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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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August 15, 2014

John Raddick, Senior Program Manager
US Data Center Services
Microsoft Corporation
5600 148th Avenue NE
Redmond, WA 98052

Re: Approval Order No. 14AQ-E537

Dear Mr. Raddick:

The Department of Ecology Air Quality Program has approved the installation and operation of the new Oxford Data Center, located at Industrial Park #5 on Port Industrial Parkway in Quincy, WA. Ecology's approval is based on the Notice of Construction application submitted on January 27, 2014. The 30 day public comment period required in Washington Administrative Code (WAC) 173-400-171(3) was completed on July 29, 2014. A public hearing was conducted by Ecology on July 24, 2014.

Enclosed are Approval Order No. 14AQ-E537, the technical support document, and the Second Tier Review Recommendation Document for the project. Thank you for your patience while we processed your application. If you have any questions, please contact me at (509) 329-3452 or gregory.flibbert@ecy.wa.gov.

Ecology is committed to streamlining our permitting procedures and to maintaining a high level of staff responsiveness and assistance to permit applicants. We encourage you to provide Ecology with feedback. To help us provide better service to you and our other applicants, please complete the short survey online at: www.ecy.wa.gov/programs/air/permit_register/Permitting_Feedback.htm

Sincerely,

Gregory Flibbert
Commercial/Industrial Unit Manager
Department of Ecology
Air Quality Section

GF:lc

Enclosures: Approval Order No. 14AQ-E537, Technical Support Document, Second Tier Review Recommendation Document.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF APPROVING A NEW) APPROVAL ORDER No. 14AQ-E537
 AIR CONTAMINANT SOURCE FOR)
 MICROSOFT CORPORATION)
 THE OXFORD DATA CENTER)

TO: John Radick, Senior Program Manager
 US-Data Center Services
 Microsoft Corporation
 5600 148th Avenue NE
 Redmond, WA 98052

On January 27, 2014, Ecology received a Notice of Construction (NOC) application submittal from the Microsoft Corporation (MSN), requesting approval for Phases 1 and 2 of a new facility named the Oxford Data Center located at Industrial Park #5, west of Road R NW at the end of Port Industrial Parkway in Quincy, WA. The NOC application was determined to be incomplete, and an incompleteness letter was issued on February 26, 2014. A revised NOC application was received on March 17, 2014. The application was considered complete on June 3, 2014.

EQUIPMENT

A list of equipment for this project is provided in Tables 1.1–1.4 below. Engine sizes listed in Tables 1.1–1.3 are in megawatt (MWe) units with the “e” indicating “electrical” based on generator power ratings listed on the engine specifications provided with the application. MWe is the assumed engine power rating unit for all Approval Conditions related to this Order.

Table 1.1. 2.5 MWe Engine & Generator Serial Numbers for Phases 1 & 2				
Phase/Building	Unit ID	Engine SN	Generator SN	Build Date
Ph 1/AZ-4A				
"				
"				
Ph 1/AZ-4B				
"				
"				
Ph 1/AZ-4C				
"				
"				
Ph 1/AZ-4D				
"				
"				

Table 1.1. 2.5 MWe Engine & Generator Serial Numbers for Phases 1 & 2				
Phase/Building	Unit ID	Engine SN	Generator SN	Build Date
"				
Ph 2/AZ-3A				
"				
"				
Ph 2/AZ-3B				
"				
"				
Ph 2/AZ-3C				
"				
"				
Ph 2/AZ-3D				
"				
"				
"				

Table 1.2. 2.0 MWe Engine & Generator Serial Numbers for Phases 1 & 2				
Building	Unit ID	Engine SN	Generator SN	Build Date
CNR-A	CNR-A			
CNR-B	CNR-B			
CNR-C	CNR-C			
CNR-D	CNR-D			

Table 1.3. 0.750 MWe Engine & Generator Serial Numbers for Phases 1 & 2				
Building	Unit ID	Engine SN	Generator SN	Build Date
Admin				

Table 1.4. Cooling Towers for Phases 1 & 2			
Phase/Building	# Cooling Towers	# Cells per Tower	Total # Cooling Tower Cells
Ph 1/AZ-4A	4	4	16
Ph 1/AZ-4B	4	4	16
Ph 1/AZ-4C	4	4	16

