

OCT 24 2001

ENERGY FACILITY SITE EVALUATION COUNCIL  
P.O. BOX 43172  
OLYMPIA, WASHINGTON 98504-3172

IN THE MATTER OF:

Satsop Combustion Turbine Project

Electrical Generating Facility

Elma, Washington

NO. EFSEC/2001-01

FINAL APPROVAL

NOTICE OF CONSTRUCTION

AND PREVENTION OF

SIGNIFICANT DETERIORATION

Pursuant to the Energy Facility Site Evaluation Council (EFSEC) Permit Regulations for Air Pollution Sources (Washington Administrative Code 463-39), regulation for air permit applications (Washington Administrative Code 463-42-385), the Washington Department of Ecology (Ecology) regulations for new source review (Washington Administrative Code 173-400-110 and Chapter 174-460 WAC), the federal Prevention of Significant Deterioration regulations (40 CFR 52.21), and based upon the complete Notice of Construction Application (NOC), submitted by Duke Energy Grays Harbor, LLC., and Energy Northwest on April 23, 2001, the Energy Facility Site Evaluation Council Resolution No. 298 dated April 13, 2001, the Administrative Order on Consent, Docket No. CAA-10-2001-0097, between the Satsop CT Project and the U.S. Environmental Protection Agency, Region 10, dated March 30, 2001, and the technical analysis performed by Ecology for EFSEC, EFSEC now finds the following:

**FINDINGS**

1. Duke Energy Grays Harbor, LLC., and Energy Northwest (jointly "Duke Energy") have applied to construct the Satsop Combustion Turbine Project which is to be located near Elma, Washington. The proposed 650 megawatt (MW) project consists of two (2) separate, combined cycle, natural gas fired power generation facilities, each rated at 175 Megawatts (MW) and one steam turbine generator (STG) rated at 300 Megawatts (MW). The project will consist of the following major components:

1.1. Two General Electric gas combustion turbines (GE 7FA);

1.2. Two heat recovery steam generators (HRSG) with supplementary duct burners;

1.3. One steam turbine generator (STG);

1.4. One auxiliary boiler;

1.5. One forced draft cooling tower system;

These stationary sources may be built separately or simultaneously. Requirements for timing of separate construction shall be done in accordance with Approval Condition 25. They may be operated independently.

2. Duke Energy's NOC/PSD application for the proposed project was determined to be complete on August 1, 2001, after Ecology's review of additional information submitted by Duke Energy.

3. The project is subject to permitting requirements under the Federal requirements of 40 CFR 52.21 because it is one of 28 listed industries that becomes a "major source," when emitting more than 100 tons per year of any regulated pollutant. The Satsop CT Project has potential to emit significant quantities of nitrogen oxides, carbon monoxide, sulfur dioxide, sulfuric acid mist, particulate matter, and volatile organic compounds above Significant Emission Rate thresholds.

4. The project will use natural gas. No other fuel will be used as backup during periods of natural gas curtailment.

5. The site of the proposed project is within an area that is in attainment with regard to all pollutants regulated by the National Ambient Air Quality Standards (NAAQS) and state air quality standards. The site is approximately 60 kilometers from the nearest Class I Area, Olympic National Park.

6. The project is subject to new source review requirements under Chapter 173-400 WAC, Chapter 173-460 WAC, 40 CFR 52.21, 40 CFR 60.40b, 40 CFR 60.330; to emission monitoring requirements under RCW 70.94, Chapter 173-400 WAC, 40 CFR 60 Appendices A, B, and F, and 40 CFR 75; and to gas fuel monitoring requirements under 40 CFR 60.334(b)(2).

7. Best available control technology (BACT) as required under WAC 173-113(2) and toxic best available control technology (T-BACT) as required under WAC 173-460-040(4) will be used for the control of all air pollutants which will be emitted by the proposed project.

68

69 8. The facility will have the potential to emit up to 264 tons per year of oxides of nitrogen (NO<sub>x</sub>).

70

71 9. The facility will have the potential to emit up to 424 tons per year of carbon monoxide (CO).

72

73 10. The facility will have the potential to emit up to 10 tons per year of sulfur dioxide (SO<sub>2</sub>).

74

75 11. The facility will have the potential to emit up to 80 tons per year of volatile organic compounds  
76 (VOCs).

