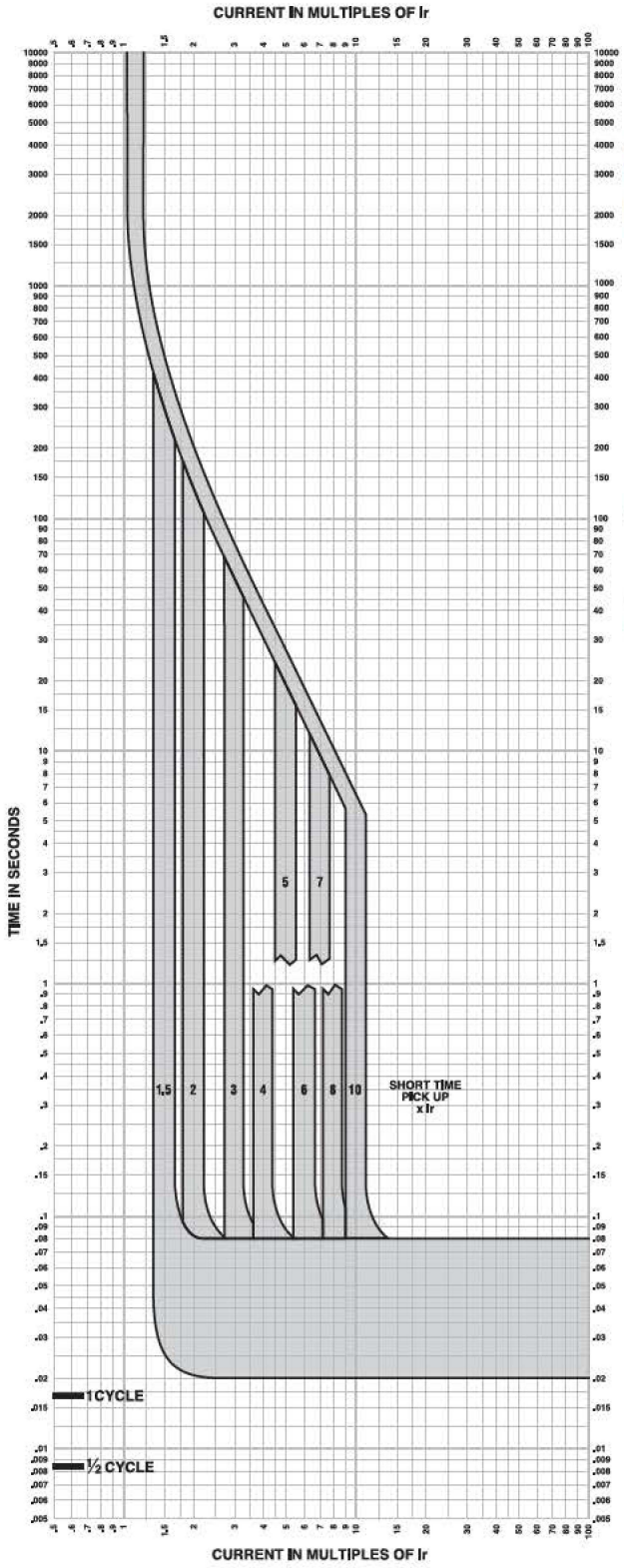
Table 115: Dimensions

Cat. No.	Approximate Dimension						
	Series	H		W		D	
HD100S	A01	17.00 in.	431.8 mm	7.90 in.	200.7 mm	4.75 in.	120.7 mm
J250F	A01	32.40 in.	823 mm	15.40 in.	391 mm	6.00 in.	152 mm
J250S	A01	31.36 in.	797 mm	14.36 in.	365 mm	6.00 in.	152 mm
J250R	A01	31.05 in.	789 mm	14.47 in.	368 mm	6.28 in.	160 mm
J250DS	A01	32.26 in.	819 mm	9.72 in.	247 mm	7.94 in.	202 mm
J250AWK	A01	32.26 in.	819 mm	9.72 in.	247 mm	7.94 in.	202 mm



NEMA Type 1

Figure 117: Micrologic 3.3S and 3.3S-W Electronic Trip Unit Long Time/Short Time Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.3S and 3.3S-W
Long Time/Short Time Trip Curve
250A, 400A L-Frame