Phase/Building	# Cooling Towers	# Cells per Tower	Total # Cooling Tower Cells
Ph 1/AZ-4D	4	4	16
Ph 2/AZ-3A	4	4	16
Ph 2/AZ-3B	4	4	16
Ph 2/AZ-3C	4	4	16
Ph 2/AZ-3D	4	4	16
Total	32	4	128

PROJECT SUMMARY

1. The Oxford Data Center will contain four Phase 1 activity zone (AZ) buildings designated AZ-4A, AZ-4B, AZ-4C, AZ-4D; four core network room (CNR) buildings; an administrative building; and four phase 2 AZ buildings designated AZ-3A, AZ-3B, AZ-3C, AZ-3D. Building construction for the Phase 1 generators and cooling towers is expected to begin before the end of October 2014 with commissioning of generators spread over an approximately 9-month period. Construction of Phase 2 is expected to begin within 18 months after the start of generator commissioning for Phase 1. Project Oxford Phases 1 and 2 will have thirty-two (32) Caterpillar Model 3516C-HD-TA diesel powered electric emergency generators in the activity zone buildings with a power rating of 2.5 MWe per generator, four (4) Caterpillar Model 3516C-TA diesel powered electric emergency generators in the CNR buildings with a power rating of 2.0 MWe per generator, and one (1) Caterpillar Model C27ATAAC diesel powered electric emergency generator in the administrative building with a power rating of 0.75 MWe.
2. Project Oxford will use SPX-Marley Model MD5008PAF2 cooling towers to dissipate heat from the AZ buildings. Each cooling tower has four cells and four fans. Each of the eight AZ buildings will have four cooling towers for a total of thirty-two (32) cooling towers. Each of the thirty-two individual cooling towers has a design recirculation rate of 950 gallons per minute (gpm) and 143,600 cubic feet per minute (cfm).

Combined Phase 1 and 2 emissions for Project Oxford are contained in Tables 2.1 and 2.2.

Pollutant	Main Generator Engines	Cooling Tower	Total Facility Emissions
Total particulate matter (PM)	All PM _{2.5}	23	23.5
PM smaller than 10 microns in diameter (PM ₁₀)	All PM _{2.5}	12.8	13.3
PM smaller than 2.5 microns in diameter (PM _{2.5}) ^(a)	0.536	2.99	3.53

Pollutant	Main Generator Engines	Cooling Tower	Total Facility Emissions
Carbon monoxide (CO)	15.6	0	15.6
Nitrogen oxides (NO _x)	8.6	0	8.6
Volatile organic compound (VOC)	8.0E-01	Negligible	0.8
Sulfur dioxide (SO ₂)	4.7E-02	0	4.7E-02
Lead	Negligible	0	Negligible

^(a) All PM emissions from the generator engines are PM_{2.5}, and all PM_{2.5} from the generator engines is considered Diesel Engine Exhaust Particulate (DEEP).

Pollutant	Main Generator Engines	Cooling Tower	Total Facility Emissions
CO	15.6	0	15.6
Ammonia	0.71	0	0.71
DEEP ^(a)	5.36E-01	0	5.36E-01
SO ₂	4.7E-02	0	4.7E-02
Primary nitrogen dioxide (NO ₂) ^(b)	8.6E-01	0	8.7E-01
Benzene	2.4E-03	0	2.4E-03
Toluene	8.6E-04	0	8.6E-04
Xylenes	5.9E-04	0	5.9E-04
1,3 Butadiene	1.2E-04	0	1.2E-04
Formaldehyde	2.4E-04	0	2.4E-04
Acetaldehyde	7.7E-05	0	7.7E-05
Acrolein	2.4E-05	0	2.4E-05
Benzo(a)pyrene	7.9E-07	0	7.9E-07
Benzo(a)anthracene	1.9E-06	0	1.9E-06
Chrysene	4.7E-06	0	4.7E-06
Benzo(b)fluoranthene	3.4E-06	0	3.4E-06
Benzo(k)fluoranthene	6.7E-07	0	6.7E-07
Dibenz(a,h)anthracene	1.1E-06	0	1.1E-06
Ideno(1,2,3-cd)pyrene	1.3E-06	0	1.3E-06
Napthalene	4.0E-04	0	4.0E-04
Propylene	8.5E-03	0	8.5E-03