77

78 12. The facility will have the potential to emit up to 115 tons per year of filterable particulate matter  
79 less than or equal to 10 microns aerodynamic equivalent diameter (PM<sub>10</sub>).

80

81 13. The facility will have the potential to emit up to 11.4 tons per year of sulfuric acid mist.

82

83 14. The facility will have the potential to emit up to 121 tons per year of ammonia.

84

85 15. Allowable emissions from the new emissions units will not cause or contribute to air pollution in  
86 violation of:

87

88 15.1. Any state or national ambient air quality standard;

89 15.2. Any applicable maximum allowable increase (PSD increment) over the baseline ambient  
90 concentration.

91

92 16. Ambient Impact Analysis indicates that there will be no significant impacts resulting from pollutant  
93 deposition on soils and vegetation in either the Mt. Rainier or Olympic National Parks.

94

95 17. Ambient Impact Analysis indicates that during natural gas firing, no significant degradation of  
96 regional visibility or vistas from National Parks will occur due to this project.

97

98 18. No significant effect on industrial, commercial, or residential growth in the Elma area is anticipated  
99 due to the project.

100

101 19. EFSEC finds that all requirements for new source review (NSR) and PSD are satisfied and that as  
102 approved below, the new emissions units comply with all applicable federal new source  
103 performance standards. Approval of the NOC application is granted subject to the following  
104 conditions.

105

106 **APPROVAL CONDITIONS**

107

108 1. The combustion turbines (PGUs) shall be fueled only by pipeline quality natural gas.

109

110 2. NO<sub>x</sub> emissions from each power generating unit (PGU) exhaust stack of the project shall not  
111 exceed of the following:

112 2.1. 21.7 pounds per hour (1-hour average) with duct firing;

113 2.2. 16.8 pounds per hour (1-hour average) without duct firing;

114 2.3. 2.5 ppmvd (parts per million on a dry volumetric basis) over (1-hr average) when corrected  
115 to 15.0 percent oxygen (O<sub>2</sub>).

116

117 Initial compliance shall be determined in accordance with 40 CFR Subpart GG and EPA Reference  
118 Method 20, except that the instrument span shall be set between zero and 25 ppm. NO<sub>x</sub> and O<sub>2</sub>  
119 concentrations shall be measured and recorded by a continuous emission monitoring system  
120 (CEMS) which meets the requirements of Approval Condition 17.1 Such CEMS shall be used to  
121 determine compliance with this Condition.

122

123 3. Ammonia (free NH<sub>3</sub> and ammonium sulfate measured as NH<sub>3</sub>) emissions from each PGU exhaust  
124 stack of the project shall not exceed 5.0 ppmvd on a (1-hour average) corrected to 15.0 percent  
125 oxygen. NH<sub>3</sub> emissions from each PGU exhaust stack shall not exceed 16.1 lb/hr (1-hour average).

Initial compliance for each PGU shall be determined by Bay Area Air Quality Management District Source Test Procedure ST-1B, "Ammonia, Integrated Sampling," or an equivalent method approved in advance by EFSEC. NH<sub>3</sub> emissions from each PGU exhaust stack shall be measured and recorded by a continuous emission monitoring system (CEMS) which meets the requirements of Approval Condition 17.2. Duke Energy may propose alternative means for continuous assessment and reporting of NH<sub>3</sub> emissions for approval by the Council. Any proposed alternative NH<sub>3</sub> reporting shall be at a minimum equivalent to a continuous emission monitoring system (CEMS) which meets the requirements of Condition 17.

The SCR catalyst shall be repaired or replaced at the next scheduled outage following a time period when ammonia slip can no longer be maintained at or below 4.5 ppmvd corrected to 15.0 percent oxygen. The outage shall be no later than 12 months after ammonia slip exceeds 4.5 ppmvd corrected to 15.0 percent oxygen. The permit limitations outlined in this section shall not apply to startup, shutdown and scheduled maintenance conditions.

4. CO emissions from each PGU exhaust stack of the project shall not exceed 2 ppmvd corrected to 15.0 percent oxygen and 10.6 lb/hr at 100% load.

CO emissions from each auxiliary boiler shall not exceed 50.0 ppmvd (1- hour average) corrected to 3.0 percent oxygen, and 1.07 lb/hr.

