Air Quality Permitting
Statement of Basis

September 18, 2006

Permit to Construct No. P-050401

Dutchmen, Manufacturing, Inc., Burley

Facility ID No. 031-00031

Prepared by:

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Air Quality Division

FINAL

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Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
ft	feet
HAP	hazardous air pollutant
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
MMBtu/hr	million British thermal units per hour
MMCF/yr	million cubic feet per year
MSDS	Material Safety Data Sheet
O&M	Operation and Maintenance
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
RV	recreational vehicle
TAP	toxic air pollutant
T/yr	tons per any consecutive 12-month period
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Dutchmen Mfg., Inc. (Dutchmen) is a recreational vehicle (RV) manufacturing facility located at 10 North 300 West, Burley, Idaho. The facility specializes in towable trailers. The activities at the facility consist of chassis frame preparation, cabinet and mill woodworking, slide-out assembly, unit assembly and final finish operations. The facility includes 20 natural gas space heaters for facility heating. Fiberglass manufacturing, complete exterior painting and/or clearcoat application does not occur at the facility. The entire site is fenced to control access.

3. FACILITY / AREA CLASSIFICATION

Dutchmen is classified as a true minor facility because actual and potential emissions are below all applicable major source thresholds. The AIRS facility classification is "B." The SIC defining this facility is 3792. The AIRS facility classification for each regulated air pollutant for this facility is presented as Appendix A.

The facility is located within AQCR 63 and UTM zone 12. The facility is located in Cassia County which is designated as unclassifiable for all regulated criteria air pollutants.

4. APPLICATION SCOPE

Dutchmen has submitted a PTC application No. P-060441 for a new RV manufacturing facility in Burley, Idaho. The facility will produce up to 16 towable trailers per day. The application was received by DEQ on July 26, 2006. This is the facility's initial permit.

4.1 Application Chronology

July 26, 2006	Dutchmen submitted a 15-day pre-construction approval application for a new facility.
July 31, 2006	Required application fee was received by DEQ.
August 8, 2006	DEQ provides notice of approval for pre-construction.
August 18, 2006	DEQ determined the application complete.
August 24, 2006	Opportunity for public comment published.
September 22, 2006	Opportunity for public comment closed. No comments received.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment and Activities Listing

Dutchmen's Burley RV manufacturing facility consists of one RV production line which is composed of chassis frame preparation (CP), slide-out assembly (SA), unit assembly (UA), and final finish and repair (FF). Other production activities include cabinet and mill woodworking (CM). Space heaters (SH)

fueled by natural gas provide heat to the facility. Each emissions source is described below.

Chassis Frame Preparation - CP

- Hand application of adhesives and sealants (wiping, caulking)
- Touch-up and repair painting for scratches and maintenance (aerosol cans)

Slide-Out Assembly - SA

- Hand application of sealants and adhesives (wiping, caulking)

Unit Assembly - UA

- Adhesive application by hand (wiping, caulking)
- Touch-up and repair painting for scratches and maintenance (aerosol cans)
- Welding operations – 0.120 pounds of rod or weld per hour
- PVC pipe cutting – 10 pounds of pipe per hour controlled by a portable baghouse located inside the building
- Occasional woodworking-controlled by a portable baghouse located inside the building

Particulate matter generated from the PVC pipe cutting and occasional woodworking in unit assembly is controlled by portable baghouses that exhaust to the interior of the building.

Final Finish and Repair - FF

- Hand application of sealants and cleaners (wiping, caulking, aerosol cans)
- Touch-up painting (aerosol cans)

Emissions from CP, SA, UA and FF are not vented to the atmosphere, rather, the emissions exhaust to the interior of the manufacturing building. The activities conducted in the assembly line are inherently limited by the physical design capacity of the facility – 2 units per hour.

Cabinet and Mill Woodworking - CM

- Saws
- Router
- Adhesive application
- Maximum capacity is for wood processing is 1,305 pounds of wood per hour.

Particulate matter generated from CM is controlled by a dust collector. The dust collector exhausts through a stack to the exterior of the building. The stack is 22 feet high and one foot diameter. Exit gas flow rate is 1800 acfm at ambient temperature.

20 Natural Gas-fired Space Heaters

Total maximum rated heat input capacity is 6.425 MMBtu/hr, broken down individually as follows:

- Nine (9) 0.400 MMBtu/hr heat input capacity space heaters
- Four (4) 0.300 MMBtu/hr heat input capacity space heaters
- Two (2) 0.250 MMBtu/hr heat input capacity space heaters
- Five (5) 0.225 MMBtu/hr heat input capacity space heaters

There are no emission controls associated with the space heaters.

5.2 *Emissions Inventory*

Emissions were estimated by Dutchmen based on 2,000 operating hours per year at the facility's maximum capacity of 16 RVs per day. Emissions inventory was submitted by Dutchmen and reviewed by DEQ. Emissions calculations detailed in the submitted application package were able to be reproduced by DEQ. The detailed emission inventory submitted by Dutchmen is included in Appendix B. Table 5.1 provides a summary of the emissions inventory for criteria pollutants.

Table 5.1 POTENTIAL TO EMIT CRITERIA POLLUTANT EMISSIONS

CO	NO_x	PM/PM_{10}	SO_2	VOC
0.540 T/yr	0.643 T/yr	1.456 T/yr	0.004 T/yr	4.154 T/yr

With respect to criteria air pollutants, the following conclusions can be drawn from the emissions analysis:

1. No criteria air pollutant is major in and of itself (i.e. no criteria air pollutant exceeds the major source trigger of 100 T/yr).
2. Because no criteria air pollutant is major, operational limitations are not required to limit potential to emit below major source thresholds.
3. Since VOCs can vary in amounts according to use and potential changes in individual products, Dutchmen is required to monitor and record VOC emissions.