Pollutant	Main Generator Engines	Cooling Tower	Total Facility Emissions
Fluoride	0	4.8E-03	4.8E-03
Manganese	0	4.6E-04	4.6E-04
Copper	0	1.6E-04	1.6E-04
Chloroform	0	2.6E-04	2.6E-04
Bromodichloromethane	0	2.6E-04	2.6E-04
Bromoform	0	6.9E-03	6.9E-03
(a) DEEP is measured by EPA Method 5 (or 201a), which measures filterable (front-half) particulate emissions. (b) NO ₂ is assumed to be equal to 10 percent of the total NO _x emitted.			

DETERMINATIONS

In relation to this project, the Washington State Department of Ecology (Ecology), pursuant to Revised Code of Washington (RCW) 70.94.152, Washington Administrative Code (WAC) 173-460-040, and WAC 173-400-110, makes the following determinations:

1. The project, if constructed and operated as herein required, will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC, and Chapter 173-460 WAC, and the operation thereof, at the location proposed, will not emit pollutants in concentrations that will endanger public health.
2. The proposed project, if constructed and operated as herein required, will meet applicable air quality requirements as defined below:

Pollutant(s)	BACT Determination
PM, CO, and VOCs	a. Use of EPA Tier 2 certified engines installed and operated as emergency engines, as defined in 40 CFR Section 60.4219. b. Compliance with the operation and maintenance restrictions of 40 CFR Part 60, Subpart IIII. c. Use of high-efficiency drift eliminators which achieve a liquid droplet drift rate of no more than 0.0005 percent of the recirculation flow rate within each cooling tower.
NO _x	a. Use of EPA Tier 2 certified engines installed and operated as emergency engines, as defined in 40 CFR Section 60.4219, and satisfy the written verification requirements of Approval Condition 2.5. b. Compliance with the operation and maintenance restrictions of 40 CFR Part 60, Subpart IIII.
SO ₂	Use of ultra-low sulfur diesel fuel containing no more

Table 2a.1 BACT Determinations	
Pollutant(s)	BACT Determination
	than 15 parts per million by weight of sulfur.

3. The proposed project, if constructed and operated as herein required, will utilize Best Available Control Technology for toxic air pollutants (TAPs) (tBACT) as defined below:

Table 3.1 tBACT Determinations	
TAPs	tBACT Determination
Acetaldehyde, CO, acrolein, benzene, benzo(a)pyrene, 1,3-butadiene, DEEP, formaldehyde, toluene, total PAHs, xylenes, chrysene, benzo(a)anthracene, naphthalene, benzo(b)fluoranthene, propylene, dibenz(a,h)anthracene, Ideno(1,2,3-cd)pyrene, fluoride, manganese, copper, chloroform, bromodichloromethane, bromoform,	Compliance with the VOC and PM BACT requirement.
Ammonia	No more than 15 parts per million volume-dry (ppmvd) at 15 percent oxygen per engine.
NO ₂	Compliance with the NO _x BACT requirement.
SO ₂	Compliance with the SO ₂ BACT requirement.

4. In accordance with WAC 173-460-090, a second tier health risk analysis has been submitted by the applicant for DEEP emissions. Ecology has concluded that this project has satisfied all requirements of a second tier analysis.

THEREFORE, IT IS ORDERED that the project as described in the NOC application and more specifically detailed in plans, specifications, and other information submitted to Ecology is approved for construction and operation, provided the following conditions are met:

APPROVAL CONDITIONS

1. ADMINISTRATIVE CONDITION

1.1. The emergency engine generators approved for operation by this Order are to be used solely for those purposes authorized for emergency generators under 40 CFR 60, Subpart III.

1.2. The Oxford Data Center shall coordinate engine maintenance and testing schedules with Dell and the Microsoft Columbia Data Center in Quincy to minimize overlap between data center scheduled testing. Microsoft shall maintain records of the coordination communications with the other data centers, and those communications shall be available for review by Ecology.

