IN THE MATTER OF:  

Boeing Commercial Airplane Group  
P.O. Box 3707 MS OH-24  
Seattle, WA 98124-2207  

NO. PSD 91-01 Amendment 2  
FINAL APPROVAL  
OF PSD APPLICATION

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

FINDINGS

1) Boeing was granted approval by Ecology to build a new paint hangar designated Building 45-04 at the Everett facility by PSD 91-01 which was issued in May 1991. The new paint hangar was to accommodate cleaning and painting new model 747, model 767 airplanes. Boeing was granted approval by Ecology to expand painting and cleaning operations in Building 45-04 to accommodate new model 777 airplanes by PSD 91-01 Amendment 1 (formerly PSD 91-01-A) which was issued in October of 1992. The hangar was constructed and is currently being used as proposed.

2) The original PSD Approval required Boeing to use electrostatic air assisted airless painting systems except for application of speed stripes that are close together, when two or more colors are applied at the same time, or when applying metallic paints. Boeing Commercial Airplane Group is seeking approval to use additional high transfer efficiency coating techniques that are allowed under applicable federal
regulations and will not cause any increases in allowable or actual VOC emissions.

35 3) The Boeing Everett plant qualifies as a major source because it emits more than 250 tons per year of volatile organic compounds (VOC). Building 45-04 qualifies as a major modification to this source because it would have the potential to increase VOC emissions more than 40 tons per year. It is located in an area which is designated Class II for the 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 regards to the state and national air quality standards for ozone. Ecology has recently requested this area be redesignated non-attainment for ozone. Since this designation has not been declared by the Environmental Protection Agency, the request does not affect Building 45-04.

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

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

50 7) Best available control technology (BACT) for cleaning operations inside Building 45-04 has been determined to be use of the cleaning methods allowed under section 40 CFR 63.744 of Subpart GG, National Emission Standards for Aerospace Manufacturing and Rework Facilities (paraphrased 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 millimeters of mercury vapor pressure at 20 degrees Celsius) for hand wipe cleaning operations.
8) Best available control technology (BACT) for application of coatings inside Building 45-04 has been determined to be use of the high transfer efficiency (HTE) coating methods allowed under section 40 CFR 63.745(f) of Subpart GG, National Emission Standards for Aerospace Manufacturing and Rework Facilities (paraphrased as follows):

   a) Flow/curtain coat application;
   b) Dip coat application;
   c) Roll coating;
   d) Brush coating;
   e) Cotton-tipped swab application;
   f) Electrodeposition (dip) coating;
   g) High volume low pressure (HVLP) spraying;
   h) Electrostatic spray application; or
   i) Other coating methods that achieve emission reductions equivalent to HVLP or electrostatic spray application methods, as determined according to the requirements in § 63.750(i).

9) All operations in Building 45-04 will comply with applicable Regulations of the Puget Sound Clean Air Agency.

10) The project will have no significant impact on ambient air quality.

11) The project is anticipated to have no noticeable affect on industrial, commercial, or residential growth in the Seattle area.

12) Visibility will not be impaired in any Class I area due to the proposed emissions.

13) Ambient pollutant concentrations in any Class I area are not predicted to change due to the project with the approval conditions.

14) Ecology finds that all requirements for PSD have been satisfied (conditions 5, 7 and 9 were satisfied during the original permitting
process, and do not need to be repeated to satisfy requirements for this
PSD Amendment). Approval of the PSD application is granted subject to
the following conditions:

**APPROVAL CONDITIONS**

1) Emissions of VOC from Building 45-04 shall not exceed 142 tons per year.

2) Boeing Commercial Airplane Group will, upon request, report the
quantities and VOC content of the cleaning solutions and paints and the
VOC emissions annually to the Department of Ecology and the Puget Sound
Clean Air Agency.

3) Methods used for aerospace cleaning operations shall be limited to those
methods allowed under section 40 CFR 63.744 of Subpart GG, National
Emission Standards for Aerospace Manufacturing and Rework Facilities.
Exemptions listed in 40 CFR 63.744(e) shall apply.

4) Methods used for application of aerospace coatings shall be limited to
high transfer efficiency (HTE) methods listed in section 40 CFR
63.745(f) of Subpart GG, National Emission Standards for Aerospace
Manufacturing and Rework Facilities. Exemptions listed in 40 CFR
63.745(f)(3) shall apply.

5) Boeing Commercial Airplane Group shall obtain offsetting reductions of
VOC by reducing actual emissions from existing sources in the Puget Sound
area by 156 tons per year. The offsets shall produce a net air quality
benefit. Within 180 days of the date of this approval, Boeing Commercial
Airplane Group shall submit to Ecology procedures for insuring reductions
are obtained and maintained. All reductions shall be accomplished within
180 days of startup.

6) All operations in Building 45-04 shall comply with Regulation II of the
Puget Sound Clean Air Agency.
7) This approval shall become void if construction of Building 45-04 is not commenced within eighteen (18) months after receipt of final approval, or if construction or operation of Building 45-04 is discontinued for a period of eighteen (18) months.

8) Any activity undertaken by Boeing Commercial Airplane Group or others, in a manner inconsistent with the application and this determination, shall be subject to Ecology enforcement under applicable regulations. Nothing in this determination shall be construed so as to relieve Boeing Commercial Airplane Group of its obligations under any state, local, or federal laws or regulations.

9) Boeing Commercial Airplane Group shall notify Ecology and Puget Sound Clean Air Agency in writing within thirty days of the beginning of painting and cleaning operations.

10) Access to Building 45-04 by the U.S. Environmental Protection Agency (EPA), department, state or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow access is grounds for revocation of this determination of approval.

Reviewed by:

[Signature]
Alan T. Butler, P.E.
Air Quality Program
Washington Department of Ecology

Approved by:

[Signature]
Mary E. Burg
Manager, Air Quality Program
Washington Department of Ecology

8/14/2000

8/25/2000
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, 40-24, 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 NOx 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 NESHPAP

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 NESHPAP 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.

<table>
<thead>
<tr>
<th>No. of planes</th>
<th>Waste Generated</th>
<th>Gallons waste not generated</th>
<th>Pounds waste not generated</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>HVLP</td>
<td>Electrostatic</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>74</td>
<td>1,345</td>
<td>1,273</td>
</tr>
</tbody>
</table>

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.