

WASHINGTON DEPARTMENT OF ECOLOGY  
MAILSTOP 7600  
OLYMPIA, WASHINGTON 98504-7600

4 IN THE MATTER OF: ]  
5 ]  
6 Boeing Commercial Airplane Group ] NO. PSD 91-01 Amendment 2  
7 P.O. Box 3707 MS OH-24 ] FINAL APPROVAL  
8 Seattle, WA 98124-2207 ] OF PSD APPLICATION  
9 ]

10 Pursuant to the U.S. Environmental Protection Agency (EPA) regulations for the  
11 Prevention of Significant Deterioration (PSD) in Title 40, Code of the Federal  
12 Regulations, Part 52 and New Source Review (NSR) regulations in Washington  
13 Administrative code 173-400-110 and based on the complete application for  
14 Amendment 2 to Prevention of Significant Deterioration 91-01 submitted by  
15 Boeing Commercial Airplane Group (Boeing), and the technical analysis  
16 performed by the Department of Ecology (Ecology), Ecology now finds the  
17 following:

18 FINDINGS

- 19 1) Boeing was granted approval by Ecology to build a new paint hangar  
20 designated Building 45-04 at the Everett facility by PSD 91-01 which was  
21 issued in May 1991. The new paint hangar was to accommodate cleaning  
22 and painting new model 747, model 767 airplanes. Boeing was granted  
23 approval by Ecology to expand painting and cleaning operations in  
24 Building 45-04 to accommodate new model 777 airplanes by PSD 91-01  
25 Amendment 1 (formerly PSD 91-01-A) which was issued in October of 1992.  
26 The hangar was constructed and is currently being used as proposed.
- 27 2) The original PSD Approval required Boeing to use electrostatic air  
28 assisted airless painting systems except for application of speed  
29 stripes that are close together, when two or more colors are applied at  
30 the same time, or when applying metallic paints. Boeing Commercial  
31 Airplane Group is seeking approval to use additional high transfer  
32 efficiency coating techniques that are allowed under applicable federal

33 regulations and will not cause any increases in allowable or actual VOC  
34 emissions.

35 3) The Boeing Everett plant qualifies as a major source because it emits  
36 more than 250 tons per year of volatile organic compounds (VOC).  
37 Building 45-04 qualifies as a major modification to this source because  
38 it would have the potential to increase VOC emissions more than 40 tons  
39 per year. It is located in an area which is designated Class II for the  
40 purposes of PSD evaluation under 40 CFR 52.21 dated July 1, 1988.

41 4) The site is within an area that is currently designated as attainment as  
42 regards to the state and national air quality standards for ozone.  
43 Ecology has recently requested this area be redesignated non-attainment  
44 for ozone. Since this designation has not been declared by the  
45 Environmental Protection Agency, the request does not affect Building 45-  
46 04.

47 5) The modifications would generate up to an additional 142 tons of VOC per  
48 year.

49 6) The emissions of VOC are subject to PSD review.

50 7) Best available control technology (BACT) for cleaning operations inside  
51 Building 45-04 has been determined to be use of the cleaning methods  
52 allowed under section 40 CFR 63.744 of Subpart GG, National Emission  
53 Standards for Aerospace Manufacturing and Rework Facilities (paraphrased  
54 as follows):

- 55 a) Capture, containment, and recovery of paint gun cleaning solvents,
- 56 b) Capture and containment of VOC emitted from spent cleaning rags,  
57 and
- 58 c) Use of low vapor pressure solvents (less than or equal to 45  
59 millimeters of mercury vapor pressure at 20 degrees Celsius) for  
60 hand wipe cleaning operations.

