Quest Aircraft Company
1200 Turbine Drive, Sandpoint, ID 83864
208.263.1111 (p), 208.263.1511 (f)
www.questaircraft.com

October 18, 2016

RECEIVED
OCT 20 2016
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

Darrin Pampaian
Stationary Source Permit Program Coordinator
DEQ State Office – Air Quality Division
1410 N Hilton
Boise, ID 83706

Re: Quest Aircraft Permit to Construct Application

Dear Mr. Pampaian,

Enclosed, please find the permit to construct application for a paint booth operation for **Quest Aircraft Company**. Also enclosed is a check for the application fee of $1000.00 and a flash drive that contains electronic copies of the application and the AERMOD files.

Thank you for being patient with Quest Aircraft as we worked with an environmental consultant to complete this application. I am very happy to be finally submitting it to DEQ. Please contact me for any questions at 208-263-1111.

Sincerely,

Tiffany Goodvin

Tiffany Goodvin
Quest Aircraft Company

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER

1. Company Name	Quest Aircraft Company, L.L.C.
2. Facility Name	Quest Aircraft Company 3. Facility ID No. N/A
4. Brief Project Description - One sentence or less	PTC application for an existing paint booth operation.

PERMIT APPLICATION TYPE

5. ☐ New Source ☐ New Source at Existing Facility ☐ PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c
☒ Unpermitted Existing Source ☐ Facility Emissions Cap ☐ Modify Existing Source: Permit No.:_____ Date Issued:_____
☐ Required by Enforcement Action: Case No.:_____

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☐	☐	Form EU0 – Emissions Units General		☐
☐	☐	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: _____	☐
☐	☐	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: _____	☐
☒	☐	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: 2	☐
☐	☐	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: _____	☐
☐	☐	Form EU5 – Boiler Information	Please specify number of EU4s attached: _____	☐
☐	☐	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: _____	☐
☐	☐	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: _____	☐
☐	☐	PERF – Portable Equipment Relocation Form		☐
☐	☐	Form AO – Afterburner/Oxidizer		☐
☐	☐	Form CA – Carbon Adsorber		☐
☐	☐	Form CYS – Cyclone Separator		☐
☐	☐	Form ESP – Electrostatic Precipitator		☐
☐	☐	Form BCE– Baghouses Control Equipment		☐
☐	☐	Form SCE– Scrubbers Control Equipment		☐
☐	☐	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☐	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Forms EI— Emissions Inventory		☐
☒	☐	PP – Plot Plan		☐
☒	☐	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline: 1-877-5PERMIT

General Information **Form GI**
Revision 7
6/29/12

Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

Identification

1. Facility name Quest Aircraft Company, L.L.C.

2. Existing facility identification number NA

☐ **Check if new facility (not yet operating)**

3. Brief project description PTC application for an existing paint booth operation.

Facility Information

4. Primary facility permitting contact name Susan M. Jordan **Contact type** Responsible official

Telephone number 208-263-1111 **E-mail** sjordan@questaircraft.com or tgoodvin@questaircraft.com

5. Alternate facility permitting contact name Beth Hodgson **Alternate contact type** Facility permitting contact

Telephone number (509) 328-7500 **E-mail** beth@springenvironmental.com

6. Mailing address where permit will be sent (street/city/county/state/zip code) 1200 Turbine Drive, Sandpoint, ID 83864

7. Physical address of permitted facility (if different than mailing address) (street/ city/county/state/zip code) Same.

8. Is the equipment portable? ☐ **Yes*** ☒ **No** ***If yes, complete and attach PERF; see instructions.**

9. NAICS codes: Primary NAICS 336411 **Secondary NAICS** NA

10. Brief business description and principal product produced Single engine turboprop aircraft manufacturer.

11. Identify any adjacent or contiguous facility this company owns and/or operates None.

12. Specify type of application ☒ **Permit to construct (PTC); application fee of $1,000 required. See instructions.**

☐ **Tier I permit** ☐ **Tier II permit** ☐ **Tier II/Permit to construct**

For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.

☐ **Co-process Tier I modification and PTC** ☐ **Incorporate PTC at the time of Tier I renewal** ☐ **Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)**

Certification

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name Susan M. Jordan **Official's title** CFO, VP of Administration

Official's address 1200 Turbine Drive, Sandpoint, ID 83864

Telephone number 208-263-1111 **E-mail** sjordan@questaircraft.com

Official's signature Susan M Jordan **Date** 10/13/16

☒ **14. Check here to indicate that you want to review the draft permit before final issuance.**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Spray Paint Booth Information **Form EU3**
Revision 5
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Quest Aircraft Company, L.L.C.	Quest Aircraft Company	

4. Brief Project Description: PTC application for an aircraft fabrication paint booth operation.

BOOTH INFORMATION

5. Booth Type: ☒ New Booth ☐ Unpermitted Existing Booth
☐ Modification to a Permitted Booth, Permit #: , Date Issued:

6. Construction Date: June 2016

SPRAY GUN DESCRIPTION AND SPECIFICATIONS

Gun No.	7. Manufacturer	8. Model	9. Type	10. Transfer Eff. %	11. Rated Capacity (gal/hr)
1	SATAjet	4000B	HVLP	>65%	6.0
2	SATAjet	3000K	HVLP	>65%	11.2
3	SATAjet	100BF	HVLP	>65%	5.6
4					

Number of guns to be used simultaneously:

SPRAY MATERIAL DESCRIPTION AND SPECIFICATIONS

12. Type of Spray Material Used	13. Type of Material Coated	14. Max. Usage (gal/day)	15. Solid TAP/HAP Content (lb/gal)	16. VOC TAP/HAP Content (lb/gal)	17. MSD (Y/N)
See Appendix A: Material Usage & Emission Inventory.					

REQUEST FOR PERMIT LIMITATIONS

18. Are you requesting any permit limits? ☒ No ☐ Yes. If Yes, check all that apply below and fill in requested limit(s)

☐ Operation Hour Limits: ☐ Production Limits:

☐ Material Usage Limits: ☐ Other:

19. Rationale for Requesting the Limit(s):

EMISSION CONTROL DEVICE (FILTER[b]) DESCRIPTION AND SPECIFICATIONS

Stack Served	20. Filter Manufacturer	21. Model	22. PM Control Efficiency(%)[a]	23. Dimension (Total Area, Thickness and Number of Filters)
Stack 1	See Appendix B: Emission Control Device Description & Specification.			
Stack 2				
Stack 3				
Stack 4				

Notes: a. Provide either stack test data or vendor's documentation to support the control efficiency specified above.
b. Fill out and submit appropriate control equipment form(s) if this booth has a control device(s) other than a filter system.

BOOTH OPERATING SCHEDULE (indicate hours/day, hours/year, or other)

24. Actual Operation: 1880 painting hours/year (2014)
2090 painting hours/year (Est. Future Operation)

25. Maximum Operation: 8760 hours/year

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Spray Paint Booth Information **Form EU3**
Revision 5
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Quest Aircraft Company, L.L.C.	Quest Aircraft Company	

4. Brief Project Description: PTC application for an existing paint booth operation.

BOOTH INFORMATION

5. Booth Type: ☐ New Booth ☒ Unpermitted Existing Booth
☐ Modification to a Permitted Booth, Permit #: , Date Issued:

6. Construction Date: NA

SPRAY GUN DESCRIPTION AND SPECIFICATIONS

Gun No.	7. Manufacturer	8. Model	9. Type	10. Transfer Eff. %	11. Rated Capacity (gal/hr)
1	SATAjet	4000B	HVLP	>65%	6.0
2	SATAjet	3000K	HVLP	>65%	11.2
3	SATAjet	100BF	HVLP	>65%	5.6
4					

Number of guns to be used simultaneously:

SPRAY MATERIAL DESCRIPTION AND SPECIFICATIONS

12. Type of Spray Material Used	13. Type of Material Coated	14. Max. Usage (gal/day)	15. Solid TAP/HAP Content (lb/gal)	16. VOC TAP/HAP Content (lb/gal)	17. MSD (Y/N)
See Appendix A: Material Usage & Emission Inventory.					

REQUEST FOR PERMIT LIMITATIONS

18. Are you requesting any permit limits? ☒ No ☐ Yes. If Yes, check all that apply below and fill in requested limit(s)

☐ Operation Hour Limits:	☐ Production Limits:
☐ Material Usage Limits:	☐ Other:

19. Rationale for Requesting the Limit(s):

EMISSION CONTROL DEVICE (FILTER[b]) DESCRIPTION AND SPECIFICATIONS

Stack Served	20. Filter Manufacturer	21. Model	22. PM Control Efficiency(%)[a]	23. Dimension (Total Area, Thickness and Number of Filters)
Stack 1	See Appendix B: Emission Control Device Description & Specification.			
Stack 2				
Stack 3				
Stack 4				

Notes: a. Provide either stack test data or vendor's documentation to support the control efficiency specified above.
b. Fill out and submit appropriate control equipment form(s) if this booth has a control device(s) other than a filter system.

BOOTH OPERATING SCHEDULE (indicate hours/day, hours/year, or other)

24. Actual Operation:	25. Maximum Operation:
1880 painting hours/year (2014) 2090 painting hours/year (Est. Future Operation)	8760 hours/year

Production Growth Strategy – Phase II

- Quest has 1433 ft of runway frontage associated with 30.7 Acres of land.
- Phase II plans will take advantage of Quest's available footprint

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the **Air Permit Hotline - 1-877-5PERMIT**	**PERMIT TO CONSTRUCT APPLICATION** Revision 3 4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	Quest Aircraft Company, L.L.C.
Facility Name:	Quest Aircraft Manufacturing Building
Facility ID No.:	NA
Brief Project Description:	PTC Application for an existing paint booth operation.

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS

		1.		2.	3.	4.		5.
Criteria Pollutants	**Averaging Period**	**Significant Impact Analysis Results (µg/m3)**	**Significant Contribution Level (µg/m3)**	**Full Impact Analysis Results (µg/m3)**	**Background Concentration (µg/m3)**	**Total Ambient Impact (µg/m3)**	**NAAQS (µg/m3)**	**Percent of NAAQS**
PM_{10}	24-hour	Criteria pollutant emissions are below threshold and are not modeled.					150	
	Annual		1				50	
SO_2	3-hr		25				1300	
	24-hr		5				365	
	Annual		1				80	
NO_2	Annual		1				100	
CO	1-hr		2000				10000	
	8-hr		500				40000	

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

Preapplication Meeting Information Form FRA (Federal Requirements Applicability) - Regulatory Review

In each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name: Quest Aircraft Company, L.L.C.	2. Facility Name: Quest Aircraft Company
3. Brief Project Description: PTC Application for an aircraft fabrication paint booth operation.	
APPLICABILITY DETERMINATION	
4. List all applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). List all non-applicable subparts of the NSPS which may appear to apply to the facility but do not. Examples of NSPS-affected emissions units include internal combustion engines, boilers, turbines, etc. Applicant must thoroughly review the list of affected emissions units.	List of all applicable subpart(s): List of all non-applicable subpart(s) which may appear to apply but do not: ☑ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR part 61 and 40 CFR part 63). List all non-applicable subparts of the NESHAP which may appear to apply to the facility but do not. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. Reference EPA's webpage on NESHAPs for more information.	List of all applicable subpart(s): 40 CFR 63, Subpart HHHHH List of all non-applicable subpart(s) which may appear to apply but do not: 40 CFR 63, Subpart GG 40 CFR 63, Subpart MMMM 40 CFR 63, Subpart PPPP ☐ Not Applicable
6. For each subpart identified above, conduct a complete regulatory analysis using the instructions and referencing the example on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation does or does not apply. Regulatory reviews submitted with insufficient detail will be determined incomplete.	☑ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

APPENDIX A

Material Usage and Emission Inventory

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (uncontrolled)

	Production (Planes)	Painting Hours[1] daily	monthly	annual	Paint Use (gal/yr)	Rate (gal/hr)
2014	27	9.00	156.67	1880.00	810.00	0.43
Estimated 2015	60	20.00	348.15	4177.78	1800.00	0.43

Transfer Efficiency	65%

Coating Information						Uncontrolled PTE								
PRODUCT		COMPOSITION	CAS #	%	Max %	PTE lbs/hr	PTE lbs/year	PTE tons/yr	HAP Y/N	HAP lb/hr	HAP tons/yr	TAP Y/N	TAP lb/hr	TAP tons/yr
513X384 Primer														
VOC (g/l)	547	Fatty acids, dimers, polymers, etc.	119796-38-2	18-25%	25.0%	0.3744	926.8	0.4634	N	--	--	N	--	--
Density (lbs/gal)	9.93	Butanone	78-93-3	14-25%	25.0%	1.0696	2648	1.324	N	--	--	Y	1.069588	1.324
2014 Usage (gal/yr)	480	N-Butyl Acetate	123-86-4	10-25%	25.0%	1.0696	2648	1.324	N	--	--	Y	1.069588	1.324
Projected Usasge (gal/yr)	1067	Crystalline Silica	14808-60-7	10-25%	25.0%	0.3744	926.8	0.4634	N	--	--	Y	0.374356	0.4634
Percent of Total Use	59.26%	Strontium Chromate	7789-06-2	10-25%	25.0%	0.3744	926.8	0.4634	N	--	--	N	--	--
VOC emitted (ton/yr)	2.434641341	Cyclohexanone	108-94-1	7-10%	10.0%	0.4278	1059.2	0.5296	N	--	--	Y	0.427835	0.5296
		Butan-1-ol	71-36-3	2.2-3%	3.0%	0.1284	317.76	0.15888	N	--	--	Y	0.128351	0.15888
		Barium chromate	10294-40-3	0.3-1%	1.0%	0.0150	37.072	0.018536	N	--	--	N	--	--
									Subtotal:	--	--	Subtotal:	3.069717	3.79988
513X419 Epoxy Primer														
VOC (g/l)	353	Strontium Chromate	7789-06-2	25-50%	50.0%	0.9500	245	0.1225	N	--	--	N	--	--
Density (lbs/gal)	12.6	Formaldehyde	9003-36-5	10-25%	25.0%	0.4750	122.5	0.06125	N	--	--	N	--	--
2014 Usage (gal/yr)	50	Crystalline Silica	14808-60-7	10-25%	25.0%	0.4750	122.5	0.06125	N	--	--	Y	0.475013	0.06125
Projected Usasge (gal/yr)	111	Heptan-2-one	110-43-0	8.2-10%	10.0%	0.5429	140	0.07	N	--	--	Y	0.542872	0.07
Percent of Total Use	6.17%	4-methylpentan-2-one	108-10-1	6-10%	10.0%	0.5429	140	0.07	Y	0.5428723	0.07	Y	0.542872	0.07
VOC emitted (ton/yr)	0.163663238	Cristobalite	14464-46-1	3-5%	5.0%	0.0950	24.5	0.01225	N	--	--	Y	0.095003	0.01225
		Titanium Dioxide	13463-67-7	3-5%	5.0%	0.0950	24.5	0.01225	N	--	--	N	--	--
		Cyclohexanone	108-94-1	3.4-5%	5.0%	0.2714	70	0.035	N	--	--	Y	0.271436	0.035
		Toluene	108-88-3	1-3%	3.0%	0.1629	42	0.021	Y	0.1628617	0.021	Y	0.162862	0.021
		Butanone	78-93-3	1-3%	3.0%	0.1629	42	0.021	N	--	--	Y	0.162862	0.021
		Trimethoxysilane	2530-83-8	1-3%	3.0%	0.0570	14.7	0.00735	N	--	--	N	--	--
		Ethylbenzene	100-41-4	.1-.3%	0.3%	0.0163	4.2	0.0021	Y	0.0162862	0.0021	Y	0.016286	0.0021
									Subtotal:	0.7220202	0.0931	Subtotal:	2.269206	0.2926
823-011 Fuel Tank Primer														
VOC (g/l)	518	Talc	14807-96-6	10-30%	30.0%	0.4642	478.8	0.2394	N	--	--	N	--	--
Density (lbs/gal)	10.26	4-methylpentan-2-one	108-10-1	10-30%	30.0%	1.3262	1368	0.684	Y	1.3261596	0.684	Y	1.32616	0.684
2014 Usage (gal/yr)	200	Xylene	1330-20-7	10-30%	30.0%	1.3262	1368	0.684	Y	1.3261596	0.684	Y	1.32616	0.684
Projected Usasge (gal/yr)	444	Strontium Chromate	7789-06-2	5-10%	10.0%	0.1547	159.6	0.0798	N	--	--	N	--	--
Percent of Total Use	24.69%	Butanone	78-93-3	5-10%	10.0%	0.4421	456	0.228	N	--	--	Y	0.442053	0.228
VOC emitted (ton/yr)	0.960652205	Ethylbenzene	100-41-4	1-5%	5.0%	0.2210	228	0.114	Y	0.2210266	0.114	Y	0.221027	0.114
		Barium chromate	10294-40-3	.1-1%	1.0%	0.0155	15.96	0.00798	N	--	--	N	--	--
									Subtotal:	2.8733457	1.482	Subtotal:	3.315399	1.71
528X310 Base Component														
VOC (g/l)	611	n-Butyl Acetate	123-86-4	10-30%	30.0%	1.1762	303.3333333	0.151666667	N	--	--	Y	1.176223	0.151667
Density (lbs/gal)	9.1	Crystalline Silica	14808-60-7	10-30%	30.0%	0.4117	106.1666667	0.053083333	N	--	--	Y	0.411678	0.053083
2014 Usage (gal/yr)	50	Butanone	78-93-3	7-13%	13.0%	0.5097	131.4444444	0.065722222	N	--	--	Y	0.509697	0.065722
Projected Usasge (gal/yr)	111	Cyclohexanone	108-94-1	7-13%	13.0%	0.5097	131.4444444	0.065722222	N	--	--	Y	0.509697	0.065722
Percent of Total Use	6.17%	Carbon Black	1333-86-4	3-7%	7.0%	0.0961	24.77222222	0.012386111	N	--	--	Y	0.096058	0.012386
VOC emitted (ton/yr)	0.283281128	Butan-1-ol	71-36-3	1-5%	5.0%	0.1960	50.55555556	0.025277778	N	--	--	Y	0.196037	0.025278
		Xylene	1330-20-7	.1-1%	1.0%	0.0392	10.11111111	0.005055556	Y	0.0392074	0.0050556	Y	0.039207	0.005056
									Subtotal:	0.0392074	0.0050556	Subtotal:	2.938598	0.378914
Polane Enamel, Black, Sherwin Williams														
VOC (g/l)	624	Toluene	108-88-3	7.0%	7.0%	0.2609	16.14666667	0.008073333	Y	0.2608803	0.0080733	Y	0.26088	0.008073
Density (lbs/gal)	8.65	Ethylbenzene	100-41-4	0.6%	0.6%	0.0224	1.384	0.000692	Y	0.0223612	0.000692	Y	0.022361	0.000692
2014 Usage (gal/yr)	12	Xylene	1330-20-7	4.0%	4.0%	0.1491	9.226666667	0.004613333	Y	0.1490745	0.0046133	Y	0.149074	0.004613
Projected Usasge (gal/yr)	27	Methyl Ethyl Ketone	78-93-3	7.0%	7.0%	0.2609	16.14666667	0.008073333	N	--	--	Y	0.26088	0.008073
Percent of Total Use	1.48%	Cyclohexanone	108-94-1	20.0%	20.0%	0.7454	46.13333333	0.023066667	N	--	--	Y	0.745372	0.023067
VOC emitted (ton/yr)	0.069434013	n-Butyl Acetate	123-86-4	22.0%	22.0%	0.8199	50.74666667	0.025373333	N	--	--	Y	0.81991	0.025373
		Talc	14807-96-6	10.0%	10.0%	0.1304	8.073333333	0.004036667	N	--	--	N	--	--
		Carbon Black	1333-86-4	3.0%	3.0%	0.0391	2.422	0.001211	N	--	--	Y	0.039132	0.001211
									Subtotal:	0.432316	0.0133787	Subtotal:	2.29761	0.071103

Summary		PTE Per Paintbooth			Total PTE
					24-Hr Avg
Chemical	CAS#	(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)
1,2,4-Trimethylbenzene	95-63-6	10.008	0.005004	0.1616984	0.1347
2-Butoxyethanol	111-76-2	6.672	0.003336	0.1078	0.0898
4-methylpentan-2-one	108-10-1	1508.0000	0.754	1.8690	1.5575
Barium chromate	**10294-40-3**	**53.0320**	**0.026516**	**0.0304**	0.0254
Barium Sulfate	**7727-43-7**	**71.9787**	**0.03598933**	**1.1630**	0.9691
Butan-1-ol	71-36-3	368.3156	0.18415778	0.3244	0.2703
Butanone (Methyl Ethyl Ketone)	78-93-3	3305.1984	1.6525992	2.4451	2.0376
Carbon Black	**1333-86-4**	**32.4536**	**0.01622678**	**0.2202**	0.1835
Cristobalite	**14464-46-1**	**24.5000**	**0.01225**	**0.0950**	0.0792
Crystalline Silica	**14808-60-7**	**1155.4667**	**0.57773333**	**1.2610**	1.0509
Cyclohexanone	108-94-1	1373.1477	0.68657385	1.9543	1.6286
Ethylbenzene	100-41-4	250.3052	0.12515258	0.4028	0.3357
Fatty acids, dimers, polymers, etc.	119796-38-2	926.8000	0.4634	0.3744	0.3120
Formaldehyde	9003-36-5	122.5000	0.06125	0.4750	0.3958
Heptan-2-one	110-43-0	405.7600	0.20288	4.8367	4.0306
Light Aromatic Hydrocarbons	64742-95-6	6.6720	0.003336	0.1078	0.0898
Manganese Carbonate	**598-62-9**	**0.9968**	**0.0004984**	**0.0161**	0.0134
n-Butyl Acetate	123-86-4	3037.1995	1.51859975	3.0657	2.5548
Pentan-2-one	104-87-9	18.7480	0.009374	0.3029	0.2524
Polyester Resin	–	75.1343	0.03756713	1.2139	1.0116
Silicon Dioxide	**7631-86-9**	**1.5778**	**0.0008**	**0.0255**	0.0212
Strontium Chromate	**7789-06-2**	**1331.4000**	**0.6657**	**1.4791**	1.2326
Talc	**14807-96-6**	**486.8733**	**0.24343667**	**0.5946**	0.4955
Titanium Dioxide	**13463-67-7**	**66.5747**	**0.03328733**	**0.7748**	0.6457
Toluene	108-88-3	74.5741	0.03728707	0.5209	0.4340
Trimethoxysilane	2530-83-8	14.7000	0.00735	0.0570	0.0475
Xylene	1330-20-7	1480.9516	0.74047578	2.2301	1.8584

PM (2.5	3224.8535	1.6124	1.6150	1.3459

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (controlled)

	Production (Planes)	Painting Hours[1] daily	monthly	annual	Paint Use (gal/yr)	Rate (gal/hr)
2014	27	9.00	156.67	1880.00	810.00	0.43
Future Annual Estimation	60	20.00	348.15	4177.78	1800.00	0.43