Tables 5.2, 5.3. and 5.4 summarize the comparison of potential TAPs and their respective ELs according to specific facility process. Facility totals for TAPs submitted by Dutchmen is included in Appendix B.

Table 5.2 RV ASSEMBLY LINE HAP/TAP POTENTIAL TO EMIT SUMMARY

Non-Carcinogenic TAP	Process	lbs/hr	EL (lbs/hr)
Toluene	CP, SA, UA and FF surface coating	0.06	25
Hexane	CP, SA, UA and FF surface coating	0.04	12
MEK	CP, SA, UA and FF surface coating	0.24	39.3
Xylene	CP, SA, UA and FF surface coating	0.004	29
Acetone	CP, SA, UA and FF surface coating	0.20	119
Cyclohexane	CP, SA, UA and FF surface coating	0.02	70
Ethyl Acetate	CP, SA, UA and FF surface coating	0.01	93.3
N-Heptane	CP, SA, UA and FF surface coating	0.04	109
Isopropyl Alcohol	CP, SA, UA and FF surface coating	0.13	65.3
Isobutyl Alcohol	CP, SA, UA and FF surface coating	0.01	10
Tetrahydrfuran	CP, SA, UA and FF surface coating	0.10	39.3
Tetrasodium pyrophosphate	CP, SA, UA and FF surface coating	0.001	0.333
VM&P Naptha	CP, SA, UA and FF surface coating	2.06	91.3
Manganese	UA (from welding only)	0.0001	0.067

Table 5.3 HAP/TAP EMISSIONS FROM CM ADHESIVES

Non-Carcinogenic TAP	Process	lbs/hr	EL (lbs/hr)
Hexane	CM adhesive activities	0.021	12
Acetone	CM adhesive activities	0.009	119
Isobutyl Alcohol	CM adhesive activities	0.007	10

Table 5.4 HAP/TAP EMISSIONS FROM FUEL-BURNING SH

TAP	Process	Lbs/hr	EL (lbs/hr)
Toluene	Fuel Burning	2.18E-05	25
Hexane	Fuel Burning	0.01	12
Benzene	Fuel Burning	1.3E-05	0.0008
Dichlorobenzene	Fuel Burning	7.7E-06	20
Formaldehyde	Fuel Burning	4.8E-04	0.00051
Cadmium*	Fuel Burning	7.1E-06	3.7E-06
Chromium	Fuel Burning	9.0E-06	0.033
Manganese	Fuel Burning	2.4E-06	0.067
Nickel	Fuel Burning	1.3E-05	2.7E-05

*Exceeded EL, modeled to demonstrate compliance with AACC.

With respect to the TAP emissions, the following conclusions can be drawn from the emissions analysis:

1. The potential to emit for each TAP listed in Tables 5.2, 5.3, 5.4 and total facility TAPs (Appendix B) with the exception of cadmium is less than its respective EL.
2. Cadmium was modeled and met the respective AACC (see modeling memo in Appendix C).
3. In accordance with IDAPA 58.01.01.210.05.b, no further procedures for demonstrating preconstruction compliance is required for the respective TAP as part of the application process if the source's or modification's uncontrolled emission rate is less than or equal to the applicable screening emission level listed in Sections 585 and 586.
4. Since the facility may use varying amounts of, or alternate products for surface coating, adhesives, etc., TAP emissions need to be tracked to ensure compliance with TAP emission limits or ambient increments.

With respect to HAPs, the following conclusions can be drawn from the emissions analysis:

1. Each individual HAP listed in the above tables is not major in and of itself (i.e. no individual HAP is greater than or equal to 10 T/yr).
2. The total HAP emissions are not major (i.e. combined HAP emissions are not greater than or equal to 25 T/yr).
3. The facility is a minor source. To remain such, and because the facility may use varying amounts of, or alternate products for surface coating, adhesives, etc., any HAP emissions need to be tracked to ensure the facility remains a minor source.

5.3 Modeling

Modeling was not performed for criteria pollutants because potential emissions, based on operational limits of 2,000 hours per year, were below modeling requirement thresholds. Cadmium was the only TAP emitted by the facility that exceeded the screening emission rate limit specified by IDAPA 58.01.01.585 or 58.01.01.586. A summary of the modeling analysis is presented in Table 5.2.

Table 5.5. RESULTS OF TAP ANALYSES

TAP	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	AACC[b] ($\mu g/m^3$)	Percent of AACC
Cadmium	Annual	7.67E-05 (1.5E-04)[c]	5.6E-04	13.7% (26.8%)

[a]micrograms per cubic meter
[b]acceptable ambient concentration for carcinogens
[c]values in parentheses were developed by DEQ's verification analysis

DEQ reviewed the modeling submitted by the facility. DEQ determined that the facility demonstrated compliance that emissions from the facility will not cause or significantly contribute to a violation of any ambient air quality standard with the permitted production limits. The detailed modeling analysis is included in Appendix C.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

The facility's proposed construction does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203 ..... Permit Requirements for New and Modified Stationary Sources

The applicant has shown to the satisfaction of DEQ that its Burley facility will comply with all applicable emissions standards, ambient air quality standards, and toxic increments.