- 61 8) Best available control technology (BACT) for application of coatings  
62 inside Building 45-04 has been determined to be use of the high transfer  
63 efficiency (HTE) coating methods allowed under section 40 CFR 63.745(f)  
64 of Subpart GG, National Emission Standards for Aerospace Manufacturing  
65 and Rework Facilities (paraphrased as follows):
- 66 a) Flow/curtain coat application;
  - 67 b) Dip coat application;
  - 68 c) Roll coating;
  - 69 d) Brush coating;
  - 70 e) Cotton-tipped swab application;
  - 71 f) Electrodeposition (dip) coating;
  - 72 g) High volume low pressure (HVLV) spraying;
  - 73 h) Electrostatic spray application; or
  - 74 i) Other coating methods that achieve emission reductions equivalent  
75 to HVLV or electrostatic spray application methods, as determined  
76 according to the requirements in § 63.750(i).
- 77 9) All operations in Building 45-04 will comply with applicable Regulations  
78 of the Puget Sound Clean Air Agency.
- 79 10) The project will have no significant impact on ambient air quality.
- 80 11) The project is anticipated to have no noticeable affect on industrial,  
81 commercial, or residential growth in the Seattle area.
- 82 12) Visibility will not be impaired in any Class I area due to the proposed  
83 emissions.
- 84 13) Ambient pollutant concentrations in any Class I area are not predicted  
85 to change due to the project with the approval conditions.
- 86 14) Ecology finds that all requirements for PSD have been satisfied  
87 (conditions 5, 7 and 9 were satisfied during the original permitting

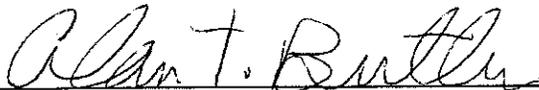
88 process, and do not need to be repeated to satisfy requirements for this  
89 PSD Amendment). Approval of the PSD application is granted subject to  
90 the following conditions:

91 APPROVAL CONDITIONS

- 92 1) Emissions of VOC from Building 45-04 shall not exceed 142 tons per year.
- 93 2) Boeing Commercial Airplane Group will, upon request, report the  
94 quantities and VOC content of the cleaning solutions and paints and the  
95 VOC emissions annually to the Department of Ecology and the Puget Sound  
96 Clean Air Agency.
- 97 3) Methods used for aerospace cleaning operations shall be limited to those  
98 methods allowed under section 40 CFR 63.744 of Subpart GG, National  
99 Emission Standards for Aerospace Manufacturing and Rework Facilities.  
100 Exemptions listed in 40 CFR 63.744(e) shall apply.
- 101 4) Methods used for application of aerospace coatings shall be limited to  
102 high transfer efficiency (HTE) methods listed in section 40 CFR  
103 63.745(f) of Subpart GG, National Emission Standards for Aerospace  
104 Manufacturing and Rework Facilities. Exemptions listed in 40 CFR  
105 63.745(f)(3) shall apply.
- 106 5) Boeing Commercial Airplane Group shall obtain offsetting reductions of  
107 VOC by reducing actual emissions from existing sources in the Puget Sound  
108 area by 156 tons per year. The offsets shall produce a net air quality  
109 benefit. Within 180 days of the date of this approval, Boeing Commercial  
110 Airplane Group shall submit to Ecology procedures for insuring reductions  
111 are obtained and maintained. All reductions shall be accomplished within  
112 180 days of startup.
- 113 6) All operations in Building 45-04 shall comply with Regulation II of the  
114 Puget Sound Clean Air Agency.

- 115 7) This approval shall become void if construction of Building 45-04 is not  
116 commenced within eighteen (18) months after receipt of final approval,  
117 or if construction or operation of Building 45-04 is discontinued for a  
118 period of eighteen (18) months.
- 119 8) Any activity undertaken by Boeing Commercial Airplane Group or others,  
120 in a manner inconsistent with the application and this determination,  
121 shall be subject to Ecology enforcement under applicable regulations.  
122 Nothing in this determination shall be construed so as to relieve Boeing  
123 Commercial Airplane Group of its obligations under any state, local, or  
124 federal laws or regulations.
- 125 9) Boeing Commercial Airplane Group shall notify Ecology and Puget Sound  
126 Clean Air Agency in writing within thirty days of the beginning of  
127 painting and cleaning operations.
- 128 10) Access to Building 45-04 by the U.S. Environmental Protection Agency  
129 (EPA), department, state or local regulatory personnel shall be permitted  
130 upon request for the purpose of compliance assurance inspections.  
131 Failure to allow access is grounds for revocation of this determination  
132 of approval.

