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# UNITED AIRLINES, INC. SAN FRANCISCO MAINTENANCE CENTER

## Semiannual Aerospace NESHAP Compliance Status Report

**Reporting Period:** September 1, 2023 through February 29, 2024

**BAAQMD Facility # A0051**



Prepared by:

**United Airlines, Inc.  
Environmental Affairs  
San Francisco, California**

March 29, 2024

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## TABLE OF CONTENTS

1.0	Semiannual Compliance Status Notification Report .....	1
1.1	General Information .....	1
1.2	Certification .....	2
1.3	Cleaning Operations .....	2
1.4	Primer and Topcoat Application .....	3
1.5	Depainting Operations (Not Applicable) .....	5
1.6	Chemical Milling Maskant Application Operations (Not Applicable).....	6
1.7	Recordkeeping Requirements .....	6
1.8	Changes in Information Already Provided.....	6
1.9	Additional Comments .....	6
2.0	DISCUSSION .....	11
2.1	Cleaning Operations: Housekeeping Measures.....	11
2.2	Hand-Wipe Cleaning Operations.....	12
2.3	Spray Gun Cleaning Operations.....	14
2.4	Flush Cleaning Operations .....	15
2.5	Primer and Topcoat Application Operations: Inorganic HAP Emissions.....	16
2.6	Primer and Topcoat Application Operations: Organic HAP/VOC Content.....	18
2.7	Depainting Operations (Not Applicable) .....	20
2.8	Chemical Milling Maskant Operations (Not Applicable) .....	20



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

**List of Tables**

Table 1-1: Emission Standards.....	7
Table 1-2: Monitoring and Recordkeeping.....	9
Table 2-1: United Airlines, Inc. Hand-Wipe Cleaning Solvents Summary .....	13
Table 2-2 Booths Subject to Inorganic HAP Requirements.....	18
Table 2-3 UAL Paint Booth Subject to Organic HAP/VOC Standard .....	19



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

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Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

## 1.0 Semiannual Compliance Status Notification Report

Applicable Rule: 40 CFR Part 63, Subpart GG — National Emission Standards for Aerospace Manufacturing and Rework Facilities. Semiannual notification is being made in accordance with 40 CFR §§ 63.753(b)(1), (c)(1), (d)(1), and/or (e).

### 1.1 General Information

A. Print or type the following information for each facility in which aerospace manufacturing and rework operations are performed (40 CFR §§ 63.9(b)(2)(i)-(ii)):

<b>Operating Permit Number (OPTIONAL)</b>	<b>Facility I.D. Number (OPTIONAL)</b>	
	A0051	
<b>Owner/Operator/Title</b>		
United Airlines, Inc. – San Francisco Maintenance Center		
<b>Street Address</b>		
800 S Airport Blvd, Building 49-2 SFOMP, San Francisco International Airport		
<b>City</b>	<b>State</b>	<b>ZIP Code</b>
San Francisco	CA	94128
<b>Facility Contact</b>	<b>Title</b>	<b>Phone (OPTIONAL)</b>
Alyson Dagly	Manager – California Air Compliance	510-220-9604

B. Check which affected source(s), as defined by 40 CFR § 63.741(c), were in operation at your facility during the semiannual reporting period:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Hand-wipe cleaning (Section 1.3, A)                | <input checked="" type="checkbox"/> Primer and topcoat application (Section 1.4) |
| <input checked="" type="checkbox"/> Flush cleaning (not covered)                       | <input type="checkbox"/> Depainting operations (Section 1.5)*                    |
| <input checked="" type="checkbox"/> Spray gun cleaning (Section 1.3, B)                | <input type="checkbox"/> Chemical milling maskant applications (Section 1.6)     |
| <input checked="" type="checkbox"/> Waste storage and handling (no reporting required) |  |

\* Please see the discussion in Section 1.5 of this report.

C. Certification and reporting period encompasses the time period from **September 1, 2023** through **February 29, 2024**.



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

## 1.2 Certification

Based upon information and belief formed after a reasonable inquiry, I, as a responsible official of the above-mentioned facility, certify the information contained in this report is accurate [40 CFR § 63.9(h)(2)(i)(G)]. The above-mentioned facility has complied with applicable requirements in 40 CFR Part 63, Subpart GG during the semiannual reporting period as indicated below (check all that apply) [40 CFR §§ 63.753(b)(1)(v), (c)(1)(vii), (d)(1)(ix), and (e)(6)].

### APPLICABLE REQUIREMENTS

- flush cleaning requirements under §63.744(d)
- hand-wipe cleaning requirements under §63.744(b)
- spray gun cleaning requirements under §63.744(c)
- organic primer and topcoat requirements under §63.745
- inorganic primer and topcoat requirements under §63.745
- depainting requirements under §63.746
- chemical milling maskant operations under §63.747
- recordkeeping under §63.10(b)

### FACILITY HAS COMPLIED

- Yes  No  NA
- Yes  No  NA
- Yes  No  NA
- Yes  No  NA
- Yes  No  NA
- Yes  No  NA
- Yes  No  NA
- Yes  No  NA

DocuSigned by:

*Bill Fulton*

ACBBFA1DFA4E446...

