DOCKETED	
Docket Number:	19-SPPE-03
Project Title:	Sequoia Data Center
TN #:	236429
Document Title:	SBGF Revised Project Description and AQ Emissions - Tier 4
Description:	N/A
Filer:	Scott Galati
Organization:	DayZenLLC
Submitter Role:	Applicant Representative
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STATE OF CALIFORNIA

Energy Resources
Conservation and Development Commission

In the Matter of: Application For Small Power Plant Exemption for the **SEQUOIA BACKUP GENERATING FACILITY**	**DOCKET NO: 19-SPPE-03** **C1-SANTA CLARA LLC'S RESPONSE TO JANUARY 20, 2021 ORDER FOR FILING REVISED PROJECT DESCRIPTION**

C1- Santa Clara LLC (C1) hereby files this Response to the Hearing Officer Memorandum dated January 20, 2021 ordering the Filing of a Revised Project Description its Sequoia Backup Generating Facility (SBGF) (TN 236380). Attached is a Revised Project Description prepared using redline/strikethrough of the original SBGF Project Description contained in the Small Power Plant Exemption (SPPE) Application including drawings and specification sheets for the generator enclosures, urea tank, and Miratech Selective Catalytic Reduction (SCR) system. Additionally, attached to the Project Description is a table comparing the emissions of the original Tier 2 generators to the proposed Tier 4 compliant generators and the original emissions tables provided in the SPPE Application provided in redline/strikethrough.

As we stated in our After Proposed Decision Status Report No. 1 no additional CEQA analysis is required for the modification as they do not cause any new impacts that were not previously analyzed in the Proposed Decision and Initial Study/Mitigated Negative Declaration (IS/MND) and in fact reduce emissions of NOx even those emissions were found to be less than significant for the original generators.

Neither CEQA nor the Commission SPPE regulations require additional evidentiary hearing to approve the modifications contained herein. We again urge the Committee to proceed to the next available Commission Business Meeting for adoption of the Proposed Decision.

Dated: January 25, 2021

Respectfully Submitted,

Scott A. Galati
Counsel to C1-Santa Clara, LLC

2 PROJECT DESCRIPTION

2.3 Overview of Proposed Generating Facilities

SBGF would be a backup generating facility with a generation capacity of up to 96.5 MW to support the SDC's purpose of providing uninterruptible power supply for its tenant's servers. The SBGF would consist of 54 diesel-fired backup generators arranged in a generation yard located on the west and south sides of the SDC. Project elements will also include switchgear and distribution cabling to interconnect the generators to their respective portion of the buildings.

2.4 Generating Facility Description, Construction and Operation

2.4.1 Site Description

The proposed SDC site encompasses 15 acres and is located at 2600 De La Cruz Boulevard in the City, California, assessor's parcel number (APN) 230-03-105. The property is zoned Heavy Industrial. The site was previously developed with a one-story recycled paperboard mill and warehouse. The mill utilized a combined-cycle cogeneration plant with a natural gas turbine. The majority of the site surfaces were paved. The initial development of the site appears to have been begun in the late 1940s and early 1950s. The site is currently vacant and unpaved.[8]

The property is bound to the north by an Enterprise Rent-a-Car Facility, to the south by a furniture warehouse, to the east by San Jose International Airport (SJC), and to the west by warehouse structures. The project area consists primarily of industrial land uses. Buildings in the area are generally similar in height and scale. SJC is approximately 100 feet east of the site. A list of all property owners within 1,000 feet of the site was generated by the City in July 2019 and is included as **Appendix A**.

2.4.2 General Site Arrangement and Layout

The 54 backup generators would be located in a generation yard along the west and south sides of the SDC building. **Figure 2** shows the general arrangement and site layout of the SBGF within the SDC site.

Each backup generator is proposed as a fully independent package system with a dedicated and integrated fuel tank located below the bottom level of the generator. The generation yard would be electrically interconnected to the SDC building through above-ground cables to a location within the building that houses electrical distribution equipment.

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[8] The City of Santa Clara issued a demolition permit to C1 on February 7, 2019 and at the time of the filing of this SPPE, demolition activities have been completed for every project feature except for piping and miscellaneous infrastructure associated with the former cogeneration facility.

2.4.3 Generating Capacity

The following facts are relevant to determining the generating capacity of the SBGF.

1. The SBGF uses internal combustion engines.
2. The SBGF internal combustion engines have a peak rating and a continuous rating.
3. The SBGF through software technology and electronic devices is controlled exclusively by the SDC.
4. The SBGF has been designed with a "6 to make 5" design basis to ensure redundancy, making 9 generators redundant.
5. The SBGF would only be operated for maintenance and testing and during emergencies.
6. The SBGF during an emergency would only operate at a load equal to the demand by the SDC.
7. The SBGF would not be interconnected to the transmission grid or anything else, including connection through the SDC.

C1 offers the following methodologies for the Commission to use to determine generating capacity that would be reasonable, not arbitrary and capricious, and would take into account the unique features of a backup generating facility such as the SBGF.

Data Center Load Demand

The preferred and most accurate way to calculate the generating capacity of the SBGF is to recognize that the load of the backup generators would be completely dictated by the demand of the data center. Using this methodology reflects the most accurate way of describing the relationship between the SBGF and the SDC and describes the actual physical constraint to the generating capacity. In other words, the SDC would employ physical electronic devices and software technology (Automatic Transfer Switches, Building Load Management System) that limit the output of the SBGF.

The SDC would include load-shedding software and electronic equipment that would automatically adjust the output of the SBGF based only on the demand of the SDC. The demand of the data center is not some ethereal concept derived for purposes of determining generating capacity. It is instead a physical constraint not controlled by C1, but rather controlled through software and electronic control devices. The software and electronic control devices would match the output of the SBGF during an emergency where SVP cannot serve the SDC load. The fact that the SBGF is not electrically connected to anything other than the data center creates this unique factual circumstance.

This unique situation must be distinguished from the case of a conventional power facility that is interconnected to the transmission grid and responds to calls from the California Independent System Operator (CaISO). In the case of a conventional power facility, the CaISO can call on any portion of the generator's capacity, including its maximum generating capacity, as the CaISO can direct the electricity to different parts of the system. For the SBGF, there would be one place the electricity can go – the SDC.

Therefore, the most accurate way of calculating generating capacity from a backup generating facility that solely supports a data center is to understand the potential load of the receiving data center. It is also important to note that the design demand of the SDC, which the SBGF has been designed to reliably supply with redundant components during an emergency, is based on the maximum Critical IT load occurring during the hottest hour in the last 20 years. Such conditions are possible but extremely unlikely to ever occur. The SDC load on that worst-case day is just under 97 MW, below the SPPE threshold.

Each set of 6 generators would be dedicated to serve the Critical IT requirement of a data hall. In addition, each set of six generators would share a portion of the overall building mechanical load, which is primarily driven by cooling of the data hall and the common space of the building (lobby, conference area, hallways, etc.). The SDC would have seven data halls, each designed to provide 7.5 MW of Critical IT as well as four data halls each designed to provide 3.75 MW of Critical IT, for a total Critical IT load of 67.5 MW. The total mechanical building load for the SDC for the hottest day in the last 20 years is 29 MW. Therefore, the maximum SDC building load would be 67.5 MW Critical IT plus 29 MW of Total Mechanical Building Load, or 96.5 MW.

It is important to note that while the SDC has been designed to accommodate full Critical IT load, it is C1's experience that clients rarely utilize the entire Critical IT load available inside a data hall(s) that it rents. Also, the average ambient temperature conditions for a data center in the City area are much lower than the design day. The average Critical IT load is expected to be more on the order of 47 MW and the average total mechanical building load is expected to be approximately 11 MW.

The data center industry utilizes a factor called the Power Utilization Efficiency Factor (PUE) to estimate the efficiency of data centers. The PUE is calculated by dividing the total demand of the data center by the Critical IT load. For the worst-case day, the peak PUE for the SDC would be 1.43 (total 96.5 MW demand of building on worst-case day divided by 67.5 MW total Critical IT load). The average PUE for the SDC would be 1.23 (total 58 MW demand of building average conditions divided by 47 MW expected Critical IT load).

Regulatory Capacity Restriction

The Commission should also consider that C1 is currently in negotiations with SVP to supply electricity to the SDC. SVP has provided a will-serve letter (**Appendix B**) that confirms its ability to provide up to 99 MW to C1 for the SDC. C1 and SVP are currently negotiating an agreement that will contractually limit the amount of deliverable electricity to the SDC to less than 100 MW. In other words, if the SDC cannot take delivery of more than 100 MW from SVP, the SBGF, which replaces the electricity that SVP is unable to deliver, would never exceed 100 MW.

2.4.4 Backup Electrical System Design

Overview

To place the role of the SBGF into context, the following information about the overall SDC design is provided. The design objective of the backup electrical system is to provide sufficient equipment and redundancy to ensure that the servers housed in the SDC buildings would never be without electricity to support critical loads. The critical loads include the load systems to support the building operation in addition to the electricity consumed by the servers themselves. The largest of these building loads is the mechanical systems to provide cooling for the server rooms.

For backup supply for a data center, it is commonplace to build levels of systems and equipment redundancy and concurrent maintainability into the overall electrical and mechanical infrastructure. The base quantity of systems that are required to serve the design load of the facility is referred to as “N”. When reliability requirements dictate that redundant systems are added to the base quantity of systems, it is commonplace in the industry to refer to the number of redundant systems as “X” in the representation “N+X”.

Each electrical system would consist of a UPS system that would be supported by batteries, electrical switchgear, an electrical inverter, and portions of the SBGF backup generation. The UPS systems that would be deployed at the SDC would consist of one (1) 1500 kilo-volt ampere (KVA) UPS unit to provide “N Unit” of redundancy for a critical capacity of 1.5 MW. This UPS unit would power a potential 1.5 MW of critical load by employing load-sharing capabilities inherent to the UPS design. The power inputs of the UPS unit would be electrically connected to a single main switchboard. This main switchboard would be connected to a dedicated 2500 KVA utility transformer as well as dedicated to one of the SBGF backup generators.