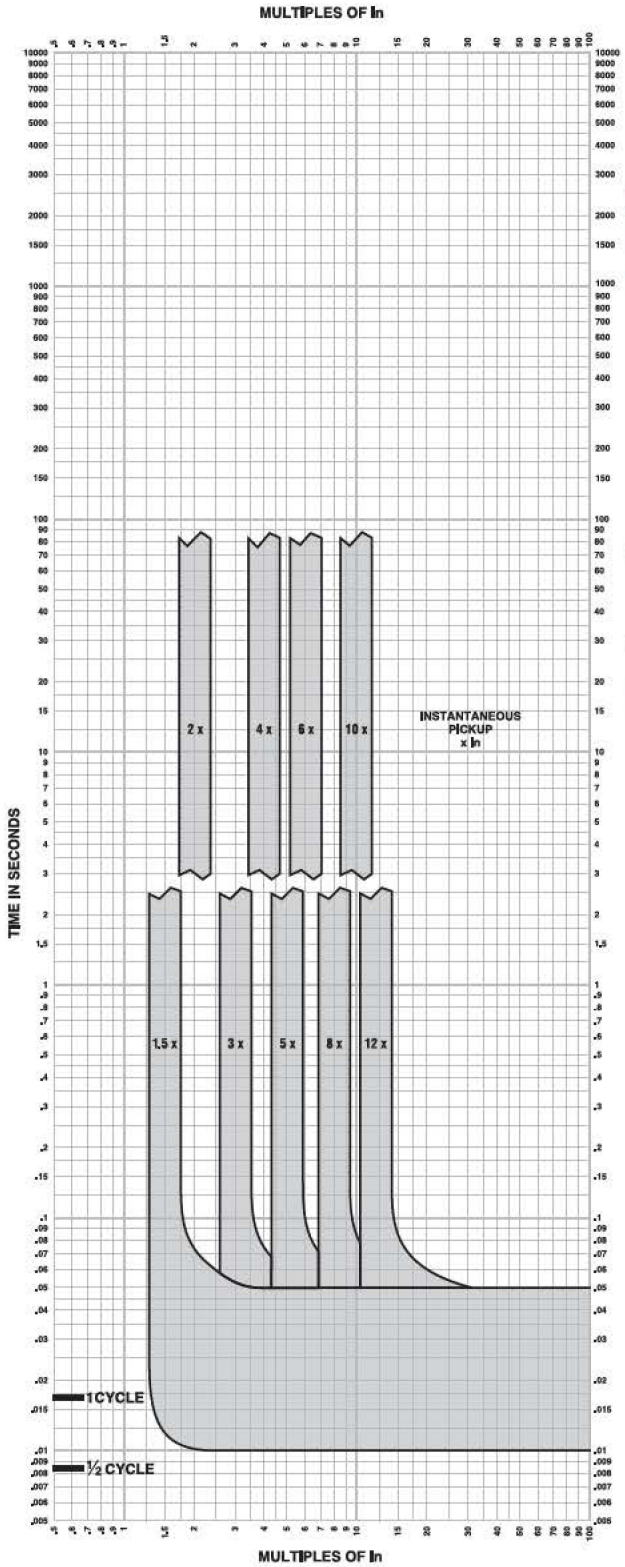
The time-current curve information is to be used for application and coordination purposes only.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

Figure 119: Micrologic 3.3, 3.3-W, 3.3S, 3.3S-W, 5.3A, 5.3A-W, 5.3E, 5.3E-W, 6.3A, 6.3A-W, 6.3E, and 6.3E-W Electronic Trip Unit Instantaneous Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.3, 3.3-W, 3.3S, 3.3S-W, 5.3A, 5.3A-W, 5.3E, 5.3E-W, 6.3A, 6.3A-W, 6.3E, and 6.3E-W
Instantaneous Trip Curve
400A L-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. In = Maximum dial setting of Ir.
   400A L-Frame: In = 400A = Max Ir setting

Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

Circuit Breaker Enclosure Data Sheet - Gas

150 kW Standby

DESCRIPTION

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation, specification requirements, and installation. This document summarizes the enclosure dimensions and mounting positions for the ***mtu*** 8V0110 GS150 circuit breakers. The dimensional drawings will govern and should be referenced for installation.

