Section II - Other LAER/BACT Determination

Source Type:	**Major/LAER**
Application No.:	Approval Order 20AQ-E005
Equipment Category:	**Diesel Internal Combustion Engine**
Equipment Subcategory:	**Stationary, Emergency ICE ≥1,000 BHP**
Date:	**September 2, 2022**

1. EQUIPMENT INFORMATION

A. MANUFACTURER: Caterpillar	B. MODEL: C175-16
C. DESCRIPTION: Diesel powered electric emergency generator	
D. FUNCTION: The emergency engine generators approved for operation by this size were installed at Microsoft Data Center in Quincy, Washington to provide backup/standby electrical power in case of emergency and loss of grid power.	
E. SIZE/DIMENSIONS/CAPACITY: 3.0 MWe (4,277 BHP)	
COMBUSTION SOURCES	
F. MAXIMUM HEAT INPUT: 26.51 MMBtu/hr	
G. BURNER INFORMATION	

TYPE	INDIVIDUAL HEAT INPUT	NUMBER
N/A	N/A	N/A

H. PRIMARY FUEL: DIESEL	I. OTHER FUEL: Supplementary or standby fuels
J. OPERATING SCHEDULE: Hours HRS/DAY DAYS/WEEK WKS/YR	
K. EQUIPMENT COST: Enter sum of all Cost Factors in Table 6 of SCAQMD BACT Guidelines	
L. EQUIPMENT INFORMATION COMMENTS: Under the State of Washington permit, each engine shall not exceed 86 hours per year of operation averaged across all generators in service over a 12-month rolling average.	

2. COMPANY INFORMATION

A. COMPANY: Microsoft Corporation (MWH Data Center)	B. FAC ID:
C. ADDRESS: 1515 Port Industrial Pkwy CITY: Quincy STATE: WA ZIP: 98848	D. NAICS CODE: 511210
E. CONTACT PERSON: Jaymes Kirkham	F. TITLE: Data Center Operations Manager
G. PHONE NO.: (509) 237-3633	H. EMAIL: jayki@microsoft.com

3. PERMIT INFORMATION

A. AGENCY: State of Washington -Department of Ecology	B. APPLICATION TYPE: NEW CONSTRUCTION
C. SCAQMD ENGINEER: Jenny Filipy	
D. PERMIT INFORMATION: P/O NO.: 20AQ-E005 PC ISSUANCE DATE: 2/27/20 PO ISSUANCE DATE: 2/27/2020 Approval Order No. 20AQ-E005: Microsoft MWH Data Center (wa.gov)	
E. START-UP DATE: 9/29/2020	
F. OPERATIONAL TIME: > 1 year	

4. EMISSION INFORMATION

A. BACT EMISSION LIMITS AND AVERAGING TIMES: List all criteria contaminant or precursor emission limits, including facility limits, on the permit(s) that affects the equipment. Include units, averaging times and corrections ($\%O_2$, $\%CO_2$, dry, etc). For VOC, values must include if the concentration is reported as methane, hexane or any other compound. VOC mass emissions should include the molecular weight-to-carbon ratio, if applicable.

	VOC	NOx	SOx	CO	PM OR PM_{10}	INORGANIC
BACT Limit	0.19 gr/kW-hr*	0.67 gr/kW-hr		3.5 gr/kW-hr	0.03 gr/kW-hr	
Averaging Time						
Correction						

B. OTHER BACT REQUIREMENTS: Concise description of the BACT requirements for each regulated contaminant from the equipment, other than the requirements list in Section 4(A).

C. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice/New Technology

D. EMISSION INFORMATION COMMENTS:
According to the permit, for the five load tests, testing shall be performed at each of the five engine torque load levels described in Table 2 of Appendix B to Subpart E of 40 CFR Part 89, and data shall be reduced to a single-weighted average value using the weighting factors specified in Table 2.

*NMHC/VOC

5. CONTROL TECHNOLOGY

A. MANUFACTURER: Caterpillar	B. MODEL: Model name and number

C. DESCRIPTION: All generators are Tier 2-ertified and each engine was equipped with urea-based selective catalytic reduction (SCR) and catalyzed diesel particulate filter (DPF) controls to meet the emission requirements of EPA Tier 4 Final engines.