2. EQUIPMENT RESTRICTIONS

- 2.1. The thirty-two 2.5 MWe engine, four 2.0 MWe engines, and the single 0.750 MWe engine shall be operated in accordance with applicable 40 CFR 60, Subpart III requirements including but not limited to: certification by the manufacturer to meet the 40 CFR 89 EPA Tier 2 emissions levels as required by 40 CFR 60.4202; and installed and operated as emergency engines, as defined in 40 CFR 60.4219. At the time of the effective date of this permit, Tier 4 interim and Tier 4 final certified engines (as specified in 40 CFR 1039.102 Table 7 and 40 CFR 1039.101 Table 1, respectively), are not required for 0.750 MWe, 2.0 MWe, and 2.5 MWe electrical generators used for emergency purposes as defined in 40 CFR 60.4219 in attainment areas in Washington State. However, any engines installed at the Oxford Data Center after Tier 4 or other limits are implemented by EPA for emergency generators, shall meet the applicable specifications as required by EPA at the time the emergency engines are installed.
 - 2.2. Each engine must be equipped with selective catalytic reduction (SCR) and catalyzed diesel particulate filter (DPF) controls to meet the emission requirements of EPA Tier 4 engines. The only 0.750 MWe, 2.0 MWe, and 2.5 MWe engines and electrical generating units approved for operation at the Oxford Data Center are those listed in Tables 1.1–1.3 above.
 - 2.3. Replacement of failed engines with identical engines (same manufacturer and model) requires notification prior to installation, but will not require NOC unless there is an emission rate increase from the replacement engines.
 - 2.4. The thirty-two 2.5 MWe engine-generator exhaust stack dimensions shall be greater than or equal to 46 feet above ground level, no more than 18 inches in diameter, and approximately 16 feet above roof height. The four 2.0 MWe engine-generator exhaust stack heights shall be greater than or equal to 46 feet above ground level, no more than 16 inches in diameter, and approximately 16 feet above roof height. The one 0.750 MWe engine-generator exhaust stack height shall be greater than or equal to 46 feet above ground level, no more than 14 inches in diameter, and approximately 16 feet above roof height.
 - 2.5. In addition to meeting EPA Tier 2 certification requirements, the source must have written verification from the engine manufacturer that each engine of the same make, model, and rated capacity installed at the facility uses the same electronic Programmable System Parameters, i.e., configuration parameters, in the electronic engine control unit.
3. OPERATING LIMITATIONS
- 3.1. Fuel consumption at the Oxford Data Center facility shall be limited to a total of 431,000 gallons per year and 119,300 gallons per day of diesel fuel equivalent to on-road specification No. 2 distillate fuel oil (less than 0.00150 weight percent sulfur). Total facility annual fuel consumption may be averaged over a three (3) year period using monthly rolling totals.

3.2. Except as provided in Approval Condition 3.3, the thirty-seven (37) Project Oxford Data Center engines shall not operate more than the following load specific limits:

- 3.2.1. Operational rpm with no load (referred to as idle): for weekly testing, corrective engine maintenance, and generator cool-down, each generator shall not exceed 29 hours per year of operation averaged across all generators in service over a rolling monthly 3-year average.
- 3.2.2. Approximately eighty percent load: for emergency power outages, load bank testing, corrective engine testing, electrical bypass for switchgear, transformer, or substation operations, and non-emergency situations authorized by 40 CFR 60.4211(f), the following conditions apply:
 - 3.2.2.1 Each generator shall not exceed 40 hours per year of operation averaged across all generators in service over a rolling monthly 3-year average.
 - 3.2.2.2 Daily generator usage shall not exceed a maximum limit of 192 MWe hours per calendar day, except during up to four days per year of emergency power outage.
 - 3.2.2.3 Maximum hourly generator usage shall be limited to no more than four 2.5 MWe generators operating simultaneously during any given hour except during emergency power outages.
- 3.2.3. One hundred percent load: for monthly load bank testing, semiannual load bank testing, and as needed generator corrective maintenance, each generator shall not exceed 17.5 hours per year of operation averaged across all generators in service over a rolling monthly 3-year average, with no more than three 2.5 MWe generators operating simultaneously during any given hour.