133 Reviewed by:

134 

135 Alan T. Butler, P.E.  
136 Air Quality Program  
137 Washington Department of Ecology  
138

8/14/2000  
Date

139 Approved by:

140 

141 for Mary E. Burg  
142 Manager, Air Quality Program  
143 Washington Department of Ecology  
144

8/25/00  
Date

**FACT SHEET FOR  
ADMINISTRATIVE AMENDMENT 2 TO PSD 91-01  
BOEING COMMERCIAL AIRPLANE GROUP  
EVERETT DIVISION PLANT, BUILDING 45-04**

## **1 Introduction**

### **1.1 The PSD Process**

The Prevention of Significant Deterioration (PSD) procedure is established in Title 40, Code of the Federal Regulations, Part 52.21. Federal rules require PSD review of all new or modified air pollution sources that meet certain criteria. The objective of the PSD program is to "prevent significant deterioration" due to emissions of PSD-regulated air pollutants by a proposed new source. The program limits deterioration of air quality to a specified increment of the National Ambient Air Quality Standard for some pollutants. It also sets up a mechanism for evaluating the effect that the proposed emissions might have on visibility, soils, and vegetation in Mandatory Class I Areas.

### **1.2 The Boeing, Everett 777 Facility**

Boeing Commercial Airplane Group (Boeing) manufactures Model 747, 767 and 777 aircraft at the Everett Division Plant. The production capacity of the Everett facility is 84 Model 777 airplanes per year.

### **1.3 Everett PSD History**

In 1991 Boeing proposed to modify this plant by expanding to build Model 777 aircraft. Ecology determined that all emission units for Model 777 production are one project and are subject to PSD review, but the project was split up into several PSD permits. PSD 91-01 is the PSD at issue, but they are all briefly discussed below.

**PSD 91-01 was issued for the construction of Building 45-04, which is the 777 paint hangar.**

**PSD 91-05** was issued for the construction of Buildings 40-25 and 40-26 which accommodate the Corrosion Inhibitor Compound Emissions Exhaust Systems for Model 777 Aircraft.

**PSD 91-03** was issued for construction of Building 40-37, also called the Clean, Seal, Test and Paint (CST&P) building. The primary purpose for this building is the cleaning, sealing, testing, and painting 777 wings and body sections. Boeing stated that Building 40-37 has the potential to emit 167 tons of VOC per year in their application for PSD 91-06.

**PSD 91-06** was issued for 777 spray coating facilities in Buildings 40-04, 40-25, 40-26, and 40-34.

**PSD 92-05** was issued for the installation of three 150-MMBtu/hr steam boilers. This approval was amended recently to ease restrictions on use of backup oil fuel and to extend the averaging times of some of the NO<sub>x</sub> limits.

## **1.4 PSD 91-01: Building 45-04**

### **1.4.1 PSD 91-01**

PSD 91-01 was originally issued in May of 1991 for the construction of Building 45-04, which was constructed for the cleaning and painting of new model 747 and 767 airplanes.

### **1.4.2 PSD 91-01 Amendment 1 (formerly PSD 91-01-A)**

The PSD Approval was amended in October of 1992 to allow expansion of the painting operations in Building 45-04 to accommodate cleaning and painting of new model 777 airplanes.

### **1.4.3 PSD 91-01 Amendment 2**

Boeing requested a number of wording changes in the PSD Approval to allow use of additional techniques for aerospace cleaning and painting. As explained in greater detail below, changing the PSD Approval to allow the use of all the techniques currently allowed under the Aerospace NESHAP will save Boeing time and money and result in less wasted paint and solvent and less emissions to the environment.

### **1.4.4 PSD Numbering Change**

The original PSD Approval was numbered PSD 91-01, because it was the first Department of Ecology Prevention of Significant Deterioration Approval issued in the year 1991. When it was amended to accommodate 777s, the PSD Approval was designated PSD 91-01-A. Currently PSD amendments are designated by adding "Amendment *N*" after the PSD number, with "*N*" being the number of times the PSD Approval has been amended. If that scheme had been followed with this Approval, it would have been numbered PSD 91-01 Amendment 1, rather than PSD 91-01-A. This PSD Approval has been numbered to reflect the current numbering scheme, and is numbered PSD 91-01 Amendment 2.

The potential to emit VOC from painting operations in building 45-04 is 142 tons per year.

## **1.5 Other Applicable Requirements**

### **1.5.1 EPA -- Aerospace NESHAPS**

No federal new source performance standards that addressed paint application on aircraft were in place at the time of the original PSD Approval, but Title 40, Code of Federal Regulations, Part 63, Subpart GG has since been promulgated by the EPA, and it currently applies to the facility. Subpart GG is the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Aerospace Manufacturing and Rework Facilities. The specific sections that relate to the findings and conditions in PSD 91-01 are §63.744, *Standards: Cleaning operations* and §63.745, *Standards: Primer and topcoat application operations*. The Puget Sound Clean Air Agency



regulates Boeing pursuant to the aerospace NESHAP

### 1.5.2 Puget Sound Clean Air Agency – New Source Review

The Puget Sound Air Pollution Control Agency Regulations I, II and III also apply and all provisions and standards will be met.