Bill Fulton  
Managing Director – Engine & Component Operations

3/29/2024

Date

## 1.3 Cleaning Operations

### A. Hand-Wipe Cleaning

- Have you used non-compliant cleaning solvents for a non-exempt hand-wipe cleaning operation during the reporting period?  Yes  No (*if no, go to A.4.*) [40 CFR § 63.753(b)(1)(i)]
- If you answered yes, please provide the following information for each instance where you used a non-compliant cleaning solvent for a non-exempt hand-wipe cleaning operation (*for additional entries, please use Continuation Sheet 1.3.A.2.*) **Not applicable.**
- (OPTIONAL) If you reported deficiencies in A.2. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**
- Have you used any new hand-wipe cleaning solvents during the reporting period?  Yes  No (*if no, go to B.1.*) [40 CFR § 63.753(b)(1)(ii)]
- If you answered yes, please provide the following information in 40 CFR § 63.753(b)(1)(ii) for each new cleaning solvent used: **See Nu-Power-II in Table 2-1.**

### B. Spray Gun Cleaning

- Did your facility use a non-compliant (i.e., other than enclosed, non-atomized, disassembled, or atomized) spray gun cleaning method during the reporting period?  Yes  No (*if no, go to B.3.*) [40 CFR § 63.753(b)(1)(iii)]
- If you answered yes, please describe the non-compliant cleaning method you used: **Not applicable.**
- Did your facility have any instance where a leaking **enclosed** spray gun cleaner remained unrepaired and in use for more than 15 days during the reporting period?  Yes  No (*if no, go to Section 1.4*) [40 CFR § 63.753(b)(1)(iv)]



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

4. If you answered yes, please provide the following information for each instance where you used a leaking enclosed spray gun cleaner for more than 15 days: *(for additional entries, please use Continuation Sheet 1.3.B.4.)* **Not applicable.**
5. (OPTIONAL) If you reported deficiencies in B.4. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**

## 1.4 Primer and Topcoat Application

### A. Uncontrolled primer and topcoats

1. Did your facility have any instance where primer or topcoat compliance was uncontrolled (e.g., you did not use averaging or a control device) during the reporting period?  Yes  No *(if no, go to B.1.)* [40 CFR § 63.753(c)(1)(i)]
2. If you answered yes, did primer or topcoat values for either  $H_i$  (the mass of organic HAP emitted per unit volume of coating as applied, less water) or  $G_i$  (the mass of VOC emitted per unit volume of coating as applied, less water and exempt solvents) ever exceed the applicable organic HAP or VOC content limit specified in 40 CFR § 63.745(c)?  Yes  No *(if no, go to B.1.)* [40 CFR § 63.753(c)(1)(i)]
3. If you answered yes, please provide the following information for each coating formulation within each coating category that exceeds the applicable limits in 40 CFR § 63.745(c) [40 CFR § 63.752(c)(2)(i), 40 CFR § 63.753(c)(1)(i)]: *(for additional entries, please use Continuation Sheet 1.4.A.3.)* **Not applicable.**
4. (OPTIONAL) If you reported deficiencies in A.3. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**

### B. Averaged primer and topcoats

1. Did your facility have any instance where primer or topcoat compliance was achieved through the use of averaging during the reporting period? (Averaging is allowed only for uncontrolled primers or topcoats; averaging primers together with topcoats is prohibited. Each averaging scheme shall be approved in advance by the permitting agency and be adopted as part of the facility's Title V permit. (40 CFR § 63.745(e)(2))).  Yes  No *(if no, go to C.1.)* [40 CFR § 63.753(c)(1)(ii)]
2. If you answered yes, did primer or topcoat values for either  $H_a$  (the monthly volume-weighted average mass of organic HAP emitted per unit volume of coating as applied, less water) or  $G_a$  (the monthly volume-weighted average mass of VOC emitted per unit volume of coating as applied, less water and exempt solvents) for all coatings ever exceed the applicable organic HAP or VOC content limit specified in 40 CFR § 63.745(c)?  Yes  No *(if no, go to C.1.)* [40 CFR § 63.753(c)(1)(ii)] **Not applicable.**
3. If you answered yes, please provide the following information for all coatings within each coating category that exceeds the applicable limits in 40 CFR § 63.745(c) [40 CFR §§ 63.752(c)(4)(i), 63.753(c)(1)(ii)] *(for additional entries, please use Continuation Sheet 1.4.B.3.)* **Not applicable.**
4. (OPTIONAL) If you reported deficiencies in B.3. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**





Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

### C. Controlled primer and topcoats using incineration

1. Did your facility have any instance where primer or topcoat compliance was achieved through the use of incinerators during the reporting period?  Yes  No (*if no, go to D.1.*) [40 CFR § 63.753(c)(1)(iii)]
2. If you answered yes, were there any instances when the 3-hour average combustion temperature(s) were less than the minimum average combustion temperature(s) established under 40 CFR § 63.751(b)(11) or (12) during the most recent performance test during which compliance was demonstrated?  Yes  No (*if no, go to D.1.*) [40 CFR §§ 63.753(c)(1)(iii), 63.751(b)(11) - (12)] **Not applicable.**
3. If you answered yes, please provide the following information for each period when the 3-hour average combustion temperature was less than established values: (*for additional entries, please use Continuation Sheet 1.4.C.3.*) **Not applicable.**
4. (OPTIONAL) If you reported deficiencies in C.3. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**

### D. Controlled primer and topcoats using carbon adsorption

1. Did your facility have any instance where primer or topcoat compliance was achieved through the use of carbon adsorption during the reporting period?  Yes  No (*if no, go to D.5.*) [40 CFR § 63.753(c)(1)(iv)]
2. If you answered yes, were there any rolling periods when the overall efficiency of the carbon adsorber was calculated to be less than 81%?  Yes  No (*if no, go to D.5.*) [40 CFR § 63.753(c)(1)(iv)(A)] **Not applicable.**
3. If you answered yes, please provide the following for each rolling period when the overall control efficiency of your carbon adsorber was calculated less than 81%. Include as an attachment to this report the initial material balance calculation and any calculations that demonstrate exceedances [40 CFR § 63.753(c)(1)(iv)(A)]: (*for additional entries, please use Continuation Sheet 1.4.D.3.*) **Not applicable.**
4. (OPTIONAL) If you reported deficiencies in D.3. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved: **Not applicable.**
5. Did your facility use nonregenerative carbon adsorbers at any time during the reporting period?  Yes  No (*if no, go to E.1.*) [40 CFR § 63.753(c)(1)(iv)(B)]
6. If you answered yes, please attach the following:
  - > the design evaluation
  - > the continuous monitoring system performance report
  - > any excess emissions as demonstrated through deviations of monitored values for each nonregenerative carbon adsorber. [40 CFR § 63.753(c)(1)(iv)(B)]