Six 1.5 MW UPS systems would equally share a maximum 7.5 MW critical load. The system would work as a distributive redundant (6 to make 5) N+1 system such that if any single N system were to catastrophically fail, the surviving 5 would have sufficient capacity to provide power to the maximum critical load. There are nine of these 6-to-make-5 systems proposed in the SDC.

UPS System and Batteries

The UPS System and Batteries are part of the SDC and are not part of the SBGF. However, the following description is provided to describe how the UPS would dispatch the individual generators of the SBGF. The UPS would protect the load against surges, sags, under voltage, and voltage fluctuation. The UPS would have built-in protection against permanent damage to itself and the connected load for all predictable types of malfunctions. The load would be automatically transferred to the bypass line without interruption in the event of an internal UPS malfunction. The status of protective devices would be indicated on a liquid crystal display (LCD) graphic display screen on the front of the UPS. The UPS would operate in the following modes:

- **Normal** – Insulated Gate Bipolar Transistor (IGBT) Rectifier converts alternating current (AC) input power to DC power for the inverter and for charging the batteries. The IGBT inverter supplies clean and stable AC power continuously to the critical load. The UPS Inverter output shall be synchronized with the bypass AC source when the bypass source is within the AC input voltage and frequency specifications.

- **Loss of Main Power** - When main power is lost, the battery option shall automatically back up the inverter so there is no interruption of AC power to the critical load.

- **Return of Main Power or Generator Power** - The system shall recover to the Normal Operating Mode and shall cause no disturbance to the critical load while simultaneously recharging the backup battery.

- **Transfer to Bypass AC source** - If the UPS becomes overloaded, or an internal fault is detected, the UPS controls shall automatically transfer the critical load from the inverter output to the bypass AC source without interruption. When the overload or internal warning condition is removed, after a preset "hold" period the UPS will automatically re-transfer the critical load from the bypass to the inverter output without interruption of power to the critical load.

- **Maintenance Bypass** - An optional manual make-before-break maintenance bypass panel may be provided to electrically isolate the UPS for maintenance or test without affecting load operation.

Similarly, the batteries and battery banks would not be a part of the SBGF and are described here for informational purposes only. The batteries would be configured in banks of eight cabinets. The banks would be connected to the UPS units as described above. The batteries would have tab washers mounted on front terminal posts capable of accepting the wiring components of a battery monitoring system. Batteries would have a minimum design life of 10 years in float applications at 77 degrees Fahrenheit. The battery containers and covers are polypropylene, are hermetically sealed to provide leak resistance over the life of the product, and are flame retardant to meet UL standard 1778.[9]

The batteries would be configured in banks with matching stand-alone valve-regulated battery banks with the following characteristics.

- Each battery bank would provide a minimum of 10 minutes of backup at 75 percent rated inverter load of 1500 kilowatts (kW), at 77°F/25°C, end of life
- Internal cabinet temperature sensor to be wired back to the UPS module
- Conductor terminations will be NEMA two-hole long barrel compression lugs

[9] Underwriters Laboratories, or UL, is a national leader in producing electrical and fire safety standards.

2.4.5 *Electrical Generation Equipment*

Each of the 54 generators would be a Tier-4~~2~~ standby diesel-fired generator equipped with the Miratch system which includes both Selective Catalytic Reduction (SCR) System[1] and diesel particulate filters~~s~~ (DPF). The generators would be MTU model 16V4000 DS2250. The maximum peak rating of the DS2250 is 2250 kW with a steady-state continuous generating capacity of 1.91 MW. Specification sheets for each manufacturer and evidence of the steady-state continuous ratings of the generators are provided in **Appendix C**.

Each individual generator would be provided with its own package system. Within that package, the prime mover and alternator would be made ready for the immediate call for the request for power controlled by the UPS. The generator package would integrate a dedicated fuel tank with a capacity of 6,800 gallons and SCR to reduce NOx emissions. The SCR system will use urea which will be stored in one 1,500 gallon tank for each pair of generators. The generators would be located in a generator yard along the west and south sides of the building. The ~~generators~~ enclosures are approximately 11~~3~~ feet wide, 34~~7~~ feet long, and 24~~17~~ feet high. Each generator on the western side of the SDC would have a stack height of approximately 38 feet 9 inches. Each generator along the southern side of the SDC would have a stack height of approximately 24 feet 9 inches. Additonally, each generator package will be set below grade such that the diesel fuel tank will be entirely below grade in a concrete basin as outlined in the previously docketed letter from the Santa Clara County Airport Land Use Commission (ALUC) dated December 20, 2019 (TN 231355). Each of the urea tanks is approximately 4 feet wide and approximately 18 feet long and will also be placed below grade in the concrete basin between the two generators each tank will serve. ~~When placed on slab,~~The generators ~~they would~~ would be spaced approximately 5 feet apart horizontally. The generator yards would have 20-foot-high precast concrete screen walls and 8-foot-high decorative metal fence.

2.4.6 *Major Electrical Equipment and Systems*

There would be a load disconnect breaker at the generator alternator that is normally closed while the generator is both in and out of operation. From that load disconnect, a 600-volt rated power cable bus would traverse from the generator into the data center facility (SDC building) terminating on a dedicated main generator input breaker. The power cable bus would be rated for the full ampacity output rating of the generator. The generator would also include a load bank connection, allowing each generator to be individually connected to a load bank for periodic maintenance and testing. The generator main breaker would be electrically interlocked with an adjacent utility transformer main breaker within the main switchboard, such that the generator main breaker can never close unless the utility transformer main breaker is in the open state. The generator main breaker would only close based upon a generator start request from a Programmable Logic Controller (PLC) control logic that indicates that:

- The utility transformer main breaker's source power is unavailable,
- The generator has started and is producing 480-volt AC power, and
- The utility transformer main breaker is in the open state

[1] ~~See Appendix C for the Miratech system spec sheet.~~

Once the generator main breaker is closed, the power created from the individual generator is then transmitted to the dedicated load of the 1.5 MW critical UPS load system and connected mechanical equipment. This load would be the exact same load that the dedicated utility transformer was supplying power to prior to the utility interruption. Power from this individual generator could not be transferred to any other load or system or anywhere outside the facility.

2.4.7 Fuel System

The backup generators would use ultra-low sulfur diesel as fuel (<15 parts per million sulfur by weight). The 54 generators would have a combined diesel fuel storage capacity of 367,200 gallons, designed to provide 24 hours of emergency generation at full demand of the SDC.

2.4.8 Cooling System

Each generator would be air cooled independently as part of its integrated package and therefore there is no common cooling system for the SBGF.

2.4.9 Water Supply and Use

The SBGF would not require any consumption of water. The SDC will use approximately 5 acre-feet per year of potable water for domestic and irrigation uses to be supplied by the City via a new pipeline from the building to an interconnection with an existing water pipeline located in De La Cruz Boulevard. Chilled hydronic water piping would require an initial one-time water use of approximately 0.5 acre-feet prior to commercial operation.

2.4.10 Waste Management

The SBGF would not create any waste materials other than minor amounts of solid waste created during construction and maintenance activities. The SDC would generate sanitary sewage which would be sent via underground pipeline from the building to an interconnection with an existing sewer pipeline located in De La Cruz Boulevard.

2.4.11 Hazardous Materials Management

The project would require the preparation of a Spill Prevention, Control and Countermeasure Plan (SPCC) to address the storage, use, and delivery of diesel fuel for the generators.

Each generator unit and its integrated fuel tanks have been designed with doublewalls. The interstitial space between the walls of each tank would be continuously monitored electronically for the presence of liquids. This monitoring system would be electronically linked to an alarm system in the security office. This system would alert personnel if a leak is detected. Additionally, the standby generator units would be housed within a self-sheltering enclosure that prevents the intrusion of storm water.

Diesel fuel would be delivered on an as-needed basis in a compartmentalized tanker truck with maximum capacity of 8,500 gallons. The tanker truck would park at the gated entrances to the generator yard for re-fueling.

The SBGF would not include loading/unloading racks or containment for re-fueling events; however, a spill catch basin would be located at each fill port for the generators. To prevent a release from entering the storm drain system, drains would be blocked off by the truck driver and/or facility staff during fueling events. Rubber pads or similar devices would be kept in the generation yard to allow quick blockage of the storm sewer drains during fueling events.

To further minimize the potential for diesel fuel to come into contact with stormwater, to the extent feasible, fueling operations would be scheduled at times when storm events are improbable.

Warning signs and/or wheel chocks would be used in the loading and/or unloading areas to prevent vehicles from departing before complete disconnection of flexible or fixed transfer lines. An emergency pump shut-off would be utilized if a pump hose breaks while fueling the tanks. Tanker truck loading and unloading procedures would be posted at the loading and unloading areas.

Additonally, the generator package will be set below grade such that the diesel fuel tank will be entirely below grade in a concrete basin as outlined in the previously docketed letter from the Santa Clara County Airport Land Use Commission (ALUC) dated December 20, 2019 (TN 231355).

To meet the Tier 4 emission standards, urea is used to enable the SCR system to achieve NOx emission reduction. Urea is required to be stored and managed appropriately. Urea does not trigger the CalARP Program and therefore neither an offsite consequence analysis nor Risk Management Plan are required. Since the urea tanks will be below grade in the concrete basin, its use complies with the ALUC Master Plan policies applicable to the site. A diagram of the urea tank is shown in Appendix C.

2.4.12 SBGF Project Construction

Construction activities for the SDC are expected to begin in January 2020 and are discussed in more detail in **Section 2.5, Sequoia Data Center Facilities Description**. Since the site preparation activities for the SDC would include the ground preparation and grading of the entire SDC site, the only construction activities for the SBGF would involve construction of the generation yard. This would include construction of concrete slabs, fencing, installation of above-ground conduit and electrical cabling to interconnect to the SDC Building switchgear, and placement and securing of the generators.

The generators themselves would be assembled offsite and delivered to the site by truck. Each generator would be placed within the generation yard by a crane.

