STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

A038-149704

075003
A.O. Smith
Automotive
Products

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Fiberglass Spring Manufacturing [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: TRW Steering and Suspension Division COUNTY: Levy

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) System I w/Baghouse

SOURCE LOCATION: Street 670 Airport Road City Williston

UTM: East Zone 17:357.0 North 3248.8

Latitude 29 ° 22 ' 00 "N Longitude 82 ° 28 ' 30 "W

APPLICANT NAME AND TITLE: Joe B. Bailey, Jr., Plant Manager

APPLICANT ADDRESS: P.O. Box 40, Williston, Florida 32696-0040

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of TRW, Inc.

I certify that the statements made in this application for a operation permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Joe B Bailey Jr

Joe B. Bailey, Jr., Plant Manager
Name and Title (Please Type)

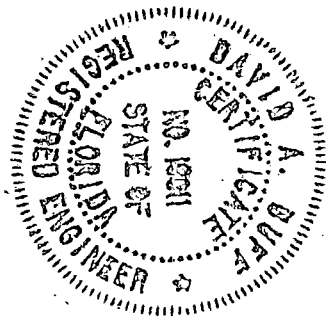
Date: 5/11/88 Telephone No. (904) 528-2273

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

P.O. Box 14288, Gainesville, Florida 32604
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 5/9/88 Telephone No. (904) 375-8000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See Attachment "A"

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction See Attachment A Completion of Construction See Attachment A

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

System I Baghouse and duct work: $6,000.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None issued

E. Requested permitted equipment operating time: hrs/day 10 ; days/wk 4 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Fiberglass/Epoxy	Particulate	2.5	28.5	7-A Mixing Room 3-A Molding Press
	VOC (Styrene)	5.4		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 28.5

2. Product Weight (lbs/hr): 16.4

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

SEE ATTACHMENT "B"

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential* Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	0.0017	0.0005	17-2.610(3)	Reasonable Precautions	0.008	0.0023	System I Baghouse

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

* Per current definition in FAC Chapter 17-2

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
DCE VOKE UMA 252	Particulate	99.9%	>1 um	Manufacturer

E. Fuels Not Applicable

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average Not Applicable Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Waste material is sent to landfill

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 10 ft. Stack Diameter: 6" x 12" ft.

Gas Flow Rate: 1,750 ACFM 1,600 DSCFM Gas Exit Temperature: 90 °F.

Water Vapor Content: Ambient (5) % Velocity: 58 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

Not Applicable

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

Not Applicable

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO^2	_____ grams/sec

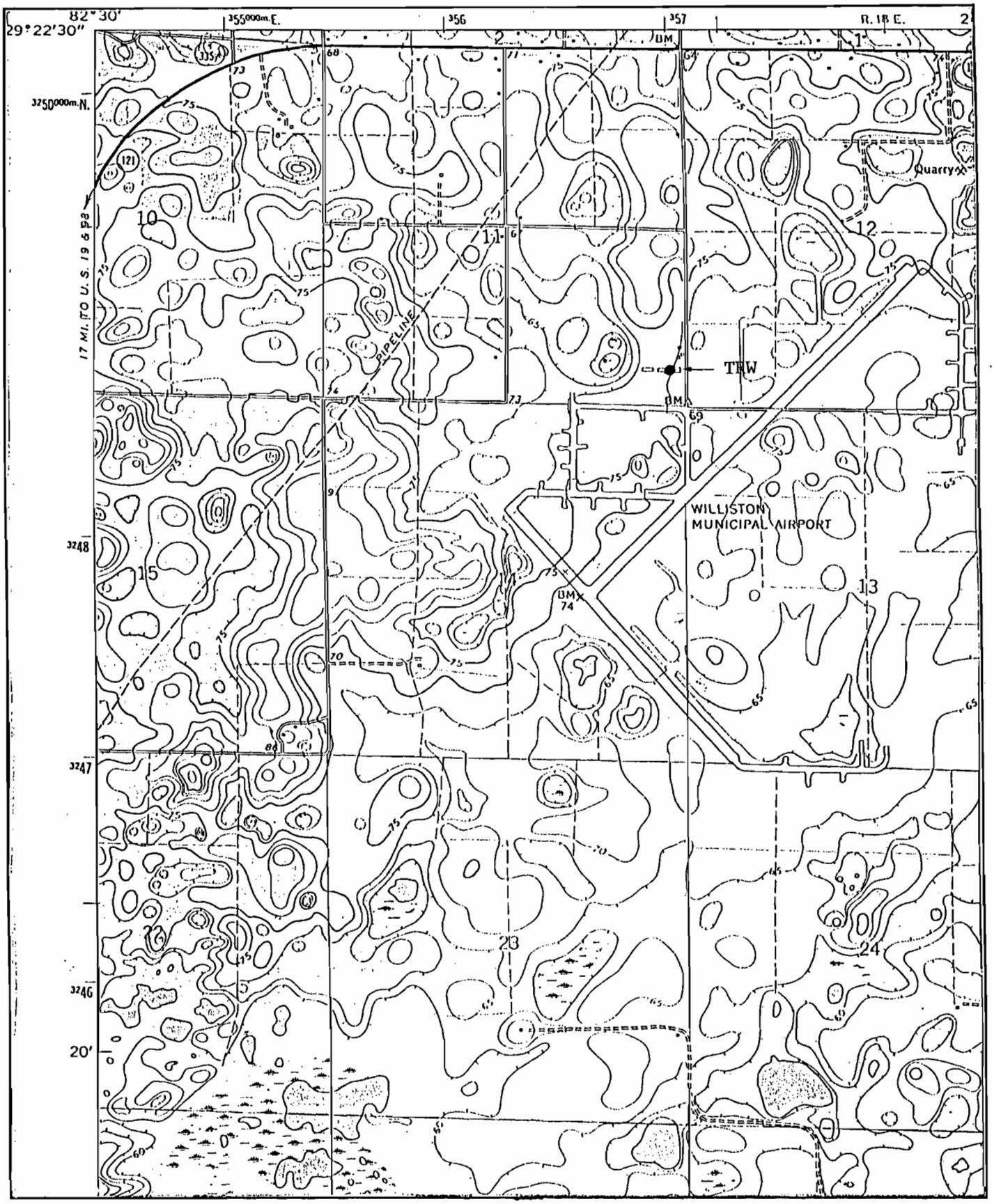
E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