Control Efficiency[2]	95%
Transfer Efficiency[3]	65%

Coating Information					Controlled PTE											
Product		Composition	CAS #	Max %	Emissions lbs/hr	lbs/year	tons/yr	VOC[4] Y/N	lb/hr	tons/yr	HAP Y/N	lb/hr	tons/yr	TAP Y/N	lb/hr	tons/yr
513X384 Primer																
VOC (g/l)	547	Fatty acids, dimers, polymers, etc.	119796-38-2	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	9.93	Butanone	78-93-3	25%	1.07	2648.00	1.32	Y	1.07	1.32	N	--	--	Y	1.07	1.32
2014 Usage (gal/yr)	480	N-Butyl Acetate	123-86-4	25%	1.07	2648.00	1.32	Y	1.07	1.32	N	--	--	Y	1.07	1.32
Projected Usage (gal/yr)	1066.7	Crystalline Silica	14808-60-7	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	Y	1.87E-02	2.32E-02
Percent of Total Use	59.26%	Strontium Chromate	7789-06-2	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	N	--	--
VOC emitted (ton/yr)	2.43464134	Cyclohexanone	108-94-1	10%	0.43	1059.20	0.53	Y	0.43	0.53	N	--	--	Y	0.43	0.53
		Butan-1-ol	71-36-3	3%	0.13	317.76	0.16	Y	0.13	0.16	N	--	--	Y	0.13	0.16
		Barium chromate	10294-40-3	1%	7.49E-04	1.85	9.27E-04	N	--	--	N	--	--	N	--	--
								Subtotal:	2.70	3.34	Subtotal:	--	--	Subtotal:	2.71	3.36
513X419 Epoxy Primer																
VOC (g/l)	353	Strontium Chromate	7789-06-2	50%	4.75E-02	12.25	6.13E-03	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	12.6	Formaldehyde, oligormeric reaction produ	9003-36-5	25%	2.38E-02	6.13	3.06E-03	N	--	--	N	--	--	N	--	--
2014 Usage (gal/yr)	50	Crystalline Silica	14808-60-7	25%	2.38E-02	6.13	3.06E-03	N	--	--	N	--	--	Y	2.38E-02	3.06E-03
Projected Usage (gal/yr)	111.1	Heptan-2-one	110-43-0	10%	0.54	140.00	7.00E-02	Y	0.54	7.00E-02	N	--	--	Y	0.54	7.00E-02
Percent of Total Use	6.17%	4-methylpentan-2-one	108-10-1	10%	0.54	140.00	7.00E-02	Y	0.54	7.00E-02	Y	0.54	7.00E-02	Y	0.54	7.00E-02
VOC emitted (ton/yr)	0.16366324	Cristoballite	14464-46-1	5%	4.75E-03	1.23	6.13E-04	N	--	--	N	--	--	Y	4.75E-03	6.13E-04
		Titanium Dioxide	13463-67-7	5%	4.75E-03	1.23	6.13E-04	N	--	--	N	--	--	N	--	--
		Cyclohexanone	108-94-1	5%	0.27	70.00	3.50E-02	Y	0.27	3.50E-02	N	--	--	Y	0.27	3.50E-02
		Toluene	108-88-3	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	Y	0.16	2.10E-02	Y	0.16	2.10E-02
		Butanone	78-93-3	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	N	--	--	Y	0.16	2.10E-02
		Trimethoxysilane	2530-83-8	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	N	--	--	N	--	--
		Ethylbenzene	100-41-4	0.3%	1.63E-02	4.20	2.10E-03	Y	1.63E-02	2.10E-03	Y	1.63E-02	2.10E-03	Y	1.63E-02	2.10E-03
								Subtotal:	1.86	0.24	Subtotal:	0.72	9.31E-02	Subtotal:	1.73	0.22
823-011 Fuel Tank Primer																
VOC (g/l)	518	Talc	14807-96-6	30%	2.32E-02	23.94	1.20E-02	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	10.26	4-methylpentan-2-one	108-10-1	30%	1.33	1368.00	0.68	Y	1.33	0.68	Y	1.33	0.68	Y	1.33	0.68
2014 Usage (gal/yr)	200	Xylene	1330-20-7	30%	1.33	1368.00	0.68	Y	1.33	0.68	Y	1.33	0.68	Y	1.33	0.68
Projected Usage (gal/yr)	444.4	Strontium Chromate	7789-06-2	10%	7.74E-03	7.98	3.99E-03	N	--	--	N	--	--	N	--	--
Percent of Total Use	24.69%	Butanone	78-93-3	10%	0.44	456.00	0.23	Y	0.44	0.23	N	--	--	Y	0.44	0.23
VOC emitted (ton/yr)	0.9606522	Ethylbenzene	100-41-4	5%	0.22	228.00	0.11	Y	0.22	0.11	Y	0.22	0.11	Y	0.22	0.11
		Barium chromate	10294-40-3	1%	7.74E-04	0.80	3.99E-04	N	--	--	N	--	--	N	--	--
								Subtotal:	3.32	1.71	Subtotal:	2.87	1.48	Subtotal:	3.32	1.71
528X310 Base Component																
VOC (g/l)	611	N-Butyl Acetate	123-86-4	30%	1.18	303.33	0.15	Y	1.18	0.15	N	--	--	Y	1.18	0.15
Density (lbs/gal)	9.1	Crystalline Silica	14808-60-7	30%	2.06E-02	5.31	2.65E-03	N	--	--	N	--	--	Y	2.06E-02	2.65E-03
2014 Usage (gal/yr)	50	Butanone	78-93-3	13%	0.51	131.44	6.57E-02	Y	0.51	6.57E-02	N	--	--	Y	0.51	6.57E-02
Projected Usage (gal/yr)	111.1	Cyclohexanone	108-94-1	13%	0.51	131.44	6.57E-02	Y	0.51	6.57E-02	N	--	--	Y	0.51	6.57E-02
Percent of Total Use	6.17%	Carbon Black	1333-86-4	7%	4.80E-03	1.24	6.19E-04	N	--	--	N	--	--	Y	4.80E-03	6.19E-04
VOC emitted (ton/yr)	0.28328113	Butan-1-ol	71-36-3	5%	0.20	50.56	2.53E-02	Y	0.20	2.53E-02	N	--	--	Y	0.20	2.53E-02
		Xylene	1330-20-7	1%	3.92E-02	10.11	5.06E-03	Y	3.92E-02	5.06E-03	Y	3.92E-02	5.06E-03	Y	3.92E-02	5.06E-03
								Subtotal:	2.43	0.31	Subtotal:	3.92E-02	5.06E-03	Subtotal:	2.46	0.32
Williams																
VOC (g/l)	624	Toluene	108-88-3	7%	0.26	16.15	8.07E-03	Y	0.26	8.07E-03	Y	0.26	8.07E-03	Y	0.26	8.07E-03
Density (lbs/gal)	8.65	Ethylbenzene	100-41-4	0.6%	2.24E-02	1.38	6.92E-04	Y	2.24E-02	6.92E-04	Y	2.24E-02	6.92E-04	Y	2.24E-02	6.92E-04
2014 Usage (gal/yr)	12	Xylene	1330-20-7	4%	0.15	9.23	4.61E-03	Y	0.15	4.61E-03	Y	0.15	4.61E-03	Y	0.15	4.61E-03
Projected Usage (gal/yr)	26.7	Methyl Ethyl Ketone	78-93-3	7%	0.26	16.15	8.07E-03	Y	0.26	8.07E-03	N	--	--	Y	0.26	8.07E-03
Percent of Total Use	1.48%	Cyclohexanone	108-94-1	20%	0.75	46.13	2.31E-02	Y	0.75	2.31E-02	N	--	--	Y	0.75	2.31E-02
VOC emitted (ton/yr)	0.06943401	N-Butyl Acetate	123-86-4	22%	0.82	50.75	2.54E-02	Y	0.82	2.54E-02	N	--	--	Y	0.82	2.54E-02
		Talc	14807-96-6	10%	6.52E-03	0.40	2.02E-04	N	--	--	N	--	--	N	--	--
		Carbon Black	1333-86-4	3%	1.96E-03	0.12	6.06E-05	N	--	--	N	--	--	Y	1.96E-03	6.06E-05
								Subtotal:	2.26	6.99E-02	Subtotal:	0.43	1.34E-02	Subtotal:	2.26	7.00E-02

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations

Toxic and Hazardous Air Pollutant Summary

Summary		PTE				Compliance	
		Total			24-Hr Avg	EL	Exceed?
Chemical	CAS#	(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)	(lb/hr)	(y/n)
1,2,4-Trimethylbenzene	95-63-6	10.01	5.00E-03	0.16	0.13	--	--
2-Butoxyethanol	111-76-2	6.67	3.34E-03	0.11	8.98E-02	8.0	no
4-methylpentan-2-one	108-10-1	1508.00	0.75	1.33	1.11	13.7	no
Barium chromate	10294-40-3	2.65	1.33E-03	7.74E-04	6.45E-04	--	--
Barium Sulfate	7727-43-7	3.60	1.80E-03	3.40E-02	2.83E-02	--	--
Butan-1-ol	71-36-3	368.32	0.18	0.20	0.16	10.0	no
Butanone (Methyl Ethyl Ketone)	78-93-3	3305.20	1.65	1.07	0.89	39.3	no
Carbon Black	1333-86-4	1.62	8.11E-04	4.80E-03	4.00E-03	0.2	no
Cristobalite	14464-46-1	1.23	6.13E-04	4.75E-03	3.96E-03	0.0033	yes
Crystalline Silica	14808-60-7	57.77	2.89E-02	2.38E-02	1.98E-02	0.0067	yes
Cyclohexanone	108-94-1	1373.15	0.69	1.07	0.89	6.7	no
Ethylbenzene	100-41-4	250.31	0.13	0.22	0.18	29.0	no
Fatty acids, dimers, polymers, etc.	119796-38-2	46.34	2.32E-02	1.87E-02	1.56E-02	--	--
Formaldehyde	9003-36-5	6.13	3.06E-03	2.38E-02	1.98E-02	--	--
Heptan-2-one	110-43-0	405.76	0.20	1.46	1.21	15.7	no
Light Aromatic Hydrocarbons	64742-95-6	6.67	3.34E-03	0.11	8.98E-02	--	--
Manganese Carbonate	598-62-9	4.98E-02	2.49E-05	8.05E-04	6.71E-04	--	--
n-Butyl Acetate	123-86-4	3037.20	1.52	1.18	0.98	47.3	no
Pentan-2-one	107-87-9	18.75	9.37E-03	0.23	0.19	46.7	no
Polyester Resin	--	214.67	0.11	1.46	1.21	--	no
Silicon Dioxide	7631-86-9	7.89E-02	3.94E-05	1.27E-03	1.06E-03	--	--
Strontium Chromate	7789-06-2	66.57	3.33E-02	4.75E-02	3.96E-02	--	--
Talc	14807-96-6	24.34	1.22E-02	2.32E-02	1.93E-02	--	--
Titanium Dioxide	13463-67-7	3.33	1.66E-03	3.40E-02	2.83E-02	--	--
Toluene	108-88-3	74.57	3.73E-02	0.26	0.22	25.0	no
Trimethoxysilane	2530-83-8	42.00	2.10E-02	0.16	0.14	--	--
Xylene	1330-20-7	1480.95	0.74	1.33	1.11	29.0	no
		Total			24-Hr Avg		
		(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)		
PM (2.5 µm & 10 µm)		157.9139	0.078957	0.05	0.03958444		

Note: Solid pollutants in bold.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Radiant Heat Boile

Operating Hours: 8760
NG LHV: 950 Btu/ft^3

Building	Make	Model	Serial	Year	Energy (MMBtu/hr)	Fuel Use (ft^3/yr)
Manufacturing	Viessmann	VSB-28	7223357400104	2004	1.000	9.22E+06
	Fonderie Sime	RS-8	7133837-00046	2001	0.550	5.07E+06
Customer Service	Munchkin	199M	H30J0636	2003	0.199	1.83E+06
	Munchikn	199M	H30J0637	2003	0.199	1.83E+06
Engineering	Gordan Ray	BH-150	0311-071-150-0049	2003	0.150	1.38E+06

Annual Max Fuel Use: 19.34576842 MMscf

Criteria Pollutant	Emission Factor (lb/MMscf)	Max. Annual Emmissions (lb/yr)	(ton/yr)
PM	7.6	147.0	0.1
VOC	5.5	106.4	0.1
CO	84	1625.0	0.8
Nox	100	1934.6	1.0
SO_2	0.6	11.6	0.0
Lead	0.0005	0.0	0.0
HAP	--	36.5	0.0

Note: Emission Factors per AP-42 Table 1.4-2, July 1998. Total PM is considered less than 1.0μm in diameter.

Toxic and Hazardous Air Pollutants				
CAS#	Air Pollutant	EF (lb/MMscf)	HAP	Emissions (lb/hr)
Organics				
56-49-5	3-Methylchloranthrene	< 1.80E-06	Yes	3.98E-09
71-43-2	Benzene	2.10E-03	Yes	4.64E-06
50-00-0	Formaldehyde	0.075	Yes	1.66E-04
110-54-3	Hexane	1.8	Yes	3.98E-03
91-20-3	Naphthalene	6.10E-04	Yes	1.35E-06
109-66-0	Pentane	2.6	No	5.74E-03
108-88-3	Toluene	3.40E-03	Yes	7.51E-06
Polycyclic Aromatic Hydrocarbons				
120–12–7	Anthracene	< 2.40E-06	Yes	5.30E-09
56–55–3	**Benz[a]anthracene**	< 1.80E-06	Yes	3.98E-09
50–32–8	**Benzo[a]pyrene**	< 1.20E-06	Yes	2.65E-09
205–99–2	Benz[e]acephenanthrylene	< 1.80E-06	Yes	3.98E-09
191–24–2	Benzo[ghi]perylene	< 1.20E-06	Yes	2.65E-09
207–08–9	**Benzo[k]fluoranthene**	< 1.80E-06	Yes	3.98E-09
218–01–9	**Chrysene**	< 1.80E-06	Yes	3.98E-09
206–44–0	Fluoranthene	3.00E-06	Yes	6.63E-09
86–73–7	9H-Fluorene	2.80E-06	Yes	6.18E-09
193–39–5	**Indeno[1,2,3-cd]pyrene**	< 1.80E-06	Yes	3.98E-09
91–20–3	Naphthalene	6.10E-04	Yes	1.35E-06
85–01–8	Phenanthrene	1.70E-05	Yes	3.75E-08
129–00–0	Pyrene	5.00E-06	Yes	1.10E-08
Metals				
7440-38-2	Arsenic	2.00E-04	No	4.42E-07
7440-39-3	Barium	4.40E-03	No	9.72E-06
7440-41-7	Beryllium	1.20E-05	No	2.65E-08
7440-43-9	Cadmium	1.10E-03	No	2.43E-06
7440-47-3	Chromium	1.40E-03	No	3.09E-06
7440-48-4	Cobalt	8.40E-05	No	1.86E-07
7440-50-8	Copper	8.50E-04	Yes	1.88E-06
7439-96-5	Manganese	3.80E-04	No	8.39E-07
7439-97-6	Mercury	2.60E-04	Yes	5.74E-07
7439-98-7	Molybdenum	1.10E-03	No	2.43E-06
7440-02-0	Nickel	2.10E-03	Yes	4.64E-06
7782-49-2	Selenium	< 2.40E-05	Yes	5.30E-08
7440-66-6	Zinc	0.029	No	6.40E-05

Note: Emission Factors from AP-42 Table 1.4-3 and Table 1.4-4, July 1998.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY

Building and Location Data

Min. Ambient Temp[1]	8	F		
Max. Ambient Temp[1]	100	F		
Min. Avg. Windspeed[1]	4	mph	1.79	m/s
Building Height	20	ft	6.10	m
Building Width	185	ft	56.39	m
Building Length	425	ft	129.54	m
Degrees from North	30	degrees		
Elevation	2135	ft	650.75	m
Population	8600		(Sandpoint & Ponderay)	

East (Current) Booth--2 Stacks

Crystalline Silica				
AERSCREEN Parameters	**Standard**		**Metric**	
Rate	9.90E-03	lb/hr	1.25E-03	g/s
Stack Height	25	ft	7.62	m
Stack Diameter	30	in	0.76	m
Stack Area	706.86	in^2	0.46	m^2
Stack Flowrate[2]	1.89E+04	acfm	536.21	$m^{3/}$min
Stack Velocity	64.29	ft/s	19.60	m/s
Stack Temperature	75	F	293.15	K
Ambient Distance	40	ft	12.19	m
Direction from Building Center	205	degrees		
Distance from Building Center	100	ft	30.48	m
Flagpole Receptors?	N			
Discrete Receptors?	N			
AERSCREEN Results				
Input Rates	7.94	lb/hr	1	gm/s
AERSCREEN 24-Hour Result			636	$\mu g/m^3$
TAP Impact			0.000793	mg/m^3
AAC			0.005	mg/m^3
Exceedence?			NO	

Cristobalite				
AERSCREEN Parameters	**Standard**		**Metric**	
Rate	1.98E-03	lb/hr	2.49E-04	g/s
Stack Height	25	ft	7.62	m
Stack Diameter	30	in	0.762	m
Stack Area	706.86	in^2	0.46	m^2
Stack Flowrate[2]	1.89E+04	acfm	536.21	$m^{3/}$min
Stack Velocity	64.29	ft/s	19.60	m/s
Stack Temperature	75	F	293.15	K
Ambient Distance	40	ft	12.19	m
Direction from Building Center	205	degrees		
Distance from Building Center	100	ft	30.48	m
Flagpole	N			
Discrete Receptors?	N			
AERSCREEN Results				
Input Rates	7.94	lb/hr	1	gm/s
AERSCREEN 24-Hour Result			636	$\mu g/m^3$
TAP Impact			0.00016	mg/m^3
AAC			0.0025	mg/m^3
Exceedence?			NO	

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY

Building and Location Data

Min. Ambient Temp[1]	8 F	
Max. Ambient Temp[1]	100 F	
Min. Avg. Windspeed[1]	4 mph	1.79 m/s
Building Height	20 ft	6.10 m
Building Width	185 ft	56.39 m
Building Length	425 ft	129.54 m
Degrees from North	30 degrees	
Elevation	2135 ft	650.75 m
Population	8600	(Sandpoint & Ponderay)

East (Current) Booth--2 Stacks

PM_{10}		
AERSCREEN Parameters	**Standard**	**Metric**
Rate	1.98E-02 lb/hr	2.49E-03 g/s
Stack Height	25 ft	7.62 m
Stack Diameter	30 in	0.76 m
Stack Area	706.86 in^2	0.46 m^2
Stack Flowrate[2]	1.89E+04 acfm	536.21 $m^{3/}$min
Stack Velocity	64.29 ft/s	19.60 m/s
Stack Temperature	75 F	293.15 K
Ambient Distance	40 ft	12.19 m
Direction from Building Center	205 degrees	
Distance from Building Center	100 ft	30.48 m
Flagpole Receptors?	N	
Discrete Receptors?	N	
AERSCREEN Results		
Input Rates	7.94 lb/hr	1 gm/s
AERSCREEN 24-Hour Result		636 $\mu g/m^3$
TAP Impact		0.001586 mg/m^3
AAC		0.005 mg/m^3
Exceedence?		NO

PM_{10}		
AERSCREEN Parameters	**Standard**	**Metric**
Rate	1.98E-02 lb/hr	2.49E-03 g/s
Stack Height	25 ft	7.62 m
Stack Diameter	30 in	0.76 m
Stack Area	706.86 in^2	0.46 m^2
Stack Flowrate[2]	1.89E+04 acfm	536.21 $m^{3/}$min
Stack Velocity	64.29 ft/s	19.60 m/s
Stack Temperature	75 F	293.15 K
Ambient Distance	40 ft	12.19 m
Direction from Building Center	205 degrees	
Distance from Building Center	100 ft	30.48 m
Flagpole Receptors?	N	
Discrete Receptors?	N	
AERSCREEN Results		
Input Rates	7.94 lb/hr	1 gm/s
AERSCREEN 24-Hour Result		636 $\mu g/m^3$
TAP Impact		0.00159 mg/m^3
AAC		0.0025 mg/m^3
Exceedence?		NO

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Modeling Results

Modeled at 1g/s per stack.

PTE Rates	Total	Per Stack
PM (24 hr)	0.04 lb/hr 0.005 g/s	0.010 lb/hr 0.001 g/s
PM (Annual)	0.02 lb/hr 0.002 g/s	0.005 lb/hr 0.0006 g/s
Crys. Silica	0.02 lb/hr 0.002 g/s	0.005 lb/hr 0.0006 g/s
Cristobalite	0.004 lb/hr 0.0005 g/s	0.0010 lb/hr 0.0001 g/s
Formaldehyde	0.0015 lb/hr 0.00018 g/s	0.0004 lb/hr 0.00005 g/s

NAAQS Impact Analysis Summary

Pollutant	Averging Period	AERMOD result @ 1g/s per stack (ug/m^3)	Total Ambient Impact (ug/m^3)	Background Concentration (ug/m^3)	Total NAAQS Concentration (ug/m^3)	NAAQS (ug/m^3)
PM_{10}	24-hour	2164.6	2.7	87	90	150
$PM_{2.5}$	Annual	752.4	0.4	4.95	5	12
$PM_{2.5}$	24-hour	2066.8	2.6	18.8	21	35

Pollutant	AERMOD result @ 1g/s per stack (ug/m^3)	Total Ambient Impact		AACC (ug/m^3)	AAC (mg/m^3)
Crys. Silica	2470.0	0.0015	(mg/m^3)	--	0.005
Cristobalite	2470.0	0.0024	(mg/m^3)	--	0.0025
Formaldehyde	752.4	0.035	(ug/m^3)	0.077	--

APPENDIX B

Emission Control Device Descriptions and Specifications

Emission Control Device (Filter) Description & Specifications for Form EU3

Position	Manufacturer	Model	PM Control Eff. (%)	Dimensions
Stage 1	Fiber Bond Corporation	FP100 Polyroll, Oiled, Blue	MERV 7 50% for PM_3-PM_{10}	Qty: 2 Dim:24'x 4' Area: 192 ft^2
Stage 2	Fiber Bond Corporation	260002020 Dustlock, 3-Ply Panel, Poly	MERV 9 85% for PM_3-PM_{10}	Qty: 44 Dim: 20" x 20" x 1" Area: 122 ft^2
Stage 3	Aerostar	77535N SoniQ Pocket Filter, Poly (#18278)	MERV 14 95% for PM_1- PM_{10}	Qty: 44 Dim: 20" x 20" x 15" Area: 122 ft^2 Media Area: 1320 ft^2 (30ft^2 per filter)

FIBERBOND

HIGH QUALITY FILTRATION

WE MAKE MEDIA "ONE ROLL AT A TIME"

POLYESTER MEDIA

MANUFACTURED BY FIBER BOND

PRODUCT CONSISTENCY

Fiber Bond FM and FP series polyester media are manufactured at Fiber Bond.
The airlaid principle of Fiber Bond media is to randomly disperse fibers in all directions throughout the web. This forms a uniform, high strength media. Contaminants are trapped within the total media. True depth loading.

FM SERIES DRY MEDIA

Fiber Bond FM polyester series combines quality, consistency and economy.
MERV 6 in a 1/2", 1" and 2" thickness.

FP SERIES BLUE TACK MEDIA

The FP series has a uniform coating of tackifier in the blue air leaving side of the media. This locks trapped dirt in the media.
MERV 6 in a 1/2" thickness.
MERV 7 in a 1" and 2" thickness.

APPLICATIONS

In pad and frame or blanket use.

- *STEEL MILLS*
- *OFFICE BUILDINGS*
- *FACTORIES*
- *SCHOOLS*
- *CONSTRUCTION*
- *HOTELS*

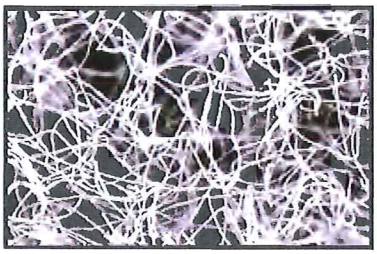
WHY FIBER BOND POLYESTER

- CONSISTENCY
- DRY OR TACKIFIED MEDIA
- ONE-HALF, ONE, TWO INCH
- U.L. CLASS 2
- 100% SYNTHETIC
- ROLLS, PRE-CUT PADS, POLY-PERF®

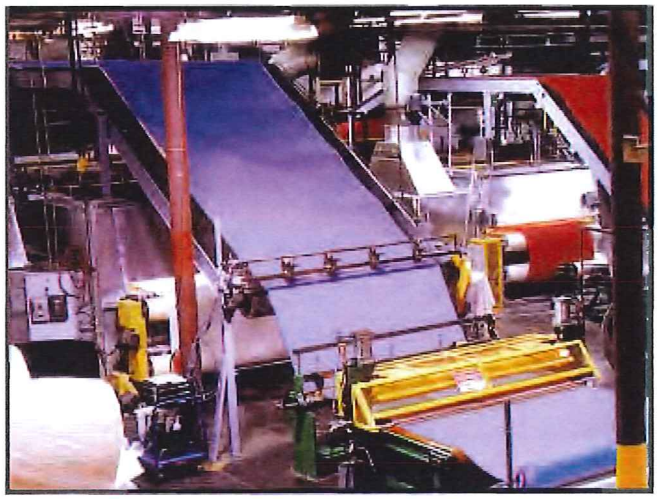
"THE BEST FILTERS COME FROM THE BEST MEDIA"

TECHNICAL DATA

- MERV 6 & 7 - ASHRAE 52.2-1999
- Operating temperature up to 200° F.
- FM Series - Dry media, FP Series - Tackified media.
- Low initial resistance at 295 fpm.



Random dispersion of fibers for true depth loading.



MEDIA	TYPE	COLOR	THICKNESS	ROLL LENGTH	WEIGHT oz./yd²	DENSITY lbs/ft³	RESISTANCE 295 fpm	MERV VALUE
FM 25	DRY	ALL WHITE	1/4"	270'	3.5	0.61	0.06"	N/A
FM 50	DRY	ALL WHITE	1/2"	135'	4.2	0.44	0.09"	6
FM 100	DRY	ALL WHITE	1"	90'	5.9	0.45	0.15"	6
POLY II	DRY	YELLOW/WHITE	2"	60'	7.9	0.33	0.13"	6
FP 50	TACK	BLUE/WHITE	1/2"	135'	4.8	0.50	0.11"	6
FP 100	TACK	BLUE/WHITE	1"	90'	6.4	0.48	0.16"	7
FP 200	TACK	BLUE/WHITE	2"	60'	10.0	0.42	0.13"	7

Particle Size Removal Efficiencies Conducted by LMS Technologies (2006 and 2007)

Fiber Bond Corporation 110 Menke Road Michigan City, IN 46360
Tel: (219) 879-4541 Fax: (219) 874-7502 www.fiberbond.net email: info@fiberbond.net
Form # FB 09 2.5M 6/07

FIBERBOND

The **Best** Filters Begin With The **Best** Media

Dustlok® Panel

3-Ply Dustlok® Panels & Continuous Links MERV 9

Dustlok® Composite Adhesive • Spor-Ax® Antimicrobial

Dustlok® 3-Ply Panels & Links Now MERV 9

Spor-Ax® Antimicrobial
Dustlok® Composite Adhesive
Renews Its Effectiveness Throughout The Life Of The Filter

The One And Only, Original Dustlok 3-Ply Panel Is Now Even Better

Dustlok panels and links have a history of superior performance and reliability. The filter's dual-density media with Dustlok composite adhesive captures and retains particulate. Its self-sealing design eliminates bypass concerns, while its 3-ply depth loading delivers unparalleled service life.