430 FRAME ENCLOSURE

- Enclosure supplied with all 430 frame alternator applications.
- Right side primary breaker shown. Left side primary breaker optional.
- Reference Figure 2 and Table 2 for breaker mounting positions.

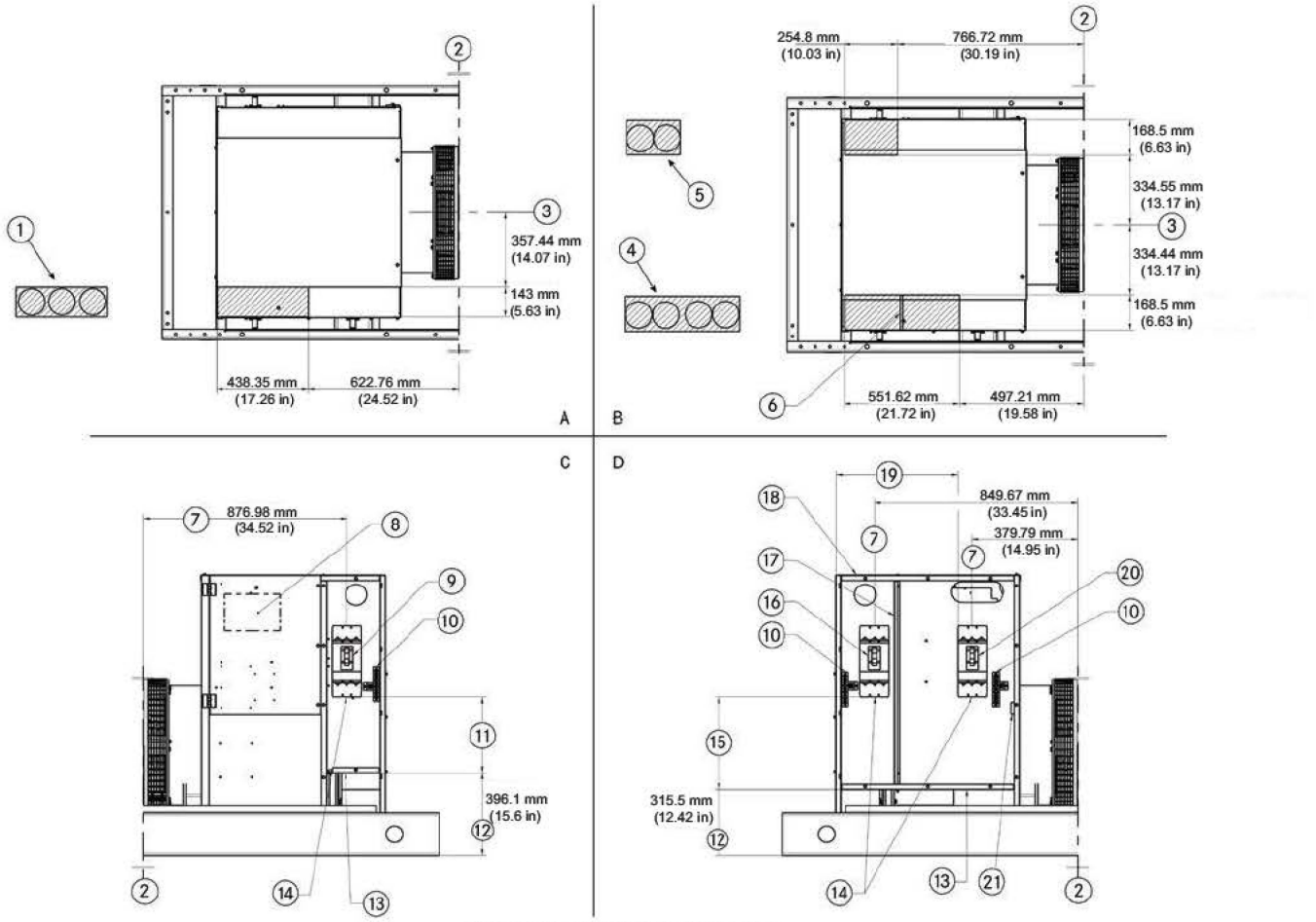


Figure 1: 430 Frame Enclosure

A. Top view, top entry conduit area
B. Top view, bottom entry conduit area
C. Left view, breaker enclosure detail (enclosure door not shown)
D. Right view, breaker enclosure detail (enclosure cover not shown)