Initial compliance for each PGU and boiler shall be determined by EPA Reference Method 10 or an equivalent method agreed to in advance by the EFSEC. The span and linearity calibration gas concentrations in Method 10 shall be appropriate to the CO concentration limits specified in this condition. CO emissions from each PGU exhaust stack shall be measured and recorded by a CEMS which meets the requirements of Approval Condition 17.3. Such CEMS shall be used to determine compliance with this Condition.

5. SO<sub>2</sub> emissions from each PGU exhaust stack shall not exceed 0.11 ppmvd over a one hour average when corrected to 15.0 percent oxygen. SO<sub>2</sub> emissions from each PGU exhaust stack shall not exceed 1.3 pounds per hour (1-hour average). Sulfur dioxide from auxiliary boiler exhaust stack shall not exceed 0.03 lb/hr (1-hour average).

Initial compliance for each PGU and boiler shall be determined by EPA Reference Method 8, or an equivalent method approved in advance by EFSEC. Duke Energy shall conduct source testing for sulfur dioxide once per month for the first year of operation at each PGU exhaust stack. If test results demonstrate compliance with the permit conditions, subsequent stack testing for sulfur dioxide can be reduced to once per year. Duke Energy shall report to EFSEC on a monthly basis the quantity and average sulfur content of pipeline quality natural gas burned at each PGU unit as substantiated by purchase records and vendor's report. Fuel sulfur determination shall follow procedures outlined in 40 CFR 60.335(d) and (e) or an alternative method approved by EPA and submitted to EFSEC.

6. Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) emissions from each PGU exhaust stack shall not exceed 1.3 lb/hr. Initial compliance with the sulfuric acid emissions limits shall be determined by EPA Reference Method 8, or an equivalent method approved by EFSEC. Duke Energy shall conduct source testing for sulfuric acid mist once per month for the first year of operation at each exhaust stack. If test results demonstrate compliance with the permit conditions, subsequent stack testing for sulfuric acid mist can be reduced to once per year.

7. Volatile organic compound emissions (VOCs) from each PGU exhaust stack shall not exceed 8.4 pounds per hour (1-hour average) and VOC emissions from auxiliary boiler shall not exceed 0.469 pounds per hour (1-hour average).

Initial compliance for each PGU and boiler shall be determined by EPA Reference Method 25A or 25B, or an equivalent method agreed to in advance by EFSEC.

8. PM<sub>10</sub> emissions from each PGU exhaust stack shall not exceed 391.2 pounds per day (filterable

only) PM10 emissions from each PGU exhaust stack shall not exceed 0.0025 gr/dscf. PM10 emissions from auxiliary boiler exhaust stack shall not exceed 7.0 pounds per day.

Initial compliance for each PGU and the boiler (exhaust stack) shall be determined by either EPA Reference Methods 5, 201, or 201A, or an equivalent method agreed to in advance by EFSEC. In conjunction with the above test, EPA Reference method 202 will also be conducted and the results reported separately.

9. Opacity from each PGU exhaust stack of the project shall not exceed 5 percent over a six minute average as measured by EPA Reference Method 9, or an equivalent method approved in advanced by EFSEC. A certified opacity reader shall read and record the opacity daily if Method 9 is used.

10. With the exception of PM<sub>10</sub>, SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, NO<sub>x</sub>, CO, and VOCs, the net emissions increase of any pollutant regulated under the Federal Clean Air Act shall be less than the significant levels in 40 CFR 52.21(b)(23)(i).

11. Plantwide emissions shall not exceed the following on an annual total rolled monthly:

**PLANTWIDE EMISSIONS\***

| Pollutant | PGU<br>PER STACK<br>tons/yr | Auxiliary Boiler<br>Tons/yr | Cooling Tower<br>Tons/yr | Total Potential<br>To emit<br>tons/yr |
|-----------|-----------------------------|-----------------------------|--------------------------|---------------------------------------|
| NOx       | 132                         | 0.26                        | --                       | 264                                   |
| SO2       | 5.0                         | 0.008                       | --                       | 10                                    |
| H2SO4     | 5.7                         | --                          | --                       | 11.4                                  |
| PM        | 55.2                        | 0.07                        | 4.51                     | 115                                   |
| CO        | 212                         | 0.27                        | --                       | 424                                   |
| VOC       | 40                          | 0.12                        | --                       | 80                                    |

\* Includes the excess emissions from startup and shutdown events.