3.3. The Oxford Data Center engines shall not exceed the following operating limits during commissioning and stack testing:

- 3.3.1. For commissioning events, each generator shall not exceed a one-time total of 50 hours of operation over a full range of loads, averaged over all facility generators commissioned in that year.
- 3.3.2. For stack testing, no more than two generators shall be tested per year, every three years, with each generator operating no more than 30 hours per testing event averaged over all generators tested in that year, and each testing event shall be conducted according to the testing requirements in Approval Condition 4. If more than 30 hours per year of stack testing are needed for re-testing to satisfy Approval Condition 4.4, those hours should be combined with any of the pre-approved hours in Approval Condition 3.2. Additional operation of the engines for the purpose of emissions testing beyond the operating hour and fuel consumptions limits authorized by this Order will be considered by Ecology upon request in writing.

3.4. All of the 32 Phase 1 and 2 cooling towers shall comply with the following conditions:

- 3.4.1. Each individual cooling tower unit shall use a mist eliminator that meets the BACT determination for PM of Section 2(c) of this Order.
- 3.4.2. Chemicals containing hexavalent chromium cannot be used to pre-treat the cooling tower makeup water.

4. GENERAL TESTING AND MAINTENANCE REQUIREMENTS

- 4.1. The Oxford Data Center will follow engine-manufacturer's recommended diagnostic testing and maintenance procedures to ensure that each of the thirty-two (32) 2.5 MWe engines, four (4) 2.0 MWe engines, and one (1) 0.750 MWe engines will conform to applicable engine specifications in Approval Condition 2.1 and applicable emission specifications in Approval Condition 5 throughout the life of each engine.
- 4.2. Any emission testing performed to verify conditions of this Approval Order or for submittal to Ecology in support of this facility's operations, requires that Microsoft comply with all requirements in 40 CFR 60.8 except subsection (g). 40 CFR 60.8(g) may be required by Ecology at their discretion. A test plan will be submitted to Ecology at least 30 days prior to testing that will include a testing protocol for Ecology approval that includes the following information:
 - 4.2.1. The location and Unit ID of the equipment proposed to be tested.
 - 4.2.2. The operating parameters to be monitored during the test.
 - 4.2.3. A description of the source including manufacturer, model number, design capacity of the equipment and the location of the sample ports or test locations.
 - 4.2.4. Time and date of the test and identification and qualifications of the personnel involved.
 - 4.2.5. A description of the test methods or procedures to be used.
- 4.3. The Oxford Data Center shall source test engines as described in Approval Order 4.4 to show compliance with emission limits in Table 4.
- 4.4. The following testing requirements are for ammonia, PM, NO_x, CO, and non-methane hydro-carbons (NMHC). The test methods in Table 4 shall be used for each test event unless an alternate method is proposed by Microsoft and approved in writing by Ecology prior to the test. Except for ammonia testing, which requires only a single-load test, each pollutant in Table 4 shall be tested at two load testing approaches (five-load weighted and single load). A single testing event is defined as completion of all tests in Table 4 per engine, and each test shall be performed on different engines from those tested previously, until each engine at the data center has been tested except as provided in subsection 4.4.4. In the event that any source test shows non-compliance with any applicable Table 4 emission standards for the engines specified in Approval Condition 2.1, Microsoft shall repair or replace the engine and repeat the test on the same engine plus two additional engines from the same phase of the Oxford Data Center. Test reports shall be submitted to Ecology as provided in Condition 9.5 of this Order.