1. Three conduit maximum
2. Rear face of flywheel housing
3. Generator centerline
4. Four conduit maximum (primary breaker side)
5. Two conduit maximum (opposite primary breaker)
6. Second breaker divider wall
7. Breaker centerline
8. Optional control panel location
9. Optional second/third breaker
10. Neutral ASM (torque to 275 in-lbs)
11. Dimension B
12. Add 205 mm (8.08 in) for bases with integrated single wall fuel tank
13. Bottom entry conduit area
14. Customer connect end (recommended torque on label)
15. Dimension A
16. Optional second breaker
17. Divider wall included with second breaker
18. Top entry conduit area
19. Dimension C
20. Primary breaker
21. Equipment ground terminal (torque to 275 in-lbs)

A Rolls-Royce solution

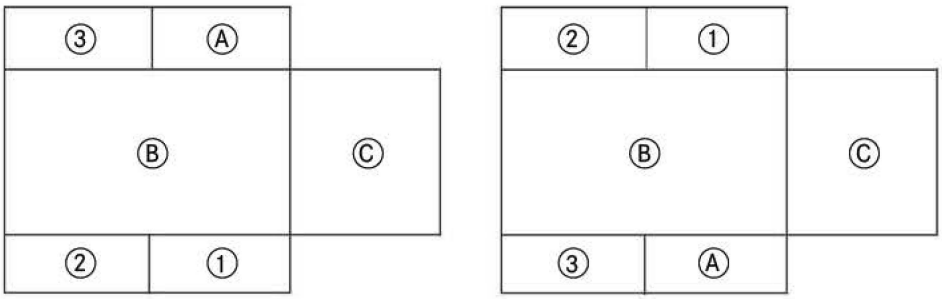
Circuit Breaker Enclosure Data Sheet - Gas
150 kW Standby

Available Circuit Breakers		Enclosure Data					
Breaker Frame	Amperage	Output Wire Range 90 °C Cu (wires per lug)	Wire Bending Space[1] Dimension A mm (in)	Wire Bending Space[1] Dimension B mm (in)	Wire Gutter Space[1,2] Dimension C mm (in)	Conduit Quantity	Conduit Size[3] in
H-Frame	20-150	(1) 8-3/0	532 (20.93)	451 (17.76)	602 (23.69)	1	2.5
J-Frame	175	(1) 4-4/0	518 (20.37)	437 (17.2)	602 (23.69)	1	2.5
J-Frame	200-250	(1) 3/0-350	518 (20.37)	437 (17.2)	602 (23.69)	1	3
L-Frame 100%	300-400	(2) 2/0-500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
L-Frame 80%	300-600	(2) 2/0-500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
M/P-Frame	250-800	(3) 250-500	407 (16.01)	N/A	451 (17.74)	3	3.5

(1) Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B)
(2) Top entry only available for single breaker applications
(3) Based on flexible metal conduit at 40% fill using THHN wire

NOTE: Equipment grounding terminal wire range: 6 AWG - 350 kcmil.

Table 1: 430 Frame Enclosure Data



Top View - Right Side Breaker **Top View - Left Side Breaker**

Figure 2: 430 Frame Enclosure Breaker Mounting Positions

A. Controls
B. Outlet box
C. Alternator

1. Position 1 (Primary)
2. Position 2
3. Position 3

Breaker Frame		
Position 1 (Primary)	Position 2	Position 3
H/J/L	-	-
H/J/L	H/J/L	-
H/J/L	H/J/L	H/J/L
P/M	-	-
P/M	H/J	-
PP/MM	H/J	H/J/L
P/M	P/M	L

Table 2: 430 Frame Breaker Mounting Positions

N/A = Not Available