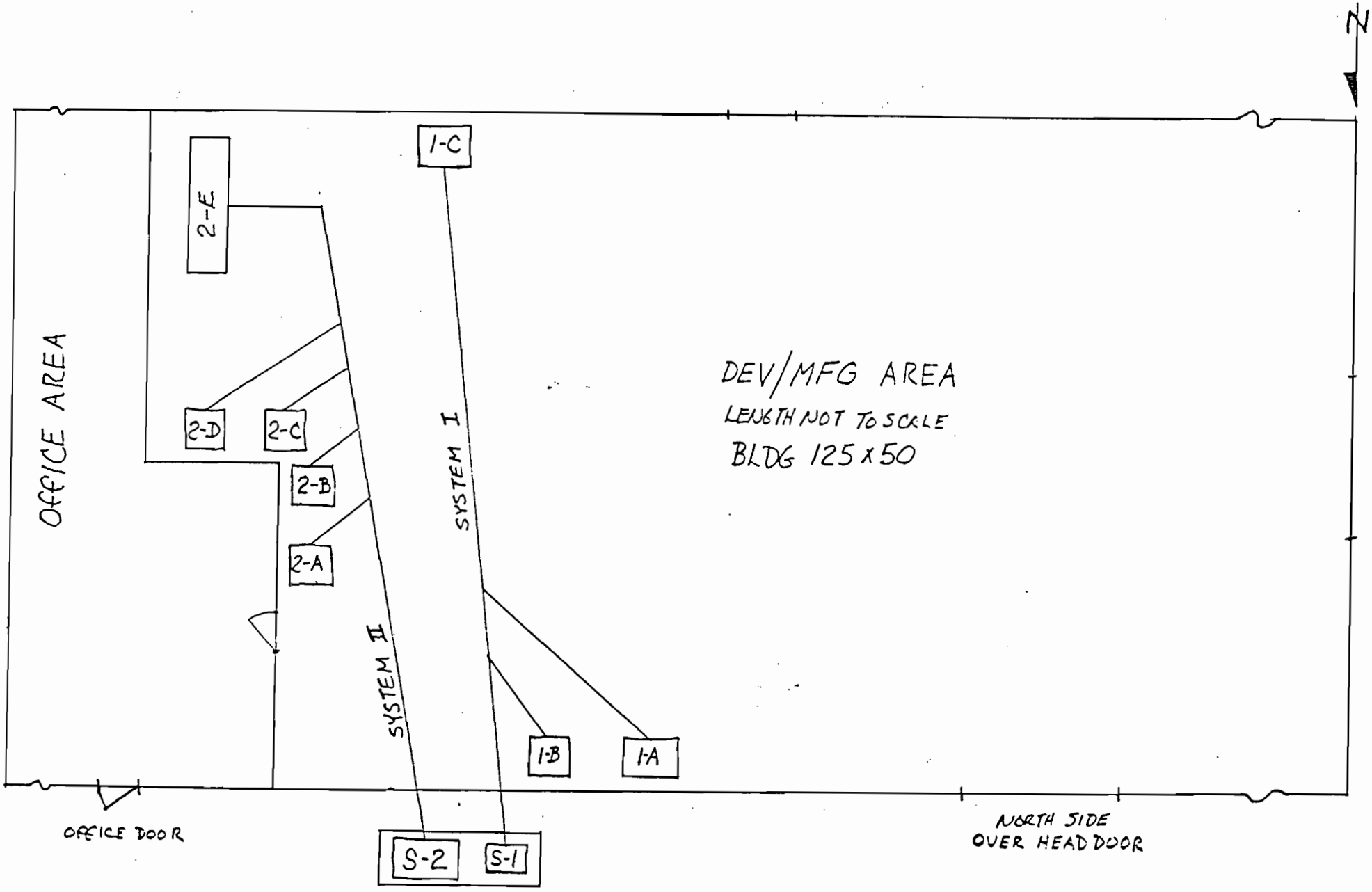
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.



Location of TRW Facility

KBN



TRW BEAR TECH
DUST COLLECTOR SYSTEMS
4/7/88 JOE BAILEY
SCALE 1"=10'0"

ATTACHMENT A

SECTION II.A

TRW is engaged in the manufacture of fiberglass composite leaf springs at the Williston facility. Both light duty and heavy duty springs are produced, and are used for suspension in automobiles and trucks. The light duty springs are used in automobiles such as Corvettes, while the heavy duty springs are used in trucks. Current maximum production at the facility is 25 light springs per day or 9 heavy springs per day.

Springs are manufactured manually through a multi-step process. The steps in the process are described below. A unique source identification number is associated with each piece of equipment to allow easy reference to other sections of the permit application.