Table 4. Testing Requirements				
Pollutant	Load Test	Test Method	Emission Limits	Compliance Test Frequency
PM	Five-load weighted avg.	EPA Method 5 or 201a	0.03 g/kW-hr	Test two different engines at both load tests within 12 months of engine startup. Test two different untested engines every 3 years.
	Single-load (78%-82%)	EPA Method 5 or 201a, and EPA Method 202	0.1 lb/hr (0.75 MWe)	
			0.21 lb/hr (2.0 MWe)	
NO _x	Five-load weighted avg.	EPA Method 7E	0.67 g/kW-hr	Test two different engines at both load tests within 12 months of engine startup. Test two different untested engines every 3 years.
	Single-load (78%-82%)	EPA Method 7E	1.8 lb/hr (0.75 MWe)	
			2.6 lb/hr (2.0 MWe)	
CO	Five-load weighted avg.	EPA Method 10	3.5 g/kW-hr	Test two different engines at both load tests within 12 months of engine startup. Test two different untested engines every 3 years.
	Single-load (78%-82%)	EPA Method 10	0.75 lb/hr (0.75 MWe)	
			10.1 lb/hr (2.0 MWe)	
NMHC/ VOC	Five-load weighted avg.	EPA Method 25A and EPA Method 18	0.19 g/kW-hr	Test two different engines at both load tests within 12 months of engine startup. Test two different untested engines every 3 years.
	Single-load (78%-82%)	EPA Method 25A and Method 18	0.1 lb/hr (0.75 MWe)	
			0.8 lb/hr (2.0 MWe)	
Ammonia	Single-load (78%-82%)	BAAQMD Method ST-1B or EPA Method 320	0.19 lb/hr (0.75 MWe)	Test two different engines within 12 months of engine startup. Test two different untested engines every 3 years.
			0.51 lb/hr (2.0 MWe)	
			0.64 lb/hr (2.0 MWe)	

- 4.4.1. 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. Each test run shall be done within 2 percent of the target load value (e.g., the test runs for the nominal 10 percent load condition shall be done at loads from 8 to 12 percent). Microsoft may replace the dynamometer requirement in Subpart E of 40 CFR Part 89 with corresponding measurement of gen-set electrical output to derive horsepower output.
- 4.4.2. The F-factor described in Method 19 shall be used to calculate exhaust flow rate through the exhaust stack, except that EPA Method 2 shall be used to calculate the flow rate for purposes of particulate testing. The fuel meter data, as measured according to Approval Condition 4.5, shall be included in the test report, along with the emissions calculations.
- 4.4.3. Three test runs shall be conducted for each engine. Each run must last at least 60 minutes. Analyzer data shall be recorded at least once every minute during the

test. Engine run time and horsepower output and fuel usage shall be recorded during each test run for each load and shall be included in the test report. In lieu of these requirements, Microsoft may propose a test protocol to Ecology in writing for approval.

4.4.4. The one (1) 0.750 MWe engine shall be stack tested according to Table 4. If the first two (2) 2.0 MWe engines tested are found to have consistent test results and are in compliance with all applicable Table 4 emission load tests, Microsoft may request approval from Ecology to discontinue compliance testing for the other two (2) 2.0 MWe engines. If the first five (5) 2.5 MWe engines tested are found to have consistent test results and are in compliance with all applicable Table 4 emission load tests, Microsoft may request approval from Ecology to discontinue compliance testing for the other twenty-seven (27) 2.5 MWe engines.

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

4.6. Each engine shall be connected to a properly installed and maintained fuel flow monitoring system (either physical or generator manufacturer provided software) that records the amount of fuel consumed by the engine during each operation.

5. EMISSION LIMITS

The thirty-two (32) 2.5 MWe engine-generators, the four (4) 2.0 MWe engine-generators, and the one (1) 0.750 MWe engine-generator shall meet the follow emission rate limitations:

5.1. Each emergency engine shall not exceed the applicable emission limits in Table 4.

5.2. Total annual facility-wide emissions shall not exceed the following: 13.3 tons per year (tpy) of PM10; 3.53 tpy of PM2.5; 15.6 tpy of CO; 8.6 tpy of NOx; 0.8 tpy of VOC; 0.047 tpy of SO2; 0.536 tpy of DEEP; 0.86 tpy of NO2; and 0.71 tpy of ammonia.

5.3. Visual emissions from each diesel electric generator exhaust stack shall be no more than five percent, with the exception of a ten (10) minute period after unit start-up. Visual emissions shall be measured by using the procedures contained in 40 CFR 60, Appendix A, Method 9.