Spor-Ax Antimicrobial Keeps Filter Media Free From Mold, Mildew, Algae & Fungi

Fiber Bond's Spor-Ax antimicrobial is part of the manufacturing process, not a costly, post-application. The elimination of microbial growth reduces resistance and extends service life.

Dustlok MERV 9 Panels

- Three stages of filtration in a single panel - first stage designed for depth-loading; second stage stops particulate from filtering through the media; third stage, Dustlok composite adhesive, absorbs particles and continuously renews its effectiveness.
- Fiber Bond migration tests conducted at 500 fpm confirmed that no Dustlok composite adhesive was observed nor chemically detected on the downstream collection sample.

FIBERBOND

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Email: customer.service@fiberbond.net • www.fiberbond.net

FIBERBOND

The **Best** Filters Begin With The **Best** Media

Dustlok® Panel & Link

Dustlok® 3-Ply Panel Technical Data

Dustlok 3-Ply Panel

Filter Media: Polyester
Initial Resistance: 0.25" w.g. at 300 fpm
Flammability: UL 900 Classified
Performance: MERV 9 media
Dust Holding Capacity: 210 grams
Recommended Final Resistance: 1.0" w.g.
Maximum Operating Temperature: 200° F

Panel Specifications

Media shall be a distinct 3-ply design.

A coarse air entering layer, combined with dual-ply Dustlok media, shall provide progressive depth-loading of contaminants.

An internal 9-gauge support grid with two cross wires seals the panel in place, preventing fluttering and dirt bypass. The air leaving side, orange in color, shall contain a non-drying, non-migratory Dustlok composite adhesive coating all downstream fibers.

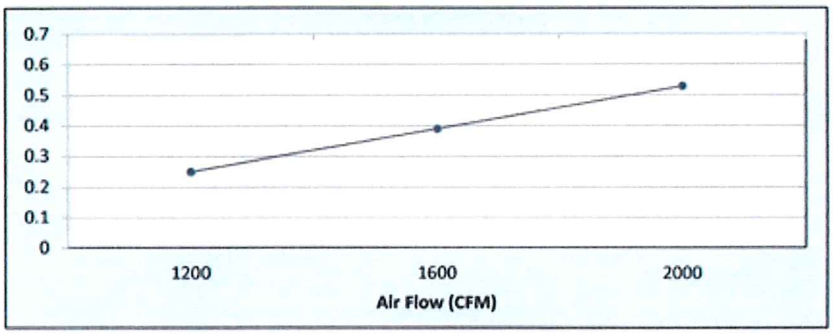
Media shall contain Spor-Ax antimicrobial which effectively controls microbial growth on the filter media.

Media shall be MERV 9 in accordance with ASHRAE 52.2-2012

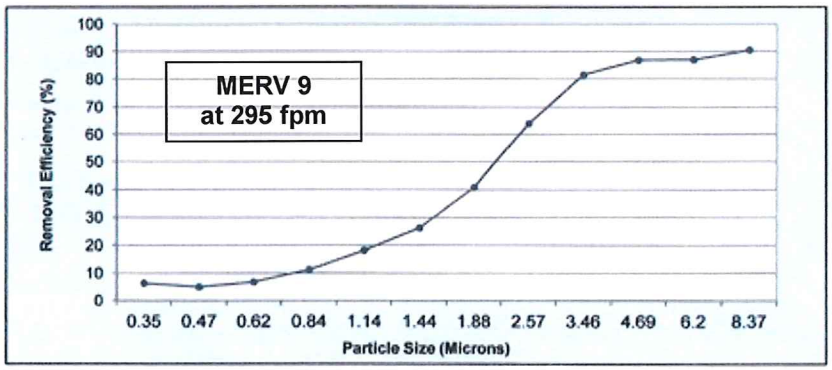
Panel test results in accordance with internal Fiber Bond test method ASHRAE 52.2-2012 (M)

Fiber Bond has a policy of continuous improvement and reserves the right to alter design and specifications without notice.

Dustlok 3-Ply Panel Resistance vs Air Flow



Dustlok 3-Ply Panel Initial Particle Removal Efficiency



October 2013

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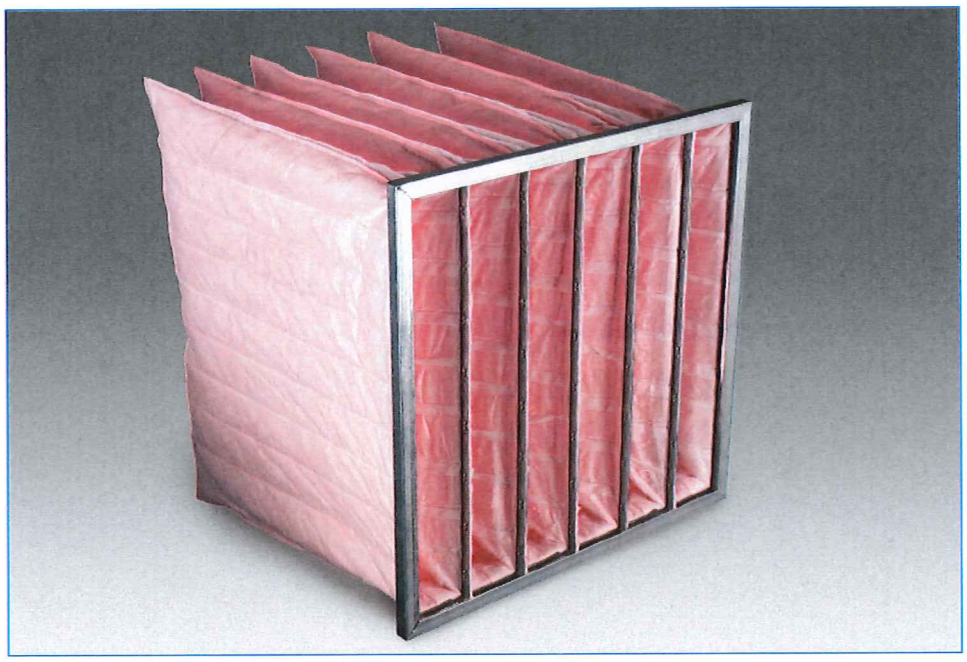
FILTRATION GROUP®

SONIQ POCKET FILTERS

AEROSTAR®

- *Medium to High Efficiency per ASHRAE 52.2-2007*
- *Ultrasonic welding technology*
- *Open throat design for optimum air flow*
- *Galvanized steel header and J-channels for filter strength*
- *Available in a wide range of sizes*
- *Gasketing available*
- *Pocket support loops are available*
- *US Patents 6,159,316 and 6,258,142*



DESCRIPTION

The Aerostar SoniQ Pocket filter is constructed with a moisture-resistant, ultrasonically welded media. This synthetic media consists of strategically layered and blended melt-blown polypropylene fibers fastened to a non-shed, high density polypropylene backing. This design creates a dual-stage filtration effect with the final layer capturing the smaller particulate from the air stream. The patented ultrasonic welding process allows us to manufacture a product that has no stitch holes in the media and provides a substantial increase in effective surface area.

Vertical separators are incorporated into each pocket to effectively channel air throughout the media to prevent excessive turbulence and allow even contaminant loading throughout the life of the filter. The header is constructed of 26 gauge galvanized steel with rolled edges to provide rigid support to the filter face and allow for easier handling.

BENEFITS

The SoniQ Pocket filter offers high efficiency filtration while maintaining low resistance to air flow. The non-shed media eliminates fiber migration downstream and the ultrasonic welding provides lower resistance with no disruption to the integrity of the filter. The open throat design and the precise pocket spacing produces a product that is aerodynamically balanced and provides excellent all-round performance.

APPLICATIONS

The SoniQ Pocket filters are designed as primary or secondary filters in heating, ventilating and air conditioning systems. Superior dust-holding capabilities allow these filters to be used in most commercial and industrial applications as well as hospitals, automotive plants and biotechnology facilities. SoniQ Pocket filters can be used in most standard built-up filter banks or side-access housing systems.

SONIQ POCKET FILTERS

AEROSTAR

DIMENSIONS AND PERFORMANCE DATA

MERV 14 (95%) PART NO.	MERV 13 (85%) PART NO.	MERV 12 (65%) PART NO.	SIZE H x W x D* (INCHES)	NUMBER OF POCKETS	MEDIA AREA (SQ. FT.)
18271	18311	18351	24 x 12 x 12	4	19
18270	18310	18350	20 x 20 x 12	6	27
18269	18309	18349	24 x 20 x 12	6	28
18272	18312	18352	24 x 24 x 12	6	30
18268	18308	18348	24 x 24 x 12	8	38
18279	18319	18359	24 x 12 x 15	4	21
18278	18318	18358	20 x 20 x 15	6	30
18277	18317	18357	24 x 20 x 15	6	31
18280	18320	18360	24 x 24 x 15	6	33
18276	18316	18356	24 x 24 x 15	8	42
18287	18327	18367	24 x 12 x 22	4	31
18286	18326	18366	20 x 20 x 22	6	40
18285	18325	18365	24 x 20 x 22	6	46
18288	18328	18368	24 x 24 x 22	6	48
18284	18324	18364	24 x 24 x 22	8	62
18295	18335	18375	24 x 12 x 29	4	42
18294	18334	18374	20 x 20 x 29	6	54
18293	18333	18373	24 x 20 x 29	6	61
18296	18336	18376	24 x 24 x 29	6	65
18292	18332	18372	24 x 24 x 29	8	84
18303	18343	18383	24 x 12 x 36	4	45
18302	18342	18382	20 x 20 x 36	6	60
18301	18341	18381	24 x 20 x 36	6	72
18304	18344	18384	24 x 24 x 36	6	73
18300	18340	18380	24 x 24 x 36	8	96

** Contact Customer Service for additional sizes and information.*

FILTER DEPTH (INCHES)	NUMBER OF POCKETS	AIRFLOW CAPACITY (cfm)	PRESSURE DROP (" w.g.) MERV 14 (95%)	MERV 13 (85%)	MERV 12 (65%)
36	8	2000	0.36	0.34	0.28
	6	2000	0.45	0.41	0.37
29	8	2000	0.33	0.29	0.26
	6	2000	0.41	0.34	0.31
22	8	2000	0.36	0.30	0.27
	6	2000	0.49	0.35	0.33
15	8	2000	0.58	0.42	0.36
	6	2000	0.72	0.52	0.42
12	8	2000	0.80	0.54	0.39
	6	2000	0.98	0.62	0.45

SONIQ ENGINEERING SPECIFICATIONS

1.0 General
- 1.1 Filters shall be Aerostar SoniQ Pocket air filters as manufactured by Filtration Group, Inc.
- 1.2 Filters shall be available in 3 efficiency levels with a depth of 3.75".
- 1.3 Filters shall be UL Classified.
- 1.4 Manufacturer shall provide documentation from an external certification body that the manufacturing location is ISO 9000 Registered.

2.0 Filter Materials of Construction
- 2.1 Media shall be 100% synthetic that does not support microbial growth.
- 2.2 The media shall be sonically bonded by a patented process to form pockets as to not allow for by-pass.
- 2.3 The pockets shall be attached internally by synthetic bands to reduce vibration and stabilize the filter during its life.
- 2.4 Media shall be adhered to all frame components to eliminate by-pass and maintain integrity throughout life.
- 2.5 Frame shall be made fully of 26 ga. Galvanized steel.

3.0 Filter Performance
- 3.1 Filters shall be available in MERV 11, 13 and 14 when tested in accordance with ASHRAE 52.2-2007 Test Standard.
- 3.2 MERV 13 version meets LEED regulations.
- 3.3 Filters shall be rated to withstand a continuous operating temperature of up to 150°F.
- 3.4 Filters shall have a recommended final resistance of 1.5" w.g.

APPLICATION PARAMETERS

Filter Media: Synthetic Polypropylene
Header: 26 ga. Galvanized Steel
Flammability: UL Classifed
Recommended Final Resistance: 1.0" w.g.
Maximum Temperature: 150° F
Actual Header: 13/16" thickness
Actual Face Size: Nominal less 5/8"
45% Media: Stitched only

Distributed by:

FILTRATION GROUP®

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WHEN CLEAN AIR MATTERS
ISO 9000 Registered

APPENDIX C

Federal Regulation Applicability

40 CFR 63, Subpart GG
National Emission Standards for Aerospace Manufacturing and Rework Facilities

§63.741 Applicability and designation of affected sources.

(a) This subpart applies to facilities that are engaged, either in part or in whole, in the manufacture or rework of commercial, civil, or military aerospace vehicles or components and that are major sources as defined in §63.2.

(b) The owner or operator of an affected source shall comply with the requirements of this subpart and of subpart A of this part, except as specified in §63.743(a) and Table 1 of this subpart.

(c) *Affected sources.* The affected sources to which the provisions of this subpart apply are specified in paragraphs (c)(1) through (7) of this section. The activities subject to this subpart are limited to the manufacture or rework of aerospace vehicles or components as defined in this subpart. Where a dispute arises relating to the applicability of this subpart to a specific activity, the owner or operator shall demonstrate whether or not the activity is regulated under this subpart.

(1) Each cleaning operation as follows:

(i) All hand-wipe cleaning operations constitute an affected source.

(ii) Each spray gun cleaning operation constitutes an affected source.

(iii) All flush cleaning operations constitute an affected source.

(2) For organic HAP or VOC emissions, each primer application operation, which is the total of all primer applications at the facility.

(3) For organic HAP or VOC emissions, each topcoat application operation, which is the total of all topcoat applications at the facility.

(4) For organic HAP or VOC emissions, each depainting operation, which is the total of all depainting at the facility.

(5) Each chemical milling maskant application operation, which is the total of all chemical milling maskant applications at the facility.

(6) Each waste storage and handling operation, which is the total of all waste handling and storage at the facility.

(7) For inorganic HAP emissions, each spray booth or hangar that contains a primer or topcoat application operation subject to §63.745(g) or a depainting operation subject to §63.746(b)(4).

(d) An owner or operator of an affected source subject to this subpart shall obtain an operating permit from the permitting authority in the State in which the source is located. The owner or operator shall apply for and obtain such permit in accordance with the regulations contained in part 70 of this chapter and in applicable State regulations.

(e) All wastes that are determined to be hazardous wastes under the Resource Conservation and Recovery Act of 1976 (PL 94-580) (RCRA) as implemented by 40 CFR parts 260 and 261, and that are subject to RCRA requirements as implemented in 40 CFR parts 262 through 268, are exempt from the requirements of this subpart.

(f) This subpart does not contain control requirements for use of specialty coatings, adhesives, adhesive bonding primers, or sealants at aerospace facilities. It also does not regulate research and development, quality control, and laboratory testing activities, chemical milling, metal finishing, electrodeposition (except for electrodeposition of paints), composites processing (except for cleaning and coating of composite parts or components that become part of an aerospace vehicle or component as well as composite tooling that comes in contact with such composite parts or components prior to cure), electronic parts and assemblies (except for cleaning and topcoating of completed assemblies), manufacture of aircraft transparencies, and wastewater operations at aerospace facilities. These requirements do not apply to the rework of aircraft or aircraft components if the holder of the Federal Aviation Administration (FAA) design approval, or the holder's licensee, is not actively manufacturing the aircraft or aircraft components. These requirements also do not apply to parts and assemblies not critical to the vehicle's structural integrity or flight performance. The requirements of this subpart also do not apply to primers, topcoats, chemical milling maskants, strippers, and cleaning solvents containing HAP and VOC at concentrations less than 0.1 percent for carcinogens or 1.0 percent for noncarcinogens, as determined from manufacturer's representations. Additional specific exemptions from regulatory coverage are set forth in paragraphs (e), (g), (h), (i) and (j) of this section and §§63.742, 63.744(a)(1), (b), (e), 63.745(a), (f)(3), (g)(4), 63.746(a), (b)(5), 63.747(c)(3), and 63.749(d).

(g) The requirements for primers, topcoats, and chemical milling maskants in §63.745 and §63.747 do not apply to the use of low-volume coatings in these categories for which the annual total of each separate formulation used at a facility does not exceed 189 l (50 gal), and the combined annual total of all such primers, topcoats, and chemical milling maskants used at a facility does not exceed 757 l (200 gal). Primers and topcoats exempted under paragraph (f) of this section and under §63.745(f)(3) and (g)(4) are not included in the 50 and 200 gal limits. Chemical milling maskants exempted under §63.747(c)(3) are also not included in these limits.

(h) Regulated activities associated with space vehicles designed to travel beyond the limit of the earth's atmosphere, including but not limited to satellites, space stations, and the Space Shuttle System (including orbiter, external tanks, and solid rocket boosters), are exempt from the requirements of this subpart, except for depainting operations found in §63.746.

(i) Any waterborne coating for which the manufacturer's supplied data demonstrate that organic HAP and VOC contents are less than or equal to the organic HAP and VOC content limits for its coating type, as specified in §§63.745(c) and 63.747(c), is exempt from the following requirements of this subpart: §§63.745 (d) and (e), 63.747(d) and (e), 63.749 (d) and (h), 63.750 (c) through (h) and (k) through (n), 63.752 (c) and (f), and 63.753 (c) and (e). A facility shall maintain the manufacturer's supplied data and annual purchase records for each exempt waterborne coating readily available for inspection and review and shall retain these data for 5 years.

(j) Regulated activities associated with the rework of antique aerospace vehicles or components are exempt from the requirements of this subpart.

[60 FR 45956, Sept. 1, 1996, as amended at 63 FR 15016, Mar. 27, 1998; 63 FR 46532, Sept. 1, 1998]

Quest Aircraft Company, L.L.C. is engaged in the manufacture of aerospace vehicles. However, the requirements of subpart GG are not applicable because Quest Aircraft Company, L.L.C. is not a major source of HAP emissions as defined in §63.2.

40 CFR 63, Subpart MMMM
National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products

What This Subpart Covers

§63.3880 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for miscellaneous metal parts and products surface coating facilities. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations.

Quest Aircraft Company, L.L.C. conducts surface coating operations on metal parts in the process of manufacturing aircraft.

§63.3881 Am I subject to this subpart?

(a) Miscellaneous metal parts and products include, but are not limited to, metal components of the following types of products as well as the products themselves: motor vehicle parts and accessories, bicycles and sporting goods, recreational vehicles, extruded aluminum structural components, railroad cars, heavy duty trucks, medical equipment, lawn and garden equipment, electronic equipment, magnet wire, steel drums, industrial machinery, metal pipes, and numerous other industrial, household, and consumer products. Except as provided in paragraph (c) of this section, the source category to which this subpart applies is the surface coating of any miscellaneous metal parts or products, as described in paragraph (a)(1) of this section, and it includes the subcategories listed in paragraphs (a)(2) through (6) of this section.

(1) Surface coating is the application of coating to a substrate using, for example, spray guns or dip tanks. When application of coating to a substrate occurs, then surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage. However, these activities do not comprise surface coating if they are not directly related to the application of the coating. Coating application with handheld, non-refillable aerosol containers, touch-up markers, marking pens, or the application of paper film or plastic film which may be pre-coated with an adhesive by the manufacturer are not coating operations for the purposes of this subpart.

(2) The general use coating subcategory includes all surface coating operations that are not high performance, magnet wire, rubber-to-metal, or extreme performance fluoropolymer coating operations.

(3) The high performance coating subcategory includes surface coating operations that are performed using coatings that meet the definition of high performance architectural coating or high temperature coating in §63.3981.

(4) The magnet wire coating subcategory includes surface coating operations that are performed using coatings that meet the definition of magnet wire coatings in §63.3981.

(5) The rubber-to-metal coatings subcategory includes surface coating operations that are performed using coatings that meet the definition of rubber-to-metal coatings in §63.3981.

(6) The extreme performance fluoropolymer coatings subcategory includes surface coating operations that are performed using coatings that meet the definition of extreme performance fluoropolymer coatings in §63.3981.

(b) You are subject to this subpart if you own or operate a new, reconstructed, or existing affected source, as defined in §63.3882, that uses 946 liters (250 gallons (gal)) per year, or more, of coatings that contain hazardous air pollutants (HAP) in the surface coating of miscellaneous metal parts and products defined in paragraph (a) of this section; and that is a major source, is located at a major source, or is part of a major source of emissions of HAP. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year or any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year. You do not need to include coatings that meet the definition of non-HAP coating contained in §63.3981 in determining whether you use 946 liters (250 gal) per year, or more, of coatings in the surface coating of miscellaneous metal parts and products.

(c) This subpart does not apply to surface coating or a coating operation that meets any of the criteria of paragraphs (c)(1) through (17) of this section.

(1) A coating operation conducted at a facility where the facility uses only coatings, thinners and other additives, and cleaning materials that contain no organic HAP, as determined according to §63.3941(a).

(2) Surface coating operations that occur at research or laboratory facilities, or is part of janitorial, building, and facility maintenance operations, or that occur at hobby shops that are operated for noncommercial purposes.

(3) Coatings used in volumes of less than 189 liters (50 gal) per year, provided that the total volume of coatings exempt under this paragraph does not exceed 946 liters (250 gal) per year at the facility.

(4) The surface coating of metal parts and products performed on-site at installations owned or operated by the Armed Forces of the United States (including the Coast Guard and the National Guard of any such State) or the National Aeronautics and Space Administration, or the surface coating of military munitions manufactured by or for the Armed Forces of the United States (including the Coast Guard and the National Guard of any such State).

(5) Surface coating where plastic is extruded onto metal wire or cable or metal parts or products to form a coating.

(6) Surface coating of metal components of wood furniture that meet the applicability criteria for wood furniture manufacturing (subpart JJ of this part).

(7) Surface coating of metal components of large appliances that meet the applicability criteria for large appliance surface coating (subpart NNNN of this part).

(8) Surface coating of metal components of metal furniture that meet the applicability criteria for metal furniture surface coating (subpart RRRR of this part).

(9) Surface coating of metal components of wood building products that meet the applicability criteria for wood building products surface coating (subpart QQQQ of this part).

(10) Surface coating of metal components of aerospace vehicles that meet the applicability criteria for aerospace manufacturing and rework (40 CFR part 63, subpart GG).

(11) Surface coating of metal parts intended for use in an aerospace vehicle or component using specialty coatings as defined in appendix A to subpart GG of this part.

(12) Surface coating of metal components of ships that meet the applicability criteria for shipbuilding and ship repair (subpart II of this part).

(13) Surface coating of metal using a web coating process that meets the applicability criteria for paper and other web coating (subpart JJJJ of this part).

(14) Surface coating of metal using a coil coating process that meets the applicability criteria for metal coil coating (subpart SSSS of this part).

(15) Surface coating of boats or metal parts of boats (including, but not limited to, the use of assembly adhesives) where the facility meets the applicability criteria for boat manufacturing facilities (subpart VVVV of this part), except where the surface coating of the boat is a metal coating operation performed on personal watercraft or parts of personal watercraft. This subpart does apply to metal coating operations performed on personal watercraft and parts of personal watercraft.

(16) Surface coating of assembled on-road vehicles that meet the applicability criteria for the assembled on-road vehicle subcategory in plastic parts and products surface coating (40 CFR part 63, subpart PPPP).

(17) Surface coating of metal components of automobiles and light-duty trucks that meets the applicability criteria in §63.3082(b) for the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) at a facility that meets the applicability criteria in §63.3081(b).

(d) If your facility meets the applicability criteria in §63.3081(b) of the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII), and you perform surface coating of metal parts or products that meets both the applicability criteria in §63.3082(c)

and the applicability criteria of the Surface Coating of Miscellaneous Metal Parts and Products (40 CFR part 63, subpart MMMM), then for the surface coating of any or all of your metal parts or products that meets the applicability criteria in §63.3082(c), you may choose to comply with the requirements of subpart IIII of this part in lieu of complying with the Surface Coating of Miscellaneous Metal Parts and Products NESHAP. Surface coating operations on metal parts or products (e.g., parts for motorcycles or lawnmowers) not intended for use in automobiles, light-duty trucks, or other motor vehicles as defined in §63.3176 cannot be made part of your affected source under subpart IIII of this part.

(e) If you own or operate an affected source that meets the applicability criteria of this subpart and at the same facility you also perform surface coating that meets the applicability criteria of any other final surface coating NESHAP in this part you may choose to comply as specified in paragraph (e)(1), (2), or (3) of this section.

(1) You may have each surface coating operation that meets the applicability criteria of a separate NESHAP comply with that NESHAP separately.