IDAPA 58.01.01.210 ..... Demonstration of Preconstruction Compliance with Toxic Standards

The applicant has demonstrated preconstruction compliance for all TAPs identified in the permit application.

IDAPA 58.01.01.224 ..... Permit to Construct Application Fee

The applicant satisfied the PTC application fee requirement by submitting a fee of $1,000.00 on July 31, 2006.

IDAPA 58.01.01.225 ..... Permit to Construct Processing Fee

The total emissions from the proposed new facility are between 1 and 10 T/yr; therefore, the associated processing fee is $2,500.00.

5.5 Fee Review

Dutchmen submitted the required application fee of $1,000.00 on July 31, 2006. A processing fee of $2,500.00 is also due, because the increase in emissions from the new facility are between 1 ton and 10 tons per year. The processing fee was submitted to DEQ September 26, 2006.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.643	0	0.643
SO_2	0.004	0	0.004
CO	0.540	0	0.540
PM_{10} **	1.456	0	1.456
VOC	4.154	0	4.154
TAPS/HAPS	AS VOC	0	AS VOC
Total:	6.797	0	6.797
Fee Due	**$ 2,500.00**		

6. PERMIT CONDITIONS

Permit Conditions 2.3 and 3.5 limit the facility's potential to emit HAPs to below major source thresholds.

Permit Conditions 2.4 and 3.6 limit the facility's potential to emit VOCs to below major source thresholds.

Permit Conditions 2.5 and 3.7 require the facility to comply with IDAPA 58.01.01.585-586 for TAPs emissions.

Permit Conditions 2.6 and 3.8 limit hours of operation for the RV assembly line and CM to 2,000 hours per year. This condition was based on information submitted with the application.

Permit Conditions 2.7 and 3.14 require VOC product containers to be covered or closed when not in use. This condition will help to control unnecessary VOC emissions.

Permit Conditions 2.8 and 3.15 require Dutchmen to maintain purchase records for RV assembly line and CM materials that contain HAPs, VOCs and/or TAPs. This information is used to estimate emissions to demonstrate compliance with HAPs, VOCs and TAPs emissions limits in the permit.

Permit Conditions 2.9 and 3.16 require Dutchmen to maintain MSDS' for all materials purchased pursuant to Permit Conditions 2.8 and 3.15. The MSDS' contain the material density (pounds per gallon), the weight percent VOCs, weight percent solids, and the weight percent of the ingredients (e.g. toluene, MEK, etc.) of each product purchased. This information is used in part to estimate emissions to demonstrate compliance with HAPs, VOCs and TAPs emissions limits.

Permit Conditions 2.11 and 3.18 require Dutchmen to monitor hours of operation for the RV assembly line and CM to demonstrate compliance with Permit Conditions 2.6 and 3.8. These conditions are also needed to calculate TAPs emissions.

Permit Conditions 2.10 and 3.19 require Dutchmen to monitor and record the usage of all assembly line and CM products that contain HAPs, VOCs and/or TAPs materials monthly. This information is used to estimate emissions to demonstrate compliance with HAPs, VOCs and TAPs emissions limits in the permit.

Permit Conditions 2.12 and 3.20 require Dutchmen to monitor and record monthly and annually the HAP emissions (single and total) from the RV assembly line and CM using purchase records, MSDS', and material usages to demonstrate compliance with HAP emissions limits in the permit.

Permit Conditions 2.13 and 3.21 require Dutchmen to monitor and record monthly and annually the VOC emissions (single and total) from the RV assembly line and CM using purchase records, MSDS', and material usages to demonstrate compliance with VOC emissions limits in the permit.

Emissions would be estimated using an equation such as the following:

Example equation:

Solvent:

- Density = 6.0 lb/gal
- VOC content (% by weight) = 100
- Xylene content (% by weight) = 60
- Monthly usage = 15 gallons

VOC Monthly Emissions:

(6.0 lb/gal)(1.0 lb VOC/lb)(15 gal/mo)(1 T/2,000 lb) = 0.04 T VOC/mo

Assume the facility used 15 gal/mo over the previous consecutive 12-month period. Annual VOC emissions would then be:

VOC Annual Emissions:

(6.0 lb/gal)(1.0 lb VOC/lb)(15 gal/mo)(12 mo/yr)(1 T/2,000 lb) = 0.54 T VOC/yr

Now estimate xylene emissions.

Xylene Monthly Emissions:

(6.0 lb/gal)(0.6 lb xylene/lb)(15 gal/mo)(1 T/2,000 lb) = 0.036 T xylene/mo

Annual Xylene Emissions:

(6.0 lb/gal)(0.6 lb xylene/lb)(15 gal/mo)(12 mo/yr)(1 T/2,000 lb) = 0.324 T xylene/yr

Permit Conditions 2.14 and 3.22 require Dutchmen to estimate TAP emissions from the assembly line and CM to demonstrate compliance with Permit Conditions 2.5 and 3.7.

Permit Condition 3.3 requires Dutchmen to comply with IDAPA 58.01.01.700-703 for PM emissions from wood processing.

Permit Conditions 3.4 and 4.3 limit visible emissions in accordance with IDAPA 58.01.01.625.

Permit Condition 3.9 limits wood processing throughput to 10,440 lb/hr to demonstrate compliance with Permit Condition 3.3.

Permit Condition 3.10 requires Dutchmen to control fugitive dust emissions in accordance to IDAPA 58.01.01.650-651.