5.4. Ammonia concentrations shall comply with the emission limits in Table 4.

6. OPERATION AND MAINTENANCE MANUALS

A site-specific O&M manual for the Oxford Data Center facility equipment shall be developed and followed. Manufacturer's operating instructions and design specifications for the engines, generators, cooling towers, and associated equipment shall be included in the manual. The O&M manual shall be updated to reflect any modifications of the equipment or its operating procedures. Emissions that result from failure to follow the operating

procedures contained in the O&M manual or manufacturer's operating instructions may be considered proof that the equipment was not properly installed, operated, and/or maintained. The O&M manual for the diesel engines, cooling towers, and associated equipment shall at a minimum include:

- 6.1. Manufacturer's testing and maintenance procedures that will ensure that each individual engine will conform to the EPA Tiered Emission Standards appropriate for that engine throughout the life of the engine.
- 6.2. Normal engine operating parameters and design specifications.
- 6.3. Operating maintenance schedule for engines and cooling towers.
- 6.4. Specification sheet for cooling towers verifying 0.0005 percent drift rating, water flow, air flow, makeup water rate, and a list of chemicals used to pre-treat cooling tower makeup water.

7. SUBMITTALS

All notifications, reports, and other submittals shall be sent to:

Washington State Department of Ecology
Air Quality Program
4601 N. Monroe Street
Spokane, WA 99205-1295

8. RECORDKEEPING

All records, O&M manual, and procedures developed under this Order shall be organized in a readily accessible manner and cover a minimum of the most recent 60-month period. The following records are required to be collected and maintained.

- 8.1. Fuel receipts with amount of diesel and sulfur content for each delivery to the facility.
- 8.2. Annual hours of operation for each diesel engine.
- 8.3. Annual number of start-ups for each diesel engine.
- 8.4. Annual gross power generated by facility-wide operation of the emergency backup electrical generators.
- 8.5. Record of each operational period for each engine with the following information:
 - 8.5.1 Date of engine operation,
 - 8.5.2 engine unit ID,

- 8.5.3 reason for operating,
- 8.5.4 duration of operation, and
- 8.5.5 the percent of generator electrical load.

8.6 Upset condition log for each facility permitted emission unit (the 37 engines and 32 cooling towers) and their respective control units that include date, time, duration of upset, cause, and corrective action.

8.7 Applicable recordkeeping for emergency engines required by 40 CFR Part 60, Subpart III Section 60.4214 (b),(c), and (d).

8.8 Air quality complaints received from the public or other entity, and the affected emissions units.

9 REPORTING

9.1 The serial number of the engine and the generator, and the engine build date will be submitted prior to installation of each engine.

9.2 The following information will be submitted to the AQP at the address in Condition 7 above by January 31 of each calendar year.

- 9.2.1 Monthly rolling annual total summary of air contaminant emissions,
- 9.2.2 Monthly rolling facility-wide generator hours of operation with annual total.
- 9.2.3 Monthly rolling gross power generation with annual total.
- 9.2.4 Monthly rolling annual total summary of fuel usage (in gallons).
- 9.2.5 Calendar year annual total runtime hours for each range of generator electrical load.

9.3 Written notification that the O&M manual described in Approval Condition 6 has been developed and updated within 60 days after the issuance of this Order. A copy of the most current O&M manual will be provided to Ecology if requested.

9.4 Any air quality complaints resulting from operation of the emissions units or activities shall be promptly assessed and addressed. A record shall be maintained of Microsoft Corporation's action to investigate the validity of the complaint and what, if any, corrective action was taken in response to the complaint. Ecology shall be notified within three (3) days of receipt of any such complaint.

9.5 Results of any stack testing performed shall be submitted to Ecology within 45 days of completion of the test and shall include, at a minimum, the following information:

- 9.5.1 The information from Conditions 4.2.3, 4.2.4, and 4.2.5 including field and analytical laboratory data, quality assurance/quality control procedures and documentation.

- 9.5.2 A summary of results, reported in units and averaging periods consistent with the applicable emission standard or limit.
- 9.5.3 A summary of control system or equipment operating conditions.
- 9.5.4 A summary of operating parameters for the diesel engines being tested.
- 9.5.5 Copies of field data and example calculations.
- 9.5.6 Chain of custody information.
- 9.5.7 Calibration documentation
- 9.5.8 Discussion of any abnormalities associated with the results.
- 9.5.9 A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

9.6 If Microsoft operates or contracts to operate any emergency diesel engine at the data center in non-emergency situations authorized by 40 CFR 60.4211(f), Microsoft shall submit the annual report required by 40 CFR 60.4214(d)