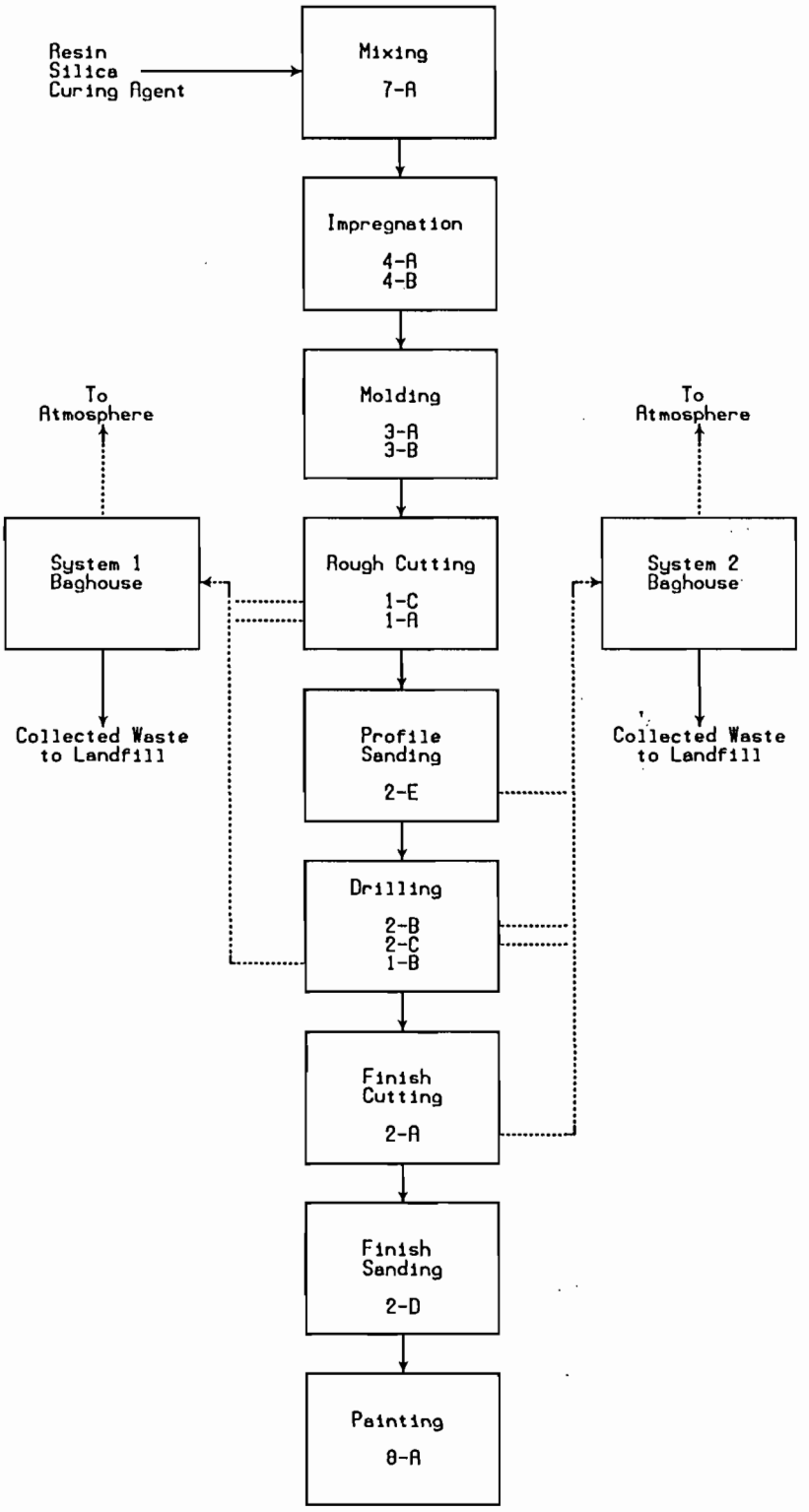
* Resin used in the fiberglass production process is mixed in the **MIXING ROOM** (7-A). Materials are manually combined into a mixing vessel, and then are automatically stirred.

* Fiberglass threads are fed through an **IMPREGNATOR** wherein the threads are wetted with resin and then wrapped on a steel frame. There is one production impregnator (4-A) and one developmental impregnator (4-B), which is used for research.

* The steel frame carrying the impregnated fiberglass is then carried to one of the two **MOLDING PRESSES**. The molding presses mold the material into an unfinished fiberglass composite leaf spring through high temperature and pressure. The presses use heated oil supplied through an electrically heated system. There is one large production molding press (3-A) and one smaller press (3-B) which is currently being used for research purposes.

* The unfinished fiberglass springs are next taken to a **BAND SAW** for rough cutting of the spring. Currently, one 26" saw (1-C) is

Fiberglass Spring Manufacturing
Process Flow Diagram



used for rough cutting. Another 20" saw (1-A) is used for samples and research. Both band saws are vented to the System 1 baghouse for dust control.

* The springs are next sanded to specification using a **PROFILE SANDER**. The PROFILE SANDER (2-E) is an automated operation. and is vented to the System 2 baghouse for dust control.

* The springs are next taken to a **DRILL PRESS** where holes are drilled in the springs. Two drill presses are used for production purposes- a 16" drill press (2-B) and a 12" drill press (2-C). Both presses are vented to the System 2 baghouse for dust control. A third drill press (1-B) is used for sampling and research only at this time.

* A 20" **BAND SAW** is used to make final end cuts on light springs only. This source is vented to the System 2 baghouse.

* A **FLAP SANDER** (2-D) is used to produce a final finish on the springs. This source is vented to the System 2 baghouse.

* The springs are spray painted by hand in a **PAINT BOOTH** (8-A). The paint booth is used to ventilate the painting operation.

* A Devilbiss **PAINT BOOTH** (6-A) is used to control and ventilate dust from power or free hand sanding operations of pre-production samples.

* A small **HIGH TEMPERATURE MUFFLE FURNACE** (5-A), electrically heated, is used for product control and laboratory purposes to test the cured fiberglass.

* Acetone is used for **GENERAL CLEANUP** (11) at the end of each day.

The installation dates for the various pieces of equipment are as follows:

1980 - 1-A Band Saw
1-B Drill Press
1-C Band Saw
2-A BAnd Saw
2-B Drill Press
2-C Drill Press
2-D Flap Sander
3-A Molding Press
3-B Molding press
4-A Impregnator
4-B Impregnator
7-A Mixing Room
System 1 Baghouse

1983 - 2-E Profile Sander
6-A Dust Booth
8-A Paint Booth
New System 1 Baghouse

1987 - 5-A Muffle Furnace
System 2 Baghouse

This permit application is for the System 1 Baghouse. This baghouse vents two band saws (1-A and 1-C) and one drill press (1-B).

ATTACHMENT B
EMISSION ESTIMATES

I. SYSTEM ONE

1-A. 20" Band Saw:

Wood cutting for sample making using wood, rubber and un reinforced plastic as material no scheduled operations are preformed on this saw.