(2) You may comply with the emission limitation representing the predominant surface coating activity at your facility, as determined according to paragraphs (e)(2)(i) and (ii) of this section. However, you may not establish high performance, rubber-to-metal, or extreme performance fluoropolymer coating operations as the predominant activity. You must not consider any surface coating activity that is subject to the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) in determining the predominant surface coating activity at your facility.

(i) If a surface coating operation accounts for 90 percent or more of the surface coating activity at your facility (that is, the predominant activity), then compliance with the emission limitations of the predominant activity for all surface coating operations constitutes compliance with these and other applicable surface coating NESHAP. In determining predominant activity, you must include coating activities that meet the applicability criteria of other surface coating NESHAP and constitute more than 1 percent of total coating activities at your facility. Coating activities that meet the applicability criteria of other surface coating NESHAP but comprise less than 1 percent of coating activities need not be included in the determination of predominant activity but must be included in the compliance calculation.

(ii) You must use liters (gal) of solids used as a measure of relative surface coating activity over a representative period of operation. You may estimate the relative volume of coating solids used from parameters other than coating consumption and volume solids content (*e.g.,* design specifications for the parts or products coated and the number of items produced). The determination of predominant activity must accurately reflect current and projected coating operations and must be verifiable through appropriate documentation. The use of parameters other than coating consumption and volume solids content must be approved by the Administrator. You may use data for any reasonable time period of at least 1 year in determining the relative amount of coating activity, as long as they represent the way the source will continue to operate in the future and are approved by the Administrator. You must determine the predominant activity at your facility and submit the results of that determination with the initial

notification required by §63.3910(b). You must also determine predominant activity annually and include the determination in the next semi-annual compliance report required by §63.3920(a).

(3) You may comply with a facility-specific emission limit calculated from the relative amount of coating activity that is subject to each emission limit. If you elect to comply using the facility-specific emission limit alternative, then compliance with the facility-specific emission limit and the emission limitations in this subpart for all surface coating operations constitutes compliance with this and other applicable surface coating NESHAP. The procedures for calculating the facility-specific emission limit are specified in §63.3890. In calculating a facility-specific emission limit, you must include coating activities that meet the applicability criteria of other surface coating NESHAP and constitute more than 1 percent of total coating activities at your facility. You must not consider any surface coating activity that is subject to the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) in determining a facility-specific emission limit for your facility. Coating activities that meet the applicability criteria of other surface coating NESHAP but comprise less than 1 percent of total coating activities need not be included in the calculation of the facility-specific emission limit but must be included in the compliance calculations.

[69 FR 157, Jan. 2, 2004, as amended at 69 FR 22660, Apr. 26, 2004; 71 FR 76927, Dec. 22, 2006]

The requirements of subpart MMMM are not applicable because Quest Aircraft Company, L.L.C. is not a major source of HAP emissions as defined in §63.2.

40 CFR 63, Subpart PPPP
National Emission Standards for Hazardous Air Pollutants for Surface Coating of Plastic Parts and Products

What This Subpart Covers

§63.4480 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for plastic parts and products surface coating facilities. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations.

Quest Aircraft Company, L.L.C. conducts surface coating operations on plastic parts in the process of manufacturing aircraft.

§63.4481 Am I subject to this subpart?

(a) Plastic parts and products include, but are not limited to, plastic components of the following types of products as well as the products themselves: Motor vehicle parts and accessories for automobiles, trucks, recreational vehicles; sporting and recreational goods; toys; business machines; laboratory and medical equipment; and household and other consumer products. Except as provided in paragraph (c) of this section, the source category to which this subpart applies is the surface coating of any plastic parts or products, as described in paragraph (a)(1) of this section, and it includes the subcategories listed in paragraphs (a)(2) through (5) of this section.

(1) Surface coating is the application of coating to a substrate using, for example, spray guns or dip tanks. When application of coating to a substrate occurs, then surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage. However, these activities do not comprise surface coating if they are not directly related to the application of the coating. Coating application with handheld, non-refillable aerosol containers, touch-up markers, marking pens, or the application of paper film or plastic film which may be pre-coated with an adhesive by the manufacturer are not coating operations for the purposes of this subpart.

(2) The general use coating subcategory includes all surface coating operations that are not automotive lamp coating operations, thermoplastic olefin (TPO) coating operations, or assembled on-road vehicle coating operations.

(3) The automotive lamp coating subcategory includes the surface coating of plastic components of the body of an exterior automotive lamp including, but not limited to, headlamps, tail lamps, turn signals, and marker (clearance) lamps; typical coatings used are reflective argent coatings

and clear topcoats. This subcategory does not include the coating of interior automotive lamps, such as dome lamps and instrument panel lamps.

(4) The TPO coating subcategory includes the surface coating of TPO substrates; typical coatings used are adhesion promoters, color coatings, clear coatings and topcoats. The coating of TPO substrates on fully assembled on-road vehicles is not included in the TPO coating subcategory.

(5) The assembled on-road vehicle coating subcategory includes surface coating of fully assembled motor vehicles and trailers intended for on-road use, including, but not limited to: automobiles, light-duty trucks, heavy duty trucks, and busses that have been repaired after a collision or otherwise repainted; fleet delivery trucks; and motor homes and other recreational vehicles (including camping trailers and fifth wheels). This subcategory also includes the incidental coating of parts, such as radiator grilles, that are removed from the fully assembled on-road vehicle to facilitate concurrent coating of all parts associated with the vehicle. The assembled on-road vehicle coating subcategory does not include the surface coating of plastic parts prior to their attachment to an on-road vehicle on an original equipment manufacturer's (OEM) assembly line. The assembled on-road vehicle coating subcategory also does not include the use of adhesives, sealants, and caulks used in assembling on-road vehicles. Body fillers used to correct small surface defects and rubbing compounds used to remove surface scratches are not considered coatings subject to this subpart.

(b) You are subject to this subpart if you own or operate a new, reconstructed, or existing affected source, as defined in §63.4482, that uses 378 liters (100 gallons (gal)) per year, or more, of coatings that contain hazardous air pollutants (HAP) in the surface coating of plastic parts and products defined in paragraph (a) of this section; and that is a major source, is located at a major source, or is part of a major source of emissions of HAP. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year or any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year. You do not need to include coatings that meet the definition of non-HAP coating contained in §63.4581 in determining whether you use 378 liters (100 gallons) per year, or more, of coatings in the surface coating of plastic parts and products.

(c) This subpart does not apply to surface coating or a coating operation that meets any of the criteria of paragraphs (c)(1) through (17) of this section.

(1) A coating operation conducted at a facility where the facility uses only coatings, thinners and other additives, and cleaning materials that contain no organic HAP, as determined according to §63.3941(a).

(2) Surface coating operations that occur at research or laboratory facilities, or is part of janitorial, building, and facility maintenance operations, or that occur at hobby shops that are operated for noncommercial purposes.

(3) The surface coating of plastic parts and products performed on-site at installations owned or operated by the Armed Forces of the United States (including the Coast Guard and the National Guard of any such State) or the National Aeronautics and Space Administration, or the surface coating of military munitions manufactured by or for the Armed Forces of the United States (including the Coast Guard and the National Guard of any such State).

(4) Surface coating where plastic is extruded onto plastic parts or products to form a coating.

(5) Surface coating of magnet wire.

(6) In-mold coating operations or gel coating operations in the manufacture of reinforced plastic composite parts that meet the applicability criteria for reinforced plastics composites production (subpart WWWW of this part).

(7) Surface coating of plastic components of wood furniture that meet the applicability criteria for wood furniture manufacturing (subpart JJ of this part).

(8) Surface coating of plastic components of large appliances that meet the applicability criteria for large appliance surface coating (subpart NNNN of this part).

(9) Surface coating of plastic components of metal furniture that meet the applicability criteria for metal furniture surface coating (subpart RRRR of this part).

(10) Surface coating of plastic components of wood building products that meet the applicability criteria for wood building products surface coating (subpart QQQQ of this part).

(11) Surface coating of plastic components of aerospace vehicles that meet the applicability criteria for aerospace manufacturing and rework (40 CFR part 63, subpart GG).

(12) Surface coating of plastic parts intended for use in an aerospace vehicle or component using specialty coatings as defined in appendix A to subpart GG of this part.

(13) Surface coating of plastic components of ships that meet the applicability criteria for shipbuilding and ship repair (subpart II of this part).

(14) Surface coating of plastic using a web coating process that meets the applicability criteria for paper and other web coating (subpart JJJJ of this part).

(15) Surface coating of fiberglass boats or parts of fiberglass boats (including, but not limited to, the use of assembly adhesives) where the facility meets the applicability criteria for boat manufacturing (subpart VVVV of this part), except where the surface coating of the boat is a post-mold coating operation performed on personal watercraft or parts of personal watercraft. This subpart does apply to post-mold coating operations performed on personal watercraft and parts of personal watercraft.

(16) Surface coating of plastic components of automobiles and light-duty trucks that meet the applicability criteria in §63.3082(b) of the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) at a facility that meets the applicability criteria in §63.3081(b).

(17) Screen printing.

(d) If your facility meets the applicability criteria in §63.3081(b) of the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) and you perform surface coating of plastic parts or products that meets both the applicability criteria in §63.3082(c) and the applicability criteria of this subpart, then for the surface coating of any or all of your plastic parts or products that meets the applicability criteria in §63.3082(c), you may choose to comply with the requirements of subpart IIII of this part in lieu of complying with this subpart. Surface coating operations on plastic parts or products (e.g., parts for motorcycles or lawnmowers) not intended for use in automobiles, light-duty trucks, or other motor vehicles as defined in §63.3176 cannot be made part of your affected source under subpart IIII of this part.

(e) If you own or operate an affected source that meets the applicability criteria of this subpart and at the same facility you also perform surface coating that meets the applicability criteria of any other final surface coating NESHAP in this part, you may choose to comply as specified in paragraph (e)(1), (2), or (3) of this section.

(1) You may have each surface coating operation that meets the applicability criteria of a separate NESHAP comply with that NESHAP separately.

(2) You may comply with the emission limitation representing the predominant surface coating activity at your facility, as determined according to paragraphs (e)(2)(i) and (ii) of this section. However, you may not establish assembled on-road vehicle or automotive lamp coating operations as the predominant activity. You must not consider any surface coating activity that is subject to the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) in determining the predominant surface coating activity at your facility.

(i) If a surface coating operation accounts for 90 percent or more of the surface coating activity at your facility (that is, the predominant activity), then compliance with the emission limitations of the predominant activity for all surface coating operations constitutes compliance with these and other applicable surface coating NESHAP. In determining predominant activity, you must include coating activities that meet the applicability criteria of other surface coating NESHAP and constitute more than 1 percent of total coating activities at your facility. Coating activities that meet the applicability criteria of other surface coating NESHAP but comprise less than 1 percent of coating activities need not be included in the determination of predominant activity but must be included in the compliance calculation.

(ii) You must use kilogram (kg) (pound (lb)) of solids used as a measure of relative surface coating activity over a representative period of operation. You may estimate the relative mass of coating solids used from parameters other than coating consumption and mass solids content (*e.g.,* design specifications for the parts or products coated and the number of items produced).

The determination of predominant activity must accurately reflect current and projected coating operations and must be verifiable through appropriate documentation. The use of parameters other than coating consumption and mass solids content must be approved by the Administrator. You may use data for any reasonable time period of at least 1 year in determining the relative amount of coating activity, as long as they represent the way the source will continue to operate in the future and are approved by the Administrator. You must determine the predominant activity at your facility and submit the results of that determination with the initial notification required by §63.4510(b). You must also determine predominant activity annually and include the determination in the next semi-annual compliance report required by §63.4520(a).

(3) You may comply with a facility-specific emission limit calculated from the relative amount of coating activity that is subject to each emission limit. If you elect to comply using the facility-specific emission limit alternative, then compliance with the facility-specific emission limit and the emission limitations in this subpart for all surface coating operations constitutes compliance with this subpart and other applicable surface coating NESHAP. The procedures for calculating the facility-specific emission limit are specified in §63.4490. In calculating a facility-specific emission limit, you must include coating activities that meet the applicability criteria of other surface coating NESHAP and constitute more than 1 percent of total coating activities at your facility. You must not consider any surface coating activity that is subject to the Surface Coating of Automobiles and Light-Duty Trucks NESHAP (40 CFR part 63, subpart IIII) in determining a facility-specific emission limit for your facility. Coating activities that meet the applicability criteria of other surface coating NESHAP but comprise less than 1 percent of total coating activities need not be included in the calculation of the facility-specific emission limit but must be included in the compliance calculations.

[69 FR 20990, Apr. 19, 2004, as amended at 69 FR 22660, Apr. 26, 2004; 71 FR 76927, Dec. 22, 2006; 72 FR 20237, Apr. 24, 2007]

The requirements of subpart PPPP are not applicable because Quest Aircraft Company, L.L.C. is not a major source of HAP emissions as defined in §63.2.

AIR DISPERSION MODELING

QUEST AIRCRAFT COMPANY
SANDPOINT, ID

OCTOBER 2016

Prepared for:

Quest Aircraft Company
Attn: Susan M. Jordan
1200 Turbine Drive
Sandpoint, ID 83864
(208) 263-1111

Prepared by:

Spring Environmental, Inc.
1011 N. Cedar Street
Spokane, Washington 99201-1914
(509) 328-7500

Beth Fifield Hodgson
Beth Fifield Hodgson
Principal Engineer

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1.0 Summary

This air impact modeling analysis was conducted to determine the impact of crystalline silica, cristobalite, and particulate matter ($PM_{2.5}$ and PM_{10}) emissions due to paint booth operations at the Quest Aircraft Company (Quest) manufacturing plant in Sandpoint, Idaho. All other criteria and toxic air pollutants have an estimated potential to emit below their respective modeling thresholds.

The sources consist of four exhaust stacks from two pain booths which exit the Quest manufacturing plant on the south side of the building. Building downwash is included for the Quest building and an extensive receptor grid including terrain data is used.

The results of this modeling effort are presented below in Table 8 and Table 9. All pollutants modeled are estimated to have an impact below their respective cumulative NAAQS and ACC/AACC limits.

2.0 Project Description and Background as it Relates to Modeling Analyses

Quest is a backcountry aircraft manufacturer located at the Sandpoint Airport in Sandpoint, Idaho. Quest was founded in May 2001 and began working at the 27,000 square foot Sandpoint facility in October 2002. Quest used the next two years to develop a prototype aircraft which first took flight in October 2004. Since then Quest has expanded the facility to 84,000 square feet and a maximum production of 60 planes per year.

2.1 General Facility/Project Description

Quest operates a paint booth as part of their manufacturing process, which is a source of toxic air pollutant and criteria pollutant emissions due to the chemical composition of the paint coatings, and is planning to install a second booth in 2016. Quest has previously operated without a permit to construct (PTC) but is now applying for a PTC due to concerns regarding potential emissions of crystalline silica from paint booth operations following an IDEQ inspection of the facility in 2015. Quest is estimated to emit cristobalite, crystalline silica, and formaldehyde in excess of the respective Emissions Screening Levels[1] (EL) and particulate in excess of Level I Thresholds[2], therefore modeling is required to determine compliance.

2.2 Location of Project

Quest Aircraft Company (Quest) is located at 1200 Turbine Drive in Sandpoint, Idaho near the Sandpoint airport. The land use is classified as rural and the immediate vicinity of the site is relatively flat and simple terrain, with more complex terrain starting with mountain ranges rising about a mile to the northwest of the source. The edge of Lake Pend Oreille is about a mile southeast of the source, and most of the terrain beyond the immediate vicinity of the source and the lake is complex with widely varying elevation.

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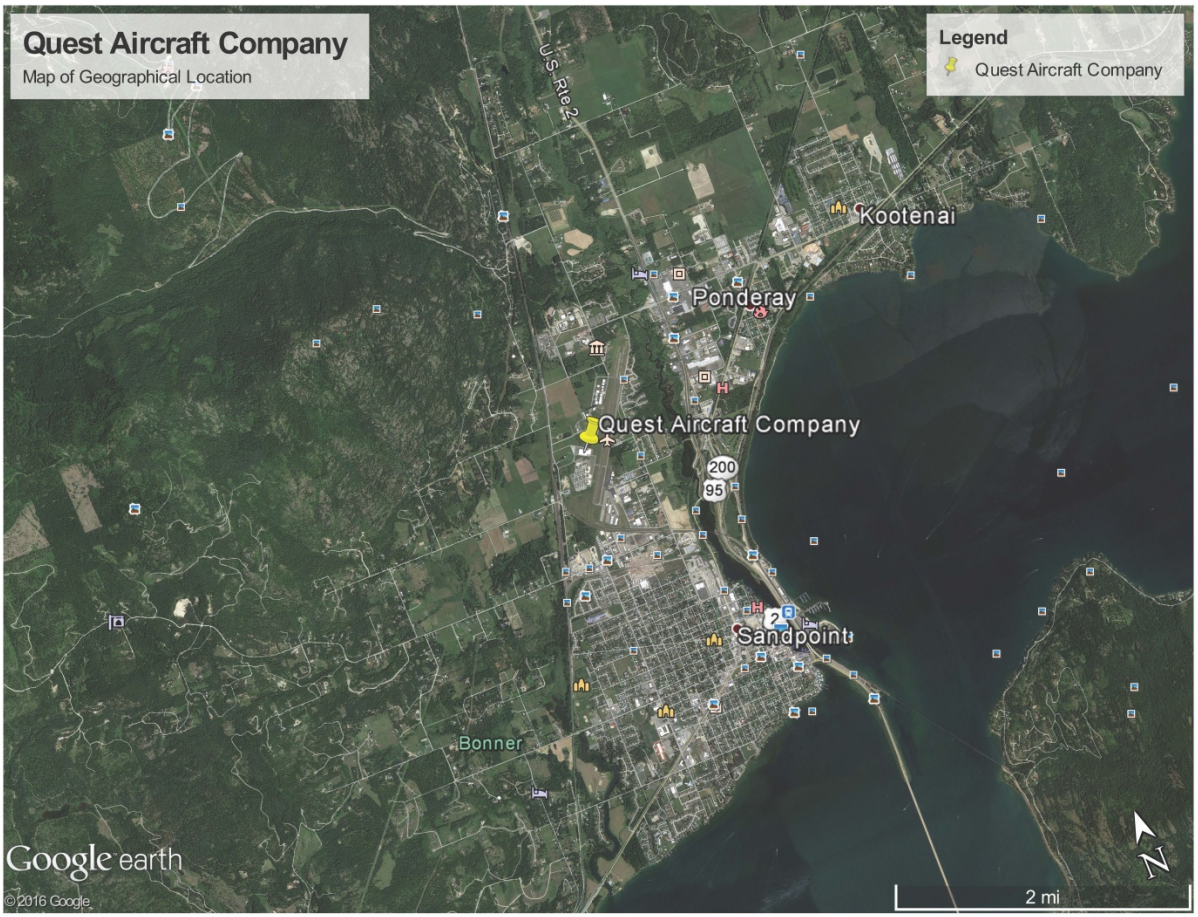
[1] Defined in IDAPA 58.01.01.585.

[2] Idaho Department of Environmental Quality, *State of Idaho Guideline for Performing Air Quality Impact Analyses* Table 2, (2013).

Industrial sources of air pollution in the area include industries such as manufacturing, surface mining, and lumber processing. The Sandpoint area is in attainment for all criteria pollutants.

The UTM coordinates of the QUEST site are: 11U 532282mE 5349542mN



2.3 Existing Permits and Modeling Analyses Performed

This facility does not have any existing or previous permits or modeling analyses.

3.0 Modeling Analyses Applicability and Protocol

Following an IDEQ inspection of the facility in 2015, concerns regarding the possibility of Quest emitting crystalline silica in excess of the below regulatory concern (BRC) level (10% of screening emissions levels) and the need for a permit to construct. The current emission inventory for the facility estimates potential emissions of cristobalite, crystalline silica, and formaldehyde to be in excess of both BRC and EL limits and therefore these toxic air pollutants require modeling. Estimates of particulate matter emissions, both $PM_{2.5}$ and PM_{10}, are above BRC levels and Idaho DEQ's Level I emissions thresholds and therefore also require modeling.

3.1 Applicable Standards

Criteria pollutant National Ambient Air Quality Standards (NAAQS) for the modeled criteria pollutants are listed in Table 1, along with significant impact levels (SILs).

Table 1. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Design Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms/cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.

TAP emissions increases resulting from the project are identified in Table 2 below.

Table 2. TAP ELS AND AACS/AACCS			
TAP	**Non-Carcinogen or Carcinogen**	**Screening Emissions Level (EL)[a] (lb/hr)**	**AAC or AACC[b] (µg/m^3)**
2-Butoxyethanol	Non-Carcinogen	8	6000
3-Methylchloranthrene	Carcinogen	0.0000025	0.00037
4-methylpentan-2-one	Non-Carcinogen	13.7	10250
7-PAH	Carcinogen	0.000002	0.014
9H-Fluorene (PAH)	Carcinogen	0.000091	0.014
Anthracene (PAH)	Carcinogen	0.000091	0.014
Arsenic	Carcinogen	0.000006	0.00023
Barium	Non-Carcinogen	0.033	25
Benz[e]acephenanthrylene (PAH)	Carcinogen	0.000002	0.014
Benzene	Carcinogen	0.0008	0.12
Benzo[a]pyrene	Carcinogen	0.000002	0.0003
Benzo[ghi]perylene (PAH)	Carcinogen	0.000091	0.014
Beryllium	Carcinogen	0.000028	0.0042
Butan-1-ol	Non-Carcinogen	10	7500
Butanone (Methyl Ethyl Ketone)	Non-Carcinogen	39.3	29000
Cadmium	Carcinogen	0.0000037	0.00056
Carbon Black	Non-Carcinogen	0.23	175
Chromium	Non-Carcinogen	0.033	25
Cobalt	Non-Carcinogen	0.0033	2.5
Copper	Non-Carcinogen	0.013	10
Cristobalite	Non-Carcinogen	0.0033	2.5
Crystalline Silica	Non-Carcinogen	0.0067	5
Cyclohexanone	Non-Carcinogen	6.67	5000
Ethyl benzene	Non-Carcinogen	29	21750
Fluoranthene (PAH)	Carcinogen	0.000091	0.014
Formaldehyde	Carcinogen	0.00051	0.077
Heptan-2-one	Non-Carcinogen	15.7	11750
Hexane	Non-Carcinogen	12	9000
Manganese	Non-Carcinogen	0.067	50
Molybdenum	Non-Carcinogen	0.333	250
Naphthalene	Non-Carcinogen	3.33	2500
n-Butyl Acetate	Non-Carcinogen	47.3	35500
Nickel	Carcinogen	0.000027	0.0042
Pentan-2-one	Non-Carcinogen	46.7	35000
Pentane	Non-Carcinogen	118	88500
Phenanthrene (PAH)	Carcinogen	0.000091	0.014
Pyrene (PAH)	Carcinogen	0.000091	0.014
Selenium	Non-Carcinogen	0.013	10
Toluene	Non-Carcinogen	25	18750
Xylene	Non-Carcinogen	29	21750
Zinc	Non-Carcinogen	0.667	500

a. ELs from Idaho Air Rules Section 585 and 586 in pounds/hour .

b. Acceptable Ambient Concentration (AAC) or Acceptable Ambient Concentration for a Carcinogen (AACC) from Idaho Air Rules Section 585 and 586, in micrograms/cubic meter or milligrams/cubic meter. Note that AACs listed in Idaho Air Rules Section 585 are expressed in units of milligrams/cubic meter rather than micrograms/cubic meter.

3.2 Criteria Pollutant Modeling Applicability

Quest is estimated to exceed Below Regulatory Concern emission levels with particulate matter (PM10 and PM2.5), VOC, cristobalite, crystalline silica, and formaldehyde emissions and so a permit to construct is required. Particulate matter is modeled because it is estimated to exceed Tier I modeling thresholds. Cristobalite, crystalline silica, and formaldehyde are modeled because they exceed emission screening levels.

Table 3 lists criteria pollutants for which site-specific modeling analyses were performed to demonstrate compliance with NAAQS.