### E. Controlled primer and topcoats using other than incineration or carbon adsorption

1. Did your facility use any control devices other than an incinerator or carbon adsorber at any time during the reporting period (including dry or wet particulate filters)?  Yes  No (*if no, go to E.8.*) [40 CFR § 63.753(c)(1)(v)]



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

2. If you answered yes, did any of these control devices exceed the operating parameter(s) established under the initial performance test during which compliance was demonstrated?  
 Yes  No  Not Applicable (*if no, go to E.5.*) [40 CFR § 63.753(c)(1)(v)]
3. If you answered yes, please provide the following for each exceedance of your control device's operating parameter(s):  
**Not applicable.**
4. (OPTIONAL) If you reported deficiencies in E.3. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved:  
**Not applicable.**
5. Did your facility have any instance within this semiannual reporting period where a primer or topcoat application operation was not immediately shut down when the pressure drop across a dry particulate filter or HEPA filter system, or the water flow rate through a waterwash system, or recommended parameter(s) through a pumpless system, was outside the limit(s) specified by the filter or booth manufacturer or in locally prepared operating procedures?  Yes  No (*if no, go to Section 1.5.*) [40 CFR § 63.753(c)(1)(vi)]
6. If you answered yes, please provide the following for each time the booth was not immediately shut down when values were outside limits:  
**Not applicable.**
7. (OPTIONAL) If you reported deficiencies in E.6. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved:  
**Not applicable.**

## 1.5 Depainting Operations (Not Applicable)

On June 1, 2015, United began operation of a new depainting booth that uses a non-chemical-based process for depainting aircraft parts, subassemblies and assemblies that are normally removed from the aircraft for depainting. The blast media is food grade corn starch which is captured in a closed loop system. Media that is no longer useful is routed to a baghouse type abatement device. Based on the types of parts, subassemblies, and assemblies depainted, the standards for depainting operations in 40 CFR § 63.746 are not applicable, and the depainting operation is not an affected source. 40 CFR §§ 63.741(b) and (c)(8), 63.746(a)(1) and (3). United maintains records of aircraft components depainted at this booth.

### A. Depainting, General

1. Did your facility depaint more than six new or discontinued aircraft models during the reporting period?  
 Yes  No (*if no, go to Section 1.6*) [40 CFR § 63.753(d)(1)(viii)]
2. If you answered yes, please provide the following parts information for each new and discontinued aircraft models depainted at your facility: **Not applicable.**
3. (OPTIONAL) If you reported deficiencies in A.2. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved:  
**Not applicable.**
4. Did your facility have any 24-hour periods where organic HAPs were emitted from depainting of the outer surface areas of aerospace vehicles (other than from exempt operations listed in 40 CFR §§ 63.746(a), (b)(3) and (b)(5) during the reporting period?  Yes  No (*if no, go to B.1.*) [40 CFR §§ 63.753(d)(1)(i), 63.746(a)(1)]. **Not applicable.**



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

**Note: Under A., do not report 24-hour periods where you used a control device to capture emissions under 40 CFR § 63.746(c), this will be reported later in this section.**

5. If you answered yes, please provide the following for each 24-hour period where you emitted HAPs.  
**Not applicable.**
6. (OPTIONAL) If you reported deficiencies in A.5. above, please describe the corrective action(s) you took to address them and prevent recurrence, to include time frames involved and results achieved:  
**Not applicable.**

## 1.6 Chemical Milling Maskant Application Operations (Not Applicable)

### 1.7 Recordkeeping Requirements

- A. Is your facility in compliance with recordkeeping requirements to keep all information (including all reports and notifications) available for inspection for a period of five years, and maintain the most recent two years on site?  Yes  No **(if yes, go to Section 1.8)** [40 CFR § 63.10(b)(1)]
- B. If you answered no, please indicate the corrective action(s) you are taking to comply with record keeping requirements. **Not applicable.**

### 1.8 Changes in Information Already Provided

Have there been any changes in information already provided for your facility since the NOCS or any subsequent report that have not otherwise been listed in this report and that were not reported within 15 days of making the change?  Yes  No [40 CFR § 63.9(j)] **(if no, end of form)** If you answered yes, please describe the changes below:

### 1.9 Additional Comments

- A. Do you have additional facility-specific information or comments you would like to present that have already been addressed elsewhere in the body of this report.  Yes  No **(if no, go to end of form.)**
- B. If you answered yes, please enter the information or comments below.



**United Airlines, Inc.**  
**San Francisco Maintenance Operations Center**  
**40 CFR 63 Subpart GG – Aerospace NESHAP**  
**Source-Specific Compliance Summary**

The following tables contain a list of the sources subject to the Aerospace NESHAP identified in United Airlines, Inc.'s (United's) most recent Title V Operating Permit (issued December 6, 2022)<sup>1</sup>. The tables contain a summary of applicability and compliance for each source related to the specific Aerospace NESHAP categories, i.e., housekeeping, hand-wipe cleaning, spray gun cleaning, flush cleaning and primer and topcoat application operations. The facility does not perform depainting operations subject to the standards in 40 CFR § 63.746 or chemical milling maskant operations subject to 40 CFR § 63.747.