Status - exempt per Regulation 17-2.210-(3)(1)
Control - dust collector

1-B. 16" Drill Press:

Used to drill samples of fiberglass reinforced epoxy, metals and wood no scheduled operations are preformed on this saw.

Output - fiberglass dust < 250 lbs/year max.
Status - possible source - fiberglass dust is not included in the plastics over 20/lbs/ft3 exemption/Tallahassee DER.
Control - dust collector

1-C. 26" Band Saw:

Fiberglass cutting production operation
Material fiberglass reinforced epoxy
Output - current schedule 25 parts per day producing annual output of 250 lbs of dust. Maximum output at 100 percent capacity of plant (light-springs only) 750 lbs per year.

Note: possible increase of 3500 lbs per year with new heavy spring product. Maximum output with new product 4250 lbs/year.

Status - possible source due to material

Control - dust collector

System 1 Dust Collector:

DCE 250 - the above equipment 1-A, 1-B and 1-C are connected to this dust collector. It is mounted outside and exhausts to the atmosphere. The maximum collected weight of fiberglass dust seen by this unit per year including new product would be 4500 lbs/year, currently it is 1000 lbs. This unit is 99.9 percent efficient as stated by its manufacturer. This being the case, it would emit as much as 1 lb per year of fiberglass dust to the atmosphere.

Status - possible source

Control - none - although air could be recirculated into production area.

Maximum Particulate Emissions

1. Current Production

Maximum hourly production = 8.5 springs/hr

Dust produced per spring = 0.2 lb/spring

8.5 springs/hr x 0.2 lb/spring = 1.7 lb/hr

Maximum emissions = 1.7 lb/hr x (1 - 0.999) = 0.0017 lb/hr

2. Potential Maximum Production

Maximum hourly production = 40 springs/hr

40 springs/hr x 0.2 lb/spring = 8.0 lb/hr

8.0 lb/hr x (1 - 0.999) = 0.008 lb/hr

Process Rate Derivation

Each spring requires:

Resin Mix -	Silica	0.1 lb
	Epoxy Resin	3.1 lb
	Curing agent	1.3 lb
		4.5 lb
E-Glass		6.9 lb
Total		11.4 lb

Maximum production rate = 8.5 springs/hr

Resin Mix - 8.5 x 4.5 = 38.3 lb/hr

E-Glass - 8.5 x 6.9 = 58.7 lb/hr

Total 97.0 lb/hr

Actual production rate = 2.5 springs/hr

97.0 lb/hr x 2.5/8.5 = 28.5 lb/hr

Product rate:

Finished spring = 6.55 lbs

Maximum production rate - 6.55 lbs x 8.5 = 55.7 lb/hr

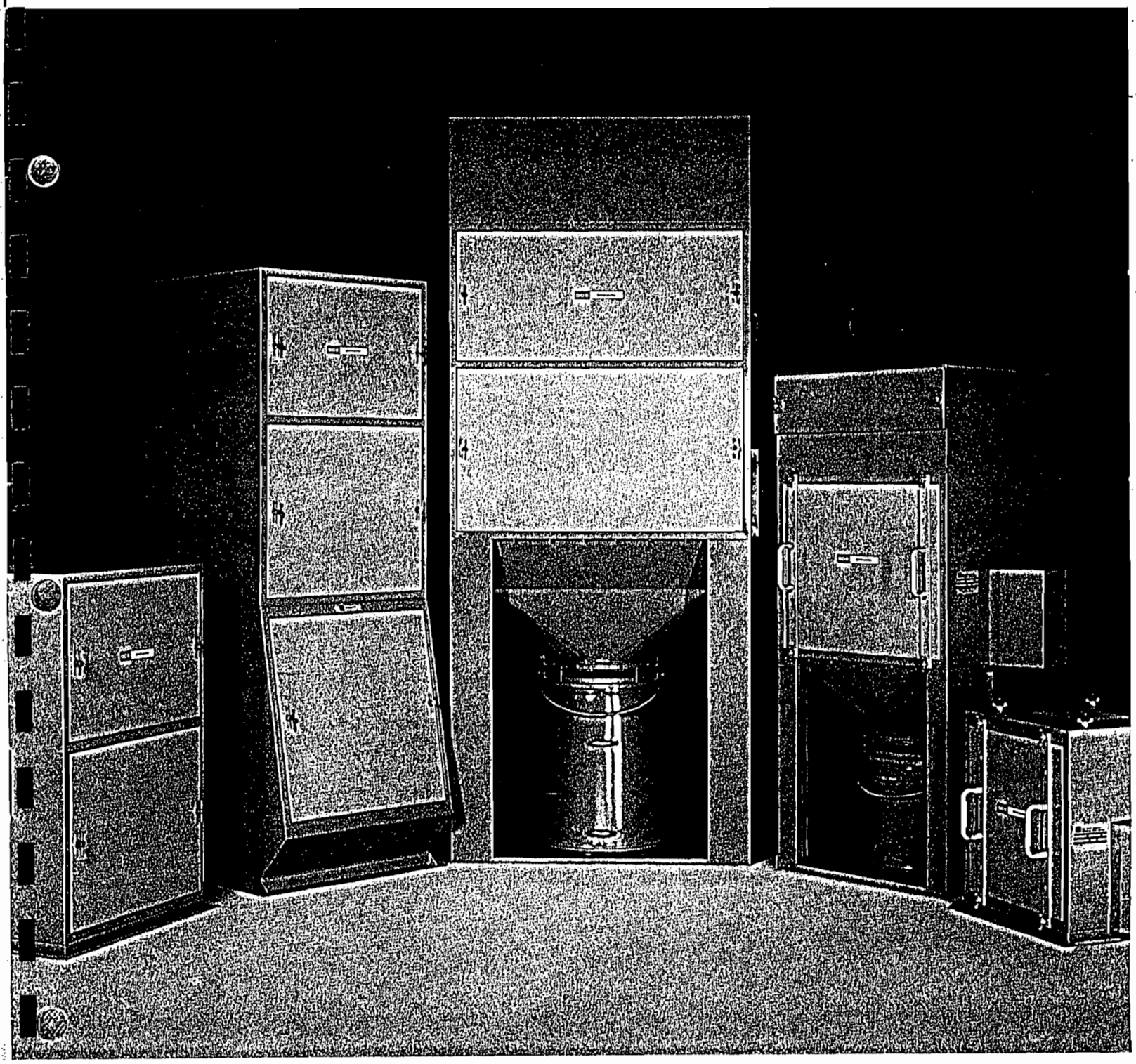
Actual production rate - 6.55 lbs x 2.5 = 16.4 lb/hr