206  
207 12. The number of startup and shutdown shall be limited to 130 events for each PGU unit. Emissions  
208 resulting from these startup and shutdown events shall be considered and reported in accordance  
209 with approval conditions outlined below. The following conditions apply to startup and shutdown  
210 periods. The startup period ends when the earlier of the two operating events occurs:

211 12.1. The proper operating temperature of oxidation and SCR catalysts has been achieved and all  
212 six Dry-Low-NOx burners, per PGU, are operational; or

213 12.2. 4 hours maximum for both turbines have elapsed since fuel was first combusted in the first  
214 turbine.

215  
216 The proper operating temperature of the oxidation and SCR catalysts and the point at which all six  
217 Dry-Low-NOx burners are operational shall be determined from the Manufacturer's design  
218 specifications and must be reported in writing to EFSEC before commercial operation of the  
219 combustion turbines. The number of startup and shutdown are limited to 130 events per year per  
220 PGU, with a maximum of two startups per turbine per 24 hour period. Compliance with short-term  
221 emission limits (during startup and shutdown periods) shall be determined using manufacturer's  
222 emission factors or source test data. Where source test data and Manufacturer's emission factors  
223 conflict, source test data shall be used to determine compliance.

224  
225 Compliance with the plantwide annual emissions per PGU exhaust stack shall be determined using  
226 a combination of source test data, CEM data and emission factors. Annual emissions per PGU shall  
227 include emissions generated during startup and shutdown periods. Source testing is to be conducted  
228 at 100% load with duct firing. The following emission factors can be used for calculating the  
229 emissions generated during startup and shutdown periods until new source test data is developed by  
230 Duke Energy and approved by EFSEC.

231

| Pollutant       | Emission Factor (both turbines) |
|-----------------|---------------------------------|
| Nitrogen oxides | 1536 lb/4-hr (average)          |
| Carbon monoxide | 5288 lb/4-hr (average)          |



- 235 Volatile organic compounds 354 lb/4-hr (average)  
236
- 237 13. Duct firing system: Duct firing shall not exceed 6760 hours per year within each power generating  
238 unit (each combustion turbine). A totalizer or metering device will be installed to record hours of  
239 operation for each duct firing system, or an equivalent method approved in advance by EFSEC.  
240
- 241 14. Within 180 days after initial start-up of the first combustion turbine, Duke Energy shall conduct  
242 performance tests for NO<sub>x</sub>, ammonia, SO<sub>2</sub>, opacity, VOC, CO, PM<sub>10</sub> and H<sub>2</sub>SO<sub>4</sub> on each PGU and  
243 boiler, to be performed by an independent testing firm. A test plan shall be submitted to EFSEC for  
244 approval at least 30 days prior to the testing. Initial start-up for a combustion turbine is defined as  
245 the time when the first electricity from the PGU and the associated steam turbine generator is  
246 delivered to the electrical power grid.  
247
- 248 15 Sampling ports and platforms shall be provided on each stack, after the final pollution control  
249 device. The ports shall meet the requirements of 40 CFR, Part 60, Appendix A, Method 20.  
250
- 251 16. Adequate permanent and safe access to the test ports shall be provided. Other arrangements may  
252 be acceptable if approved by EFSEC prior to installation.  
253
- 254 17. Continuous Emission Monitoring Systems  
255
- 256 17.1 CEMS for NO<sub>x</sub> and O<sub>2</sub> compliance shall meet the requirements contained in 40 CFR 75,  
257 Emissions Monitoring.
- 258 17.2 CEMS for ammonia shall meet the requirements contained in 40 CFR, Part 63,  
259 Appendix A and 40 CFR, Part 60, Appendix F, Quality Assurance Procedures, or  
260 other EFSEC- approved performance specifications and quality assurance  
261 procedures.
- 262 17.3 Continuous emission monitoring systems (CEMS) for CO, shall, at a minimum  
263 meet the requirements contained in 40 CFR, Part 60, Appendix B, Performance

Specifications and in 40 CFR, Part 60, Appendix F, Quality Assurance  
Procedures.

18. Compliance testing shall be performed for PM<sub>10</sub> and VOCs from each PGU and boiler exhaust stack annually for the first three years following initial startup, and once every 3 years thereafter as long as compliance continues to be demonstrated. Source testing for these parameters is to coincide with the Relative Accuracy Test Audit required for each installed CEMS.