D. SIZE/DIMENSIONS/CAPACITY: An appropriate size parameter such as rated heat input, usable volume, rated filter efficiency, and/or one more characteristic dimensions.

E. CONTROL EQUIPMENT PERMIT INFORMATION:

APPLICATION NO. PC ISSUANCE DATE: 2/27/20

PO NO.: 20AQ-E005 PO ISSUANCE DATE: 2/27/2020

F. REQUIRED CONTROL EFFICIENCIES: N/A

CONTAMINANT	OVERALL CONTROL EFFICIENCY	CONTROL DEVICE EFFICIENCY	COLLECTION EFFICIENCY
VOC	___%	___%	___%
NOx	___%	___%	___%
SOx	___%	___%	___%
CO	___%	___%	___%
PM	___%	___%	___%
PM_{10}	___%	___%	___%
INORGANIC	___%	___%	___%

G. CONTROL TECHNOLOGY COMMENTS :

6. DEMONSTRATION OF COMPLIANCE

A. COMPLIANCE DEMONSTRATED BY: Source Test

B. DATE(S) OF SOURCE TEST: September 29, 2020

C. COLLECTION EFFICIENCY METHOD:

D. COLLECTION EFFICIENCY PARAMETERS: The quantitative parameters used to verify the method or procedures in Section 6(C). Examples include static pressure measurements, anemometer measurements, and mass balance results.

E. SOURCE TEST/PERFORMANCE DATA:

Pollutants: Test Results	Emission Limits
Filterable PM: 0.006 g/kWm-hr	0.03 g/kWm-hr
CO: 0.10 g/kWm-hr	3.5 g/kWm-hr
NOx: 0.47 g/kWm-hr	0.67 g/kWm-hr
NMHC: 0.004 g/kWm-hr	0.19 g/kWm-hr
NH3: 0.17* lb/hr	0.95 lb/hr

Engine brake mechanical output (kWm)

* Arithmetic average of three runs reported for ammonia emissions, not weighted average

F. TEST OPERATING PARAMETERS AND CONDITIONS:

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The units were tested when operating within 2% of the following target load values: 100%, 75%, 50%, 25%, and 10% load. The load was based on mechanical load. For the five load tests, testing was performed at each of the five engine torque load levels. Three test runs were conducted for each engine, except as allowed by the sampling protocol from 40 CFR 1065.

Each engine was equipped with a properly installed and maintained non-resettable meter that records total operating hours.

Each engine wase connected to a properly installed and maintained fuel flow monitoring system (either certified physical or generator manufacturer provided software) that records the amount of fuel consumed by the engine.

G. TEST METHODS (SPECIFY AGENCY):

Parameter	Load Test	Test Methods
Filterable PM	Five-load weighted average	40 CFR 1065
CO	Five-load weighted average	ASTM D-6348
NOx	Five-load weighted average	ASTM D-6348
NMHC	Five-load weighted average	EPA 25A
NH3	100%-load (±2%)	ASTM D-6348

L. MONITORING AND TESTING REQUIREMENTS: Every 60 months after initial source testing, Microsoft shall test at least one engine, including the engine with the most operating hours as long as it is a different engine from that which was tested during the previous 60 month interval testing

I. DEMONSTRATION OF COMPLIANCE COMMENTS: AIP established through source test and over one year of operation of the engines.

7. ADDITIONAL SCAQMD REFERENCE DATA

A. BCAT: Click here to enter text.	B. CCAT: Click here to enter text.	C. APPLICATION TYPE CODE: Click here to enter text.
D. RECLAIM FAC? YES ☐ NO ☐	E. TITLE V FAC: YES ☐ NO ☐	F. SOURCE TEST ID(S): W021AS-698877-RT-1155

G. SCAQMD SOURCE SPECIFIC RULES: Click here to enter text.

H. HEALTH RISK FOR PERMIT UNIT

H1. MICR: Click here to enter text.	H2. MICR DATE: Click here to enter a date.	H3. CANCER BURDEN: Click here to enter text.	H4. CB DATE: Click here to enter a date.
H5: HIA: Click here to enter text.	H6. HIA DATE: Click here to enter a date.	H7. HIC: Click here to enter text.	H8. HIC DATE: Click here to enter a date.