Construction of the generation yard and placement of the generators is expected to take 6 months. Construction personnel are estimated to range from 10 to 15 workers including one crane operator.

2.4.13 SBGF Facility Operation

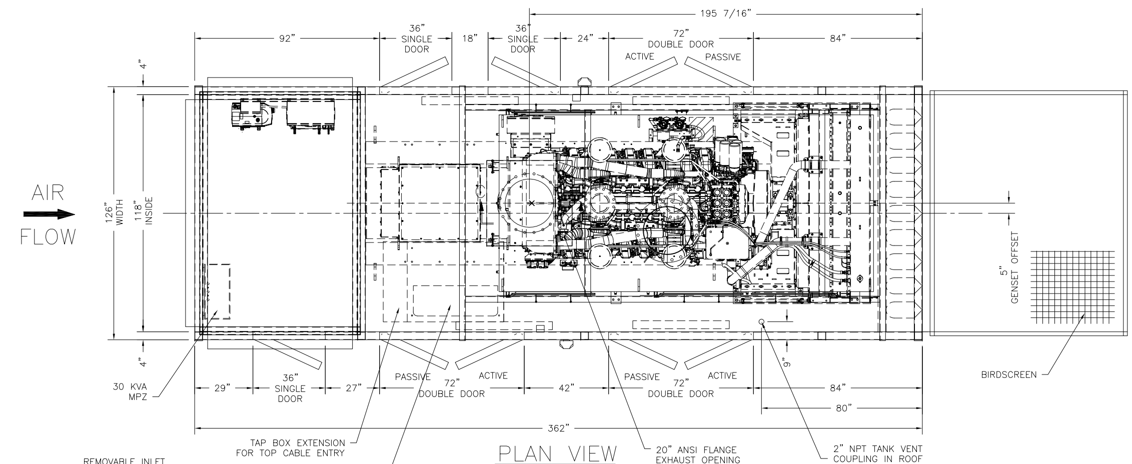
The backup generators would be run for short periods for testing and maintenance purposes. Other than maintenance and testing, the generators would not be operated unless there is a disturbance or interruption of the utility supply. The Bay Area Air Quality Management District (BAAQMD)'s Authority to Construct and the California Air Resources Board's (CARB) Airborne Toxic Control Measures (ATCM) limits each engine to no more than 50 hours of operation annually for reliability purposes (i.e., testing and maintenance). However, it is C1's experience that maintenance and testing of each engine rarely exceeds 10 hours annually. In addition, C1 will only operate one engine at a time for maintenance and testing activities. Please see **Section 4.3, Air Quality** for additional description of the testing and maintenance frequencies and loading proposed for the SBGF.

SPPE APPLICATION APPENDIX C

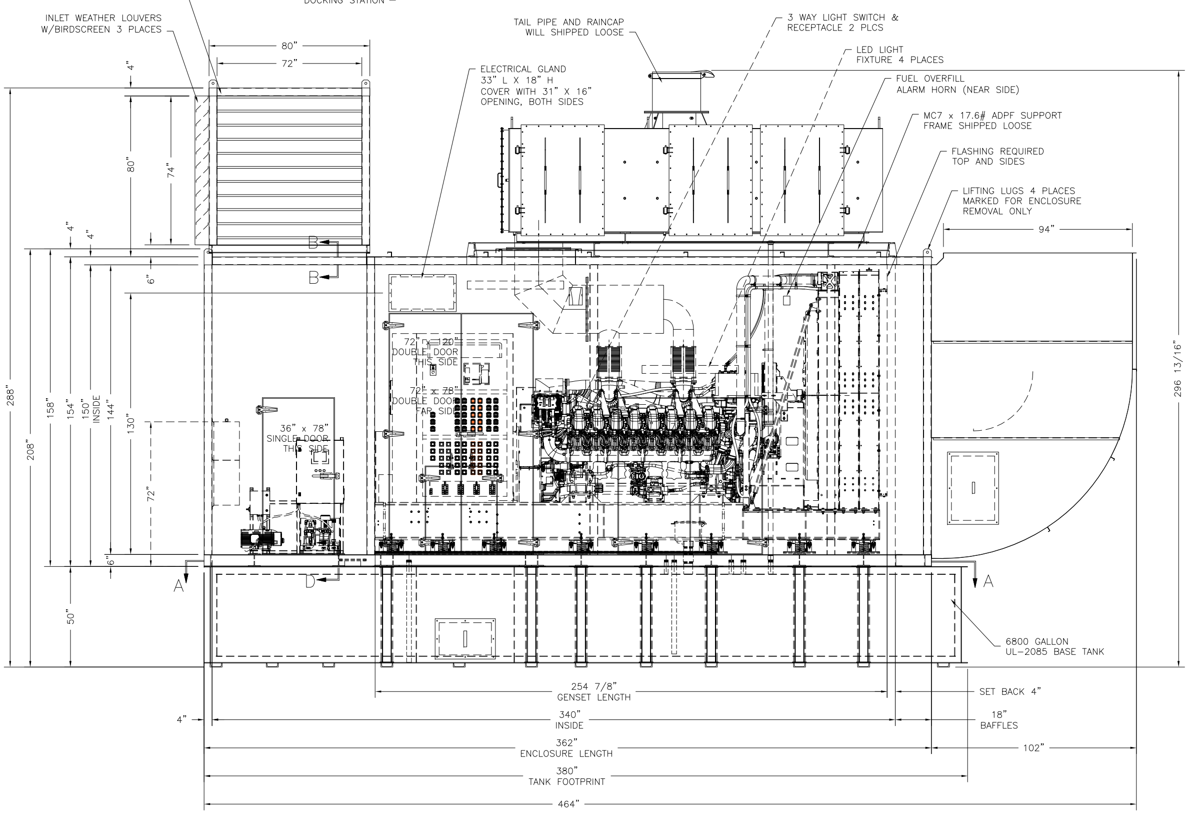
ADDITIONS

Drawings and Specification Sheets for Tier 4 Compliant Generators

PRELIMINARY



PLAN VIEW



ELEVATION VIEW

NOTES:

ENCLOSURE ASSEMBLY:
- * FOR AN MTU 2250 KW GEN-SET.
- * FULLY ASSEMBLED DROP OVER ENCLOSURE TO BE ANCHORED TO THE BASE TANK.
- * PANEL JOINTS ARE SKIP WELDED AND CAULKED.

ENCLOSURE CONSTRUCTION:
- * WALLS AND ROOF – 14 GAUGE GALVANNEALED STEEL.
- * FRAME CONSTRUCTION – A36 STRUCTURAL CHANNEL & A-500 TUBING.
- * INNER LINER – PERFORATED GALVANNEALED STEEL.
- * INSULATION – MINERAL WOOL AND POLY LINER.
- * DOORS – THREE (3) DOUBLE & THREE (3) SINGLE ACCESS SERVICE DOORS WITH STAINLESS STEEL HINGES AND LATCHES.
- * BAFFLES – 18" DEEP DISCHARGE PANELS. GALVANNEALED CONSTRUCTION.
- * LOUVERS – FIXED INLET WEATHER LOUVERS W/BIRDSCREEN. GALVANNEALED CONSTRUCTION.
- * ELBOW – DISCHARGE ELBOW WITH BIRDSCREEN. GALVANNEALED CONSTRUCTION.
- * BOLTING HARDWARE – STAINLESS STEEL.

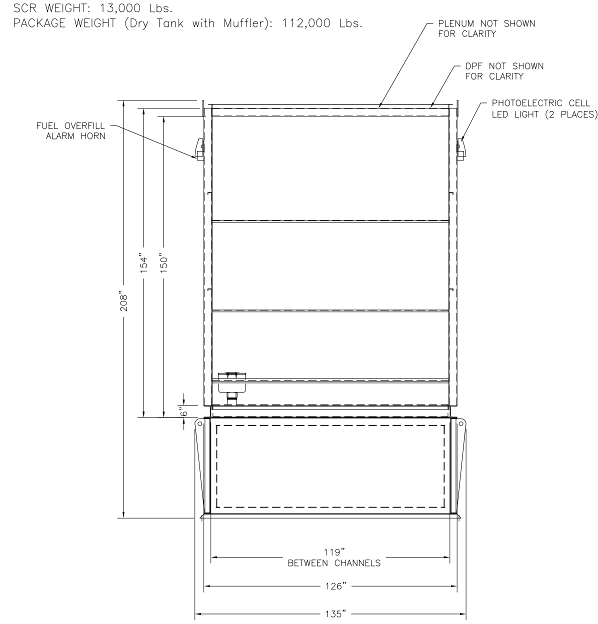
DESIGN SPECIFICATIONS:
- * DESIGNED TO REDUCE THE AIRBORNE GEN-SET EQUIPMENT NOISE LEVELS BY 5 dB(A) WHEN MEASURED AT A DISTANCE OF 23 FEET FROM THE ENCLOSURE AND 5 1/2 FEET ABOVE GRADE IN A FREE FIELD ENVIRONMENT.
- * THE GEN-SET EQUIPMENT NOISE DOESN'T EXCEED 124 dB.
- * BASED ON A TOTAL AIR REQUIREMENT OF 117,022 CFM AT LESS THAN 1/2" W.G. BACK PRESSURE THROUGH THE ENCLOSURE.
- * ENGINE EXHAUST IS NOT INCLUDED.

PAINTING:
- * ALL EXTERIOR GALVANNEALED SURFACES TO BE SOLVENT CLEANED PER SSPC-SP1 AND PAINTED AS FOLLOWS:
  INTERMEDIATE – ONE COAT AMERICAN COATINGS POLYURETHANE (1-1.5 MILS DFT)
  FINISH – ONE COAT AMERICAN COATINGS POLYURETHANE (.5-1 MILS DFT)
- * ALL CARBON STEEL SURFACES TO BE POWER TOOL CLEANED PER SSPC-SP3 AND PAINTED AS FOLLOWS:
  PRIMER – ONE COAT INDUSTRIAL PRIMER (2-4 MILS DFT)
  FINISH – ONE COAT AMERICAN COATINGS POLYURETHANE (2-4 MILS DFT)
- * COLOR – SPECTRUM GREY.