Permit Condition 3.11 requires Dutchmen to operate the dust collector during CM wood processing operations. This will help to control PM_{10} emissions from the process.

Permit Condition 3.12 requires Dutchmen to maintain and operate the dust collector according to manufacturer and O&M manual specifications. This will help ensure proper operation of the control device.

Permit Condition 3.13 requires Dutchmen to develop an O&M manual for the dust collector based on manufacturer specifications and recommendations, and submit to DEQ for review.

Permit Condition 4.4 requires Dutchmen to comply with PM emission standards for fuel-burning equipment in accordance with IDAPA 58.01.01.677.

Permit Condition 4.5 is a natural gas consumption throughput limit of 12.9 MMCF/yr to demonstrate compliance with Permit Condition 4.4 and also to ensure that cadmium emissions do not exceed the AACC.

Permit Condition 4.6 allows combustion of natural gas exclusively for the fuel-burning equipment (space heaters) listed in the permit.

Permit Condition 4.7 requires Dutchmen to monitor and record natural gas consumption to demonstrate compliance with Permit Condition 4.5.

7. PUBLIC COMMENT

An opportunity for public comment on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c from August 24, 2006, to September 22, 2006. During this time, there were no comments on the application and no request for a public comment period.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Dutchmen, Inc. be issued final PTC No. P-060441. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

TD/bf Permit No. P-060441

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APPENDIX A

AIRS Information

P-060441

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Dutchmen Manufacturing, Inc.
Facility Location: Burley
AIRS Number: 031-00031

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							U
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX B

Emissions Inventory

P-060441

Emissions Summary

Pollutant	Surface Coating	PVC Pipe Cutting	Woodworking	Natural Gas Combustion	Occassional Woodworking	Welding	Total Potential Emissions	Modeling Thresholds /Screening Levels (lbs/hr)
CO	0.00	0.00	0.00	0.54	0.00	0.00	0.540	70 lbs/hr
NO_x	0.00	0.00	0.00	0.64	0.00	0.00	0.643	1 t/yr
PM/PM_{10}	0.08	0.49	0.34	0.05	0.49	0.00	1.456	7 tpy
SO_2	0.00	0.00	0.00	3.86E-03	0.00	0.00	0.004	1 tpy; 0.2lb/hr
VOC	4.12	0.00	0.00	0.04	0.00	0.00	4.154	
Pb	0.00	0.00	0.00	3.21E-06	0.00	0.00	3.21E-06	0.6 tpy; 100lbs/mo
Individual TAP								
Toluene	0.06	0.00	0.00	2.18E-05	0.00	0.00	0.057	25.0
Hexane	0.06	0.00	0.00	0.01	0.00	0.00	0.067	12.0
MEK	0.24	0.00	0.00	0.00	0.00	0.00	0.237	39.3
Xylene	0.00	0.00	0.00	0.00	0.00	0.00	0.004	29.0
Acetone	0.21	0.00	0.00	0.00	0.00	0.00	0.215	119.0
Cyclohexane	0.02	0.00	0.00	0.00	0.00	0.00	0.017	6.7
Ethyl acetate	0.01	0.00	0.00	0.00	0.00	0.00	0.007	93.3
N-heptane	0.04	0.00	0.00	0.00	0.00	0.00	0.038	109.0
Isopropyl alcohol	0.13	0.00	0.00	0.00	0.00	0.00	0.128	65.3
Isobutyl alcohol	0.02	0.00	0.00	0.00	0.00	0.00	0.017	10.0
Tetrahydrofuran	0.10	0.00	0.00	0.00	0.00	0.00	0.101	39.3
asodium pyrophospha	6.61E-04	0.00	0.00	0.00	0.00	0.00	0.001	0.3
VM&P Naptha	2.06	0.00	0.00	0.00	0.00	0.00	2.063	91.3
Benzene*	0.00	0.00	0.00	1.3E-05	0.00	0.00	1.35E-05	8.0E-04
Dichlorobenzene*	0.00	0.00	0.00	7.7E-06	0.00	0.00	7.71E-06	20.0
Formaldehyde*	0.00	0.00	0.00	4.8E-04	0.00	0.00	4.82E-04	0.00051
Cadmium*	0.00	0.00	0.00	7.1E-06	0.00	0.00	7.07E-06	3.7E-06
Chromium*	0.00	0.00	0.00	9.0E-06	0.00	0.00	9.00E-06	3.3E-02
Manganese*	0.00	0.00	0.00	2.4E-06	0.00	1.06E-04	1.10E-04	6.7E-02
Nickel*	0.00	0.00	0.00	1.3E-05	0.00	0.00	1.35E-05	2.7E-05
Total HAP	2.87	0.00	0.00	1.2E-02	0.00	1.06E-04	2.878	

IDAPA 586 carcinogens

Potential emissions assume 8 hrs/day, 5 days/wk, 50 wk/yr operations or 2,000 operating hours.

*Potential emissions from natural gas combustion also assume 8 hrs/day, 5 days/wk, 50 wks/yr heating duration or 2,000 operating hours.