<b>Table 1-1: Emission Standards</b>								
40 CFR Part 63, Subpart GG National Emission Standards for Aerospace Manufacturing and Rework Facilities								
§ 63.744 Standards: Cleaning Operations					§ 63.745 Standards: Primer and Topcoat			Comments
Source	(a) House-keeping	(b) Hand-wipe	(c) Spray Gun Cleaning	(d) Flush Cleaning	(c) Uncontrolled Coatings – Organic HAP and VOC Content	(f) Application Method	(g) Inorganic HAP	
S-1	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-9	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-10	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-56	C	C	NA	NA	NA	NA	NA	Spray Cleaning
S-57	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-61	C	C	C	NA	C	C	C	Paint Spray Booth
S-64	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-78	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-80	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-112	C	NA	NA	C	NA	NA	NA	Solvent Spray Booth
S-123	C	C	C	NA	C	C	C	Paint Spray Booth

<sup>1</sup> A timely and complete MFR permit renewal application was submitted on November 21, 2022 and is currently under review by BAAQMD.



Semiannual Aerospace NESHAP  
Compliance Status Reports  
September 1, 2023 through February 29, 2024

Table 1-1: Emission Standards								
40 CFR Part 63, Subpart GG National Emission Standards for Aerospace Manufacturing and Rework Facilities								
§ 63.744 Standards: Cleaning Operations				§ 63.745 Standards: Primer and Topcoat				
Source	(a) House- keeping	(b) Hand- wipe	(c) Spray Gun Cleaning	(d) Flush Cleaning	(c) Uncontrolled Coatings – Organic HAP and VOC Content	(f) Application Method	(g) Inorganic HAP	Comments
S-126	C	C	C	NA	C	C	C	Paint Spray Booth
S-146	C	C	C	NA	C	C	C	Paint Spray Booth.
S-198	C	C	NA	NA	NA	NA	NA	Facility-wide Solvent Hand-wipe Operations
S-258	C	NA	NA	C	NA	NA	NA	Flush Cart
S-284	C	NA	NA	C	NA	NA	NA	Flush Cart
S-288	C	NA	NA	C	NA	NA	NA	Recycling Parts Cleaner
S-290	C	NA	NA	C	NA	NA	NA	Recycling Parts Cleaner
S-330	C	C	NA	NA	C	C	NA	Parts Cleaner
S-335	C	C	NA	NA	NA	NA	NA	ATC issued 2/26/2024; Startup notification submitted on 2/28/2024. Aircraft Wipe Cleaning Operation (SuperBay)
S-331	C	C	NA	NA	C	C	NA	Parts Cleaner
S-400	C	C	NA	NA	C	C	C	Facility-wide Non-Booth Aerospace Coating Operations

C = Compliant  
NC = Non-Compliant  
NA = Not Applicable



**United Airlines, Inc.**  
**San Francisco Maintenance Operations Center**  
**40 CFR 63 Subpart GG – Aerospace NESHAP**  
**Source-Specific Compliance Summary**

<b>Table 1-2: Monitoring and Recordkeeping</b>						
Source	40 CFR Part 63, Subpart GG National Emission Standards for Aerospace Manufacturing and Rework Facilities					
	§ 63.751 Monitoring Requirements		§ 63.752 Recordkeeping Requirements			
	(a) Enclosed Spray Gun Cleaners	(c) Dry Particulate Filter – Primer and Topcoats	(b) Cleaning Operations	(c) Primer and Topcoat Application	(d) Inorganic HAP Emissions	Comments
S-1	NA	NA	C	NA	NA	
S-9	NA	NA	C	NA	NA	
S-10	NA	NA	C	NA	NA	
S-56	NA	NA	C	NA	NA	
S-57	NA	NA	C	NA	NA	
S-61	NA	C	C	C	C	
S-64	NA	NA	C	NA	NA	
S-78	NA	NA	C	NA	NA	
S-80	NA	NA	C	NA	NA	
S-112	NA	NA	C	NA	NA	
S-123	NA	C	C	C	C	
S-126	NA	C	C	C	C	
S-146	NA	C	C	C	C	
S-198	NA	NA	C	NA	NA	
S-258	NA	NA	C	NA	NA	



Semiannual Aerospace NESHAP  
Compliance Status Reports  
September 1, 2023 through February 29, 2024

Table 1-2: Monitoring and Recordkeeping						
Source	40 CFR Part 63, Subpart GG National Emission Standards for Aerospace Manufacturing and Rework Facilities					
	§ 63.751 Monitoring Requirements		§ 63.752 Recordkeeping Requirements			
	(a) Enclosed Spray Gun Cleaners	(c) Dry Particulate Filter – Primer and Topcoats	(b) Cleaning Operations	(c) Primer and Topcoat Application	(d) Inorganic HAP Emissions	Comments
S-284	NA	NA	C	NA	NA	
S-288	NA	NA	C	NA	NA	
S-290	NA	NA	C	NA	NA	
S-330	NA	NA	C	NA	NA	
S-331	NA	NA	C	NA	NA	
S-335	NA	NA	C	NA	NA	ATC issued 2/26/2024; Startup notification submitted on 2/28/2024.
S-400	NA	NA	NA	C	C	

C = Compliant  
NC = Non-Compliant  
NA = Not Applicable



## 2.0 DISCUSSION

### 2.1 Cleaning Operations: Housekeeping Measures

#### Housekeeping Requirements for Cleaning Operations:

Aerospace NESHAP housekeeping requirements for cleaning operations include the following (40 CFR §§ 63.744(a)(1)-(3)):

- Solvent-laden cloth, paper, or other absorbent applicators used for cleaning aerospace vehicles or components must be stored in bags or other closed containers after use. These bags or containers must be designed to contain solvent vapors and be kept closed except when depositing or removing materials. This requirement does not apply to cotton-tipped swabs for very small cleaning operations.
- Fresh and spent cleaning solvents, except semi-aqueous solvent cleaners, used in aerospace cleaning operations must be stored in closed containers.
- Cleaning solvents must be handled and transferred to or from enclosed systems, vats, or waste containers in a manner that minimizes spills.