ELECTRICAL:
- * SEE DRAWING B0113219C.

ENCLOSURE SHIPPING SIZE & WEIGHT: (CUPOLA SHIPS SEPARATELY)
- * SIZE – 464" L x 132" W x 158" H
- * WEIGHT – 20,000 LBS.

TANK WEIGHT (Dry): 35000 Lbs.
GENSET WEIGHT: 44000 Lbs.
SCR WEIGHT: 13,000 Lbs.
PACKAGE WEIGHT (Dry Tank with Muffler): 112,000 Lbs.



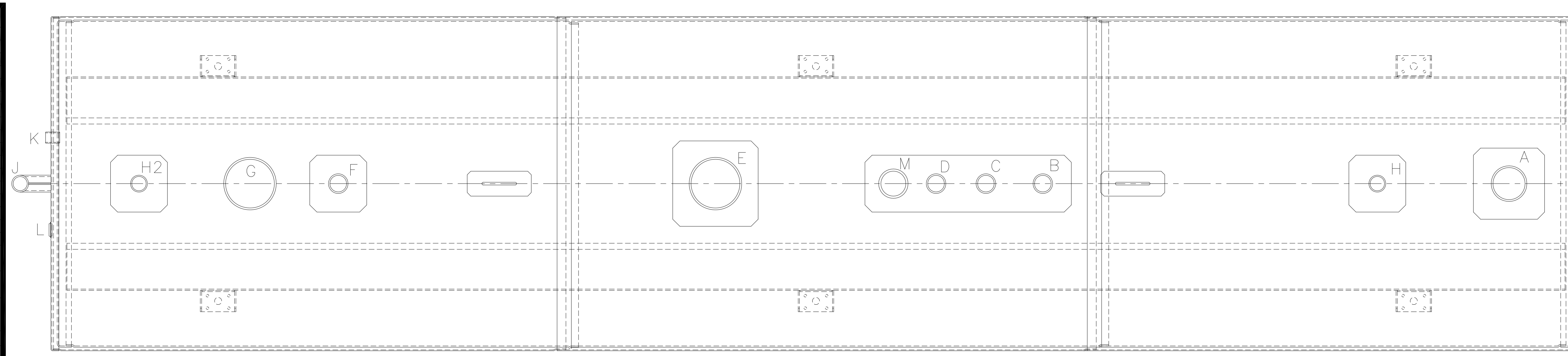
END VIEW

ACOUSTICAL ENCLOSURE

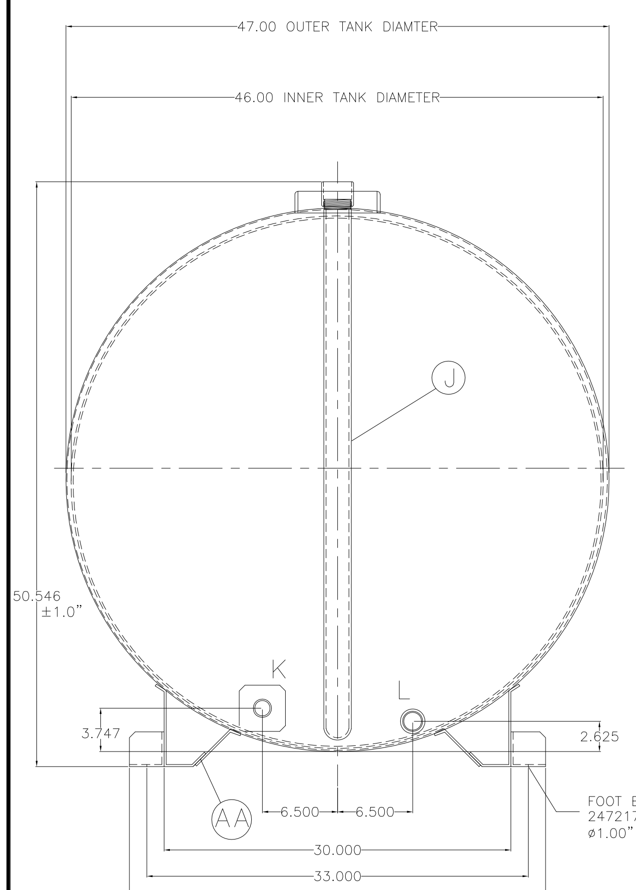
MTU 2250 KW

DRAWING NUMBER B0113219A	SCALE NONE / DATE 1/19/21	APPROVED BY	DRAWN BY JS / REVISION 1	PROJECT NAME CYRUS ONE

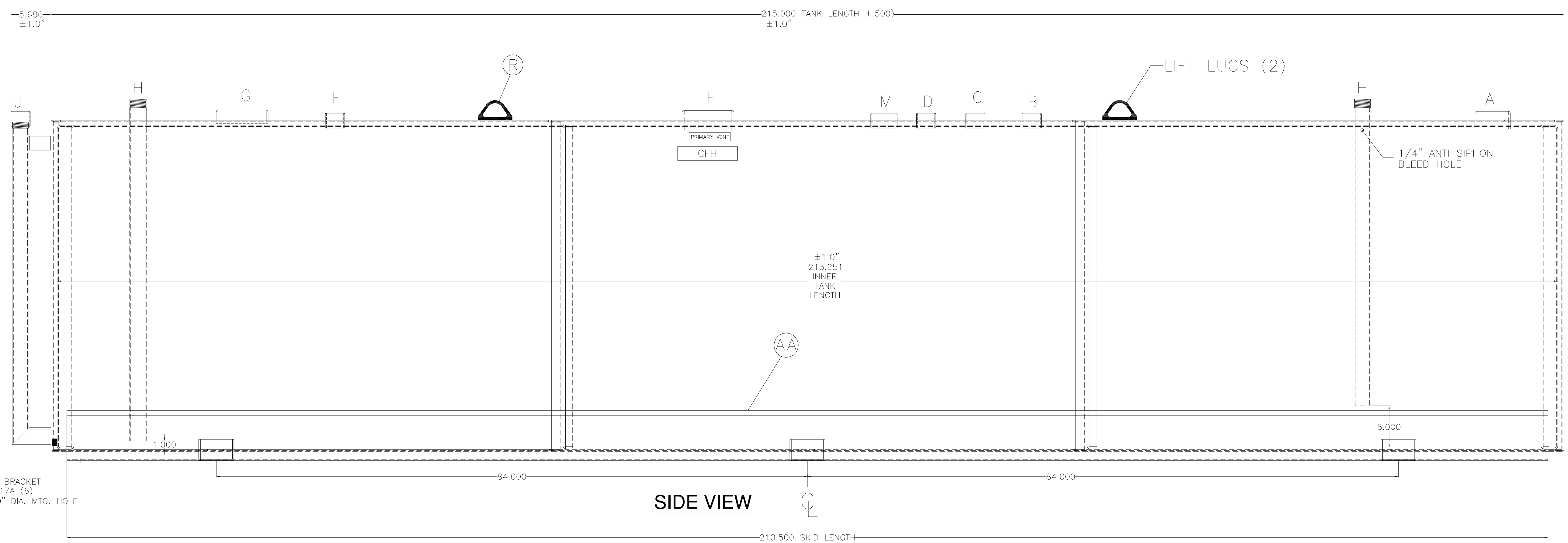
MATERIAL DESCRIPTION			
MODEL	KEY	QTY.	HORIZONTAL DW SKID TANK
INNER DIAMETER			46"
OUTER DIAMETER			47"
INNER LENGTH			213" ± 1"
OUTER LENGTH			215" ± 1"
CAPACITY			1500 gallons @ 100%
INNER GAUGE			10 ga.
OUTER GAUGE			10 ga.
CODE			UL 142
TANK FILL PORT	A	1	4" #150 FULL COUPLING
MECHANICAL LEVEL GAUGE	B	1	2" #150 FULL COUPLING
OVERFLOW/SPARE PORT	C	1	2" #150 FULL COUPLING
SPARE PORT	D	1	2" #150 FULL COUPLING
PRIMARY TANK E-VENT	E	1	6" #150 FULL COUPLING
TANK WORKING VENT PORT	F	1	2" #150 FULL COUPLING
SECONDARY TANK E-VENT	G	1	6" #150 HALF COUPLING
INLET DROP TUBE WITH 1/4" BLEED HOLE	H	1	2" SCH 40 PIPE NIP. TOE, 6" CLEARANCE TO BOTTOM
SUCTION DROP TUBE	H2	1	2" SCH 40 PIPE NIP. TOE, 1" CLEARANCE TO BOTTOM
LEAK SENSOR PORT	J	1	2" SCH 40 PIPE TOE. ASS'Y W/ 2" FULL COUPLING
PRIMARY TANK DRAIN PORT	K	1	1" #150 FULL COUPLING
SECONDARY TANK DRAIN PORT	L	1	1" #150 WELD FLANGE
SPARE PORT	M	1	3" #150 FULL COUPLING
SUPPORTS	AA	2	7ga. SKIDS



TOP VIEW



REAR VIEW



SIDE VIEW

NOTES:

1. SEE SIDE VIEW FOR TRUE ORIENTATION OF ALL FITTINGS. ALL DIMENSIONS ± ⅛" TOLERANCE.
2. MATERIAL = 10 GA., 304 STAINLESS STEEL
3. TANK TO BE BUILD & LABELED PER UL 142 CODE.
4. TANK ESTIMATED DRY WEIGHT: 3,400 LBS.
5. TEST: 3 P.S.I. SOAP & WATER
6: TANK PAINTED WHITE

SIMPLEX® SPRINGFIELD, ILLINOIS

SCALE : ~	APPROVED BY :	DRAWN BY : JDS
DATE : 01/15/21		REVISED :
SIMPLEX TECNOLOGY SERIES FUEL OIL DAY TANK	**1500 GALLON DUAL WALL**	
		277481

Application & Performance Warranty Data

Project Information

Site Location:	CA
Project Name:	Interstate Power Cyrus One Sequoia Miracube
Application:	Standby Power
Number Of Engines:	1
Operating Hours per Year:	200