10 GENERAL CONDITIONS

- 10.1 **Commencing/Discontinuing Construction and/or Operations:** This Approval Order shall become void if construction of Phase 1 is not commenced within eighteen (18) months following the date of this Approval Order, or if Phase 2 is not commenced within eighteen (18) months following completion of commissioning of the final engine in Phase 1. No additional engines shall be installed, if construction of both phases is discontinued for a period of eighteen (18) months, or if operation of backup emergency diesel electric generator is discontinued at the facility for a period of eighteen (18) months, unless prior written notification is received by Ecology at the address in Condition 7 above.
- 10.2 **Compliance Assurance Access:** Access to the source by representatives of Ecology or the EPA shall be permitted upon request. Failure to allow such access is grounds for enforcement action under the federal Clean Air Act or the Washington State Clean Air Act, and may result in revocation of this Approval Order.
- 10.3 **Availability of Order and O&M Manual:** Legible copies of this Order and the O&M manual shall be available to employees in direct operation of the emergency diesel electric generators, and cooling towers, and be available for review upon request by Ecology.
- 10.4 **Equipment Operation:** Operation of the generator units, cooling towers, and related equipment shall be conducted in compliance with all data and specifications submitted as part of the NOC application and in accordance with the O&M manual, unless otherwise approved in writing by Ecology.
- 10.5 **Modifications:** Any modification to the generators, engines, or cooling towers and their related equipment's operating or maintenance procedures, contrary to information in the NOC application, shall be reported to Ecology at least 60 days

before such modification. Such modification may require a new or amended NOC Approval Order.

- 10.6 **Activities Inconsistent with the NOC Application and this Approval Order:** Any activity undertaken by the permittee or others, in a manner that is inconsistent with the NOC application and this Order, shall be subject to Ecology enforcement under applicable regulations.
- 10.7 **Obligations under Other Laws or Regulations:** Nothing in this Approval Order shall be construed to relieve the permittee of its obligations under any local, state, or federal laws or regulations.

All plans, specifications, and other information submitted to Ecology relative to this project and further documents and any authorizations or approvals or denials in relation thereto shall be kept at the Eastern Regional Office of the Department of Ecology in the "Air Quality Controlled Sources" files, and by such action shall be incorporated herein and made a part thereof.

Authorization may be modified, suspended, or revoked in whole or part for cause including, but not limited to the following:

1. Violation of any terms or conditions of this authorization;
2. Obtaining this authorization by misrepresentation or failure to disclose fully all relevant fact.

The provisions of this authorization are severable and, if any provision of this authorization, or application of any provisions of their circumstances, and the remainder of this authorization, shall not be affected thereby.

YOUR RIGHT TO APPEAL

You have a right to appeal this Approval Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Approval Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Approval Order:

- File your appeal and a copy of this Approval Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Approval Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p> <p>Pollution Control Hearings Board 1111 Israel Road SW, Suite 301 Tumwater, WA 98501</p>	<p>Department of Ecology Attn: Appeals Processing Desk P.O. Box 47608 Olympia, WA 98504-7608</p> <p>Pollution Control Hearings Board P.O. Box 40903 Olympia, WA 98504-0903</p>

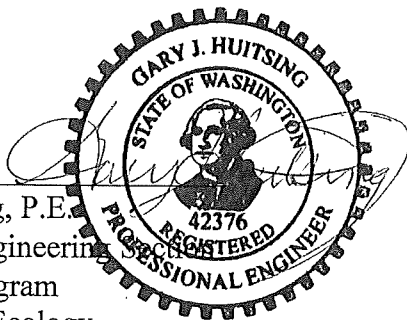
*For additional information visit the Environmental Hearings Office Website:
<http://www.eho.wa.gov>*

*To find laws and agency rules visit the Washington State Legislature Website:
<http://www1.leg.wa.gov/CodeReviser>*

DATED this 15th day of August 2014, at Spokane, Washington.

Reviewed By:

Gary J. Huitsing, P.E.
Science and Engineering
Air Quality Program
Department of Ecology
State of Washington



Approved By:

Karen K. Wood
Karen K. Wood, Section Manager
Regional Air Quality Section
Eastern Regional Office
Department of Ecology
State of Washington