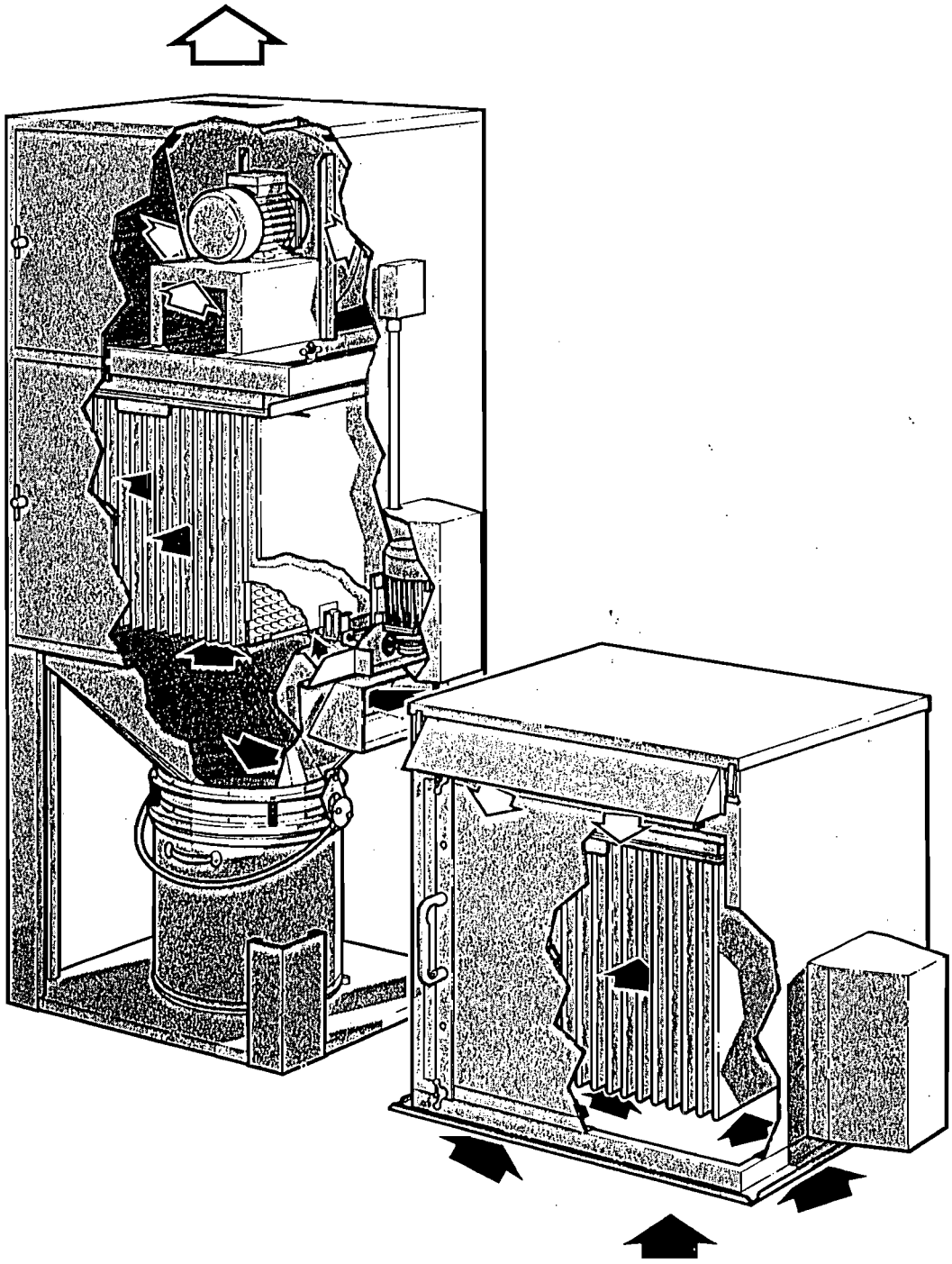
PUBLICATION 378A

DCE

Unimaster®

dust control units
series UMA70-250





Unimaster models UMA 152 and UMA 150V showing air flow

APPLICATIONS

Standard units

DCE Unimaster Type UMA dust control units are applied in most industries on many different dusts involving a wide variety of processes. A comprehensive list of applications would be too long and misleading because each problem needs careful assessment before the most suitable unit can be selected. As a general guide applications include the following types of dust generating machinery: borers, chipping booths, crushers, drills, grinders, lathes, milling machines, mixers, packing machines, polishers, powder spray equipment, presses, sanders, saws, shot-blast cabinets, slitters, tabletting machines.

Hopper type units

The type UMA H is designed for applications requiring increased dust storage capacity, typically for dusts with a large bulk, e.g. sawdust and shavings from saw benches and planers. It can also be applied to groups of several machines, on intermittent use of large machines, or on any other heavy duty requirements needing large container capacity. Further applications include the ventilation of bulk storage vessels and process machinery under negative pressure.