Engine Specifications

Engine Manufacturer:	MTU
Model Number:	16V4000G84S
Rated Speed:	1800 RPM
Type of Fuel:	Ultra-Low Sulfur Diesel (ULSD)
Type of Lube Oil:	1 wt% sulfated ash or less
Lube Oil Consumption:	0.1 % Fuel Consumption
Number of Exhaust Manifolds:	1

Engine Cycle Data

Load	Speed	Power	Exhaust Flow	Exhaust Temp.	Fuel Cons.	NO_x	CO	NMNEHC	PM_{10}	O_2	H_2O
%		*kW*	*kg/hr*	*C*		*g/kW-hr*	*g/kW-hr*	*g/kW-hr*	*g/kW-hr*	*%*	*%*
100	Rated	2,500	14,327	501		8.5	1.7	0.29	0.09	10	12.5

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	6.34	4.69	579	1,069	8.5	18.74	0.5	0.37	46	84	0.67	1.48	92.1%
CO	1.27	0.94	190	351	1.7	3.75	2.61	1.93	391	723	3.5	7.72	
NMNEHC**	0.22	0.16	57	105	0.29	0.64	0.14	0.1	37	69	0.19	0.42	34.5%
PM_{10}	0.07	0.05	23	43	0.09	0.2	0.02	0.02	8	14	0.03	0.07	66.7%

* MW referenced as NO_2

** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMNEHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMNEHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

System Specifications

SCR/DOC/DPF System Specifications (M3Z-56-64-20120094-XR4, ACIS-3 Lite, Commissioning & Startup)

Design Exhaust Flow Rate:	14,327 kg/hr
Design Exhaust Temperature[1]:	501°C
Total Catalyst Volume:	41 cubic feet
SCR Catalyst Volume:	41 cubic feet
System Pressure Loss:	16.0 inches of WC (Clean) (39.9 mBar)
Sound Attenuation:	Critical Grade
Exhaust Temperature Limits:	572 – 977°F (300 – 525°C)
Minimum Regeneration Temperature[1,2]:	500°F (260°C)
Reactant:	Urea
Percent Concentration:	32.5%
System Dosing Capacity:	60 L/hr
Estimated Reactant Consumption:	13.8 gal/hr (52.3 L/hr) / Per Engine

Sound Data

	Octave Band Center Frequency (OBCF)											Receiver	
	Hz	*31.5*	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*dBA*	*Angle*	*Distance*
Raw Engine Exhaust Sound Levels													
Sound Pressure	dB	108.7	110.2	118.0	119.4	116.0	110.5	108.7	99.8	79.8	117.4	90°	1 meters
Calculated Sound Power	dB	116.7	118.2	126.0	127.4	124.0	118.5	116.7	107.8	87.8	125.4		
Calculated Sound Pressure	dB	108.6	110.1	117.9	119.3	115.9	110.4	108.6	99.7	79.7	117.3	90°	3.3 feet
Requested Sound Target													
Overall Sound Pressure											75.0	90°	23 feet
Calculated Target Overall Sound Pressure											91.9	90°	3.3 feet
Sound Performance Estimations(M3Z-56-64-20120094-XR4)													
Estimated Sound Attenuation	dB	12.0	17.5	24.5	31.8	37.5	45.3	56.5	66.8	70.3	34.9		
Estimated Sound Power	dB	104.7	100.7	101.5	95.6	86.5	73.2	60.2	41.0	17.5	90.4		
Estimated Sound Pressure	dB	79.8	75.8	76.6	70.7	61.6	48.3	35.3	16.1	-7.4	65.5	90°	23 feet
Estimated Sound Pressure	dB	96.6	92.6	93.4	87.5	78.4	65.1	52.1	32.9	9.4	82.4	90°	3.3 feet
Warranted Sound Level													
Warranted Sound Pressure											91.9	90°	3.3 feet

- Computed noise levels at each distance and frequency is based on a *free field condition.*
- Site conditions have *not* been taken into account in acoustic predictions.
- The ambient sound level must be at least 10 dBA below the requested sound target.
- MIRATECH does not warrant Sound Performance Estimations.
- Warranted sound level is of the primary silencer only.
- For all distance noise propagation, free field dispersion rule of 6 dB is used every time distance is doubled.

MIRATECH Scope of Supply & Equipment Details

	Model Number	Quantity
SCR/DOC/DPF Housing	**M3Z-56-64-20120094-XR4**	**1 / engine**
SCR/DOC/DPF Housing	M3Z-56-64-20120094-HSG	1 / engine
• Number of Catalyst Layers	2.0	
• Number of Spare Catalyst Layers	0.0	
• Number of Catalyst Blocks per Layer	56	
• Material	Carbon Steel	
• Paint	Coating System VII (High Temperature Dark Grey)	
• Inlet Pipe Size & Connection	24 inch FF Flange, 150# ANSI standard bolt pattern	
• Outlet Pipe Size & Connection	24 inch FF Flange, 150# ANSI standard bolt pattern	
• Door Location	Sides	
• Dimensions	67.75" H x 100" W x 193.5" L	
• Weight Without Catalyst	7,020 lbs	
• Weight Fully Loaded With Catalyst	12,193 lbs	
• Insulation	None	
SCR Tray Set	STS-M3Z-56-20120094	2 / engine
DPF Tray Set	DTS-M3Z-64-20120094	1 / engine
DPF Block	LTR-DPF-Filter-Block	64 / engine
SCR Catalyst	SCRC-044-075-450	112 / engine
Oxidation Element	M3Z64-RE-303-S2400x1300XR	4 / engine
System Sound	**M3Z-56-64-20120094-XR4**	**1 / engine**
System Sound	M3Z-56-64-20120094-XR4	1 / engine
SCR Control System	**ACIS-3 Lite**	**1 / engine**
SCR Controller	OLC-60-HMI	1 / engine
• Overall Dimensions	24.110 W x 31.535 H x 12.442 D	
• Weight	76 lbs	
Dosing Box	SEN60.lab.wt	1 / engine
• Overall Dimensions	15.75 W x 15.75 H x 6.562 D	
• Weight	28 lbs	
Reactant Pump	VPN75.lab	1 / engine
• Overall Dimensions	19.685 W x 15.906 H x 23.031 D	
• Weight	88 lbs	
Reactant Filter	FILTER115	1 / engine
Injector	DEN75.600	1 / engine
• Weight	12 lbs	
Differential Pressure Sensor	PT.040	1 / engine
Temperature Sensor	TT-14-FLEX60-32-1112	2 / engine
Air Compressor	CA75.lab	1 / engine

	Model Number	Quantity
• Overall Dimensions	21.445 W x 26.772 H x 15.748 D	
• Weight	82 lbs	
Commissioning & Startup	**Commissioning & Startup**	**1 / engine**
Analyzer Charges	Analyzer Charges	1 / engine
Expense Charges	Expense Charges	1 / engine
Labor Charges	Labor Charges	1 / engine

Optional Content MIRATECH Scope of Supply & Equipment Details

	Model Number	Quantity
Insulation	**FACTORY-INSTALLED**	**1 / engine**
SCR Controls Skid	**SP-SKID-20120095**	**1 / engine**

Customer Scope Of Supply

- Support Structure
- Attachment to Support Structure (Bolts, Nuts, Levels, etc.)
- Expansion Joints
- Exhaust Piping
- Inlet Pipe Bolts, Nuts, & Gasket
- Outlet Pipe Bolts, Nuts, & Gasket
- Insulation for Exhaust Piping
- Insulation for Housing
- Installation, Fabrication, and Installation of Mounting Frame for Particulate Filters
- Power Input (230 VAC, 60 Hz, Single Phase)
- Component Installation Including External Tubing and Wiring
- Isolated Engine Load Signal to MIRATECH Equipment (4-20 mA)
- Dry Contact (N.O.) for Engine Run Signal to MIRATECH Equipment
- Heat Tracing of Reactant Lines (Required when Ambient Temperatures are Below 40 °F)
- Heat Tracing of Sample Lines (Required when Ambient Temperatures are Below 32 °F)
- Design for Structural Support and Thermal Expansion
- Reactant Storage Tank

Special Notes & Conditions

1. For housings and exhaust components that are insulated, internally or externally, please refer to Section 7.1 of the General Terms and Conditions of Sale to prevent voiding MIRATECH product warranty.

    - **Emission Equipment:**
        - Carbon steel is suitable for temperatures up to 900° F / 482° C continuously, when covered with external insulation or a heat shield. For continuous operation above 900° F / 482° C, where the equipment is externally insulated or has a heat shield, stainless steel should be used.
    - **Silencers, Accessories and Exhaust Piping:**
        - *Aluminized Steel:*
            - Aluminized steel is suitable for temperatures up to 1100° F / 593° C continuously when covered with insulation or a heat shield.
        - *Carbon Steel:*
            - Carbon steel is suitable for temperatures up to 1100° F / 593° C in intermittent use, i.e., less than 500 hours per year, when covered with external insulation or a heat shield.
            - Silencers (plain carbon steel or aluminized) with internal insulation, and without external insulation or heat shield, are suitable for temperatures up to 1100° F / 593° C continuously.
        - *Stainless Steel:*
            - Stainless steel should be used when the exhaust temperature will exceed 1100° F / 593° C continuously and product is internally or externally insulated.

2. Diesel Particulate Filters depend on exhaust temperature to keep soot regenerated and the filter back pressure within acceptable levels. If the engine will be operated consistently at low loads/low exhaust temperatures, the customer should make provisions to add load via facility operations or a load bank. Refer to the included *Guidelines for Successful Operation of LTR™ DPF*.

- A packed silencer installed upstream of the MIRATECH catalyst system will void MIRATECH's limited warranty.

- Final catalyst housings are dependent on engine output and required emission reductions. Changes may be made to optimize the system design at the time of order.