Housekeeping measures are applicable to all United cleaning operations, as defined in 40 CFR § 63.742, except those utilizing solvents with VOC or HAP levels below the minimums in 40 CFR § 63.741(f) and those utilizing solvents classified as “semi-aqueous solvent cleaners.” (40 CFR §§ 63.741(f), 63.742, 63.744(a)). These requirements also do not govern use of solvents outside of aerospace operations. (40 CFR §§ 63.742, 63.744(a)).

#### Process Description:

United uses solvent-laden cloth, paper, and other absorbent applicators for cleaning aerospace components throughout the SFMC. United has approved the following containers for the storage and disposal of solvent-laden material:

- 5- to 10-gallon safety container with foot operated, gravity-closing lid;
- 55-gallon “open-head drum funnels” with closing lid and lip cover clip;
- 1-gallon can with lid; and
- Plastic bags that are kept closed.

These containers meet the requirements in 40 CFR § 63.744(a)(1), which specifies that the cleaning operations use “bags and containers of such design so as to contain the vapors of the cleaning solvent.”

#### Monitoring Requirements:

See the discussions of the specific cleaning operations below.

#### Recordkeeping Requirements:

Records that include the name, vapor pressure, and documentation of the organic HAP constituents of each cleaning solvent used at the affected sources are maintained on-site. (40 CFR § 63.752(b)(1)).

#### Reporting Requirements:

No specific reporting requirements are associated with housekeeping measures.





## 2.2 Hand-Wipe Cleaning Operations

### Requirements:

Hand-wipe cleaning is defined as “removal of contaminants . . . from an aerospace vehicle or component by physically rubbing it with a material such as a rag, paper, or cotton swab that has been moistened with a cleaning solvent.” (40 CFR § 63.742). Hand-wipe cleaning operations that use solvents with HAP or VOC content above the threshold amounts in 40 CFR § 63.741(f) are subject to the Aerospace NESHAP. In general, operations must use cleaning solvents that meet one of the classifications below (40 CFR § 63.744(b)(1)-(2)):

- Aqueous cleaner in which water is the primary ingredient (i.e., ≥ 80% water).
- Hydrocarbon-based cleaner with a vapor pressure maximum of 7 mm Hg at 20 deg. C, containing no HAP compounds.
- Cleaner which has a composite vapor pressure of 45 mm Hg or less at 20 degrees C.

### Exempt Cleaning Operations:

Thirteen exempt cleaning operations in which non-compliant solvent can be used are specified in 40 CFR § 63.744(e). The eight exempt cleaning operations applicable to United are listed below:

- Cleaning and surface activation prior to adhesive bonding (40 CFR § 63.744(e)(3));
- Cleaning of electronic parts and assemblies containing electronic parts (40 CFR § 63.744(e)(4));
- Cleaning of aircraft and ground support equipment fluid systems that are exposed to the fluid of hydraulic fluid systems (40 CFR § 63.744(e)(5));
- Cleaning of fuel cells, fuel tanks, and confined spaces (40 CFR § 63.744(e)(6));
- Surface cleaning of solar cells, coated optics, and thermal control surfaces (40 CFR § 63.744(e)(7));
- Cleaning during fabricating, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used in the interior of the aircraft (40 CFR § 63.744(e)(8));
- Cleaning of metallic and non-metallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components (40 CFR § 63.744(e)(9)); and
- Cleaning and cleaning solvent usage associated with research and development, quality control, and laboratory testing (40 CFR § 63.744(E)(11)).

### Process Description:

Presently 12 different hand-wipe solvents are being used at the SFMC. Table 2-1 summarizes the hand-wipe cleaning solvents used at the SFMC.

### Monitoring Requirements:

None.

### Recordkeeping Requirements:

The facility must maintain records as follows (40 CFR §§ 63.752(b)(1)-(4)):



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

- Maintain records showing the name, vapor pressure, and the organic HAP constituents for every cleaning solvent used.
- Retain the name, all data and calculations that demonstrate composition, and annual records of the volume of each cleaning solvent used in hand-wipe operations that comply with the composition requirements of 40 CFR § 63.744(b)(1).
- Retain the name, vapor pressure, data/calculations/test results that demonstrate vapor pressure, and monthly records of the volume (in gallons) of each cleaning solvent used in hand-wipe operations that comply with the vapor pressure requirements of 40 CFR §63.744(b)(2) but not the requirements of 40 CFR § 63.733(b)(1).
- Retain the identity and monthly record of the usage rate (in gallons) for each solvent used in exempt hand-wipe cleaning operations that does not conform to the vapor pressure or composition requirements of 40 CFR § 63.744(b). Include a list of the processes provided in 40 CFR § 63.744(e) at which the cleaning operation was used.

Reporting Requirements:

The facility must report the following information semiannually (40 CFR § 63.753(b)):

- Any instance when a non-compliant solvent is used in a non-exempt hand-wipe operation;
- Any new cleaning solvents used in the previous six months (report, as appropriate, either their composite vapor pressure or provide notification that they comply with the composition requirements of 40 CFR § 63.744(b)(1)); and
- A statement certifying the facility compliance status with the applicable standards and a statement of compliance signed by a responsible official certifying compliance with all applicable requirements.