TAPs
From Surface Coating Operations

Company Name: Dutchmen Manufacturing, Inc.
Address City IN Zip: 10 North 300 West, Burley, ID 83318
Permit: New
Prepared by: Divinia N Stamm, MS, Ph.D.
Date: July 5, 2006

Material	Density (lbs/gal)	Maximum Usage (gal/unit)	Maximum Throughput (unit/hr)	Weight % Toluene	Weight % Hexane	Weight % MEK	Weight % Xylene	Weight % Acetone	Weight % Cyclohexanone	Weight % Ethyl acetate	Weight % N-heptane	Weight % Isopropyl alcohol	Weight % Isobutyl alcohol	Weight % Tetrahydrofuran	Weight % Tetrasodium pyrophosphate	Weight % VM&P naptha
Chassis Frame and Floor Prep																
Spray N Go paint (touch-up)	6.67	0.012	2.00	10.00%	0.00%	7.50%	2.50%	22.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cycle silicone	5.92	0.000	2.00	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Oatey ABS Black cement	7.50	0.010	2.00	0.00%	0.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cabinet & Mill												0.00%				
Mobilbond glue	9.49	0.011	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cycle silicone	5.92	0.001	2.00	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sealik superlak	5.80	0.004	2.00	0.00%	40.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	15.00%	0.00%	0.00%	0.00%
Slide-out Assembly																
Geocel 2300 sealant	7.92	0.032	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cycle silicone	5.92	0.000	2.00	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mobilbond glue	9.49	0.002	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sealik superlak	5.80	0.002	2.00	0.00%	40.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	15.00%	0.00%	0.00%	0.00%
Unit Assembly																
Geocel 2300 sealant	7.92	0.074	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Oatey PVC cement	7.50	0.015	2.00	0.00%	0.00%	2.50%	0.00%	20.00%	7.50%	0.00%	0.00%	0.00%	0.00%	45.00%	0.00%	0.00%
Oatey Cleaner	6.58	0.002	2.00	0.00%	0.00%	70.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
502 LSW tub sealant	9.92	0.320	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	32.00%
305 BA bonding cement	8.20	0.250	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IPS Weld-on	7.30	0.010	2.00	0.00%	0.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mobilbond glue	9.49	0.006	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sealik superlak	5.80	0.004	2.00	0.00%	40.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	15.00%	0.00%	0.00%	0.00%
Cycle silicone	5.92	0.001	2.00	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%
WD 40	6.67	0.001	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Final Finish and Repair																
Geocel 2300 sealant	7.92	0.028	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tile R Bond	7.42	0.001	2.00	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	90.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Touch N Time enamel	6.98	0.026	2.00	10.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cycle silicone	5.92	0.000	2.00	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Brake Cleaner	6.34	0.004	2.00	25.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Glass Cleaner	8.26	0.008	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Isopropyl alcohol	6.52	0.010	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Mineral spirits	6.59	0.010	2.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Potential Emissions (2000 operating hrs/year)																
TAP Screening Emission Levels (IDAPA 58.01.01.585 and 586)																
10 % of TAP Screening Emission Levels																

* Potential to Emit (PTE) value assumes 8 hrs/day, 5 days/wk, 50 wk/yr operations or 2,000 operating hours.

Methodology:

HAPS emission rate (tons/yr) = Density (lb/gal) * Gal of Material (gal/unit) * Maximum (unit/hr) * Weight % HAP * 2000 hrs/yr * 1 ton/2000 lbs

Emission Calculations
VOC and Particulate
From Surface Coating Operations

Company Name: Dutchmen Manufacturing, Inc.
Address City ID Zip: 10 North 300 West, Burley, ID 83318
Permit: New
Prepared by: Dhiraj N Sharma, MS, Ph.D.
Date: July 5, 2006