## 2 Best Available Control Technology

### 2.1 Definition

Best available control technology (BACT) is defined as an emission limitation based on the most stringent level of emission control available or applied at an identical or similar source. Boeing must achieve this level of control or prove it is technically or economically infeasible before a less stringent level of control is allowed.

### 2.2 BACT For VOC Emissions From Cleaning and Painting Operations

#### 2.2.1 BACT ~ Original PSD Approval and Amendment 1

Best available control technology (BACT) for painting operations in building 45-04 at the time or original PSD Approval issuance had been determined to be:

- Electrostatic air assisted airless surface coating,
- Capture, containment, and recovery of paint gun cleaning solvents,
- Capture and containment of VOC emitted from spent cleaning rags, and,
- Low pressure application of bulk solvent.

The Washington State regulation Chapter 173-460 WAC "Controls for New Sources of Toxic Air Pollutants" applies to the aerospace coating application process and requires T-BACT for toxic air pollutants. In this application toxics are VOC. Therefore BACT for VOC satisfies the T-BACT for toxics required in the toxics regulation.

#### 2.2.2 BACT ~ Amendment 2

The EPA promulgated 40 CFR 63, Subpart GG, the National Emission Standard for Hazardous Air Pollutants for Aerospace Manufacturing and Rework Facilities on September 1, 1998. All new and existing "major" aerospace manufacturers must comply with the emissions limitations and methodology requirements in Subpart GG.

The Aerospace NESHAP contains numerous, detailed specifications as to how various types of cleaning (both airplane parts and painting equipment) and painting are to be done. The original PSD Approval allowed paint application by only one method – electrostatic air assisted airless

surface coating. Boeing currently has to comply with all requirements of both PSD 91-01 and the Aerospace NESHAP. Boeing would like for the requirements of the PSD to be essentially the same as the requirements for the Aerospace NESHAP.

Boeing compared estimated VOC emissions and hazardous waste generation under the allowable PSD permit conditions and under the methods allowed under the Aerospace NESHAP. The estimates are based on the current year 2000 production rates for the 777 model aircraft. The savings in emissions and waste are achieved primarily while applying small volumes of paint because the HVLP equipment allows the operator to mix only the amount required for a specific job and the equipment requires less solvent to clean. Electrostatic painting equipment requires more paint for priming the system and more solvent for cleaning. Boeing stated that used solvent is often recycled on site, so the data presented in the table below represent waste paint and solvent generated, not hazardous waste removed from Building 45-04.

No. of planes	Waste Generated		Gallons waste not generated	Pounds waste not generated
	HVLP	Electrostatic		
54	74	1,345	1,273	14,249

Air emission reductions achievable through HVLP versus electrostatic paint application technologies are due to reduced waste generation. Assuming approximately 10 percent evaporation of waste materials during paint gun cleaning and transferring of waste, an estimated reduction of up to 1,425 pounds of volatile organic compounds would result.

The proposed methods for cleaning and painting operations at Building 45-04 (as required under the Aerospace NESHAP) represent BACT for VOC emissions because these methods provide for better control of VOC at lower cost (less paint wasted) while allowing greater flexibility in facility operations.

### **2.3 Change in Actual Emissions**

Expanding the allowable use of HVLP and other high transfer efficiency technology is not expected to increase air emissions. In fact, less waste paint and solvents are generated resulting in air emission reductions. Annual hazardous waste reduction is estimated to be 14,249 pounds and air emission reduction to be up to 1,424 pounds of volatile organic compounds (VOC).

Enforcement of these requirements will be by periodic inspections by the Puget Sound Air Pollution Control Agency and the monitoring, recording and recordkeeping techniques required in the Aerospace NESHAP.

### **2.4 Change in Allowable Emissions**

Condition 1 of PSD 91-01 Amendment 2 states that emissions of VOC from the Building 45-04 shall not exceed 142 tons per year. This allowable emission requirement will not be changed.

### **3 Conclusion**

Because the proposed amendment does not involve any increase in allowable emissions, or any decrease in stringency of any monitoring requirement, public comment is not required and the PSD approval can be issued in final form.