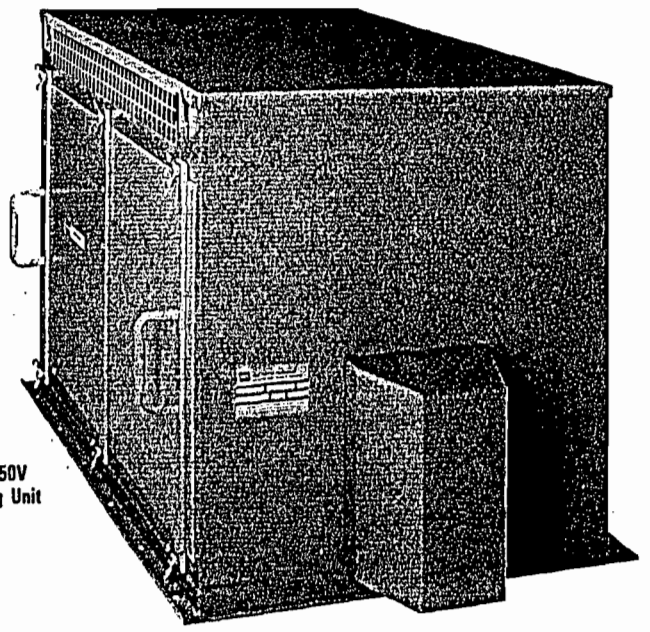
Sack tipping units

The UMA STU is specifically designed for use in tipping operations. The unit is easy to locate over feeding points to hoppers, chutes and conveyors, where material is manually discharged from sacks or containers.

Venting units

The venting units Type UMA V are designed for ventilating process machinery, silos or other storage vessels, which are under pressure. The size of the unit required is determined by the period of uninterrupted operation, the air displacement of the system and the approved filtration velocity.

If the unit needs to be located away from the silo or process served, a UMA V with hopper and dust container is used.



UMA 250V Venting Unit

Latest design of Unimaster Venting Unit—showing cleaned air outlet at front, and sloping lid.

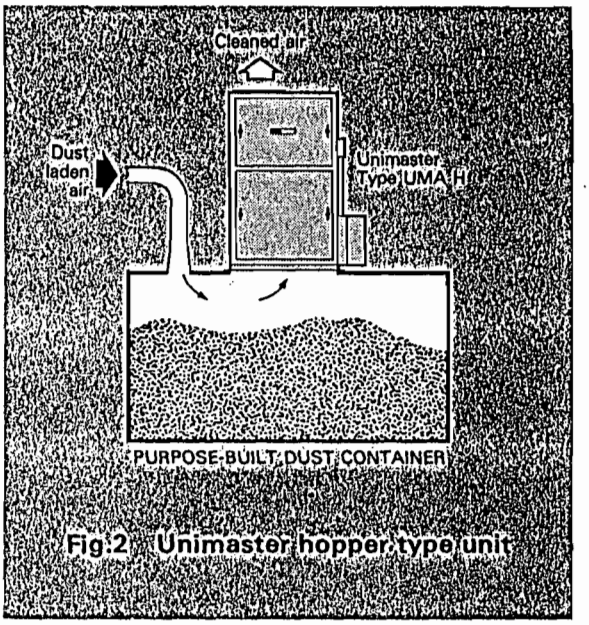


Fig 2 Unimaster hopper type unit

OPERATION

Standard unit

As shown inside front cover, contaminated air from the dust generation point is drawn through the inlet to the filter by the fan. Initially some pre-separation takes place in the unit hopper where a baffle deflects the heavier dust particles into the dust container below. Finer dust particles are carried up to the filter elements where they are retained on the outer surface of the filter fabric. The cleaned air passes through the filter fabric into the fan chamber and is then discharged. On fan shutdown the cleaning mechanism is automatically activated. The collected dust is dislodged from the filter elements and falls into the container below. On normal applications the optimum interval between cleaning cycles should be four hours.

Hopper type unit

Operates as Standard unit, dust being entrained as shown in Fig. 2.

Sack tipping unit

The quick-release hatch is removed from the hopper and the unit fan is switched on. Air is entrained through the sack tipping point and prevents dust escaping while sacks are being emptied. Airborne dust is carried up and retained by the filter elements. On completion of sack tipping the hatch is replaced and the fan switched off, which automatically activates the filter cleaning mechanism – depositing the collected dust directly into the hopper, chute or conveyor beneath.

Venting unit

The Venting unit filter operates above atmospheric pressure. No fan is supplied, the air flow being provided by the blower or fan associated with the system (see inside front cover). The conveying air and feed burden should enter the silo, bin or pressure vessel in a way that allows pre-separation of the bulk product from the conveying air before it reaches the filter. Dust is collected in the same way as in the Standard unit. On completion of delivery, the blower or fan must be allowed to run down before the cleaning mechanism is operated. Collected dust is deposited directly into the silo or dust container.

Standard Units, Type UMA

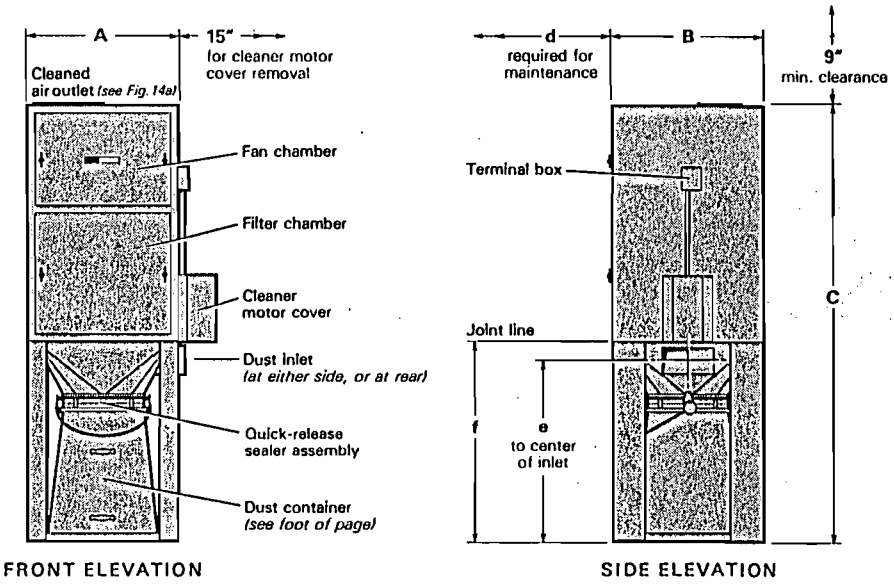
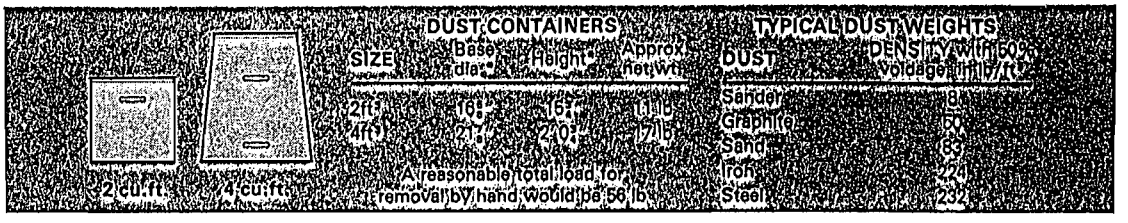