Process / Material	Substrate	Density (lb/gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Maximum Usage (gal/unit)	Maximum Throughput (units/hour)	Pounds VOC per gallon of coating	PTE*** of VOC (lb/hr)	PTE of VOC (lb/day)	PTE of VOC (tons/yr)	PTE of PM/PM10 (ton/yr)	Transfer Efficiency
Chassis Frame and Floor Prep													
Spray N Go paint (touch-up)	metal	6.67	78.0%	2.00%	76.0%	0.0120	2.00	5.07	0.12	1.22	0.122	0.000	75%
Cyclo silicone	metal, wood, plastic	5.82	92.5%	7.50%	85.0%	0.0003	2.00	5.03	0.00	0.03	0.003	0.000	75%
Oatey ABS Black cement	plastic	7.50	85.0%	0.00%	85.0%	0.0100	2.00	6.60	0.13	1.32	0.132	0.000	100%
Cabinet & Sill									0.38	2.87	0.387	0.000	
Multiband glue	wood	9.40	60.0%	0.00%	60.0%	0.0110	2.00	5.68	0.13	1.25	0.125	0.000	100%
Cyclo silicone	wood	5.82	92.5%	7.50%	85.0%	0.0008	2.00	5.03	0.01	0.08	0.008	0.000	75%
Stealth supertak	wood	5.80	71.0%	29.0%	91.0%	0.0040	2.00	2.96	0.02	0.24	0.024	0.000	100%
Slide-out Assembly									0.15	1.55	0.155	0.000	
Gunnel 2000 sealant	wood	7.92	35.0%	0.00%	35.0%	0.0320	2.00	2.77	0.18	1.77	0.177	0.000	100%
Cyclo silicone	metal, wood	5.82	92.5%	7.50%	85.0%	0.0008	2.00	5.03	0.00	0.03	0.003	0.000	75%
Multiband glue	wood	9.40	60.0%	0.00%	60.0%	0.0020	2.00	5.68	0.02	0.23	0.023	0.000	100%
Stealth supertak	wood	5.80	71.0%	29.0%	91.0%	0.0020	2.00	2.96	0.01	0.12	0.012	0.000	100%
Unit Assembly									0.32	2.15	0.215	0.000	
Gunnel 2000 sealant	wood	7.92	35.0%	0.00%	35.0%	0.0720	2.00	2.77	0.41	4.10	0.410	0.000	100%
Oatey PVC cement	plastic	7.50	85.0%	0.00%	85.0%	0.0190	2.00	6.60	0.25	1.98	0.198	0.000	100%
Oatey Cleaner	plastic	6.55	100.0%	20.0%	80.0%	0.0020	2.00	5.25	0.02	0.21	0.021	0.000	75%
552 LSW lap sealant	wood, plastic	9.92	35.0%	0.00%	35.0%	0.2280	2.00	3.04	1.94	19.45	1.943	0.000	100%
555 BA bonding cement	wood, plastic	8.20	91.0%	88.5%	0.50%	0.2280	2.00	0.04	0.02	0.21	0.021	0.000	100%
PB Weld-on	plastic	7.30	70.0%	0.00%	70.0%	0.0190	2.00	5.11	0.10	1.02	0.102	0.000	100%
Multiband glue	wood	9.40	60.0%	0.00%	60.0%	0.0050	2.00	5.68	0.06	0.57	0.057	0.000	100%
Stealth supertak	wood, foam insulation	5.80	71.0%	29.0%	91.0%	0.0040	2.00	2.96	0.02	0.24	0.024	0.000	100%
Cyclo silicone	metal, wood, plastic	5.82	92.5%	7.50%	85.0%	0.0010	2.00	5.03	0.01	0.10	0.010	0.000	75%
VG 48	metal, equipment	6.67	78.0%	0.00%	78.0%	0.0008	2.00	5.20	0.01	0.08	0.008	0.001	75%
Final Finish and Repair									2.79	27.9	2.794	0.001	
Gunnel 2000 sealant	wood	7.92	35.0%	0.00%	35.0%	0.0280	2.00	2.77	0.16	1.55	0.155	0.000	100%
Tite R Bond	wood, plastic	7.42	98.2%	0.00%	98.2%	0.0095	2.00	7.29	0.01	0.07	0.007	0.000	100%
Touch N Tone enamel	wood, plastic	5.56	99.0%	20.0%	79.0%	0.0250	2.00	4.39	0.22	2.20	0.220	0.001	75%
Cyclo silicone	metal, wood, plastic	5.82	92.5%	7.50%	85.0%	0.0003	2.00	5.03	0.00	0.03	0.003	0.000	75%
Brake Cleaner	wood, plastic	6.34	100.0%	26.0%	74.0%	0.0040	2.00	4.69	0.04	0.38	0.038	0.000	75%
Glass Cleaner	glass	8.28	99.9%	87.0%	12.9%	0.0080	2.00	1.06	0.02	0.17	0.017	0.000	75%
Isopropyl alcohol	wood, plastic	6.32	100.0%	0.00%	100%	0.0100	2.00	6.32	0.13	1.26	0.126	0.000	75%
Mineral spirits	wood, plastic	6.59	100.0%	0.00%	100%	0.0100	2.00	6.59	0.13	1.32	0.132	0.000	75%
									5.70	7.0	0.000	0.001	
Total											4.119	0.011	

NOTES

* Assume all the PM emissions are PM10 emissions.
** The transfer efficiency information is provided by the manufacturer.
No particulate control device is used. Coatings will be applied by brushing, hand wiping, and spray can.
*** Potential to Emit (PTE) values assume 8 hr/day, 5 days/week, 50 weeks/year operating hours or 2,000 hr/year.

Methodology:

Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)

PTE of VOC (lb/hr) = Pounds of VOC per Gallon coating (lb/gal) * Max. Throughput (units/hr) * Max. Usage (gal/unit)
PTE of VOC (lb/day) = Pounds of VOC per Gallon coating (lb/gal) * Max. Throughput (units/hr) * Max. Usage (gal/unit) * (10 hr/day)
PTE of VOC (tons/yr) = Pounds of VOC per Gallon coating (lb/gal) * Max. Throughput (units/hr) * Max. Usage (gal/unit) * (2000 hr/yr) * (1 ton/2000 lb)
PTE of PM/PM10 before Control (lb/hr) = Max. Throughput (units/hr) * Max. Usage (gal/unit) * Density (lb/gal) * (1- Weight % Volatile) * (1-Transfer efficiency)
PTE of PM/PM10 before Control (tons/yr) = Max. Throughput (units/hr) * Max. Usage (gal/unit) * Density (lb/gal) * (1- Weight % Volatile) * (1-Transfer efficiency) * (2000 hr/yr) *(1 ton/2000 lb)

APPENDIX C

Modeling Memorandum

P-060441

MEMORANDUM

DATE: September 27, 2006

TO: Tracy Drouin, Permit Writer, Air Program

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-060441

SUBJECT: Modeling Review for Dutchmen Mfg, Inc., 15-Day Permit to Construct Application for their facility in Burley, Idaho.