Table 3. MODELING APPLICABILITY

Criteria Pollutant	Modeled (yes/no)	Basis for Exclusion from Modeling
$PM_{2.5}$ 24-hour	yes	___BRC Exempt[a] ___Emissions Below Level l Thresholds[b] ___Emissions Below Level II Thresholds[c]
$PM_{2.5}$ annual	yes	___BRC Exempt ___Emissions Below Level l Thresholds ___Emissions Below Level II Thresholds
PM_{10} 24-hour	yes	___BRC Exempt ___Emissions Below Level l Thresholds ___Emissions Below Level II Thresholds
NO_2 1-hour	no	_x_BRC Exempt ___Emissions Below Level l Thresholds ___Emissions Below Level II Thresholds
NO_2 annual	no	_x_BRC Exempt ___Emissions Below Level l Thresholds Emissions Below Level II Thresholds
SO_2 1-hour, 3-hour	no	_x_BRC Exempt ___Emissions Below Level l Thresholds ___Emissions Below Level II Thresholds
SO_2 annual	no	_x_BRC Exempt ___Emissions Below Level l Thresholds ___Emissions Below Level II Thresholds
CO 1-hour, 8-hour	no	_x_BRC Exempt ___Emissions Below Level l Thresholds Emissions Below Level II Thresholds

a. If the project would have qualified for a Category I BRC permitting exemption for the criteria pollutant in question, as per Idaho Air Rules Section 221.01, except for the emissions quantities of another criteria pollutant, then a NAAQS compliance analysis is not required under Section 203.02 or 403.02 for that criteria pollutant.

b. Level I Modeling Thresholds from Table 2 in Section 3 of the DEQ Modeling Guideline. NAAQS compliance is assured through DEQ's non-site-specific modeling analyses.

c. Level II Modeling Thresholds from Table 2 in Section 3 of the DEQ Modeling Guideline. NAAQS compliance is assured through DEQ's non-site-specific modeling analyses. Level II Modeling Thresholds can only be used with prior DEQ approval.

Calculations for each criteria pollutant can be found in attachment A. This is a sample emissions equation:

PM (ton/yr) = [annual coating usage (gal) * coating density (lbs/gal) * Σ Max.% of particulate ingredients * (1-Transfer Eff.) * (1-Filter Eff.) ÷ 2000 (lb/ton)] + [Σ Boiler Energy Input (MMBtu/hr) * 8760 (hrs/yr) ÷ Nat. Gas LHV (Btu/ft3) * PM EF (lb/MMscf) * 2000 (lb/ton)]

3.3 TAP Modeling Applicability

The current emission calculations estimate Quest's potential to emit cristobalite, crystalline silica, and formaldehyde in excess of their respective screening emission levels, therefore they have been included in this modeling effort. This modeling effort did not include the toxic air pollutants with a potential to emit below their respective screening emission levels. Calculations for each toxic air pollutant can be found in attachment A. This is a sample emissions equation:

TAP (non-voc) pollutant (ton/yr) = annual coating usage (gal) * coating density (lbs/gal) * Max. % of TAP in coating * (1 – Transfer Eff.) * (1-Filter Eff.) ÷ 2000 lb/ton

3.4 Modeling Protocol

A modeling protocol was submitted to DEQ prior to the application on June 9, 2016, by Spring Environmental on the behalf of Quest. Conditional DEQ protocol approval was provided to Spring Environmental on June 28, 2016. Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the protocol and in the *Idaho Air Quality Modeling Guideline*.

The protocol and DEQ's conditional protocol approval notice are included in Attachment B of this Modeling Report. Concerns identified by DEQ in the protocol approval notice have been addressed in the analyses performed and in this Modeling Report.

4.0 Modeled Emissions Sources

The modeled sources at the Quest facility are four total exhaust stacks from two paint booths. Each stack is modeled individually with total PTE proportioned between the four stacks as if both booths are operated simultaneously with the highest emitting coating for each pollutant modeled.

The eastern-most Col-Met Spray Booth operates as a downdraft booth, and consists of a single paint booth bay oriented north-south in the building. The painting area of the booth is 10-feet by 24-feet by 12-feet high. Intake air is filtered from the roof of the booth and exhaust is captured chair-height along both of the long edges of the booth. Approximately 36,000 cfm of exhaust air is controlled by a 3-stage NESHAP filtration system consisting of a blanket filter, a cartridge filter, and a bag filter, and exhausted to atmosphere approximately 5-feet above the building through one of two 30-inch diameter stacks located along the southern wall approximately 40-feet from the property boundary. One operator works in the booth on a regular basis averaging 35-hours per week; an assistant painter is available as needed and averages 5 to 10 hours per month. The paint booth filters are Fiberbond FP100 54x90 blue oiled polyroll, Dustlok 260002020 3-ply poly panels, and Aerostar 77535N SoniQ poly pocket filters. HVLP paint guns

are used for all coatings. A Dwyer Mark II manometer is installed on each exhaust stack with the acceptable range of 0.26 – 0.53 inH2O annotated on the monomer.

The Global Finishing Systems Spray Booth will replace the out of service paint booth to the west of the Col-Met paint booth, operates as a downdraft booth, consists of a single paint booth bay oriented north-south in the manufacturing building, and will be installed in June 2016. The painting area of the booth is 14-feet by 30-feet by 12-feet high. Approximately 21,000 cfm of exhaust air will be controlled by a 2-stage NESHAP filtration system consisting of a blanket filter and a cartridge filter, and exhausted to atmosphere approximately 5-feet above the building through one of two 34-inch diameter stacks located along the southern wall approximately 40-feet from the property boundary.

4.1 Criteria Pollutants

Quest PTE calculations for particulate matter assume a worst case scenario in which $PM_{2.5}$ and PM_{10} are equal to total particulate because emissions of particulate matter are based upon the solids content of the material coatings without data regarding the size distribution of the solids content.

The other criteria pollutants are not calculated to emit above BRC levels and are not included in this modeling effort.

4.1.1 Modeled Emissions Rates for Significant Impact Level Analyses

A SIL was not conducted; Spring Environmental instead proceeded to perform Cumulative Impact Analyses.

4.1.2 Modeled Emissions Rates for Cumulative Impact Analyses

Annual Paint booth emission rates were calculated based upon a total 4178 annual painting hours. 24-hour rates were calculated based upon 20 painting hours per day between the two booths. This per week operating schedule is based upon Quest's 2014 operation scaled to an expected future 220% increase in production (from 27 to 60 plane annual production). Table 4 lists criteria pollutant emissions rates used in the cumulative NAAQS impact analyses. Calculations of modeled emissions are thoroughly documented in the Quest emission inventory which can be found in Attachment A.

Table 4. MODELED EMISSIONS RATES FOR CUMULATIVE NAAQS IMPACT ANALYSES

Source ID	Source Description	Pollutant	Averaging Period	Emissions[a] (lb/hr)
WESTLEFT	Left stack of the westernmost paint booth.	$PM_{2.5}$	24-hour	0.010
			Annual	0.005
		PM_{10}	24-hour	0.010
WESTRGHT	Right stack of the westernmost paint booth.	$PM_{2.5}$	24-hour	0.010
			Annual	0.005
		PM_{10}	24-hour	0.010

Table 4. MODELED EMISSIONS RATES FOR CUMULATIVE NAAQS IMPACT ANALYSES				
EASTLEFT	Left stack of the easternmost paint booth.	$PM_{2.5}$	24-hour	0.010
			Annual	0.005
		PM_{10}	24-hour	0.010
EASTRGHT	Right stack of the easternmost paint booth.	$PM_{2.5}$	24-hour	0.010
			Annual	0.005
		PM_{10}	24-hour	0.010

a. Pounds/hour emissions rate modeled is the potential/allowable emissions for the averaging period specified for the pollutant.

The emissions rates in the model input files for cumulative NAAQs impact analyses are 1 gm/sec (7.94 lb/hr) per stack. The impact from these is scaled by the emission rates in Table 4 and the resulting values for ambient impact are in Table 8.

4.1.3 NO_2/NOx Ratio for NOx Chemistry Modeling

NO_2/NOx was not included in this modeling effort.

4.1.4 Special Methods for Modeling Criterial Pollutant Emissions

No special or unique methods for modeling criteria pollutants were included in this modeling effort.

4.2 Toxic Air Pollutants

Table 5 lists TAP emissions rates that were included in modeling analyses. Modeling was performed for each TAP having total project emissions exceeding the TAP-specific Screening Emissions Level (EL).

TABLE 5. MODELED EMISSIONS RATES FOR TAP ANALYSES				
Source ID	**Source Description**	**TAP**	**Averaging Period**	**Emissions[a] (lb/hr)**
WESTLEFT	Left stack, west paint booth.	cristobalite	24-hour	0.0010
		crystalline silica	24-hour	0.005
		formaldehyde	Annual	0.0004
WESTRGHT	Right stack, west paint booth.	cristobalite	24-hour	0.0010
		crystalline silica	24-hour	0.005
		formaldehyde	Annual	0.0004
EASTLEFT	Left stack, east paint booth.	cristobalite	24-hour	0.0010
		crystalline silica	24-hour	0.005
		formaldehyde	Annual	0.0004
EASTRGHT	Right stack, east paint booth.	cristobalite	24-hour	0.0010
		crystalline silica	24-hour	0.005
		formaldehyde	Annual	0.0004

a. Pounds/hour emissions rate modeled is the project-specific increase in potential/allowable emissions increase for the averaging period specified for the TAP.

The emissions rates in the model input files for TAP impact analyses are 1 gm/sec (7.94 lb/hr). The impact from these is scaled by the emission rates in Table 5 and the resulting values for ambient impact are in Table 9.

4.3 Emissions Release Parameters

The gas flow temperature is assumed to be room temperature as the paint booths are located within the larger Quest manufacturing facility. The normal temperature and pressure value (NTP) of 20°C (293.15°K) is used for this modeling effort. The gas flow velocity values for the stacks are per design specifications.

The other release parameters are the physical characteristics of the paint booths and their exhaust stacks as constructed. Table 6 lists stack parameters for point sources and Table 7 lists release parameters for volume and area sources.

Table 6. POINT SOURCE STACK PARAMETERS

Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temp. (K)[c]	Stack Gas Flow Velocity (m/sec)[d]	Modeled Stack Diameter (m)	Orient. Of Release[e]
		Easting-X (m)[b]	Northing-Y (m)					
WESTLEFT	Left stack of the westernmost paint booth.	532274	5349513	7.62	293.15	8.9	0.86	Vertical
WESTRGHT	Right stack of the westernmost paint booth.	532278	5349510	7.62	293.15	8.9	0.86	Vertical
EASTLEFT	Left stack of the easternmost paint booth.	532279	5349509	7.62	293.15	19.6	0.76	Vertical
EASTRGHT	Right stack of the easternmost paint booth.	532283	5349513	7.62	293.15	19.6	0.76	Vertical

a. Universal Transverse Mercator.
b. Meters.
c. Kelvin.
d. Meters per second.
e. Vertical uninterrupted, rain-capped, or horizontal release.

5.0 Modeling Methodology

Modeling parameters were outlined in the modeling protocol submitted to DEQ prior to this modeling effort and were approved June 28, 2016. Table 7 summarizes the key modeling parameters used in the impact analyses.

Table 7. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Sandpoint Airport	The Sandpoint area is in NAAQS attainment.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 15181.
Meteorological Data	2008 to 1012 surface and upper air data for Sandpoint Airport (KSZT)	The meteorological model input files for this project were developed by Idaho DEQ. See Section 5.2 of this memorandum for additional details of the meteorological data.
Terrain	Considered	3-dimensional receptor coordinates were obtained from USGS National Elevation Dataset (NED) files and were used to establish elevation of ground level receptors. AERMAP was used to determine each receptor elevation and hill height scale.
Building Downwash	Considered	Plume downwash was considered for the facility's building. Surrounding buildings are outside the immediate vicinity of the sources. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
NOx Chemistry	Not modeled.	NOx emissions were not included in this modeling effort.
Receptor Grid	**NAAQS & TAPs Analyses**	
	Grid 1	10-meter spacing from the building in a 100 meter (easting) by 100 meter (northing) grid centered on the facility
	Grid 2	25-meter spacing in a 100 to 3,000 meter (easting) by 100 to 3,000 meter (northing) grid centered on the facility
	Grid 3	100-meter spacing in a 3,000 to 10,000 meter (easting) by 3,000 to 10,000 meter (northing) grid centered on the facility
	Grid 4	500-meter spacing in a 10,000 to 30,000 meter (easting) by 10,000 to 30,000 meter (northing) grid centered on the facility
	Grid 5	1,000-meter spacing in a 30,000 to 50,000 meter (easting) by 30,000 to 50,000 meter (northing) grid centered on the facility.

5.1 Model Selection

The current versions of all models and associated programs were used in analyses:

AERMOD v.15181
AERMAP v. 11103
AERMET v. 12345

5.2 Meteorological Data

Five-year meteorological data (2008 to 2012) for Sandpoint Airport, which has been previously provided by Idaho DEQ in 2013, was used for modeling.

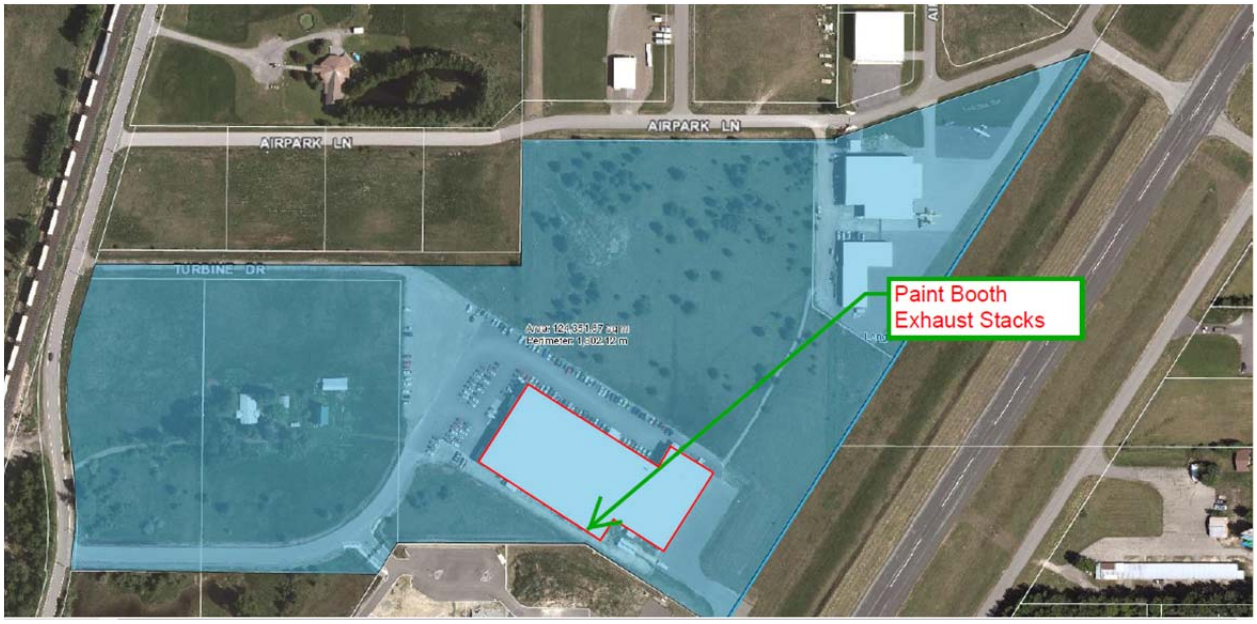
5.3 Effects of Terrain

Terrain data was obtained through the United States Geological Survey (USGS) Landfire program. The file contains terrain data between N: 48.875, W: -117.25, S: 47.75, and E: -115.75 and the datum is WGS 84. The datum of terrain data, building corner locations, emissions

sources, and the ambient air boundary are specified and are consistent such that the modeled plot plan accurately represents the facility and surroundings.

5.4 Facility Layout

The facility layout plot plan is provided in this section depicting the Quest manufacturing building outlined in red, the property highlighted in blue, and labels the location of the emission points.



5.5 Effects of Building Downwash

Building dimensions were estimated using Google Earth. Surrounding structures were not included in the modeling because the Quest manufacturing building does not lie within the immediate vicinity of these buildings.

5.6 Ambient Air Boundary

The ambient air boundary was limited to the extent of the Quest manufacturing building's dimensions, which is outlined in red on the facility layout in section 5.4.

5.7 Receptor Network

AERMAP was used to develop a receptor grid with elevated receptors to account for the varied terrain in the surrounding area. The receptor spacing used in this modeling effort was chosen in response to specific requests in comments from DEQ during development of the modeling protocol. The receptor grid sufficiently narrows to provide an appropriate representation of dispersion characteristics, with 10 meter spacing for the first 100 meters, then 25 meter increments to 3,000 meters, then 100 meter increments to 10,000 meters, then 500 meter increments to 30,000 meters, and then 1,000 meter increments to 50,000 meters.

5.8 Background Concentrations

Background concentration data for Sandpoint has been previously provided by DEQ on February 5, 2016. The PM data used in this modeling effort is from monitoring conducted near the Sandpoint airport at 2106 North Boyer Avenue.

5.9 NOx Chemistry

NOx emissions were not included in this modeling effort.

6.0 Results and Discussion

AERMOD was run for the criteria pollutants PM_{10} and $PM_{2.5}$ and the TAPs cristobalite, crystalline silica, and formaldehyde. The design concentrations of all modeled pollutants are below the corresponding NAAQS, AACs, AACCs, meaning Quest's facility is in compliance with Idaho Air Rules Section 203.02 and 203.03. The results will be discussed further in the following sections.

6.1 Criteria Pollutant Impact Results

PM_{10} and $PM_{2.5}$ are the only criteria pollutants that required modeling. The modeling results and the total impact can be found in Table 8 below.

6.1.1 Significant Impact Level Analyses

A SIL analysis was not preformed because Spring Environmental chose to proceed directly to the cumulative NAAQS impact.

6.1.2 Cumulative NAAQS Impact Analyses

A cumulative NAAQS analysis was performed for all receptors as descried above in section 5.7. There are no NAAQS violations as a result of the modeling. Spring Environmental is confident that NAAQS would still be demonstrated if additional receptors were used in the analysis.

Table 8 provides results of Cumulative NAAQS Impact analyses.

Table 8. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSES					
Pollutant	**Averaging Period**	**Modeled Design Concentration ($\mu g/m^3$)[a]**	**Background Concentration ($\mu g/m^3$)**	**Total Impact ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**
$PM_{2.5}$[b]	24-hour	2.6	18.8	21	35
	Annual	0.4	4.95	5	12
PM_{10}[c]	24-hour	2.7	87	90	150

a. Micrograms/cubic meter
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

Model input and output files for the cumulative NAAQS impact analyses are provided with the application.

6.2 TAP Impact Analyses

Cristobalite, crystalline silica, and formaldehyde are the three TAPs that are estimated to exceed the ELs. Modeling shows that each of the TAPs are below the corresponding AACCs. Table 9 provides results for TAP impact analyses.

Table 9. RESULTS FOR TAP IMPACT ANALYSES			
TAP	**Averaging Period**	**Maximum Modeled Impact ($\mu g/m^3$)[a]**	**AAC or AACC ($\mu g/m^3$)**
Cristobalite	24-hour	2.4	2.5
Crystalline Silica	24-hour	1.5	5
Formaldehyde	Annual	0.035	0.077

a. Micrograms/cubic meter.

7.0 Quality Assurance/Control

- The most recent version of all modeling programs were used
- High density receptor grid provides assurance of no missing concentrations
- Stack heights are within GEP

This Air Quality Monitoring Report was prepared by Gabriel Sedberry, E.I.T. under the direction of Beth Fifield Hodgson, P.E. of Spring Environmental, Inc.

Spring Environmental Inc.
1011 N. Cedar Street
Spokane, WA 99201-1914
Tel: (509) 328-7500
Fax: (509) 328-7501

Attachment A
Emissions Calculations

Facility Criteria Emissions Summary

Source	Criteria Pollutants											
	PM*		CO		NO_X		SO_2		Pb		VOCs*	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/mon	ton/yr	lb/hr	ton/yr
Uncontrolled Emissions												
Paint Booth	1.3	1.6	--	--	--	--	--	--	--	--	3.8	4.0
Boiler	0.0	0.1	0.2	0.8	0.2	1.0	0.0	0.0	0.0	0.00	0.0	0.1
Total	1.4	1.7	0.2	0.8	0.22	1.0	0.0	0.0	0.0	0.00	3.8	4.0
Permitting Threshold:												
BRC	0.23	1	2.28	10	0.91	4	0.91	4	--	0.06	--	4.0
At or Exceed?	yes	yes	no	no	no	no	no	no	--	no	--	yes
Controlled Emissions												
Paint Booth	0.0	0.1	--	--	--	--	--	--	--	--	3.8	4.0
Boiler	0.0	0.1	0.2	0.8	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	0.1	0.2	0.2	0.8	0.22	1.0	0.0	0.0	0.0	0.0	3.8	4.0
Modeling Thresholds:												
Tier I	0.054	0.35	--	--	--	--	--	--	--	--	--	--
Tier II	0.63	4.1	--	--	--	--	--	--	--	--	--	--
Exceed?	Yes (Tier I)	No	--	--	--	--	--	--	--	--	--	--

* It is assumed that Total PM = PM_{10} = $PM_{2.5}$. Thresholds correspond to $PM_{2.5}$.

Note: See Appendix A: Material Usage and Emission Inventory for emissions and modeling details.

Toxic Air Pollutant Emissions Summary

CAS#	Chemical	Emissions (lb/hr)		EL[1] (lb/hr)	BRC[2] Exceedance	EL Exceedance
		Uncontrolled	Controlled			
111-76-2	2-Butoxyethanol	8.98E-02	8.98E-02	8.00E+00	no	--
56-49-5	3-Methylchloranthrene	3.98E-09	3.98E-09	2.50E-06	no	--
108-10-1	4-methylpentan-2-one	1.56E+00	1.11E+00	1.37E+01	yes	no
56–55–3	7-PAH	3.98E-09	3.98E-09	2.00E-06	no	--
86–73–7	9H-Fluorene	6.18E-09	6.18E-09	9.10E-05	no	--
120–12–7	Anthracene	5.30E-09	5.30E-09	9.10E-05	no	--
7440-38-2	Arsenic	4.42E-07	4.42E-07	6.00E-06	no	--
7440-39-3	Barium	9.72E-06	9.72E-06	3.30E-02	no	--
205–99–2	Benz[e]acephenanthrylene	3.98E-09	3.98E-09	2.00E-06	no	--
71-43-2	Benzene	4.64E-06	4.64E-06	8.00E-04	no	--
50–32–8	Benzo[a]pyrene	2.65E-09	2.65E-09	2.00E-06	no	--
191–24–2	Benzo[ghi]perylene	2.65E-09	2.65E-09	9.10E-05	no	--
7440-41-7	Beryllium	2.65E-08	2.65E-08	2.80E-05	no	--
71-36-3	Butan-1-ol	2.70E-01	1.63E-01	1.00E+01	no	--
78-93-3	Butanone (Methyl Ethyl Ketone)	2.04E+00	8.91E-01	3.93E+01	no	--
7440-43-9	Cadmium	2.43E-06	2.43E-06	3.70E-06	yes	no
1333-86-4	Carbon Black	1.83E-01	4.00E-03	2.30E-01	yes	no
7440-47-3	Chromium	3.09E-06	3.09E-06	3.30E-02	no	--
7440-48-4	Cobalt	1.86E-07	1.86E-07	3.30E-03	no	--
7440-50-8	Copper	1.88E-06	1.88E-06	1.30E-02	no	--
14464-46-1	Cristobalite	7.92E-02	3.96E-03	3.30E-03	yes	yes
14808-60-7	Crystalline Silica	1.05E+00	1.98E-02	6.70E-03	yes	yes
108-94-1	Cyclohexanone	1.63E+00	8.94E-01	6.67E+00	yes	no
100-41-4	Ethylbenzene	3.36E-01	1.84E-01	2.90E+01	no	--
206–44–0	Fluoranthene	6.63E-09	6.63E-09	9.10E-05	no	--
50-00-0	Formaldehyde	3.96E-01	1.63E-03	5.10E-04	yes	yes
110-43-0	Heptan-2-one	4.03E+00	1.21E+00	1.57E+01	yes	no
110-54-3	Hexane	3.98E-03	3.98E-03	1.20E+01	no	--
7439-96-5	Manganese	8.39E-07	8.39E-07	6.70E-02	no	--
7439-98-7	Molybdenum	2.43E-06	2.43E-06	3.33E-01	no	--
91-20-3	Naphthalene	1.35E-06	1.35E-06	3.33E+00	no	--
123-86-4	n-Butyl Acetate	2.55E+00	9.80E-01	4.73E+01	no	--
7440-02-0	Nickel	4.64E-06	4.64E-06	2.70E-05	yes	no
107-87-9	Pentan-2-one	2.52E-01	1.92E-01	4.67E+01	no	--
109-66-0	Pentane	5.74E-03	5.74E-03	1.18E+02	no	--
85–01–8	Phenanthrene	3.75E-08	3.75E-08	9.10E-05	no	--
129–00–0	Pyrene	1.10E-08	1.10E-08	9.10E-05	no	--
7782-49-2	Selenium	5.30E-08	5.30E-08	1.30E-02	no	--
108-88-3	Toluene	4.34E-01	2.17E-01	2.50E+01	no	--
1330-20-7	Xylene	1.86E+00	1.11E+00	2.90E+01	no	--
7440-66-6	Zinc	6.40E-05	6.40E-05	6.67E-01	no	--

1. Screening emission level (EL): IDAPA 58.01.01 Sections 585 and 586.

2. Below Regulatory Concern (BRC): Uncontrolled emission rate below or equal to 10% of EL.

Note: See Appendix A: Material Usage and Emission Inventory for emissions and modeling details.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (uncontrolled)