**Table 2-1: United Airlines, Inc. Hand-Wipe Cleaning Solvents Summary**

Solvent	Vapor pressure (mm Hg @ 20°C)	Contain VOCs or HAPs?	Acceptable for Hand-Wipe Cleaning?
Isopropyl Alcohol	33	Yes	Yes
Acetone	182	No	Yes
Desoclean 45	45	Yes	Yes
Toluene	22	Yes	Yes
Stoddard Solvent	1	Yes	Yes
Denatured Alcohol	42	Yes	Yes
Ethyl Alcohol	42	Yes	Yes
Naphtha	1	Yes	Yes
LPS Presolv	<5	Yes	Yes
Citrikleen	0.18	Yes	Yes
Nu-Power-II	18	Yes	Yes
Mineral Spirits	1	Yes	Yes



## 2.3 Spray Gun Cleaning Operations

### Requirements:

Spray guns are devices that atomize a coating or other material and project the particulates or other material onto a substrate. (40 CFR § 63.742). Spray guns used for applying primers, topcoats, and specialty coatings must be cleaned using one or more of the following techniques, unless the cleaning solvents used contain HAP and VOC amounts greater than the thresholds in 40 CFR § 63.741(f) (40 CFR §§ 63.744(c)(1)-(4)):

- **Enclosed System:** The spray gun is cleaned by forcing solvent through the gun in an enclosed system that is closed at all times except when inserting and removing the spray gun.
- **Non-atomized Cleaning:** The spray gun is cleaned by placing cleaning solvent in the pressure pot and forcing it through the spray gun with the atomizing cap in place using no atomizing air. The cleaning solvent must be directed into a vat, drum, or other waste container that is closed when not in use.
- **Disassembled Spray Gun Cleaning:** The spray gun is disassembled, and components cleaned by hand in a vat, which remains closed at all times except when in use. Alternatively, the components are soaked in a vat that remains closed during the soaking period and when not inserting or removing the components.
- **Atomized Cleaning:** The spray gun is cleaned by forcing cleaning solvent through the gun and directing the resulting atomized spray into a waste container fitted with a device designed to capture the atomized cleaning solvent emissions.

Cleaning nozzle tips of automated spray equipment systems, except for robotic systems that can be programed to spray into a closed container, are exempt from these requirements. (40 CFR § 63.744(c)(5)).

### Process Description:

Solvents used to clean paint guns at the SFMC include: Desoclean 45, isopropyl alcohol, and denatured alcohol. Spray gun cleaning with each of these solvents is subject to the Aerospace NESHAP.

Spray gun cleaning is performed at the following paint spray booths:

- S-61
- S-123
- S-126
- S-146

Enclosed spray gun cleaning, non-atomized spray gun cleaning, and atomized spray gun cleaning are not utilized at the above applicable paint spray booths. Therefore, all spray gun cleaning is classified as disassembled spray gun cleaning as defined in 40 CFR § 63.744(c)(3).

### Monitoring Requirements:

Inspect enclosed spray gun cleaners at least once per month while the system is in operation, as described in 40 CFR § 63.751(a). (Note: United does not utilize enclosed spray gun cleaners at the applicable paint spray booths).

### Recordkeeping:

The facility must maintain records showing the name, vapor pressure, and organic HAP constituents of each cleaning solvent used by each spray gun cleaning operation subject to the Aerospace NESHAP. (40 CFR § 63.752(b)(1)). (Note: United does not utilize enclosed spray gun cleaners at the applicable paint spray booths).



### Reporting Requirements:

The facility must report the following information semiannually (40 CFR §§ 63.753(b)(1)(iii), (iv)-(v)):

- Any instance when a non-compliant spray gun cleaning method is used.
- Any instance when a leaking enclosed spray gun cleaner remains unrepaired and in use for more than 15 days. (Note: United does not utilize enclosed spray gun cleaners at the applicable paint spray booths).
- A statement certifying the facility compliance status with the applicable standards and a statement of compliance signed by a responsible official certifying compliance with all applicable requirements.

## **2.4 Flush Cleaning Operations**

### Requirements:

Flush cleaning means "the removal of contaminants...from an aerospace vehicle or component or coating equipment by passing solvent over, through, or into the item being cleaned." (40 CFR § 63.742). Flush cleaning operations that do not use solvents that have HAP or VOC amounts over the thresholds in 40 CFR 63.741(f) or that qualify as hydrocarbon-based or aqueous cleaning solvents per Table 1 in 40 CFR § 63.744 are not subject to flush cleaning requirements (40 CFR § 63.744(d)). Otherwise, the used cleaning solvent must be emptied each time aerospace parts or assemblies, or components of a coating unit, other than spray guns, are flush cleaned into an enclosed container or collection system that remains closed when not in used or into a system with equivalent emission control. (*Id.*)

### Process Description:

All flush cleaning operations at the SFMC primarily use mineral spirits/stoddard solvent at solvent spray booths (non-atomized), or cold cleaners.

### Monitoring Requirements:

None.

### Recordkeeping Requirements:

The facility must maintain records showing the name, vapor pressure, and organic HAP constituents of each cleaning solvent used by each flush cleaning operation subject to the Aerospace NESHAP. (40 CFR § 63.752(b)(1)). For semi-aqueous cleaning solvents used for flush cleaning operations, records must include the amount of each cleaning solvent used, data and calculations that demonstrate the cleaning solvent complies with the composition requirements, and annual records of the volume of each solvent used, as determined by purchase or usage records (40 CFR § 63.752(b)(2)). United keeps usage records for flush cleaning throughput to comply with the Bay Area Air Quality Management District's permit to operate.