Fig. 3 Standard Unimaster dust control unit
Suitable for inside locations—Model UMA 154 illustrated

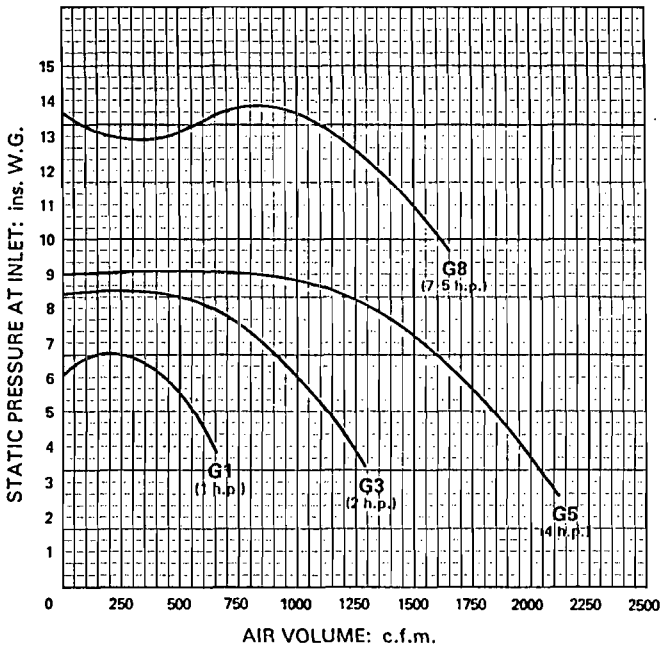
TYPE UMA	Filtration area	DIMENSIONS* A	B	C	d	e	f	Inlet (inside dims.)†	Duct dia. size range	Fan	Motor rating	Dust container	Net weight (approx.)
72	67 ft²	22⅜"	22⅜"	5' 10"	22"	2' 1"	2' 4"	4" × 6"	3" to 6"	G1	1 hp	2 ft³	340 lb
74	67 ft²	22⅜"	22⅜"	7' 2"	22"	3' 6"	3' 8"	4" × 6"	3" to 6"	G1	1 hp	4 ft³	360 lb
102	100 ft²	2' 6"	22⅜"	6' 5"	22"	2' 4"	2' 7"	5" × 10"	4" to 8"	G1 G3	1 hp 2 hp	2 ft³	410 lb 430 lb
104	100 ft²	2' 6"	22⅜"	7' 2"	22"	3' 1"	3' 5"	5" × 10"	4" to 8"	G1 G3	1 hp 2 hp	4 ft³	430 lb 450 lb
152	150 ft²	2' 6"	2' 6"	6' 7"	2' 6"	2' 4"	2' 7"	5" × 10"	4" to 9"	G3 G5	2 hp 4 hp	2 ft³	460 lb 490 lb
154	150 ft²	2' 6"	2' 6"	7' 4"	2' 6"	3' 1"	3' 5"	5" × 10"	4" to 9"	G3 G5	2 hp 4 hp	4 ft³	490 lb 510 lb
252	244 ft²	3' 9"	2' 6"	7' 3"	2' 6"	3' 0"	3' 4"	6" × 12"	4" to 9"	G3 G5 G8	2 hp 4 hp 7½ hp	2 ft³	620 lb 640 lb 670 lb
254	244 ft²	3' 9"	2' 6"	8' 0"	2' 6"	3' 8"	4' 1"	6" × 12"	4" to 9"	G3 G5 G8	2 hp 4 hp 7½ hp	4 ft³	640 lb 660 lb 690 lb

*Tolerance ±⅛" †DCE tolerance $^{+\frac{1}{8}"}_{-0}$ (Note: Outside dimensions of duct connectors must not exceed inside dimensions of inlets).



*Tolerance ±⅛"

Fan details



UNIT PERFORMANCE CURVES

These curves were obtained from volume and pressure readings taken at unit inlet with the filter clean.

Standard & Hopper Type units

To select the most suitable fan for a given application:

1. Determine the air rate, in cfm, needed to entrain the dust.
2. Estimate pressure drop through connected system – i.e. between point of entrainment and unit inlet.
3. Assess pressure drop across filter prior to shaking, usually 2 - 4 in. W.G.
4. Sum of 2 and 3 = W.G. required.
5. Consult graph for fan performances available.

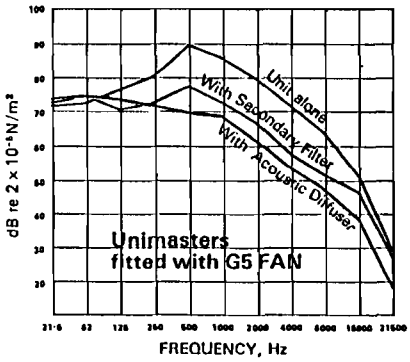
Sack Tipping Units have G3 fans with modified outlet to ensure adequate face velocities at the tipping hatch under normal operating conditions.

Typically, the exhaust rate for the UMA 250 STU is 750 cfm.

Sound pressure levels

The accompanying graph shows typical sound pressure levels versus frequency for Unimasters of different configurations. Continuous exposure to noise levels in excess of 90 dB(A) is prohibited by governmental regulations. Since the noise emanating from various sources is additive, many companies have established specifications limiting the noise level from an individual piece of equipment to 85 dB(A) or less. The Machine Tool Builders Association have established a test procedure for determining sound pressure levels.