	Production (Planes)	Painting Hours[1] daily	monthly	annual	Paint Use (gal/yr)	Rate (gal/hr)
2014	27	9.00	156.67	1880.00	810.00	0.43
Estimated 2015	60	20.00	348.15	4177.78	1800.00	0.43

Transfer Efficiency	65%

Coating Information						Uncontrolled PTE								
PRODUCT		COMPOSITION	CAS #	%	Max %	PTE lbs/hr	PTE lbs/year	PTE tons/yr	HAP Y/N	HAP lb/hr	HAP tons/yr	TAP Y/N	TAP lb/hr	TAP tons/yr
513X384 Primer														
VOC (g/l)	547	Fatty acids, dimers, polymers, etc.	119796-38-2	18-25%	25.0%	0.3744	926.8	0.4634	N	--	--	N	--	--
Density (lbs/gal)	9.93	Butanone	78-93-3	14-25%	25.0%	1.0696	2648	1.324	N	--	--	Y	1.069588	1.324
2014 Usage (gal/yr)	480	N-Butyl Acetate	123-86-4	10-25%	25.0%	1.0696	2648	1.324	N	--	--	Y	1.069588	1.324
Projected Usasge (gal/yr)	1067	Crystalline Silica	14808-60-7	10-25%	25.0%	0.3744	926.8	0.4634	N	--	--	Y	0.374356	0.4634
Percent of Total Use	59.26%	Strontium Chromate	7789-06-2	10-25%	25.0%	0.3744	926.8	0.4634	N	--	--	N	--	--
VOC emitted (ton/yr)	2.434641341	Cyclohexanone	108-94-1	7-10%	10.0%	0.4278	1059.2	0.5296	N	--	--	Y	0.427835	0.5296
		Butan-1-ol	71-36-3	2.2-3%	3.0%	0.1284	317.76	0.15888	N	--	--	Y	0.128351	0.15888
		Barium chromate	10294-40-3	0.3-1%	1.0%	0.0150	37.072	0.018536	N	--	--	N	--	--
									Subtotal:	--	--	Subtotal:	3.069717	3.79988
513X419 Epoxy Primer														
VOC (g/l)	353	Strontium Chromate	7789-06-2	25-50%	50.0%	0.9500	245	0.1225	N	--	--	N	--	--
Density (lbs/gal)	12.6	Formaldehyde	9003-36-5	10-25%	25.0%	0.4750	122.5	0.06125	N	--	--	N	--	--
2014 Usage (gal/yr)	50	Crystalline Silica	14808-60-7	10-25%	25.0%	0.4750	122.5	0.06125	N	--	--	Y	0.475013	0.06125
Projected Usasge (gal/yr)	111	Heptan-2-one	110-43-0	8.2-10%	10.0%	0.5429	140	0.07	N	--	--	Y	0.542872	0.07
Percent of Total Use	6.17%	4-methylpentan-2-one	108-10-1	6-10%	10.0%	0.5429	140	0.07	Y	0.54287234	0.07	Y	0.542872	0.07
VOC emitted (ton/yr)	0.163663238	Cristobalite	14464-46-1	3-5%	5.0%	0.0950	24.5	0.01225	N	--	--	Y	0.095003	0.01225
		Titanium Dioxide	13463-67-7	3-5%	5.0%	0.0950	24.5	0.01225	N	--	--	N	--	--
		Cyclohexanone	108-94-1	3.4-5%	5.0%	0.2714	70	0.035	N	--	--	Y	0.271436	0.035
		Toluene	108-88-3	1-3%	3.0%	0.1629	42	0.021	Y	0.1628617	0.021	Y	0.162862	0.021
		Butanone	78-93-3	1-3%	3.0%	0.1629	42	0.021	N	--	--	Y	0.162862	0.021
		Trimethoxysilane	2530-83-8	1-3%	3.0%	0.0570	14.7	0.00735	N	--	--	N	--	--
		Ethylbenzene	100-41-4	.1-.3%	0.3%	0.0163	4.2	0.0021	Y	0.01628617	0.0021	Y	0.016286	0.0021
									Subtotal:	0.72202021	0.0931	Subtotal:	2.269206	0.2926
823-011 Fuel Tank Primer														
VOC (g/l)	518	Talc	14807-96-6	10-30%	30.0%	0.4642	478.8	0.2394	N	--	--	N	--	--
Density (lbs/gal)	10.26	4-methylpentan-2-one	108-10-1	10-30%	30.0%	1.3262	1368	0.684	Y	1.32615957	0.684	Y	1.32616	0.684
2014 Usage (gal/yr)	200	Xylene	1330-20-7	10-30%	30.0%	1.3262	1368	0.684	Y	1.32615957	0.684	Y	1.32616	0.684
Projected Usasge (gal/yr)	444	Strontium Chromate	7789-06-2	5-10%	10.0%	0.1547	159.6	0.0798	N	--	--	N	--	--
Percent of Total Use	24.69%	Butanone	78-93-3	5-10%	10.0%	0.4421	456	0.228	N	--	--	Y	0.442053	0.228
VOC emitted (ton/yr)	0.960652205	Ethylbenzene	100-41-4	1-5%	5.0%	0.2210	228	0.114	Y	0.2210266	0.114	Y	0.221027	0.114
		Barium chromate	10294-40-3	.1-1%	1.0%	0.0155	15.96	0.00798	N	--	--	N	--	--
									Subtotal:	2.87334574	1.482	Subtotal:	3.315399	1.71
528X310 Base Component														
VOC (g/l)	611	n-Butyl Acetate	123-86-4	10-30%	30.0%	1.1762	303.3333333	0.151666667	N	--	--	Y	1.176223	0.151667
Density (lbs/gal)	9.1	Crystalline Silica	14808-60-7	10-30%	30.0%	0.4117	106.1666667	0.053083333	N	--	--	Y	0.411678	0.053083
2014 Usage (gal/yr)	50	Butanone	78-93-3	7-13%	13.0%	0.5097	131.4444444	0.065722222	N	--	--	Y	0.509697	0.065722
Projected Usasge (gal/yr)	111	Cyclohexanone	108-94-1	7-13%	13.0%	0.5097	131.4444444	0.065722222	N	--	--	Y	0.509697	0.065722
Percent of Total Use	6.17%	Carbon Black	1333-86-4	3-7%	7.0%	0.0961	24.77222222	0.012386111	N	--	--	Y	0.096058	0.012386
VOC emitted (ton/yr)	0.283281128	Butan-1-ol	71-36-3	1-5%	5.0%	0.1960	50.55555556	0.025277778	N	--	--	Y	0.196037	0.025278
		Xylene	1330-20-7	.1-1%	1.0%	0.0392	10.11111111	0.005055556	Y	0.03920745	0.00505556	Y	0.039207	0.005056
									Subtotal:	0.03920745	0.00505556	Subtotal:	2.938598	0.378914
Polane Enamel, Black, Sherwin Williams														
VOC (g/l)	624	Toluene	108-88-3	7.0%	7.0%	0.2609	16.14666667	0.008073333	Y	0.26088032	0.00807333	Y	0.26088	0.008073
Density (lbs/gal)	8.65	Ethylbenzene	100-41-4	0.6%	0.6%	0.0224	1.384	0.000692	Y	0.02236117	0.000692	Y	0.022361	0.000692
2014 Usage (gal/yr)	12	Xylene	1330-20-7	4.0%	4.0%	0.1491	9.226666667	0.004613333	Y	0.14907447	0.00461333	Y	0.149074	0.004613
Projected Usasge (gal/yr)	27	Methyl Ethyl Ketone	78-93-3	7.0%	7.0%	0.2609	16.14666667	0.008073333	N	--	--	Y	0.26088	0.008073
Percent of Total Use	1.48%	Cyclohexanone	108-94-1	20.0%	20.0%	0.7454	46.13333333	0.023066667	N	--	--	Y	0.745372	0.023067
VOC emitted (ton/yr)	0.069434013	n-Butyl Acetate	123-86-4	22.0%	22.0%	0.8199	50.74666667	0.025373333	N	--	--	Y	0.81991	0.025373
		Talc	14807-96-6	10.0%	10.0%	0.1304	8.073333333	0.004036667	N	--	--	N	--	--
		Carbon Black	1333-86-4	3.0%	3.0%	0.0391	2.422	0.001211	N	--	--	Y	0.039132	0.001211
									Subtotal:	0.43231596	0.01337867	Subtotal:	2.29761	0.071103

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (uncontrolled)

CA8800 |1073														
VOC (g/l)	337	Titanium Dioxide	13463-67-7	15-40%	40.0%	0.6798	42.07466667	0.021037333	N	--	--	N	--	--
Density (lbs/gal)	11.27	Heptan-2-one	110-43-0	10-30%	30.0%	1.4567	90.16	0.04508	N	--	--	Y	1.456707	0.04508
2014 Usage (gal/yr)	7	Polyester Resin[3]	NA	10-30%	30.0%	0.5098	31.556	0.015778	N	--	--	N	--	--
Projected Usasge (gal/yr)	16	Xylene	1330-20-7	1-5%	5.0%	0.2428	15.02666667	0.007513333	Y	0.24278457	0.00751333	Y	0.242785	0.007513
Percent of Total Use	0.86%	Silicon Dioxide	7631-86-9	0.5-1.5%	1.5%	0.0255	1.5778	0.0007889	N	--	--	Y	0.025492	0.000789
VOC emitted (ton/yr)	0.02187431	Ethylbenzene	100-41-4	0.1-1%	1.0%	0.0486	3.005333333	0.001502667	Y	0.04855691	0.00150267	Y	0.048557	0.001503
		Toluene	108-88-3	0.1-1%	1.0%	0.0486	3.005333333	0.001502667	Y	0.04855691	0.00150267	Y	0.048557	0.001503
									Subtotal:	0.3398984	0.01051867	Subtotal:	1.822098	0.056388
CA8800 |3017														
VOC (g/l)	347	Barium Sulfate	7727-43-7	10-30%	30.0%	0.4832	29.904	0.014952	N	--	--	N	--	--
Density (lbs/gal)	10.68	Heptan-2-one	110-43-0	10-30%	30.0%	1.3804	85.44	0.04272	N	--	--	Y	1.380447	0.04272
2014 Usage (gal/yr)	1	Polyester Resin[3]	NA	10-30%	30.0%	0.4832	29.904	0.014952	N	--	--	N	--	--
Projected Usasge (gal/yr)	2	Xylene	1330-20-7	1-5%	5.0%	0.2301	14.24	0.00712	Y	0.23007447	0.00712	Y	0.230074	0.00712
Percent of Total Use	0.12%	Pentan-2-one	104-87-9	1-5%	5.0%	0.2301	14.24	0.00712	N	--	--	N	--	--
VOC emitted (ton/yr)	0.003217629	Manganese Carbonate	598-62-9	0.1-1%	1.0%	0.0161	0.9968	0.0004984	N	--	--	N	--	--
		Ethylbenzene	100-41-4	0.1-1%	1.0%	0.0460	2.848	0.001424	Y	0.04601489	0.001424	Y	0.046015	0.001424
									Subtotal:	0.27608936	0.008544	Subtotal:	1.656536	0.051264
CA8800/B701 Base Component														
VOC (g/l)	336	Barium Sulfate	7727-43-7	15-40%	40.0%	0.6798	42.07466667	0.021037333	N	--	--	N	--	--
Density (lbs/gal)	11.27	Heptan-2-one	110-43-0	10-30%	30.0%	1.4567	90.16	0.04508	N	--	--	Y	1.456707	0.04508
2014 Usage (gal/yr)	3	Polyester Resin[3]	NA	7-13%	13.0%	0.2209	13.67426667	0.006837133	N	--	--	N	--	--
Projected Usasge (gal/yr)	7	Xylene	1330-20-7	1-5%	5.0%	0.2428	15.02666667	0.007513333	Y	0.24278457	0.00751333	Y	0.242785	0.007513
Percent of Total Use	0.37%	Carbon Black Respirable	1333-86-4	1-5%	5.0%	0.0850	5.259333333	0.002629667	N	--	--	Y	0.084975	0.00263
VOC emitted (ton/yr)	0.009346886	Pentan-2-one	107-87-9	0.5-1.5%	1.5%	0.0728	4.508	0.002254	N	--	--	N	--	--
		Ethylbenzene	100-41-4	0.1-1%	1.0%	0.0486	3.005333333	0.001502667	Y	0.04855691	0.00150267	Y	0.048557	0.001503
		Toluene	108-88-3	0.1-1%	1.0%	0.0486	3.005333333	0.001502667	Y	0.04855691	0.00150267	Y	0.048557	0.001503
									Subtotal:	0.3398984	0.01051867	Subtotal:	1.88158	0.058228
Polane Enamel Stucco, Sherman Williams														
VOC (g/l)	671	Titanium Dioxide	13463-67-7	29.0%	29.0%	0.4881	30.20872773	0.015104364	N	--	--	N	--	--
Density (lbs/gal)	11.16086	Cyclohexanone	108-94-1	22.3%	22.3%	1.0723	66.36991413	0.033184957	N	--	--	Y	1.072333	0.033185
2014 Usage (gal/yr)	3	n-Butyl Acetate	123-86-4	11.8%	11.8%	0.5674	35.11950613	0.017559753	N	--	--	Y	0.567423	0.01756
Projected Usasge (gal/yr)	7	Methyl Ethyl Ketone	78-93-3	3.9%	3.9%	0.1875	11.6072944	0.005803647	N	--	--	Y	0.187538	0.005804
Percent of Total Use	0.37%	Toluene	108-88-3	3.5%	3.5%	0.1683	10.41680267	0.005208401	Y	0.16830339	0.0052084	Y	0.168303	0.005208
VOC emitted (ton/yr)	0.018665955	Xylene	1330-20-7	2.0%	2.0%	0.0962	5.952458667	0.002976229	Y	0.09617337	0.00297623	Y	0.096173	0.002976
		Ethylbenzene	100-41-4	0.4%	0.4%	0.0192	1.190491733	0.000595246	Y	0.01923467	0.00059525	Y	0.019235	0.000595
									Subtotal:	0.28371144	0.00877988	Subtotal:	2.111005	0.065328
Tile Clad II, Gray Primer														
VOC (g/l)	378	Titanium Dioxide	13463-67-7	33.0%	33.0%	0.6225	38.5308	0.0192654	N	--	--	N	--	--
Density (lbs/gal)	12.51	Polyamide[3]	NA	18.0%	18.0%	0.3396	21.0168	0.0105084	N	--	--	N	--	--
2014 Usage (gal/yr)	4	Xylene	1330-20-7	13.0%	13.0%	0.7007	43.368	0.021684	Y	0.70069309	0.021684	Y	0.700693	0.021684
Projected Usasge (gal/yr)	9	1,2,4-Trimethylbenzene	95-63-6	3.0%	3.0%	0.1617	10.008	0.005004	N	--	--	N	--	--
Percent of Total Use	0.49%	2-Butoxyethanol	111-76-2	2.0%	2.0%	0.1078	6.672	0.003336	N	--	--	Y	0.107799	0.003336
VOC emitted (ton/yr)	0.014020329	Ethylbenzene	100-41-4	2.0%	2.0%	0.1078	6.672	0.003336	Y	0.10779894	0.003336	Y	0.107799	0.003336
		Light Aromatic Hydrocarbons	64742-95-6	2.0%	2.0%	0.1078	6.672	0.003336	N	--	--	N	--	--
									Subtotal:	0.80849202	0.02502	Subtotal:	0.916291	0.028356

Total VOC Emitted 3.978797033

Total 1.65691543 Total 6.512061

Notes

1. Based on 35 primary painting hours per week for 52 weeks per year, plus 5 assistant painting hours per month for 12 months per year.
2. Boiling point < 250 °C
3. "Polyeser Resin" and "Polyamide" are assumed to not be VOC for the purpose of emission rate.

Summary		PTE Per Paintbooth			Total PTE
					24-Hr Avg
Chemical	CAS#	(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)
1,2,4-Trimethylbenzene	95-63-6	10.008	0.005004	0.1616984	0.1347
2-Butoxyethanol	111-76-2	6.672	0.003336	0.1078	0.0898
4-methylpentan-2-one	108-10-1	1508.0000	0.754	1.8690	1.5575
Barium chromate	**10294-40-3**	**53.0320**	**0.026516**	**0.0304**	0.0254
Barium Sulfate	**7727-43-7**	**71.9787**	**0.03598933**	**1.1630**	0.9691
Butan-1-ol	71-36-3	368.3156	0.18415778	0.3244	0.2703
Butanone (Methyl Ethyl Ketone)	78-93-3	3305.1984	1.6525992	2.4451	2.0376
Carbon Black	**1333-86-4**	**32.4536**	**0.01622678**	**0.2202**	0.1835
Cristobalite	**14464-46-1**	**24.5000**	**0.01225**	**0.0950**	0.0792
Crystalline Silica	**14808-60-7**	**1155.4667**	**0.57773333**	**1.2610**	1.0509
Cyclohexanone	108-94-1	1373.1477	0.68657385	1.9543	1.6286
Ethylbenzene	100-41-4	250.3052	0.12515258	0.4028	0.3357
Fatty acids, dimers, polymers, etc.	119796-38-2	926.8000	0.4634	0.3744	0.3120
Formaldehyde	9003-36-5	122.5000	0.06125	0.4750	0.3958
Heptan-2-one	110-43-0	405.7600	0.20288	4.8367	4.0306
Light Aromatic Hydrocarbons	64742-95-6	6.6720	0.003336	0.1078	0.0898
Manganese Carbonate	**598-62-9**	**0.9968**	**0.0004984**	**0.0161**	0.0134
n-Butyl Acetate	123-86-4	3037.1995	1.51859975	3.0657	2.5548
Pentan-2-one	104-87-9	18.7480	0.009374	0.3029	0.2524
Polyester Resin	--	75.1343	0.03756713	1.2139	1.0116
Silicon Dioxide	**7631-86-9**	**1.5778**	**0.0008**	**0.0255**	0.0212
Strontium Chromate	**7789-06-2**	**1331.4000**	**0.6657**	**1.4791**	1.2326
Talc	**14807-96-6**	**486.8733**	**0.24343667**	**0.5946**	0.4955
Titanium Dioxide	**13463-67-7**	**66.5747**	**0.03328733**	**0.7748**	0.6457
Toluene	108-88-3	74.5741	0.03728707	0.5209	0.4340
Trimethoxysilane	2530-83-8	14.7000	0.00735	0.0570	0.0475
Xylene	1330-20-7	1480.9516	0.74047578	2.2301	1.8584
PM (2.5		3224.8535	1.6124	1.6150	1.3459

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (controlled)

	Production (Planes)	Painting Hours[1] daily	monthly	annual	Paint Use (gal/yr)	Rate (gal/hr)
2014	27	9.00	156.67	1880.00	810.00	0.43
Future Annual Estimation	60	20.00	348.15	4177.78	1800.00	0.43

Control Efficiency[2]	95%
Transfer Efficiency[3]	65%

Coating Information					Controlled PTE											
Product		Composition	CAS #	Max %	Emissions			VOC[4]			HAP			TAP		
					lbs/hr	lbs/year	tons/yr	Y/N	lb/hr	tons/yr	Y/N	lb/hr	tons/yr	Y/N	lb/hr	tons/yr
513X384 Primer																
VOC (g/l)	547	Fatty acids, dimers, polymers, etc.	119796-38-2	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	9.93	Butanone	78-93-3	25%	1.07	2648.00	1.32	Y	1.07	1.32	N	--	--	Y	1.07	1.32
2014 Usage (gal/yr)	480	N-Butyl Acetate	123-86-4	25%	1.07	2648.00	1.32	Y	1.07	1.32	N	--	--	Y	1.07	1.32
Projected Usage (gal/yr)	1066.7	Crystalline Silica	14808-60-7	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	Y	1.87E-02	2.32E-02
Percent of Total Use	59.26%	Strontium Chromate	7789-06-2	25%	1.87E-02	46.34	2.32E-02	N	--	--	N	--	--	N	--	--
VOC emitted (ton/yr)	2.43464134	Cyclohexanone	108-94-1	10%	0.43	1059.20	0.53	Y	0.43	0.53	N	--	--	Y	0.43	0.53
		Butan-1-ol	71-36-3	3%	0.13	317.76	0.16	Y	0.13	0.16	N	--	--	Y	0.13	0.16
		Barium chromate	10294-40-3	1%	7.49E-04	1.85	9.27E-04	N	--	--	N	--	--	N	--	--
								Subtotal:	2.70	3.34	Subtotal:	--	--	Subtotal:	2.71	3.36
513X419 Epoxy Primer																
VOC (g/l)	353	Strontium Chromate	7789-06-2	50%	4.75E-02	12.25	6.13E-03	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	12.6	Formaldehyde, oligormeric reaction produc	9003-36-5	25%	2.38E-02	6.13	3.06E-03	N	--	--	N	--	--	N	--	--
2014 Usage (gal/yr)	50	Crystalline Silica	14808-60-7	25%	2.38E-02	6.13	3.06E-03	N	--	--	N	--	--	Y	2.38E-02	3.06E-03
Projected Usage (gal/yr)	111.1	Heptan-2-one	110-43-0	10%	0.54	140.00	7.00E-02	Y	0.54	7.00E-02	N	--	--	Y	0.54	7.00E-02
Percent of Total Use	6.17%	4-methylpentan-2-one	108-10-1	10%	0.54	140.00	7.00E-02	Y	0.54	7.00E-02	Y	0.54	7.00E-02	Y	0.54	7.00E-02
VOC emitted (ton/yr)	0.16366324	Cristobalite	14464-46-1	5%	4.75E-03	1.23	6.13E-04	N	--	--	N	--	--	Y	4.75E-03	6.13E-04
		Titanium Dioxide	13463-67-7	5%	4.75E-03	1.23	6.13E-04	N	--	--	N	--	--	N	--	--
		Cyclohexanone	108-94-1	5%	0.27	70.00	3.50E-02	Y	0.27	3.50E-02	N	--	--	Y	0.27	3.50E-02
		Toluene	108-88-3	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	Y	0.16	2.10E-02	Y	0.16	2.10E-02
		Butanone	78-93-3	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	N	--	--	Y	0.16	2.10E-02
		Trimethoxysilane	2530-83-8	3%	0.16	42.00	2.10E-02	Y	0.16	2.10E-02	N	--	--	N	--	--
		Ethylbenzene	100-41-4	0.3%	1.63E-02	4.20	2.10E-03	Y	1.63E-02	2.10E-03	Y	1.63E-02	2.10E-03	Y	1.63E-02	2.10E-03
								Subtotal:	1.86	0.24	Subtotal:	0.72	9.31E-02	Subtotal:	1.73	0.22
823-011 Fuel Tank Primer																
VOC (g/l)	518	Talc	14807-96-6	30%	2.32E-02	23.94	1.20E-02	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	10.26	4-methylpentan-2-one	108-10-1	30%	1.33	1368.00	0.68	Y	1.33	0.68	Y	1.33	0.68	Y	1.33	0.68
2014 Usage (gal/yr)	200	Xylene	1330-20-7	30%	1.33	1368.00	0.68	Y	1.33	0.68	Y	1.33	0.68	Y	1.33	0.68
Projected Usage (gal/yr)	444.4	Strontium Chromate	7789-06-2	10%	7.74E-03	7.98	3.99E-03	N	--	--	N	--	--	N	--	--
Percent of Total Use	24.69%	Butanone	78-93-3	10%	0.44	456.00	0.23	Y	0.44	0.23	N	--	--	Y	0.44	0.23
VOC emitted (ton/yr)	0.9606522	Ethylbenzene	100-41-4	5%	0.22	228.00	0.11	Y	0.22	0.11	Y	0.22	0.11	Y	0.22	0.11
		Barium chromate	10294-40-3	1%	7.74E-04	0.80	3.99E-04	N	--	--	N	--	--	N	--	--
								Subtotal:	3.32	1.71	Subtotal:	2.87	1.48	Subtotal:	3.32	1.71
528X310 Base Component																
VOC (g/l)	611	N-Butyl Acetate	123-86-4	30%	1.18	303.33	0.15	Y	1.18	0.15	N	--	--	Y	1.18	0.15
Density (lbs/gal)	9.1	Crystalline Silica	14808-60-7	30%	2.06E-02	5.31	2.65E-03	N	--	--	N	--	--	Y	2.06E-02	2.65E-03
2014 Usage (gal/yr)	50	Butanone	78-93-3	13%	0.51	131.44	6.57E-02	Y	0.51	6.57E-02	N	--	--	Y	0.51	6.57E-02
Projected Usage (gal/yr)	111.1	Cyclohexanone	108-94-1	13%	0.51	131.44	6.57E-02	Y	0.51	6.57E-02	N	--	--	Y	0.51	6.57E-02
Percent of Total Use	6.17%	Carbon Black	1333-86-4	7%	4.80E-03	1.24	6.19E-04	N	--	--	N	--	--	Y	4.80E-03	6.19E-04
VOC emitted (ton/yr)	0.28328113	Butan-1-ol	71-36-3	5%	0.20	50.56	2.53E-02	Y	0.20	2.53E-02	N	--	--	Y	0.20	2.53E-02
		Xylene	1330-20-7	1%	3.92E-02	10.11	5.06E-03	Y	3.92E-02	5.06E-03	Y	3.92E-02	5.06E-03	Y	3.92E-02	5.06E-03
								Subtotal:	2.43	0.31	Subtotal:	3.92E-02	5.06E-03	Subtotal:	2.46	0.32
Williams																
VOC (g/l)	624	Toluene	108-88-3	7%	0.26	16.15	8.07E-03	Y	0.26	8.07E-03	Y	0.26	8.07E-03	Y	0.26	8.07E-03
Density (lbs/gal)	8.65	Ethylbenzene	100-41-4	0.6%	2.24E-02	1.38	6.92E-04	Y	2.24E-02	6.92E-04	Y	2.24E-02	6.92E-04	Y	2.24E-02	6.92E-04
2014 Usage (gal/yr)	12	Xylene	1330-20-7	4%	0.15	9.23	4.61E-03	Y	0.15	4.61E-03	Y	0.15	4.61E-03	Y	0.15	4.61E-03
Projected Usage (gal/yr)	26.7	Methyl Ethyl Ketone	78-93-3	7%	0.26	16.15	8.07E-03	Y	0.26	8.07E-03	N	--	--	Y	0.26	8.07E-03
Percent of Total Use	1.48%	Cyclohexanone	108-94-1	20%	0.75	46.13	2.31E-02	Y	0.75	2.31E-02	N	--	--	Y	0.75	2.31E-02
VOC emitted (ton/yr)	0.06943401	N-Butyl Acetate	123-86-4	22%	0.82	50.75	2.54E-02	Y	0.82	2.54E-02	N	--	--	Y	0.82	2.54E-02
		Talc	14807-96-6	10%	6.52E-03	0.40	2.02E-04	N	--	--	N	--	--	N	--	--
		Carbon Black	1333-86-4	3%	1.96E-03	0.12	6.06E-05	N	--	--	N	--	--	Y	1.96E-03	6.06E-05
								Subtotal:	2.26	6.99E-02	Subtotal:	0.43	1.34E-02	Subtotal:	2.26	7.00E-02