1.0 Summary

Dutchmen Mfg., Inc. (Dutchmen) submitted a 15-day Pre-Permit to Construct (PTC) application for the proposed construction of a manufacturing facility for the production of recreational vehicles. Production operations will include chassis frame preparation, cabinetry and mill woodworking, slide-out assembly, RV unit assembly, final finishing, and repairs. The facility is inherently limited to a production capacity of two towable vehicles per hour. Refer to the permit application or the PTC statement of basis to review the process description and equipment listing.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Natural gas combustion emissions and ambient impacts for the space heaters were analyzed using 2,000 hours per year (hr/yr) of operation. The applicant requested an allowable throughput of 12.9 million British thermal units per year (MMBtu/yr) for operation of the space heaters.	The application reflects a controlled emission rate and ambient concentration compliance demonstration for cadmium, per IDAPA 58.01.01.210.02, 03, 07, and 08. Compliance with the carcinogenic TAP increment for cadmium was demonstrated using a natural gas throughput of 12.9 MMBtu/yr.
The applicant estimated hourly cadmium emissions at 7.07E-06 lb/hr using the operational restrictions listed above. The modeled emission rate (see page 6-2 of the PTC application) was 3.77E-06 lb/hr.	DEQ used a cadmium emission rate of 7.07E-06 lb/hr in the verification analysis to demonstrate compliance with the increment for cadmium. Operation of the natural gas-fired space heaters at 12.9 MMBtu/yr complies with the cadmium TAP increment.
Emission rates were estimated using an operating scenario of approximately 8 hours per day, 5 days per week, and 50 weeks per year.	The applicant requested the following annual emission rate limits: • Carbon monoxide (CO): 0.540 tons per year (T/yr) • Nitrogen oxides (NO_x): 0.643 T/yr • Particulate matter/Particulate matter less than 10 microns in diameter (PM/PM_{10}): 1.456 T/yr • Sulfur dioxide (SO_2): 0.004 T/yr • Volatile organic compounds (VOCs): 4.154 T/yr

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The Dutchmen facility is located in Cassia County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

Modeling of criteria air pollutant emissions was not performed by the applicant. Each pollutant is expected to be emitted below the thresholds that trigger the requirement to perform a preliminary ambient impact analysis to demonstrate that the maximum requested emissions for the new source do not exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.90, or a full impact analysis to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact.

2.1.3 TAPs Analyses

The increase in emissions from the proposed facility are required to demonstrate compliance with the toxic air pollutant (TAP) increments with an ambient impact dispersion analysis for any TAP with a requested potential emission rate that exceeds the screening emission rate limit specified by IDAPA 58.01.01.585 or 58.01.01.586. Table 2 lists the applicable screening emission rates and regulatory limits (allowable increments) for the TAP modeled for this project.

Table 2. TOXIC AIR POLLUTANTS APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Screening Emission Rate Limit[a] (lb/hr)[b]	Regulatory Limit (AAC/AACC)[c] ($\mu g/m^3$)[d]	Modeled Value Used[e]
Cadmium (CAS[f]# 7440-43-9)	Annual	3.7E-06	5.6E-04	Maximum 1st highest[g]

[a]IDAPA 58.01.01.585 and 58.01.01.586
[b]Pounds per hour
[c]Increment for acceptable ambient concentration/acceptable ambient concentration for carcinogens
[d]Micrograms per cubic meter
[e]The maximum 1st highest modeled value is always used to establish TAPs compliance
[f]Chemical abstract service
[g]Concentration at any modeled receptor, never expected to be exceeded in any calendar year

TAPs are emitted due to combustion of natural gas in the 20 space heaters. Cadmium is the only TAP identified in the application that will exceed the screening emission rate limit for this project.

2.2 Background Concentrations

Ambient background concentrations for criteria air pollutants are not relevant for this project. Requested emission rates of all criteria air pollutants for the proposed facility were below the modeling thresholds listed in the draft update of the Idaho DEQ Modeling Guideline, so criteria pollutant preliminary and full impact analyses were not presented by the applicant.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 3 provides a summary of the modeling parameters used in the DEQ verification analyses.

Table 3. MODELING PARAMETERS

Parameter	Description/ Values	Documentation/Additional Description
Model	SCREEN3	SCREEN3, Version 96043
Meteorological data	Generic met data	A full meteorology set was employed in the modeling analysis.
Land Use (urban or rural)	Rural	Rural dispersion coefficients were used by the applicant and by DEQ. DEQ reviewed aerial photographs of the facility site and surrounding land. The City of Burley development is located approximately 2.5 miles to the east of the facility. The majority of the surrounding land is rural in nature according to the 1992 aerial photograph of the area.
Terrain	Not considered	The area is relatively flat surrounding this source.
Building downwash	Downwash algorithm	Building dimensions were accounted for in calculating the horizontal and vertical initial dispersion dimensions. Building data is not input directly into SREEN3 for volume sources as is done for point sources.
Receptor grid	Maximum concentration	SCREEN3 does not rely on a Cartesian coordinate receptor grid. It provides the maximum downwind ambient concentration. The applicant placed a receptor at 43 meters (141.5 meters) away from the plant building to demark the ambient air boundary. Receptors were placed at 100 meters spacing out to 10,000 meters.

3.1.1 Modeling protocol

A protocol was submitted by JBR Environmental Consultants (JBR), on behalf of Dutchmen, to DEQ prior to submission of the application, as required by IDAPA 58.01.01.213.01.c.

Written approval of the modeling protocol, with comments on modeling methodology, was issued by Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division, DEQ, by e-mail, on August 7, 2006. Modeling was conducted using methods and data presented in the modeling protocol and the *State of Idaho Air Quality Modeling Guideline*.

3.1.2 Model Selection

SCREEN3 was chosen by JBR for this project. All 20 natural gas-fired space heaters were modeled as a single elevated volume source. SCREEN3 is a conservative screening model used to predict ambient impacts from a single source of emissions or all combined emissions from multiple nearby sources which are modeled as a single emissions source.