### Reporting Requirements

The facility must report the following information semiannually (40 CFR § 63.753(b)(1)(v)):

- A statement certifying the facility compliance status with the applicable standards and a statement of compliance signed by a responsible official certifying compliance with all applicable requirements.



## 2.5 Primer and Topcoat Application Operations: Inorganic HAP Emissions

### Requirements:

The Aerospace NESHAP applies to each spray booth or hangar that contains a primer or topcoat application operation that uses coatings with inorganic HAPs. (40 CFR § 63.749(a)(1)). Under the Aerospace NESHAP, the compliance date for specialty coating application operations existing on February 17, 2015, is December 7, 2018. (40 CFR § 63.741(f)). If these primer and topcoat application operations spray-apply inorganic HAP coatings, they must comply with the following requirements (40 CFR §§ 63.745(g)(1)-(3)):

- Apply the primer or topcoat in a booth or hangar in which airflow is directed downward onto or across the part or assembly being coated and exhausted through one or more outlets; and
- If the source is existing (40 CFR § 63.745(g)(2)(i)):
  - Before exhausting the air stream to the atmosphere, pass it through a certified dry particulate filter system or an air pollution control system that meets or exceeds the efficiency standards and/or data points in Tables 1 and 2 of 40 CFR § 63.745; or
  - Before exhausting the air stream to the atmosphere, pass it through a waterwash system that remains in operation during all coating application operations; or
- If the source is new (40 CFR § 65.745(g)(2)(ii)):
  - Pass the air stream through a certified dry particulate filter system or an air pollution control system that meets or exceeds the efficiency data points in Tables 3 and 4 of 40 CFR § 63.745; or
- If the new source was constructed or reconstructed prior to June 6, 1994, but prior to October 29, 1996, the facility may comply with the following requirements instead (40 CFR § 65.745(g)(2)(iii)):
  - Pass the air stream through a two-stage dry particulate filter system or a waterwash system; or
  - If the primer or topcoat contains chromium or cadmium, the source must use a HEPA filter system, three-stage filter system, or other control system equivalent to a three-stage filter system approved by the BAAQMD.

A conventional waterwash system must have the water flow rate monitored continuously and have the rate read and recorded once per shift. (40 CFR § 63.745(g)(2)(v)). A pumpless system must continuously monitor booth parameter(s) that indicate performance consistent with the manufacturer's recommendations, and the parameter(s) must be read and recorded once per shift or must have an interlock system that will automatically shut down the coating spray application system if the booth parameters are outside the parameter range in the manufacturer's recommendations. (*Id.*)

A dry particulate filter system must be maintained in good working order, have a differential pressure gauge across the filter banks, and have the pressure drop across the filter continuously monitored, and be read and recorded once per shift or have an interlock system that will automatically shut down the coating spray application system if the pressure drop exceeds or falls below the filter manufacturer's recommended limit(s). (40 CFR §§ 63.745(g)(2)(iv)(A)-(C)). If the pressure drop exceeds or falls below the filter manufacturer's recommended limits, the facility must take corrective action. (*Id.* at § 63.745(g)(2)(iv)(D)).

If the dry particulate filter systems and/or waterwash systems do not perform as specified by 40 CFR § 63.745(g)(3), the operation must be shut down immediately and corrective action must be taken. (40 CFR § 63.745(g)(3)).

### Process Description:

Inorganic HAPs in paints and primers used at the SFMC include chromium and nickel compounds. Presently, four aircraft painting booths use HVLP spray guns to apply various inorganic HAP-containing primers. These booths are listed in Table 2-2.



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

### Monitoring Requirements:

The following monitoring requirements are established by 40 CFR § 63.751(c):

- Continuously monitor the pressure drop across the dry particulate filters, and record the pressure drop once during each shift of coating operation or install an interlock system.
- Continuously monitor the water flow rate through the waterwash system and record the water flow rate once during each shift of coating operation or install an interlock system. (Note: United does not operate any waterwash control units.)

### Recordkeeping Requirements:

The following recordkeeping measures are required by 40 CFR §§ 63.752(d)(1)-(3):

- For the dry particulate filter or HEPA filter systems, the pressure drop across the operating system (i.e., filter bank) shall be recorded once each shift.
- For waterwash systems, the water flow rate shall be recorded on the log sheet once each shift of coating operation. (Note: United does not operate any paint booths utilizing waterwash control.)
- The logs shall include the acceptable operating pressure drop range, water flow rate, or booth manufacturer recommended parameters as applicable.

In addition, the Aerospace NESHAP requires the following information for any failure to meet an applicable standard (40 CFR §§ 63.752(a)(1)-(3)):

- Number, date, time, and duration of failures to meet the applicable standard;
- List of affected sources or equipment, an estimate of the quantity of excess emissions, and description of emissions estimation method; and
- Details of actions taken to minimize emissions in accordance with 40 CFR § 63.743(e) and corrective actions to return affected unit to normal or usual manner of operation.

### Reporting Requirements:

The facility must report the following information semiannually (40 CFR §§ 63.753(c)(1)(v)-(vii)):

- Each exceedance of the operating parameter(s) established for control devices under the initial compliance test.
- Any times when the primer or topcoat operation was not immediately shut down when the pressure drop across a dry particulate filter or HEPA filter system, the water flow rate through a conventional waterwash system, or the recommended parameters(s) that indicate the booth performance for pumpless systems was outside the manufacturer's recommended range or limits in locally prepared operating procedures.
- A statement that the operations have complied with applicable standards.