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations (controlled)

		Composition	CAS #	Max %	Emissions lbs/hr	Emissions lbs/year	Emissions tons/yr	VOC[4] Y/N	VOC[4] lb/hr	VOC[4] tons/yr	HAP Y/N	HAP lb/hr	HAP tons/yr	TAP Y/N	TAP lb/hr	TAP tons/yr
CA8800 |1073																
VOC (g/l)	337	Titanium Dioxide	13463-67-7	40%	3.40E-02	2.10	1.05E-03	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	11.27	Heptan-2-one	110-43-0	30%	1.46	90.16	4.51E-02	Y	1.46	4.51E-02	N	--	--	Y	1.46	4.51E-02
2014 Usage (gal/yr)	7	Polyester Resin[5]	NA	30%	1.46	90.16	4.51E-02	Y	1.46	4.51E-02	N	--	--	N	--	--
Projected Usage (gal/yr)	15.5555556	Xylene	1330-20-7	5%	0.24	15.03	7.51E-03	Y	0.24	7.51E-03	Y	0.24	7.51E-03	Y	0.24	7.51E-03
Percent of Total Use	0.86%	Silicon Dioxide	7631-86-9	1.5%	1.27E-03	7.89E-02	3.94E-05	N	--	--	N	--	--	N	--	--
VOC emitted (ton/yr)	0.02187431	Ethylbenzene	100-41-4	1%	4.86E-02	3.01	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03
		Toluene	108-88-3	1%	4.86E-02	3.01	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03
								Subtotal:	3.25	0.10	Subtotal:	0.34	1.05E-02	Subtotal:	1.80	5.56E-02
CA8800 |3017																
VOC (g/l)	347	Barium Sulfate	7727-43-7	30%	2.42E-02	1.50	7.48E-04	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	10.68	Heptan-2-one	110-43-0	30%	1.38	85.44	4.27E-02	Y	1.38	4.27E-02	N	--	--	Y	1.38	4.27E-02
2014 Usage (gal/yr)	1	Polyester Resin[5]	NA	30%	1.38	85.44	4.27E-02	Y	1.38	4.27E-02	N	--	--	N	--	--
Projected Usage (gal/yr)	2.22222222	Xylene	1330-20-7	5%	0.23	14.24	7.12E-03	Y	0.23	7.12E-03	Y	0.23	7.12E-03	Y	0.23	7.12E-03
Percent of Total Use	0.12%	Pentan-2-one	107-87-9	5%	0.23	14.24	7.12E-03	Y	0.23	7.12E-03	N	--	--	Y	0.23	7.12E-03
VOC emitted (ton/yr)	0.00321763	Manganese Carbonate	598-62-9	1%	8.05E-04	4.98E-02	2.49E-05	N	--	--	N	--	--	N	--	--
		Ethylbenzene	100-41-4	1%	4.60E-02	2.85	1.42E-03	Y	4.60E-02	1.42E-03	Y	4.60E-02	1.42E-03	Y	4.60E-02	1.42E-03
								Subtotal:	3.27	0.10	Subtotal:	0.28	8.54E-03	Subtotal:	1.89	5.84E-02
CA8800/B701 Base Component																
VOC (g/l)	336	Barium Sulfate	7727-43-7	40%	3.40E-02	2.10	1.05E-03	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	11.27	Heptan-2-one	110-43-0	30%	1.46	90.16	4.51E-02	Y	1.46	4.51E-02	N	--	--	Y	1.46	4.51E-02
2014 Usage (gal/yr)	3	Polyester Resin[5]	NA	13%	0.63	39.07	1.95E-02	Y	0.63	1.95E-02	N	--	--	N	--	--
Projected Usage (gal/yr)	6.66666667	Xylene	1330-20-7	5%	0.24	15.03	7.51E-03	Y	0.24	7.51E-03	Y	0.24	7.51E-03	Y	0.24	7.51E-03
Percent of Total Use	0.37%	Carbon Black Respirable	1333-86-4	5%	4.25E-03	0.26	1.31E-04	N	--	--	N	--	--	Y	4.25E-03	1.31E-04
VOC emitted (ton/yr)	0.00934689	Pentan-2-one	107-87-9	1.5%	7.28E-02	4.51	2.25E-03	Y	7.28E-02	2.25E-03	N	--	--	Y	7.28E-02	2.25E-03
		Ethylbenzene	100-41-4	1%	4.86E-02	3.01	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03
		Toluene	108-88-3	1%	4.86E-02	3.01	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03	Y	4.86E-02	1.50E-03
								Subtotal:	2.50	7.74E-02	Subtotal:	0.34	1.05E-02	Subtotal:	1.87	5.80E-02
Polane Enamel Stucco, Sherman Williams																
VOC (g/l)	671	Titanium Dioxide	13463-67-7	29.0%	2.44E-02	1.51	7.55E-04	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	11.16086	Cyclohexanone	108-94-1	22.3%	1.07	66.37	3.32E-02	Y	1.07	3.32E-02	N	--	--	Y	1.07	3.32E-02
2014 Usage (gal/yr)	3	n-Butyl Acetate	123-86-4	11.8%	0.57	35.12	1.76E-02	Y	0.57	1.76E-02	N	--	--	Y	0.57	1.76E-02
Projected Usage (gal/yr)	6.66666667	Methyl Ethyl Ketone	78-93-3	3.9%	0.19	11.61	5.80E-03	Y	0.19	5.80E-03	N	--	--	Y	0.19	5.80E-03
Percent of Total Use	0.37%	Toluene	108-88-3	3.5%	0.17	10.42	5.21E-03	Y	0.17	5.21E-03	Y	0.17	5.21E-03	Y	0.17	5.21E-03
VOC emitted (ton/yr)	0.01866595	Xylene	1330-20-7	2.0%	9.62E-02	5.95	2.98E-03	Y	9.62E-02	2.98E-03	Y	9.62E-02	2.98E-03	Y	9.62E-02	2.98E-03
		Ethylbenzene	100-41-4	0.4%	1.92E-02	1.19	5.95E-04	Y	1.92E-02	5.95E-04	Y	1.92E-02	5.95E-04	Y	1.92E-02	5.95E-04
								Subtotal:	2.11	6.53E-02	Subtotal:	0.28	8.78E-03	Subtotal:	2.11	6.53E-02
Tile Clad II, Gray Primer																
VOC (g/l)	378	Titanium Dioxide	13463-67-7	33.0%	3.11E-02	1.93	9.63E-04	N	--	--	N	--	--	N	--	--
Density (lbs/gal)	12.51	Polyamide[5]	NA	18.0%	1.70E-02	1.05	5.25E-04	N	--	--	N	--	--	N	--	--
2014 Usage (gal/yr)	4	Xylene	1330-20-7	13.0%	0.70	43.37	2.17E-02	Y	0.70	2.17E-02	Y	0.70	2.17E-02	Y	0.70	2.17E-02
Projected Usage (gal/yr)	8.88888889	1,2,4-Trimethylbenzene	95-63-6	3.0%	0.16	10.01	5.00E-03	Y	0.16	5.00E-03	N	--	--	N	--	--
Percent of Total Use	0.49%	2-Butoxyethanol	111-76-2	2.0%	0.11	6.67	3.34E-03	Y	0.11	3.34E-03	N	--	--	Y	0.11	3.34E-03
VOC emitted (ton/yr)	0.01402033	Ethylbenzene	100-41-4	2.0%	0.11	6.67	3.34E-03	Y	0.11	3.34E-03	Y	0.11	3.34E-03	Y	0.11	3.34E-03
		Light Aromatic Hydrocarbons	64742-95-6	2.0%	0.11	6.67	3.34E-03	Y	0.11	3.34E-03	N	--	--	N	--	--
								Subtotal:	1.19	3.67E-02	Subtotal:	0.81	2.50E-02	Subtotal:	0.92	2.84E-02
	3.97879703								Total	6.05		Total	1.66		Total	5.94

Notes

1. Based on average 261 business days a year, 21.75 business days a month
2. % Control per vendor data. See Appendix B: Emission Control Device Descriptions and Specifications
3. Transfer efficiency per vendor documentation. See Appendix C: Spray Gun Vendor Documents
4. Boiling point < 250 °C
5. "Polyester Resin" and "Polyamide" are assumed to not be VOC for the purpose of emission rate.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Coating Information and Emissions Calculations

Toxic and Hazardous Air Pollutant Summary

Summary		PTE				Compliance	
		Total			24-Hr Avg	EL	Exceed?
Chemical	CAS#	(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)	(lb/hr)	(y/n)
1,2,4-Trimethylbenzene	95-63-6	10.01	5.00E-03	0.16	0.13	--	--
2-Butoxyethanol	111-76-2	6.67	3.34E-03	0.11	8.98E-02	8.0	no
4-methylpentan-2-one	108-10-1	1508.00	0.75	1.33	1.11	13.7	no
Barium chromate	10294-40-3	2.65	1.33E-03	7.74E-04	6.45E-04	--	--
Barium Sulfate	7727-43-7	3.60	1.80E-03	3.40E-02	2.83E-02	--	--
Butan-1-ol	71-36-3	368.32	0.18	0.20	0.16	10.0	no
Butanone (Methyl Ethyl Ketone)	78-93-3	3305.20	1.65	1.07	0.89	39.3	no
Carbon Black	1333-86-4	1.62	8.11E-04	4.80E-03	4.00E-03	0.2	no
Cristobalite	14464-46-1	1.23	6.13E-04	4.75E-03	3.96E-03	0.0033	yes
Crystalline Silica	14808-60-7	57.77	2.89E-02	2.38E-02	1.98E-02	0.0067	yes
Cyclohexanone	108-94-1	1373.15	0.69	1.07	0.89	6.7	no
Ethylbenzene	100-41-4	250.31	0.13	0.22	0.18	29.0	no
Fatty acids, dimers, polymers, etc.	119796-38-2	46.34	2.32E-02	1.87E-02	1.56E-02	--	--
Formaldehyde	9003-36-5	6.13	3.06E-03	2.38E-02	1.98E-02	--	--
Heptan-2-one	110-43-0	405.76	0.20	1.46	1.21	15.7	no
Light Aromatic Hydrocarbons	64742-95-6	6.67	3.34E-03	0.11	8.98E-02	--	--
Manganese Carbonate	598-62-9	4.98E-02	2.49E-05	8.05E-04	6.71E-04	--	--
n-Butyl Acetate	123-86-4	3037.20	1.52	1.18	0.98	47.3	no
Pentan-2-one	107-87-9	18.75	9.37E-03	0.23	0.19	46.7	no
Polyester Resin	--	214.67	0.11	1.46	1.21	--	no
Silicon Dioxide	7631-86-9	7.89E-02	3.94E-05	1.27E-03	1.06E-03	--	--
Strontium Chromate	7789-06-2	66.57	3.33E-02	4.75E-02	3.96E-02	--	--
Talc	14807-96-6	24.34	1.22E-02	2.32E-02	1.93E-02	--	--
Titanium Dioxide	13463-67-7	3.33	1.66E-03	3.40E-02	2.83E-02	--	--
Toluene	108-88-3	74.57	3.73E-02	0.26	0.22	25.0	no
Trimethoxysilane	2530-83-8	42.00	2.10E-02	0.16	0.14	--	--
Xylene	1330-20-7	1480.95	0.74	1.33	1.11	29.0	no
		Total			24-Hr Avg		
		(lbs/yr)	(tons/yr)	(lb/hr)	(lb/hr)		
PM (2.5 µm & 10 µm)		157.9139	0.078957	0.05	0.03958444		

Note: Solid pollutants in **bold**.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Radiant Heat Boilers

Operating Hours: 8760
NG LHV: 950 Btu/ft^3

Building	Make	Model	Serial	Year	Energy (MMBtu/hr)	Fuel Use (ft^3/yr)
Manufacturing	Viessmann	VSB-28	7223357400104	2004	1.000	9.22E+06
	Fonderie Sime	RS-8	7133837-00046	2001	0.550	5.07E+06
Customer Service	Munchkin	199M	H30J0636	2003	0.199	1.83E+06
	Munchikn	199M	H30J0637	2003	0.199	1.83E+06
Engineering	Gordan Ray	BH-150	0311-071-150-0049	2003	0.150	1.38E+06

Annual Max Fuel Use: 19.34576842 MMscf

Criteria Pollutant	Emission Factor (lb/MMscf)	Max. Annual Emmissions (lb/yr)	(ton/yr)
PM	7.6	147.0	0.1
VOC	5.5	106.4	0.1
CO	84	1625.0	0.8
Nox	100	1934.6	1.0
SO_2	0.6	11.6	0.0
Lead	0.0005	0.0	0.0
HAP	--	36.5	0.0

Note: Emission Factors per AP-42 Table 1.4-2, July 1998. Total PM is considered less than 1.0µm in diameter.

Toxic and Hazardous Air Pollutants				
CAS#	Air Pollutant	EF (lb/MMscf)	HAP	Emissions (lb/hr)
Organics				
56-49-5	3-Methylchloranthrene	< 1.80E-06	Yes	3.98E-09
71-43-2	Benzene	2.10E-03	Yes	4.64E-06
50-00-0	Formaldehyde	0.075	Yes	1.66E-04
110-54-3	Hexane	1.8	Yes	3.98E-03
91-20-3	Naphthalene	6.10E-04	Yes	1.35E-06
109-66-0	Pentane	2.6	No	5.74E-03
108-88-3	Toluene	3.40E-03	Yes	7.51E-06
Polycyclic Aromatic Hydrocarbons				
120–12–7	Anthracene	< 2.40E-06	Yes	5.30E-09
56–55–3	**Benz[a]anthracene**	< 1.80E-06	Yes	3.98E-09
50–32–8	**Benzo[a]pyrene**	< 1.20E-06	Yes	2.65E-09
205–99–2	Benz[e]acephenanthrylene	< 1.80E-06	Yes	3.98E-09
191–24–2	Benzo[ghi]perylene	< 1.20E-06	Yes	2.65E-09
207–08–9	**Benzo[k]fluoranthene**	< 1.80E-06	Yes	3.98E-09
218–01–9	**Chrysene**	< 1.80E-06	Yes	3.98E-09
206–44–0	Fluoranthene	3.00E-06	Yes	6.63E-09
86–73–7	9H-Fluorene	2.80E-06	Yes	6.18E-09
193–39–5	**Indeno[1,2,3-cd]pyrene**	< 1.80E-06	Yes	3.98E-09
91–20–3	Naphthalene	6.10E-04	Yes	1.35E-06
85–01–8	Phenanthrene	1.70E-05	Yes	3.75E-08
129–00–0	Pyrene	5.00E-06	Yes	1.10E-08
Metals				
7440-38-2	Arsenic	2.00E-04	No	4.42E-07
7440-39-3	Barium	4.40E-03	No	9.72E-06
7440-41-7	Beryllium	1.20E-05	No	2.65E-08
7440-43-9	Cadmium	1.10E-03	No	2.43E-06
7440-47-3	Chromium	1.40E-03	No	3.09E-06
7440-48-4	Cobalt	8.40E-05	No	1.86E-07
7440-50-8	Copper	8.50E-04	Yes	1.88E-06
7439-96-5	Manganese	3.80E-04	No	8.39E-07
7439-97-6	Mercury	2.60E-04	Yes	5.74E-07
7439-98-7	Molybdenum	1.10E-03	No	2.43E-06
7440-02-0	Nickel	2.10E-03	Yes	4.64E-06
7782-49-2	Selenium	< 2.40E-05	Yes	5.30E-08
7440-66-6	Zinc	0.029	No	6.40E-05

Note: Emission Factors from AP-42 Table 1.4-3 and Table 1.4-4, July 1998.

QUEST AIRCRAFT CO. PAINT BOOTH CHEMICAL USAGE & EMISSION INVENTORY: Modeling Results

Modeled at 1g/s per stack.

PTE Rates	Total	Per Stack
PM (24 hr)	0.04 lb/hr 0.005 g/s	0.010 lb/hr 0.001 g/s
PM (Annual)	0.02 lb/hr 0.002 g/s	0.005 lb/hr 0.0006 g/s
Crys. Silica	0.02 lb/hr 0.002 g/s	0.005 lb/hr 0.0006 g/s
Cristobalite	0.004 lb/hr 0.0005 g/s	0.0010 lb/hr 0.0001 g/s
Formaldehyde	0.0015 lb/hr 0.00018 g/s	0.0004 lb/hr 0.00005 g/s

NAAQS Impact Analysis Summary

Pollutant	**Averging Period**	**AERMOD result @ 1g/s per stack (ug/m^3)**	**Total Ambient Impact (ug/m^3)**	**Background Concentration (ug/m^3)**	**Total NAAQS Concentration (ug/m^3)**	**NAAQS (ug/m^3)**
PM_{10}	24-hour	2164.6	2.7	87	90	150
$PM_{2.5}$	Annual	752.4	0.4	4.95	5	12
$PM_{2.5}$	24-hour	2066.8	2.6	18.8	21	35

Pollutant	**AERMOD result @ 1g/s per stack (ug/m^3)**	**Total Ambient Impact**		**AACC (ug/m^3)**	**AAC (mg/m^3)**
Crys. Silica	2470.0	0.0015	**(mg/m^3)**	--	0.005
Cristobalite	2470.0	0.0024	**(mg/m^3)**	--	0.0025
Formaldehyde	752.4	0.035	**(ug/m^3)**	0.077	--

Attachment B
Modeling Protocol and DEQ's Conditional Protocol Approval Notice

AIR QUALITY MODELING PROTOCOL
Quest Aircraft Company

Quest Aircraft Company (Quest) is a backcountry aircraft manufacturer located at 1200 Turbine Drive in Sandpoint, Idaho near the Sandpoint airport. Quest was founded in May 2001 and began working at the 27,000 square foot Sandpoint facility in October 2002. Quest used the next two years developing a prototype aircraft which first took flight in October 2004. Since then Quest has expanded the facility to 84,000 square feet and a maximum production of 60 planes per year.

Quest operates a paint booth as part of their manufacturing process, which is a source of toxic air pollutant and VOC emissions, and is planning to install a second booth in 2016. Quest has previously operated without a permit to construct (PTC) but is now applying for a PTC due to concerns regarding potential emissions of crystalline silica from paint booth operations following an IDEQ inspection of the facility in 2015. Quest is estimated to emit crystalline silica and cristobalite in excess of the Emissions Screening Levels[1] (EL) and particulate in excess of Level I Thresholds[2], therefore modeling is required to determine compliance.

1. **Purpose:** To determine the off-site impact of cristobalite, crystalline silica, and particulate emissions attributed to the Quest paint booth in order to obtain a Permit to Construct.

2. **Applicable Regulations and Requirements:** Toxic air pollutant emissions are limited by impact as defined in IDAPA 58.01.01.585 and particulate emissions are limited by impact as defined in 40 CFR 50.6 and 50.7.

3. **Model Description:** EPA provides guidance on applicability of specific air quality dispersion models in the review and preparation of new source permits and State Implementation Plans (SIP) revisions. EPA's Guideline of Air Quality Models is documented in Subpart W of 40 CFR Part 51. In accordance with this Guidance, the first approach was to determine whether a conservative estimate using a screening model would be acceptable based on site specific parameters. This facility has two paint booths which each have two exhaust points and five boilers. AERMOD is selected for the modeling due to the number and complexity of source points.

4. **Facility Layout:** The paint booths are located inside a larger manufacturing building. Refer to the site plan included at the end of this protocol.

5. **Emissions Data:** The primary source of air pollutants is the paint booth. The paint booth emissions are filtered before exhausting from the facility. The height of the discharge point as currently installed will be evaluated and adjusted as necessary up to the Good Engineering Practice stack height. The facility boilers also contribute to air pollutant emissions. Particulate will be modeled from paint booth exhaust sources and boiler exhaust sources. All particulate is assumed to have a diameter less than 2.5 microns.

[1] Defined in IDAPA 58.01.01.585.
[2] Idaho Department of Environmental Quality, *State of Idaho Guideline for Performing Air Quality Impact Analyses* Table 2, (2013).

TAP (non-voc) pollutant (ton/yr) = annual coating usage (gal) * coating density (lbs/gal) * Max. % of TAP in coating * (1 – Transfer Eff.) * (1-Filter Eff.) ÷ 2000 lb/ton

PM (ton/yr) = [annual coating usage (gal) * coating density (lbs/gal) * Σ Max.% of particulate ingredients * (1-Transfer Eff.) * (1-Filter Eff.) ÷ 2000 (lb/ton)] + [Σ Boiler Energy Input (MMBtu/hr) * 8760 (hrs/yr) ÷ Nat. Gas LHV (Btu/ft^3) * PM EF (lb/MMscf) * 2000 (lb/ton)]

The worst case emission rates for crystalline silica, cristobalite, and particulate matter based on the provided paint Safety Data Sheets, the proposed operating schedule and the proposed production limits, are:

- 0.00079 g/s crystalline silica
- 0.0024 g/s cristobalite
- 0.047 g/s PM (24-hr avg.)
- 0.013 g/s PM (annual avg.)

A summary of criteria and toxic air pollutant emissions can be found in Table 1 and Table 2. These tables illustrate that a permit to construct is necessary due to PM, VOC, and several toxic air pollutants, and that modeling is necessary for PM, cristobalite, and crystalline silica.

Table 1: Criteria Pollutant Emissions Summary

	Criteria Pollutants											
	PM*		CO		NO_X		SO_2		Pb		VOCs*	
Source	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/mon	ton/yr	lb/hr	ton/yr
Uncontrolled Emissions												
Paint Booth	7.7	1.6	--	--	--	--	--	--	--	--	6.4	4.0
Boiler	0.0	0.1	0.2	0.8	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	3.9	1.6	0.2	0.8	0.22	1.0	0.0	0.0	0.0	0.0	6.4	4.03
Permitting Threshold:												
BRC	0.23	1	2.28	10	0.91	4	0.91	4	--	0.6	--	4.0
Exceed?	**yes**	**yes**	no	no	no	no	no	no	--	no	--	**yes**
Controlled Emissions												
Paint Booth	0.4	0.1	--	--	--	--	--	--	--	--	6.4	4.0
Boiler	0.0	0.1	0.2	0.8	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	0.2	0.2	0.2	0.8	0.22	1.0	0.0	0.0	0.0	0.0	6.4	4.03
Modeling Thresholds:												
Tier I	0.054	0.35	--	--	--	--	--	--	--	--	--	--
Tier II	0.63	4.1	--	--	--	--	--	--	--	--	--	--
Exceed?	**Yes (Tier I)**	No	--	--	--	--	--	--	--	--	--	--

* It is assumed that Total PM = PM_{10} = $PM_{2.5}$. Thresholds correspond to $PM_{2.5}$.