3.1.3 Meteorological Data

The SCREEN3 option for Full Meteorology was used in the analyses. The model calculates the worst-case meteorology for the emissions characteristics and the downwind receptor location

3.1.4 Terrain Effects

The model was run assuming the area impacted is effectively flat. This is a reasonable assumption since maximum impacts from the space heaters are very close to the emissions source. The terrain elevation increases by approximately 40 feet in a distance of approximately two miles to the south of the source. The terrain elevation declines to the north of the source, remains essentially constant to the east of the source, and increases in elevation by approximately 40 feet within 1.5 miles to the west of the source.

3.1.5 Facility Layout

DEQ verified proper identification of the facility boundary and layout by comparing the plot plan submitted with the application to 1992 aerial photographs of the site and surrounding area from the "terraserver.microsoft.com" website.

3.1.6 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses in the calculation of initial horizontal and vertical release dimensions. JBR/Dutchmen assumed an emissions release height of 12 feet.

The calculation of release dimensions of a volume source were derived from the SCREEN3 Model User's Guide, Publication ID# EPA-454/B-95-004, U.S. Environmental Protection Agency, September 1995.

For an elevated volume source that is on or adjacent to a building, the initial vertical dimension is determined by the following equation:

σ_{zo}, Initial Vertical Dimension (meters) = Building Height (meters) / 2.15

For a single volume source, the initial lateral, or horizontal, dimension is determined by the following equation:

σ_{yo}, Initial Lateral Dimension (meters) = Length of building on the side the source is located (meters) / 4.3

3.1.7 Ambient Air Boundary

Ambient air was determined to exist for all areas immediately exterior to Dutchmen's property boundary. The perimeter of the property is fenced, and demarks the ambient air boundary.

3.1.8 Receptor Network

The model was run to calculate the maximum downwind concentration.

3.1.9 Modeling Methods Used

SCREEN3 was run using a unit emissions rate of 1.0 pounds per hour (lb/hr). Model output is given as micrograms per cubic meter ($\mu g/m^3$) for a 1-hour averaging period. Concentrations of specific pollutants for a 1-hour averaging period are calculated by multiplying the model result for 1.0 lb/hr by the requested potential emissions rate in pounds per hour. Concentrations for the annual averaging period were calculated by multiplying the pollutant-specific maximum 1-hour concentration by the persistence factor. The following are appropriate persistence factors to convert 1-hour concentrations to concentrations for other averaging periods:

- 1-hour to annual factor = 0.125 (for TAPs analyses)

Limitations on annual operating hours may be accounted for by multiplying the annual persistence factor by the annual requested operating hours and dividing this value by 8,760 hours per year (provided the worst-case hourly emission rate is modeled).

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for DEQ verification modeling:

- The cadmium emission rate modeled by the applicant (3.77E-06 lb/hr) was approximately equal to the screening emission rate limit specified by IDAPA 58.01.01.586 (3.7E-06 lb/hr). DEQ modeled the emission rate listed in the application's emission inventory (7.07E-06 lb/hr).
- More extensive review of modeling parameters selected was conducted when model results for specific sources approached applicable thresholds.

Table 4 lists the toxic air pollutant emissions rates for the sources included in the dispersion modeling analyses for the annual averaging period.

Table 4. MODELED ANNUAL EMISSIONS RATES

Source ID	Description	Emission Rates (lb/hr[a])
		Cadmium
Space Heaters	20 individual natural gas-fired space heaters with a combined heat input capacity of 6.425 MMBtu/hr	3.77E-06 (7.07E-06)[b]

[a]Pounds per hour

[b]Values in parentheses were used by DEQ in it's verification analyses.

3. 3 Emission Release Parameters

Table 5 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources. Values used in the analyses appeared reasonable and within expected ranges. Additional documentation and verification of these parameters was not required.

Table 5. VOLUME SOURCE EMISSION RELEASE PARAMETERS					
Release Point	Release Point Description	Source Type	Source Height (m)[a]	σ_{yo} Initial Lateral Dimension (m)	σ_{zo} Initial Vertical Dimension (m)
Space Heaters	20 individual natural gas-fired space heaters with a combined heat input capacity of 6.425 MMBtu/hr	Volume	3.66 (3.55)[d]	34.88 (34.90)	3.97 (3.54)

[a]Meters
[b]Kelvin
[d]Values in parentheses were used in DEQ's verification analyses

3.4 *Results for Toxic Air Pollutant Ambient Impact Analyses*

Compliance with TAP increments were demonstrated by modeling uncontrolled TAP emissions (for the TAP with emissions exceeding the EL) from all 20 space heaters aggregated. Annual hours of operation were assumed to be 2,000 hours per year. The operating hours were accounted for in establishing the modeled emission rate of cadmium. Table 6 summarizes the ambient TAP analyses.

Table 6. RESULTS OF TAP ANALYSES				
TAP	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	AACC[b] ($\mu g/m^3$)	Percent of AACC
Cadmium	Annual	7.67E-05 (1.5E-04)[c]	5.6E-04	13.7% (26.8%)

[a]micrograms per cubic meter
[b]acceptable ambient concentration for carcinogens
[c]values in parentheses were developed by DEQ's verification analysis

4.0 Conclusions

The ambient air impact analysis submitted, in combination with DEQ's verification analyses, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.