The facility must report the following information annually (40 CFR § 63.753(c)(2)):

- The number of times the pressure drop or water flow rate for each dry filter or waterwash system was outside applicable limits specified by the filter or booth manufacturer or in locally prepared operating procedures.



**Table 2-2**  
**Booths Subject to Inorganic HAP Requirements**

Source ID	Location	Operation	Paint Booth Filter Parameters		
			Pressure Monitoring Device Required	Number of Stages Required	Compliant Filter Manufacturer
S-61	Bldg. 84 A	Miscellaneous parts painting (FR primer and topcoat)	Yes	2	ATI
S-123	Bldg. 84	Landing gear paint booth (FR primer and topcoat)	Yes	3	SmartMedia®/ Purolator
S-126	Bldg. 15	Bonding primer paint booth (also FR primer and topcoat)	Yes	2	ATI
S-146	Bldg. 10	Cabin equipment paint shop plus radomes and flaps	Yes	2	ATI

## 2.6 Primer and Topcoat Application Operations: Organic HAP/VOC Content

### Requirements:

The Aerospace NESHAP regulates organic HAP and VOC emissions from primer and topcoat application operations. (40 CFR §§ 63.741(c)(2)-(3)).

Under the Aerospace NESHAP, the compliance date for specialty coating application operations existing on February 17, 2015, is December 7, 2018. (40 CFR § 63.749(a)(1)).

Coatings applied to parts and assemblies not critical to an aerospace vehicle's structural integrity or flight performance are not covered. Nor are primers and topcoats containing HAP and VOC concentrations below amounts established in 40 CFR § 63.741(f) covered. A low volume coating exemption is provided for non-compliant primers and topcoats in which the annual use for each formulation does not exceed 50 gallons and the combined annual total of these low-volume coatings is less than 200 gallons. (40 CFR § 63.741(g)).

A non-exempt primer or topcoat operation with organic HAP or VOC emissions must comply with the following requirements (40 CFR §§ 63.745(b)-(f)):

- The handling and transfer of primers and topcoats to or from containers, tanks, vats, vessels, and piping systems must be done in a way that minimizes spills.
- For coatings that are uncontrolled:
  - Organic HAP and VOC emissions for primers must be limited to the applicable content levels set forth in 40 CFR § 63.745(c)(1)-(2); and
  - Organic HAP and VOC emissions for topcoats must be limited to the applicable content levels set forth in 40 CFR § 63.745(c)(2)-(3).
  - Compliance with these limits will occur with use of coatings that with compliant organic HAP and VOC content levels and/or with use of the averaging provisions in 40 CFR § 63.743(d).
- For coatings that are controlled, each control system shall reduce the operation's organic HAP and VOC emissions by 81% or greater, as determined using the procedures in 40 CFR §§ 63.750(g)(h).



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

- The facility must also use certain primer and topcoat application techniques and equipment as specified in 40 CFR § 63.745(f). Situations in 40 CFR § 63.745(f)(3) may be exempt from the application technique requirements.

Compliance Option Selection:

The SFMC has selected the as-applied method of achieving compliance, i.e., use of primers and/or topcoats that comply with the content levels set forth in 40 CFR § 63.745(c)(1)-(4). Monthly records are maintained in United's online databases, which are readily accessible to the Environmental Affairs team.

Process Description:

The primers and topcoats used at the paint booths or coating application areas meet the Aerospace NESHAP limits. United maintains "Aerospace Coating Usage Records" for each paint booth or operation. These records provide data necessary to calculate the monthly VOC and organic HAP content.

United has also developed an emissions tracking database that electronically stores the usage data and can be used to generate usage and emission summary reports.

The coating operations that are subject to the NESHAP are listed in Table 2-3.

**Table 2-3**  
**United's Coating Operations Subject to the Organic HAP/VOC Standard**

Source ID	Location	Operation
S-61	Building 84A	Miscellaneous Parts Painting
S-123	Building 84	Landing Gear Paint Booth
S-126	Building 15	Bonding Primer Paint Booth
S-146	Building 10	Cabin Equipment Paint Shop
S-400	Facility-wide	Aerospace Non-booth Coating Operations

Recordkeeping Requirements:

For the operations described in this report, United must maintain records as follows (40 CFR §§ 63.752(c)(1)-(2)):

- The name and VOC content as received and as applied for each primer and topcoat used at the facility; and
- For uncontrolled primers and topcoats that meet the organic HAP and VOC content limits in 40 CFR §§ 63.745(c)(1)-(4) without averaging:
  - The mass of organic HAP emitted per unit volume of coating as applied (less water) (Hi) and the mass of VOC emitted per unit volume of coating as applied (less water and exempt solvents) (Gi) for each coating formulation within each coating category used each month (as calculated using the procedures specified in 40 CFR §§ 63.750(c) and (e));
  - All data, calculations, and test results used to determine the values of Hi and Gi; and
  - The volume (gal) of each coating formulation within each coating category used each month; or
  - The manufacturer's supplied data to demonstrate compliance with 40 CFR § 63.745(c).





Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

Reporting Requirements:

The facility must report the following information semiannually (40 CFR §§ 63.753(c)(1)(i), (6)):

- All instances when applicable organic HAP or VOC limits were exceeded.
- A statement that the operations have complied with applicable standards.

**2.7 Depainting Operations (Not Applicable)**

United does not conduct depainting operations regulated by 40 CFR § 63.746.

**2.8 Chemical Milling Maskant Operations (Not Applicable)**

United does not conduct chemical milling maskant application operations regulated by 40 CFR § 63.747.



Semiannual Aerospace NESHAP  
Compliance Status Report  
September 1, 2023 through February 29, 2024

**THIS PAGE MARKS THE CONCLUSION OF THIS SEMIANNUAL REPORT.**