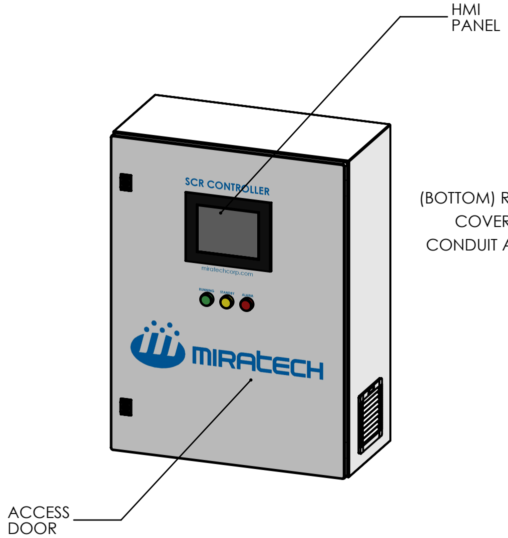
- Any drawings included with this proposal are preliminary in nature and could change depending on final product selection.

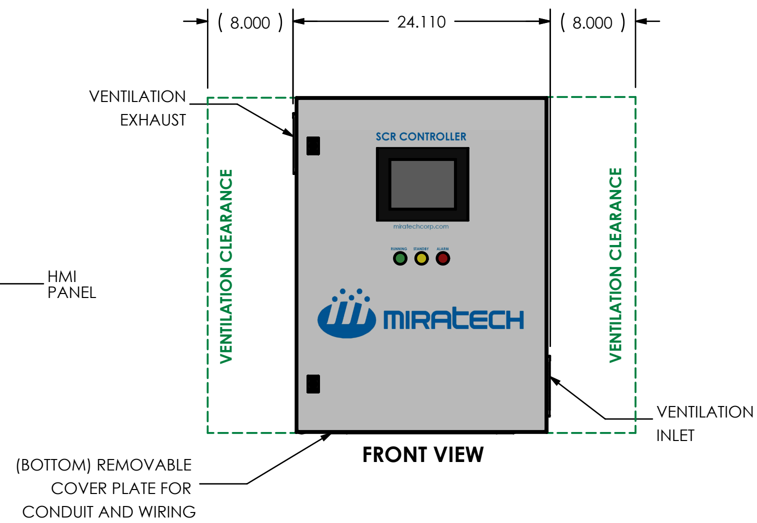
- Any sound attenuation listed in this proposal is based on housing with catalyst elements installed.

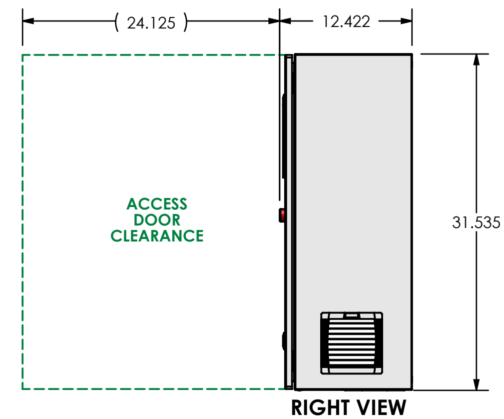
- MIRATECH Corporation warrants that the emissions reductions requested for this inquiry will be achieved at the design and test load point as outlined in the proposal. Tier 4 is an engine certificate designation, not an actual tons/yr or g/bhp-hr measurement. MIRATECH will utilize the engine manufacturer’s emission data at 100% load to provide our warranty. This is the maximum volume potential point for pollutants to be emitted. Permitting is normally done on a mass flow or tons per year basis, therefore the system will be sized accordingly. The MIRATECH design is to achieve the blended Tier 4 emission targets from the D2 test cycle, measured at 100% engine load conditions.

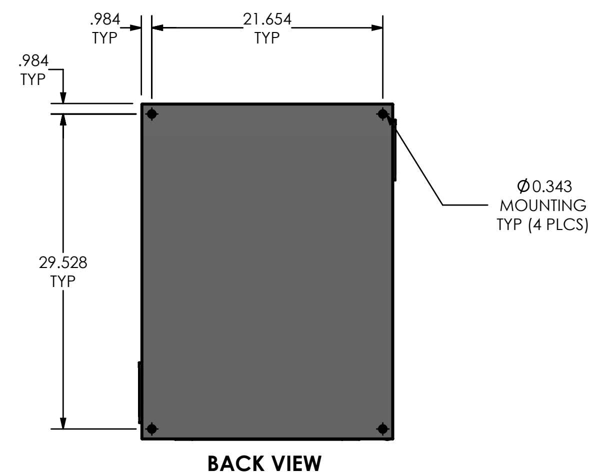
- Any emission reductions listed in this proposal are based on housing with catalyst elements installed.

- MIRATECH will confirm shipping location upon placement of order.









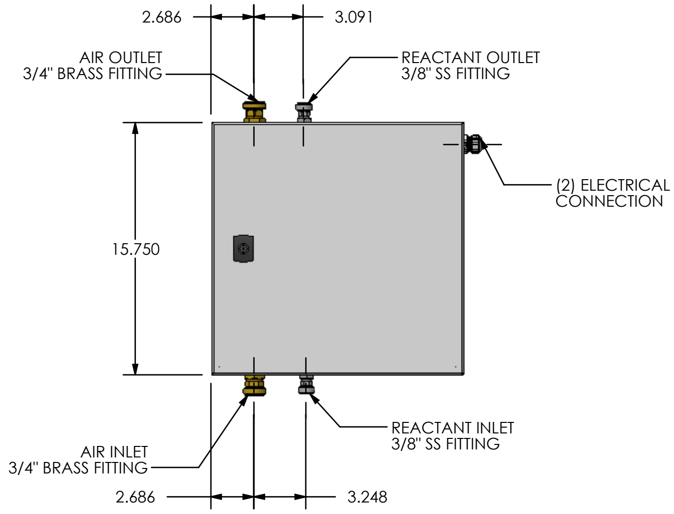
NOTES:

- POWER CONSUMPTION: 300 W MAX
- VOLTAGE: 208 VAC +/- 10%, SINGLE Φ, 60 HZ
- CURRENT DRAW: 1.5 A
- POWER CONSUMPTION OF THE REACTANT BOOSTER PUMP AND DOSING PANEL ARE SUPPLIED USING THE SAME CIRCUIT AS THE OLC; REFERENCE THESE DRAWINGS FOR THEIR ADDED POWER CONSUMPTION
- OPERATING TEMPERATURE: 32°F - 122°F (NON-CONDENSING)

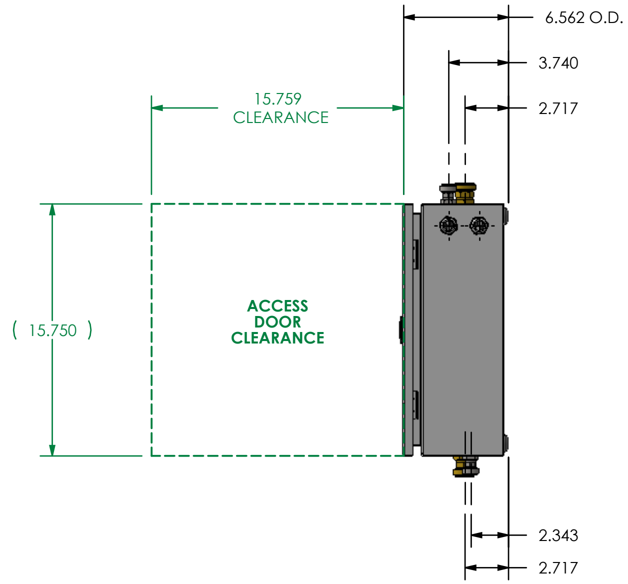
INSTALLATION INSTRUCTIONS:

- ENCLOSURE RATED IP66 (NEMA 4 EQUIVALENT)
- INSTALLATION LOCATION MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATING TEMPERATURE.
- UNIT MAY BE WALL MOUNTED OR INSTALLED ON A BASE

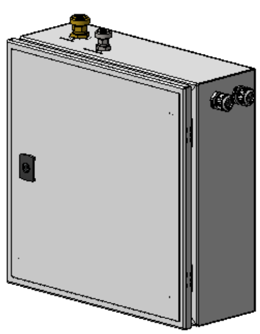
PROJECT NAME	**PROPRIETARY AND CONFIDENTIAL**	DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED	MIRATECH
PROPOSAL NUMBER	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MIRATECH GROUP, LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MIRATECH GROUP, LLC IS PROHIBITED.	DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES MACH: ±2° BEND: ±3° INCHES: ±0.125 MILLIMETERS: ±3	**OLC-60-HMI Controller Sales Drawing**
SALES ORDER NO.		DO NOT SCALE DRAWING	
		DRAWN GFS / DATE 10/13/2017	DRAWING OLC-60-HMI SD / REV 0
CUSTOMER P.O.		REVIEWED BY AJM / DATE 10/31/2017	SIZE A / SCALE 1:18 / WEIGHT: 76lb / SHEET 1 OF 1

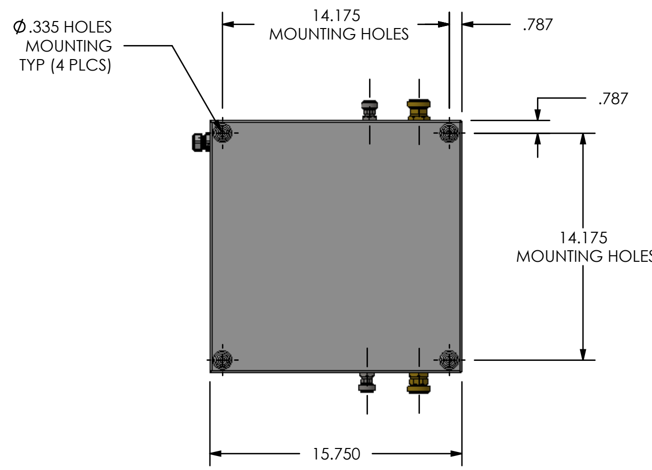


FRONT VIEW



RIGHT VIEW





BACK VIEW

NOTES:

- *POWER CONSUMPTION:* 5.75 W MAX
- *POWER:* SUPPLIED FROM SNQ CONTROLLER
- *OPERATION TEMPERATURE:* 40-104°F
14-104°F (WITH .WT OPTION)
- NO DEW DROPS ALLOWED
- OPERATING PRESSURE: REACTANT - 3 BAR (43.50 PSI)
AIR - 1 BAR (14.50 PSI)

INSTALLATION INSTRUCTIONS:

- IF UNIT IS INSTALLED IN AN ENCLOSURE, THE ENCLOSURE MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATION TEMPERATURE.
- UNIT TO BE MOUNTED SO THAT IT IS ACCESSIBLE WHILE ENGINE IS IN OPERATION AND NO MORE THAN 6.5 FEET FROM DOSING INJECTOR.
- UREA LINES SHOULD BE HEAT TRACED IF AMBIENT CONDITIONS FALL BELOW 40°F

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

PROPRIETARY AND CONFIDENTIAL

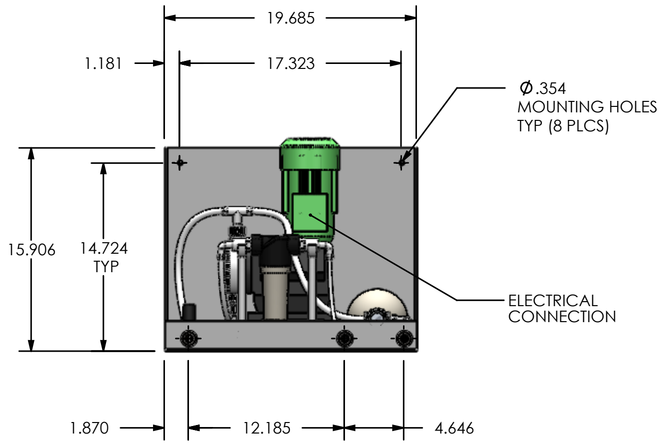
DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DRAWING

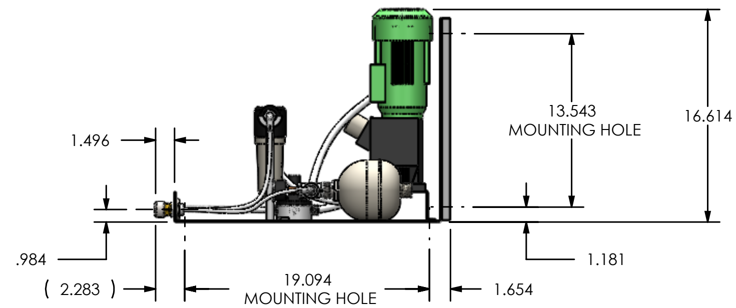
MIRATECH

SEN60 Dosing Box
Sales Drawing

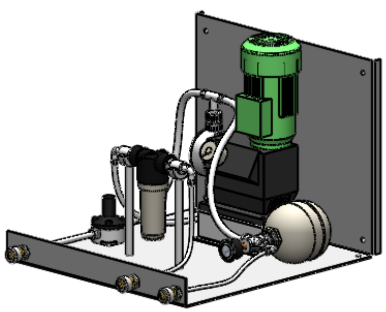
DRAWN: JFS	DATE: 08/22/2011	DRAWING: SEN60 SD	REV: 6
REVIEWED BY: AJM	DATE: 08/22/2011	SIZE: A	SCALE 1:12
WEIGHT: 28 lb	SHEET 1 OF 1		

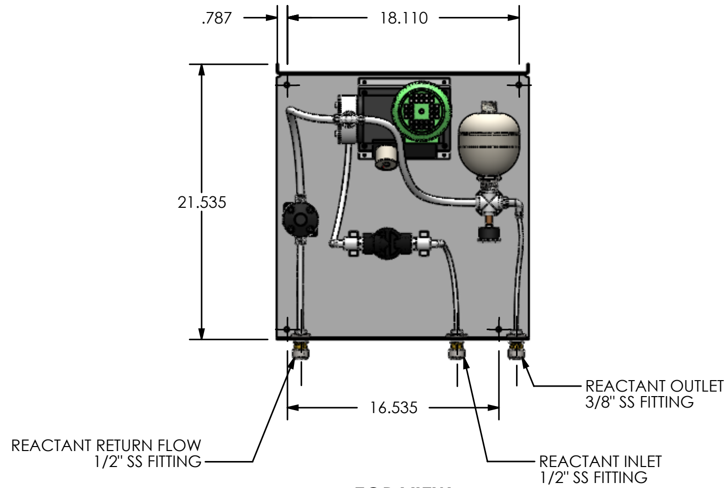


FRONT VIEW



RIGHT VIEW





TOP VIEW

NOTES:

- *POWER CONSUMPTION:* 250 W MAX SUPPLIED BY SNQ CONTROLLER
- *OPERATION TEMPERATURE:* 40°F - 104°F

INSTALLATION INSTRUCTIONS:

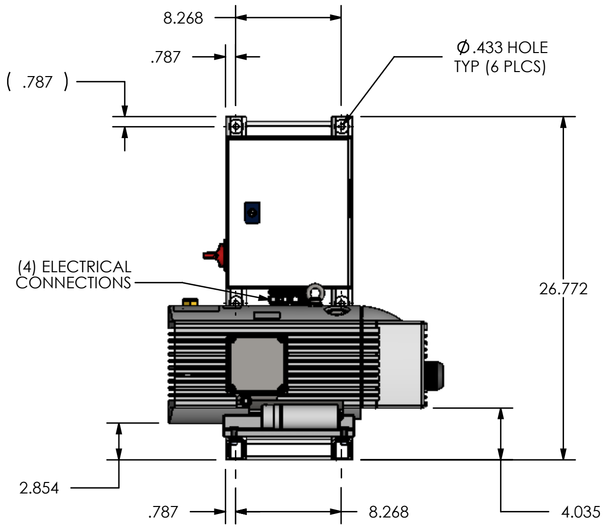
- UNIT TO BE MOUNTED SO THAT THE MAXIMUM SUCTION HEIGHT IS LESS THAN 5 FEET
- UREA LINES SHOULD BE HEAT TRACED IF AMBIENT CONDITIONS FALL BELOW 40° F

PROJECT NAME	**PROPRIETARY AND CONFIDENTIAL**	DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED
PROPOSAL NUMBER	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MIRATECH CORPORATION. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MIRATECH CORPORATION IS PROHIBITED.	DO NOT SCALE DRAWING
SALES ORDER NO.		DRAWN: JFS — DATE: 08/22/2011
CUSTOMER P.O.		REVIEWED BY: AJM — DATE: 08/22/2011

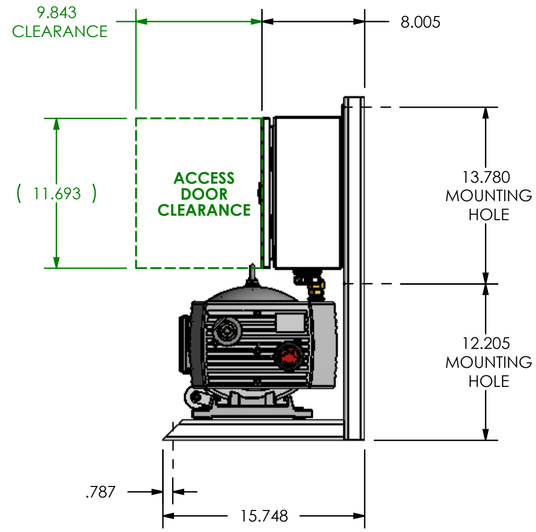
MIRATECH

VPN75 Booster Pump Sales Drawing

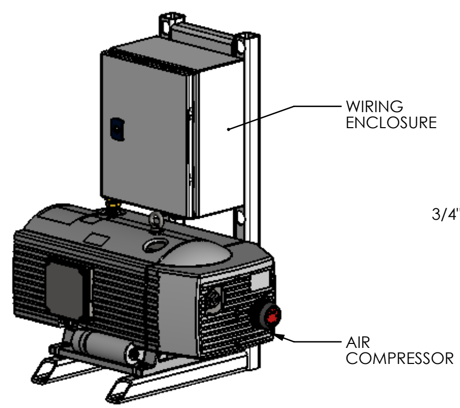
DRAWING	REV	SIZE	SCALE	WEIGHT	SHEET
VPN75 SD	6	A	SCALE 1:15	WEIGHT: 88 lb	SHEET 1 OF 1

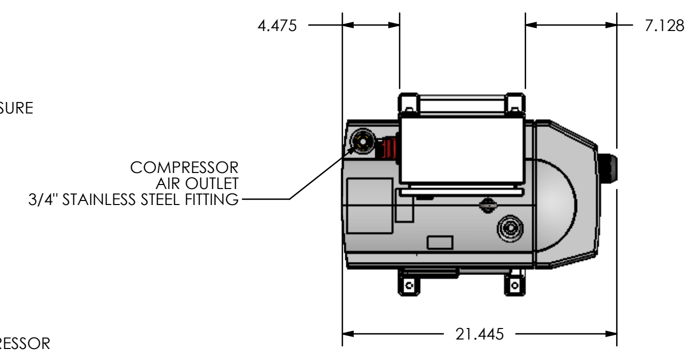


FRONT VIEW



RIGHT VIEW





TOP VIEW

NOTES:

- *POWER CONSUMPTION:* 1300 W MAX
- *VOLTAGE:* 230 VAC +/- 10%, SINGLE Φ, 60 Hz
- *CURRENT DRAW:* 9.5 A
- OPERATION TEMPERATURE: 32°F - 104°F

INSTALLATION INSTRUCTIONS:

- IF UNIT IS INSTALLED IN AN ENCLOSURE, THE ENCLOSURE MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATION TEMPERATURE

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

PROPRIETARY AND CONFIDENTIAL

DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DRAWING

DRAWN	JFS	DATE	08/22/2011
REVIEWED BY	AJM	DATE	08/22/2011

MIRATECH

CA75 Air Compressor Sales Drawing

DRAWING	CA75 SD			REV 6
SIZE A	SCALE 1:15	WEIGHT: 131 lb	SHEET 1 OF 1	

DOCKETED

Docket Number:	19-SPPE-03
Project Title:	Sequoia Data Center
TN #:	231355
Document Title:	ALUC Final Consistency Determination - SDC
Description:	N/A
Filer:	Scott Galati
Organization:	DayZenLLC
Submitter Role:	Applicant Representative
Submission Date:	12/30/2019 5:14:08 PM
Docketed Date:	12/31/2019

ALUC

SANTA CLARA COUNTYAIRPORT LAND USE COMMISSION

Airport Land Use Commission

County Government Center, 70 W. Hedding Street, East Wing, 7th Fl., San Jose, CA 95110

(408) 299-5786 FAX (408) 288-9198

December 30, 2019

Elaheh Kerachian, Associate Planner
Planning Division | Community Development Department
1500 Warburton Avenue | Santa Clara, CA 95050

RE: ALUC Consistency determination for the Sequoia Data Center located at 2600 De La Cruz Boulevard in Santa Clara.