19. CEMS and process data shall be reported in written (or electronic if permitted by the EFSEC) form to the authorized representative of EFSEC and to the EPA Region X Office of Air Quality monthly (unless a different testing and reporting schedule has been approved by EFSEC) within thirty days of the end of each calendar month.

20. The format of the reporting described in Condition 19 shall match that required by EPA for Demonstrating compliance with the Title IV Acid Rain program reporting requirements. Pollutants not covered by that format shall be reported in a format approved by EFSEC that shall include at least the following:

20.1 Process or control equipment operating parameters.

20.2 The hourly maximum and average concentration, in the units of the standards, for each pollutant monitored.

20.3 The duration and nature of any monitor down-time.

20.4 Results of any required monitor audits or accuracy checks.

20.5 Results of any required stack tests.

20.6 The above data shall be retained at the Satsop CT Project site for a period of five years.

21. For each occurrence of monitored emissions in excess of the standard, the monthly emissions report (per Approval Condition 19 and 20) shall include the following:

- 293        21.1    For parameters subject to monitoring and reporting under the Title IV, Acid Rain program,  
294                   the reporting requirements in that program shall govern excess emissions report content.
- 295        21.2    For all other pollutants:
- 296                   21.2.1    The time of the occurrence.
- 297                   21.2.2    Magnitude of the emission or process parameters excess.
- 298                   21.2.3    The duration of the excess.
- 299                   21.2.4    The probable cause.
- 300                   21.2.5    Corrective actions taken or planned.
- 301                   21.2.6    Any other agency contacted.
- 302
- 303 22.    Operating and maintenance manuals for all equipment that has the potential to affect emissions to  
304           the atmosphere shall be developed and followed. Copies of the manuals shall be available to  
305           EFSEC or the authorized representative of EFSEC. Emissions that result from a failure to follow  
306           the requirements of the manuals may be considered proof that the equipment was not properly  
307           operated and maintained.
- 308
- 309 23.    Operation of the equipment that has the potential to affect the quantity and nature of emissions to  
310           the atmosphere must be conducted in compliance with all data and specifications submitted as part  
311           of the PSD/NOC application unless otherwise approved by EFSEC.
- 312
- 313 24.    This approval shall become void if construction of the project is not commenced within 18 months  
314           after receipt of final approval, or if construction of the facility is discontinued for a period of 18  
315           months, unless EFSEC extends the 18 month period upon a satisfactory showing that an extension  
316           is justified , pursuant to 40 CFR 52.1 (r) (2) and applicable EPA guidance.
- 317
- 318
- 319 25.    Any activity which is undertaken by Duke Energy or others, in a manner which is inconsistent with  
320           the application and this determination, shall be subject to EFSEC enforcement under applicable  
321           regulations. Nothing in this determination shall be construed so as to relieve Duke Energy of its

322 obligations under any state, local, or federal laws or regulations.

323

324 26. Duke Energy shall notify EFSEC in writing at least thirty days prior to initial start-up of the project.

325

326 27. Access to the source by EFSEC, the authorized representative of EFSEC, or the U.S. Environmental  
327 Protection Agency (EPA), shall be permitted upon request for the purpose of compliance assurance  
328 inspections. Failure to allow access is grounds for action under the Federal Clean Air Act or the  
329 Washington Clean Air Act.

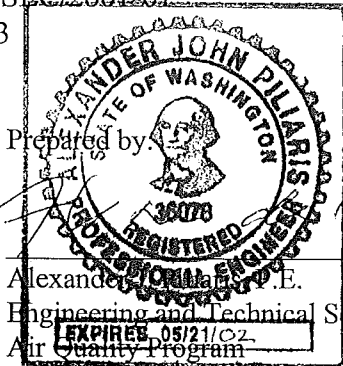
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Final Approval of NOC/PSD Permit

Satsop CT Project

No. EFSEC/2001-01

Page 13



Prepared by:

Alexander John Pillaris, P.E.  
Engineering and Technical Services  
Air Quality Program  
Washington Department of Ecology

10/23/2001

Date

Approved by:

A handwritten signature of James O. Luce.

James O. Luce  
EFSEC Chair  
Energy Facility Site Evaluation Council

10-23-01

Date

Approved by:

A handwritten signature of Barbara McAllister.

Barbara McAllister  
Director  
Office of Air Quality  
U.S. Environmental Protection Agency  
Region 10

11/2/01

Date