Table 2: Toxic Air Pollutant Emissions Summary

CAS#	Chemical	Uncontrolled Emissions	Controlled Emissions	EL	BRC Exceedance	EL Exceedance
111-76-2	2-Butoxyethanol	1.25E-01	1.43E-01	8.00E+00	no	--
56-49-5	3-Methylchloranthrene	3.98E-09	3.98E-09	2.50E-06	no	--
108-10-1	4-methylpentan-2-one	3.13E+00	2.86E+00	1.37E+01	yes	no
56–55–3	7-PAH	3.98E-09	1.86E-08	2.00E-06	no	--
86–73–7	9H-Fluorene	6.18E-09	6.18E-09	9.10E-05	no	--
120–12–7	Anthracene	5.30E-09	5.30E-09	9.10E-05	no	--
7440-38-2	Arsenic	4.42E-07	4.42E-07	6.00E-06	no	--
7440-39-3	Barium	9.72E-06	9.72E-06	3.30E-02	no	--
205–99–2	Benz[e]acephenanthrylene	3.98E-09	3.98E-09	2.00E-06	no	--
71-43-2	Benzene	4.64E-06	4.64E-06	8.00E-04	no	--
50–32–8	Benzo[a]pyrene	2.65E-09	2.65E-09	2.00E-06	no	--
191–24–2	Benzo[ghi]perylene	2.65E-09	2.65E-09	9.10E-05	no	--
7440-41-7	Beryllium	2.65E-08	2.65E-08	2.80E-05	no	--
71-36-3	Butan-1-ol	5.43E-01	5.73E-01	1.00E+01	no	--
78-93-3	Butanone (Methyl Ethyl Ketone)	4.09E+00	4.15E+00	3.93E+01	yes	no
7440-43-9	Cadmium	2.43E-06	2.43E-06	3.70E-06	yes	no
1333-86-4	Carbon Black	3.35E-01	1.88E-02	2.30E-01	yes	no
7440-47-3	Chromium	3.09E-06	3.09E-06	3.30E-02	no	--
7440-48-4	Cobalt	1.86E-07	1.86E-07	7.00E-03	no	--
7440-50-8	Copper	1.88E-06	1.88E-06	1.30E-02	no	--
14464-46-1	Cristobalite	1.59E-01	6.27E-03	3.30E-03	yes	**yes**
14808-60-7	Crystalline Silica	2.11E+00	1.00E-01	6.70E-03	yes	**yes**
108-94-1	Cyclohexanone	3.27E+00	3.44E+00	6.67E+00	yes	no
100-41-4	Ethylbenzene	6.22E-01	6.37E-01	2.90E+01	no	--
206–44–0	Fluoranthene	6.63E-09	6.63E-09	9.10E-05	no	--
50-00-0	Formaldehyde	7.95E-01	1.66E-04	5.10E-04	yes	no
110-43-0	Heptan-2-one	6.52E+00	7.16E+00	1.57E+01	yes	no
110-54-3	Hexane	3.98E-03	3.98E-03	1.20E+01	no	--
7439-96-5	Manganese	8.39E-07	8.39E-07	6.70E-02	no	--
7439-98-7	Molybdenum	2.43E-06	2.43E-06	3.33E-01	no	--
91-20-3	Naphthalene	1.35E-06	1.35E-06	3.33E+00	no	--
123-86-4	n-Butyl Acetate	5.13E+00	5.51E+00	4.73E+01	yes	no
7440-02-0	Nickel	4.64E-06	4.64E-06	2.70E-05	yes	no
107-87-9	Pentan-2-one	4.05E-01	4.65E-01	4.67E+01	no	--
109-66-0	Pentane	5.74E-03	5.74E-03	1.18E+02	no	--
85–01–8	Phenanthrene	3.75E-08	3.75E-08	9.10E-05	no	--
129–00–0	Pyrene	1.10E-08	1.10E-08	9.10E-05	no	--
7782-49-2	Selenium	5.30E-08	5.30E-08	1.30E-02	no	--
108-88-3	Toluene	8.34E-01	8.59E-01	2.50E+01	no	--
1330-20-7	Xylene	3.47E+00	3.58E+00	2.90E+01	yes	no
7440-66-6	Zinc	6.40E-05	6.40E-05	6.67E-01	no	--

6. **Stack Parameters:**

Table 3: AERSCREEN Stack Parameters

	East Paint Booth Stacks 1 & 2		West Paint Booth Stacks 1 & 2	
Source Type	Point		Point	
Stack Orientation	Vertical		Vertical	
Rain Cap?	No		No	
Stack Height	25 ft	7.6 m	25 ft	7.6 m
Stack Diameter	30"	0.76 m	34"	0.86 m
Stack Area	4.91 ft^2	0.45 m^2	4.88 ft^2	0.45 m^2
Stack Flowrate	18,936 acfm	536.21 m^3/min	11,046 acfm	312.79 m^3/min
Stack Velocity	64.29 fps	19.60 mps	29.20 fps	8.90 mps
Stack Temperature	Ambient	293.15 K	Ambient	293.15 K
Distance to Property Boundary	40 ft	12.2 m	40 ft	12.2 m

7. **Receptor Network:** AERMAP will be used to develop a receptor grid with elevated receptors to account for the varied terrain in the surrounding area. The receptor grid will sufficiently narrow to provide an appropriate representation of dispersion characteristics, with 10 meter spacing for the first 100 meters, then 25 meter increments to 3,000 meters, then 100 meter increments to 10,000 meters, then 500 meter increments to 30,000 meters, and then 1,000 meter increments to 50,000 meters.

   The ambient air boundary is the plant boundary. The plot plan showing the plant boundary will be used for the ambient air boundary. We base this conclusion on:
   - The area is general industrial and away from the proximity of human habitation or activities; and
   - The general public is not invited onto the plant site as a normal part of the business operation.

8. **Elevation Data:** The terrain immediately surrounding the source is mostly flat for the first kilometer in all directions except to the northwest of the plant where the elevation gently rises for about 650 meters and then increases beyond that. The wider terrain is varied with a large lake to the east and south, a large peak to the northwest, and otherwise a mix of hilly and relatively flat terrain within a 3 kilometer radius of the source. Beyond that, the terrain is mostly mountainous.

9. **Meteorological Data:** Five-year meteorological data (2008 to 2012) for Sandpoint Airport, which has been previously provided by Idaho DEQ in 2013, will be used for modeling.

10. **Land Use Classification:** Some of the immediate area is developed including some multi-family residential, commercial, and industrial land-uses (I1, I2, C1,R2,R3 land uses), but more than 50% of the surrounding area within a 3-km radius of the site is other than industrial,

commercial, or multi-family residential. Therefore the land-use classification as Rural in accordance with EPA[1] and Idaho DEQ[2] guidelines.

11. **Background Concentrations:** Background concentrations are not defined for cristobalite and crystalline silica. Particulate matter background concentrations for this location were provided by Kevin Schilling of Idaho DEQ:

    PM_{10}: 87 μg/m^3 (annual 3rd high value)
    $PM_{2.5}$: 18.8 μg/m^3 (24-hr)
    4.95 μg/m^3 (annual)

12. **Evaluation of Compliance with Standards:**

    A) PTC Required—Quest uncontrolled potential emissions will exceed BRC levels and category I and II exemption thresholds for particulate matter, VOC, crystalline silica, and cristobalite. Therefore a permit to construct is required.

    B) Major Source Threshold –If the potential emissions of VOC or any other criteria pollutant do not exceed the "Significant Emissions Rate" (State of Idaho – Air Quality Modeling Guideline, Table 6) then this facility will not be classified as a major source under PSD. Quest is not expected to exceed the "Significant Emissions Rate" for VOC or any other criteria pollutant.

    C) Modeling Threshold – Quest is estimated to exceed the Emissions Screening Levels (IDAPA 58.01.01.585) for crystalline silica and cristobalite and the Level I Threshold for particulate matter. All other pollutants are calculated below modeling thresholds. Modeling will be required for crystalline silica, cristobalite, and particulate matter.

    D) Preliminary Analysis – The modeling will be conducted as described above and compared to the "Acceptable Ambient Concentration" (IDAPA 58.01.01.585) to demonstrate compliance.

This Air Quality Monitoring Protocol was prepared by Beth Fifield Hodgson, P.E. of Spring Environmental, Inc.
Spring Environmental Inc.
1011 N. Cedar Street
Spokane, WA 99201-1914
Tel: (509) 328-7500
Fax: (509) 328-7501

[1] 40 C.F.R. §51 Appendix W, Section 7.2.3
[2] Idaho Department of Environmental Quality, *State of Idaho Guideline for Performing Air Quality Impact Analyses* p. 48 (2013).

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 NORTH HILTON, BOISE, ID 83706 · (208) 373-0502

C. L. "BUTCH" OTTER, GOVERNOR

JOHN TIPPETS, DIRECTOR

June 28, 2016

Beth Hodgson
Spring Environmental on behalf of Quest Aircraft Company (Quest), of Sandpoint, Sandpont County, Idaho

Re: Modeling Protocol for the Quest Aircraft Company

Dear Beth:

DEQ received your dispersion modeling protocol via email on June 9, 2016 on behalf of Quest Aircraft Company (Quest), located in Sandpoint, Idaho. The modeling protocol was submitted by Beth Hodgson of Spring Environmental (SE). The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct (PTC) application for a new facility. The analyses are needed to demonstrate compliance with ambient air quality standards for the proposed facility. DEQ has the following comments:

- Comment 1: Documentation and justification of release parameters must be provided in the application. Refer to Section 3.4.3 of the *State of Idaho Guideline for Performing Air Quality Impact Analyses*, September 2013(http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf). Simply stating that values are "manufacturer data" does not constitute adequate documentation and/or justification. DEQ requests that the application describe how the values were obtained (measurement, similar source, combustion evaluation, fan curves, etc.). If values were obtained from an equipment/engineering firm, then those forms, specification sheets, etc. provided by the firm should be included in the application as documentation for the values used in the modeling analyses. The application should be treated as a stand-alone document. If values have been taken from previous permit applications or permits, then the data and derivation from those permit applications or permits must be included in the document. If data was taken from a stack test, then the stack test report and data should also be included in the document.

- Comment 2: Descriptions of the facility process are generally adequate. The ambient air boundary, as stated in the State of Idaho Guideline for Performing Air Quality Impact Analyses, should be defined by an area where the public access is legally and practically precluded. This includes separation from areas of habitation or activities by people not employed by the facility. The protocol states that the ambient boundary will not be controlled by a physical barrier but general access will be limited by not inviting the public on site during normal operations. DEQ requests that the applicant provide a more restrictive method of precluding public access. A detailed description of the requirements of these methods is in section 1c of Section 6.5 in the Modeling Guideline [1]. If a physical barrier is not used to preclude public access from areas excluded from ambient air, then the application must thoroughly describe the methods used to practically preclude access.

- Comment 3: SE has proposed to use the meteorological data provided by DEQ. This data was collected at Sandpoint, Idaho for the period 2008-2012, and is deemed to be appropriately representative of the facility locale.

- Comment 4: DEQ is providing updated ambient background concentrations to be used in the modeling analyses. These data has been taken from the NWAIRQUEST tool using the coordinates of the facility.

- Comment 5: SE is agreeing to treat the land use of the area as "rural", as a majority of the land use in the locale of the facility is non-urban.

- Comment 6: SE will treat the terrain as non-simple, and will extract elevation data using the AERMAP portion of the AERMOD modeling system. DEQ recommends using the web site http://www.mrlc.gov/viewersjs/, (Multi-Resolution Land Characteristics Consortium), to extract the elevation data in either 1 second or 1/3 second resolution.

- Comment 7: SE did provide some detailed emission data with the modeling protocol. It should be noted that review and acceptance of the emission calculation and their usage with respect to modeling thresholds is the responsibility of the assigned permit writer, and DEQ review of such emissions estimates will be performed during DEQ's review of the submitted application. Usage of emissions with respect to modeling thresholds is normally limited to Level I thresholds. Level II modeling applicability thresholds are accepted on a case by case situation, and discussions with DEQ and approval by DEQ are necessary before any pollutants can be excluded from site-specific analyses on the basis of emissions quantities below Level II thresholds. Therefore modeling applicability and estimated modeling emissions are considered preliminary as submitted in the protocol. The applicant expects to have emissions over the BRC (Below Regulatory Concern) thresholds for particulate matter. DEQ reminds the applicant that this assessment includes two separate criteria pollutants, PM_{10} and $PM_{2.5}$, and analyses will be required for both.

- Comment 8: SE infers that NO_X modeling will not be required because estimated NO_X emissions are less than BRC thresholds. If at some point in the future NO_x modeling is deemed necessary, DEQ reminds the applicant that prior discussion and subsequent approval is needed to model with non-default options for assessing NO_2 impacts with respect to chemical transformation from NO_x to NO_2. If non-default Tier 3 options such as OLM or PVMRM are used, the applicant must first contact DEQ for prior approval.

- Comment 9: SE provides adequate description of a modeling receptor grid. DEQ reminds the applicant that the density spacing of receptors in the immediate areas of maximum "design" concentrations should be such that DEQ is confident that maximum impacts have been identified at a level where compliance with the applicable standards is highly confident.

- Comment 10: DEQ has recently developed a modeling report template form for consultants/applicants to use when submitting modeling analyses. An electronic copy of this template should have been attached to the email delivering this protocol approval notice. DEQ now **requires** that this template be used for the submitted modeling analyses.

DEQ modeling staff considers the submitted dispersion modeling protocol, with consideration and resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance.

DEQ modeling staff requests submission of electronic copies of all modeling input and output files (including BPIP and AERMAP input and output files) with an analysis report. Also, please include with the application materials a copy of the protocol and this protocol approval in the appendix of the application. If you have any questions, please call at 208 373 0220

Sincerely,

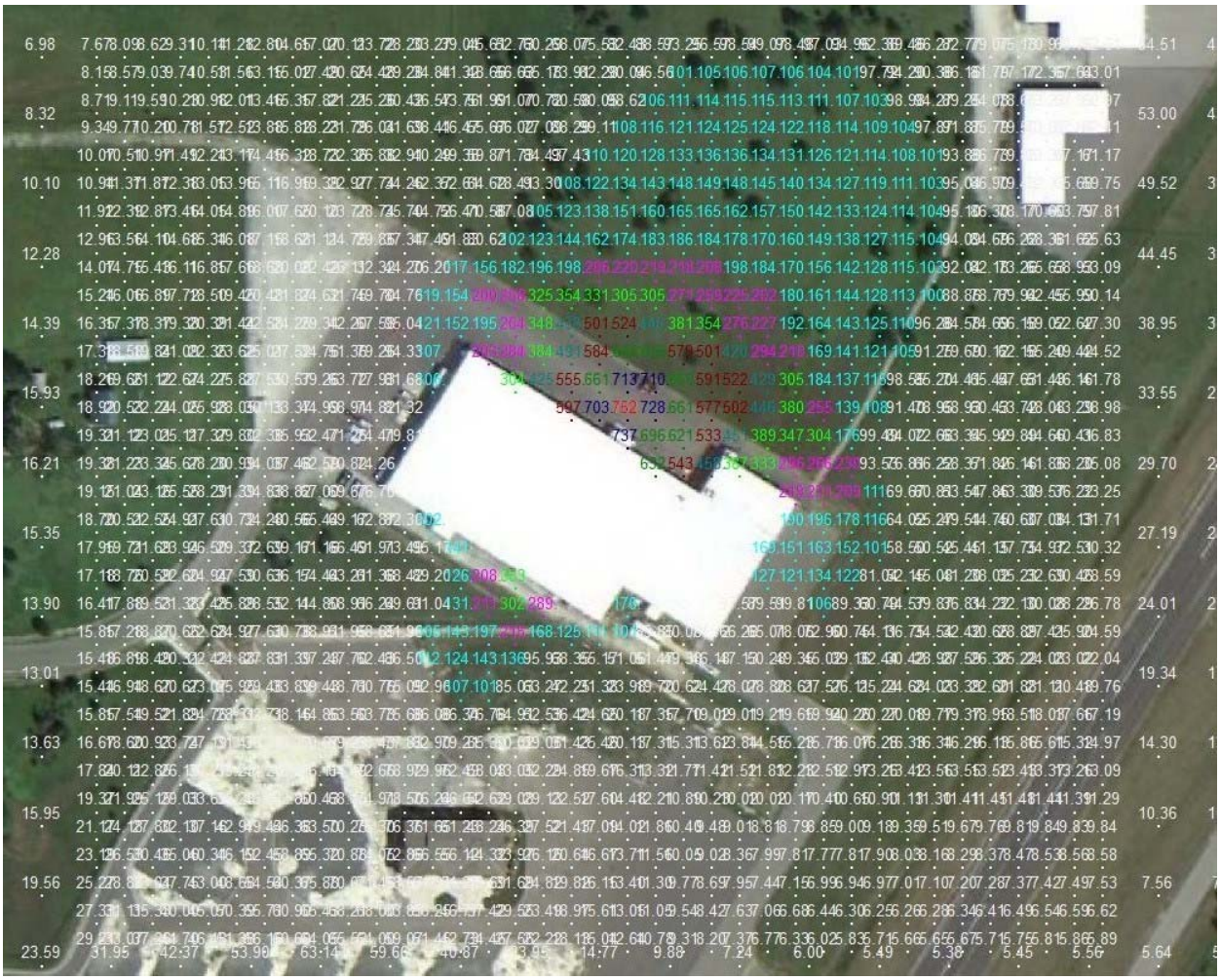
Thomas Swain
Analyst 3 , Air Modeling
Idaho Department of Environmental Quality
208 373-0220
thomas.swain@deq.idaho.gov

([1])*State of Idaho Guideline for Performing Air Quality Impact Analyses*, September 2013

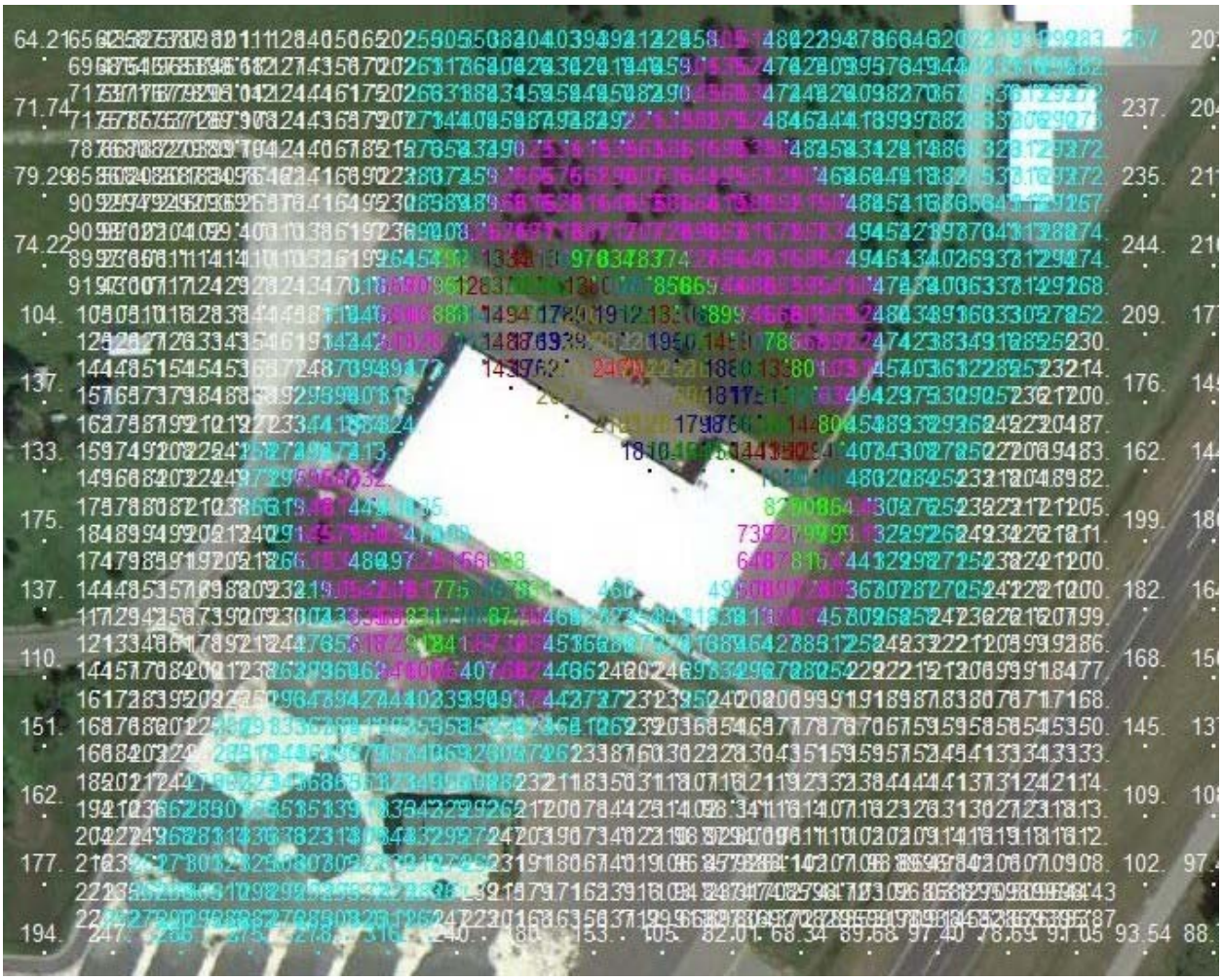
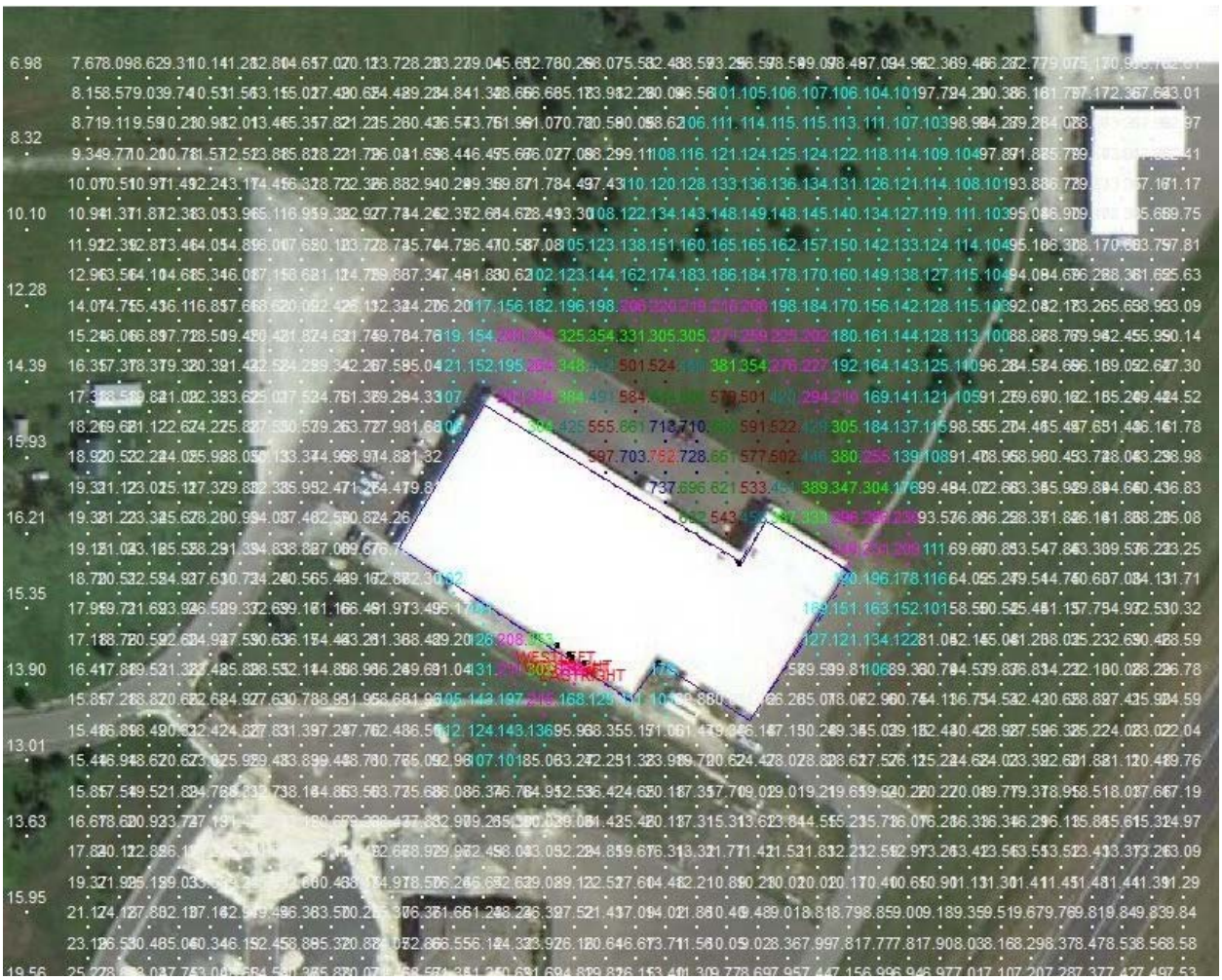
Attachment C
Modeling Results Contour Plots

PM 2.5 24-hour

PM 2.5 Annual



PM 10 24-hour



PM 10 Annual