Dear Ms. Kerachian:

On October 23, 2019, the ALUC considered the above referral for consistency with the policies of safety, height and noise contained within the San Jose International Airport (SJC) Comprehensive Land Use Plan (CLUP).

The ALUC found the referral ***Consistent*** with the CLUP policies as defined in the SJC Comprehensive Land Use Plans (CLUPs), subject to the following recommended conditions:

- Prior to construction commencing, an Avigation Easement shall be granted to the City of San Jose on behalf of San Jose International Airport.

- The proposed 54-diesel fuel tanks shall be located underground to avoid any flammable safety risks. (See Attached Diagram).

- In the event that the industrial usage proposal changes a referral shall be sent to the ALUC prior to City of Santa Clara approval, including the condition that no part of the building or attachments, including trees, penetrate the Part 77 height limits.

Please note that pursuant to the Public Resources Code 21670, the City of Santa Clara has the option of overruling the ALUC's determination. Overrules require a 2/3 vote of the entire body of the City of Santa Clara City Council. The notification process to the ALUC and Cal Trans Division of Aeronautics shall also be complied with.

If you have any questions, please feel free to contact ALUC staff, Mark Connolly, at 408-299-5786, or via e-mail at mark.connolly@pln.sccgov.org.

Sincerely,

Mark J. Connolly

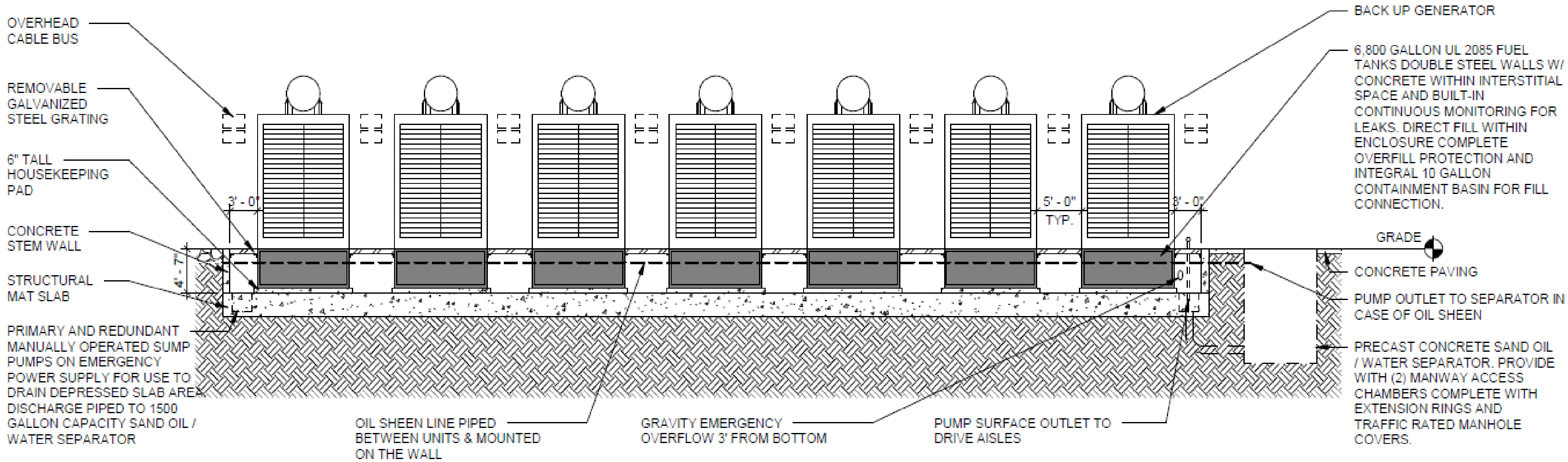
Mark J. Connolly
Senior Planner

Airport Land Use Commission

County Government Center, 70 W. Hedding Street, East Wing, 7th Fl., San Jose, CA 95110

ALUC

SANTA CLARA COUNTYAIRPORT LAND USE COMMISSION



REVISED EMISSIONS TABLES

Tier 4 Compliant Generators

The following table provides a comparison of the annual NOx emissions of the proposed Tier 4 compliant generators to the original Tier 2 generators.

NOx Emissions Comparison	***Units***	***Tier 2***	***Tier 4***
Emission Factor	g/kW-hr	5.37	0.67
Emissions per Generator (Testing and Maintenance)	ton/yr	0.67	0.08
Emissions Phase 1 (Testing and Maintenance)	ton/yr	18.65	2.33
Emissions Full Buildout (Testing and Maintenance)	ton/yr	35.96	4.49
Emissions Full Buildout (Testing and Maintenance and emergency operation required by BAAQMD emissions offsets screening rules)	ton/yr	107.88	13.46

The following tables from the SPPE Application have been revised for the Revised Project Description modification to Tier 4 compliant generators.

Table 4.3-6 Criteria Pollutant Emissions from All Backup Generators for Maintenance and Testing (tons per year)

Evaluation Period	Pollutant	Emissions	BAAQMD Thresholds	Exceeds Threshold?
Maximum Annual Emissions (tons per year)[a]	NO_x[b]	~~36~~4.5	10	~~Yes~~No
	VOCs	0.5	10	No
	CO[c]	2.7	--	N/A
	PM_{10}	0.16	15	No
	$PM_{2.5}$	0.16	10	No

Source: Ramboll, 2019

[a] The maximum annual emissions were estimated assuming that all 54 backup generators would operate 50 hours per year even though this estimate is extremely conservative as C1 estimates normal maintenance and testing would be on the order of less than 11 hours per year.

[b] NO_X emissions from maintenance and testing would be fully offset through the air permitting process with the BAAQMD.

[c] In the absence of a mass-based threshold, CO impacts were evaluated through air dispersion modeling

-- = No mass-based threshold has been adopted for this pollutant

N/A = Not applicable because no mass-based threshold is available

Table 4.3-7 Criteria Pollutant Emissions from All Backup Generators for Emergency and Maintenance and Testing (tons per year)

Evaluation Period	Pollutant	Emissions (Includes Emergency Periods)
Maximum Annual Emissions (tons per year)[a]	NO_x[b]	~~108~~13
	VOCs	1.6
	CO[c]	8.0
	PM_{10}	0.48
	$PM_{2.5}$	0.48

Source: Ramboll, 2019

[a] The maximum annual emissions for emergency use and maintenance and testing were estimated assuming that all 54 backup generators would operate 150 hours per year (100 hours of emergency use and 50 hours of maintenance and testing). This estimate is extremely conservative as C1 estimates normal maintenance and testing would be on the order of less than 11 hours per year and SVP power outages are very rare.

[b] NO_X emissions from maintenance and testing would be fully offset through the air permitting process with the BAAQMD.

Table 4.3-8 Maximum Daily Criteria Pollutant Emissions from a Single Backup Generator

Pollutant	Emissions (lb/day)	BAAQMD BACT Thresholds (lb/day)	Exceeds Threshold?
NO_x	~~639~~80	10	Yes
VOCs	9.55	10	No
CO	47.6	10	Yes
SO_2	0.35	10	No
PM_{10}	2.86	10	No
$PM_{2.5}$	2.86	10	No

Source: Ramboll, 2019

Notes: The maximum daily emissions were derived assuming 24 hours of operation in one day.

Table 4.3-9 Toxic Air Contaminant Emissions from All Backup Generators

Pollutant	Pollutant is a Federal HAP?	Hourly Emissions (lb/hr)[a]	Annual Emissions (tons/year)[b]
Diesel PM[c]	No	2.94	0.537
1,3-Butadiene	Yes	0.00560	0.00102
Acetaldehyde	Yes	0.216	0.0395
Benzene	Yes	0.0589	0.0107
Ethylbenzene	Yes	0.00913	0.00167
Formaldehyde	Yes	0.433	0.0791
n-Hexane	Yes	0.00471	0.000860
Methanol	Yes	0.00088	0.00016
Methyl Ethyl Ketone	No	0.0436	0.00795
Naphthalene	Yes	0.00265	0.00048
Propylene	No	0.0766	0.0140
Styrene	Yes	0.00177	0.000322
Toluene	Yes	0.0433	0.00790
m-Xylene	Yes	0.0180	0.00328
o-Xylene	Yes	0.0100	0.00183
p-Xylene	Yes	0.00294	0.000537
Ammonia	No	10.54	0.264
Total HAP Emissions			**0.147**

Source: Ramboll, 2019

[a] Hourly emissions were estimated assuming that all 54 backup generators could be operated concurrently. However, C1 commits to standard operating procedures that would limit testing to one backup generator at a time. Ammonia emissions are calculated as one generator operating at a time, consistent with how the generators will be operated.

[b] The annual emissions were estimated assuming that all 54 backup generators would operate 50 hours per year.

[c] Diesel particulate matter (DPM) emissions were assumed equal to exhaust PM10 emissions.

[d] Emissions of ammonia do not exceed trigger levels in BAAQMD Rule 2-5, so additional health risk assessments are not necessary. lb/hr = pound(s) per hour PAH = Polycyclic Aromatic Hydrocarbons