The table shows the noise levels for the range of Unimasters in three different configurations. The readings given were taken in semi-reverberant surroundings at a radius of 1 meter from the equipment housing and at a height of 1.5 meters from floor level, using a precision sound level meter and octave band filter. As sound pressure levels are affected by installation conditions, the surroundings and other factors, variation from these readings can be expected with each field installation. However, these readings do serve as a guide indicating that noise levels reached by Unimasters fitted with an acoustic diffuser or secondary filter come well within acceptable limits.



COMPARISON OF UNIMASTER SOUND PRESSURE LEVELS, in dB re $2 \times 10^{-4} N/m^2$ –

Units alone / Units with Acoustic Diffuser / Units with Secondary Filter

Frequency Hz	G1 FAN (UMA 70) Unit alone	G1 FAN (UMA 70) With A/D	G1 FAN (UMA 70) With S/F	G3 FAN (UMA 100, 150 & 250) Unit alone	G3 FAN (UMA 100, 150 & 250) With A/D	G3 FAN (UMA 100, 150 & 250) With S/F	G5 FAN (UMA 150 & 250) Unit alone	G5 FAN (UMA 150 & 250) With A/D	G5 FAN (UMA 150 & 250) With S/F	G8 FAN (UMA 250 only) Unit alone	G8 FAN (UMA 250 only) With A/D	G8 FAN (UMA 250 only) With S/F
31·5	63	70	SECONDARY FILTER NOT SUPPLIED WITH UMA 70	67	67	68	72	74	73	75	80	78
63	66	73		71	71	73	73	75	75	78	77	80
125	69	74		75	75	69	77	74	71	80	78	74
250	78	75		78	75	70	81	72	73	82	75	72
500	80	70		90	71	78	90	70	78	81	71	69
1000	76	59		86	63	72	86	69	73	82	65	69
2000	71	53		78	57	65	80	62	67	81	62	68
4000	63	49		70	49	56	72	54	58	80	60	66
8000	56	43		63	43	51	64	48	52	68	54	56
16000	44	34		61	33	46	52	39	47	64	49	49
31500	23	18		29	17	27	30	19	28	32	30	27
Typical weighted sound levels, dB(A)	81	69		90	71	78	90	71	78	87	72	74

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

A039-14728[1]

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Fiberglass Spring Manufacturing [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: TRW Steering and Suspension Division COUNTY: Levy

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) System 2 w/Baghouse

SOURCE LOCATION: Street 670 Airport Road City Williston

UTM: East Zone 17: 357.0 North 3248.8

Latitude 29 ° 22 ' 00 "N Longitude 82 ° 28 ' 30 "W

APPLICANT NAME AND TITLE: Joe B. Bailey, Jr., Plant Manager

APPLICANT ADDRESS: P.O. Box 40, Williston, Florida 32696-0040

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of TRW, Inc.

I certify that the statements made in this application for a operation permit are true, correct and complete to the best of my knowledge and belief. Furthe I agree to maintain and operate the pollution control source and pollution contr facilities in such a manner as to comply with the provision of Chapter 403, Flori Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferab and I will promptly notify the department upon sale or legal transfer of the permitt establishment.

*Attach letter of authorization

Signed: Joe B. Bailey

Joe B. Bailey, Jr., Plant Manager
Name and Title (Please Type)

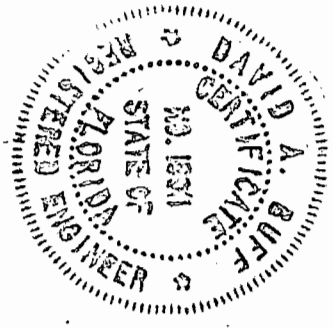
Date: 5/11/88 Telephone No. (904) 528-2273

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project ha been designed/examined by me and found to be in conformity with modern engineeri principles applicable to the treatment and disposal of pollutants characterized in t permit application. There is reasonable assurance, in my professional judgment, th

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharg an effluent that complies with all applicable statutes of the State of Florida and th rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the prop maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

P.O. Box 14288 Gainesville, Florida 32604
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 5/9/88 Telephone No. (904) 375-8000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See Attachment "A"

B. Schedule of project covered in this application (Construction Permit Application Only

Start of Construction See Attachment A Completion of Construction See Attachment A

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

System 2 Baghouse and Duct work: $12,000.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None issued

E. Requested permitted equipment operating time: hrs/day 10 ; days/wk 4 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Fiberglass/Epoxy	Particulate	2.5	28.5*	7-A Mixing Room 3-A Molding Press
	VOC	5.4		

*Refer to System I Baghouse application for derivation

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 28.5

2. Product Weight (lbs/hr): 16.4

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

SEE ATTACHMENT "B"

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential* Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	0.0018	0.0005	17-2.610(3)	Reasonable Precautions	0.017	0.0050	System 2 Baghouse
VOC (mixing)	0.0003	0.0003	N/A	N/A	0.0008	0.0008	7-A
VOC (Impregnation)	0.04	0.04	N/A	N/A	0.16	0.16	4-A,4-B
VOC (Molding)	0.0007	0.0007	N/A	N/A	0.0007	0.0050	3-A,3-B
VOC (Painting)	0.26	0.262	N/A	N/A	0.79	0.785	8-A
VOC (Cleanup)	0.5	0.05	N/A	N/A	0.5	0.005	11

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

* Per current definition in FAC Chapter 17-2

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
DCE VOKES UMA 350	Particulate	99.9%	>1 um	Manufacturer

E. Fuels Not Applicable

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average Not Applicable Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Waste material is sent to landfill

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 15 ft. Stack Diameter: 1x2 ft.

Gas Flow Rate: 2,750 ACFM 2,500 DSCFM Gas Exit Temperature: 90 °F.

Water Vapor Content: Ambient (5) % Velocity: 23 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

Not Applicable

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

Not Applicable

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/aec
SO^2	_____	grams/sec

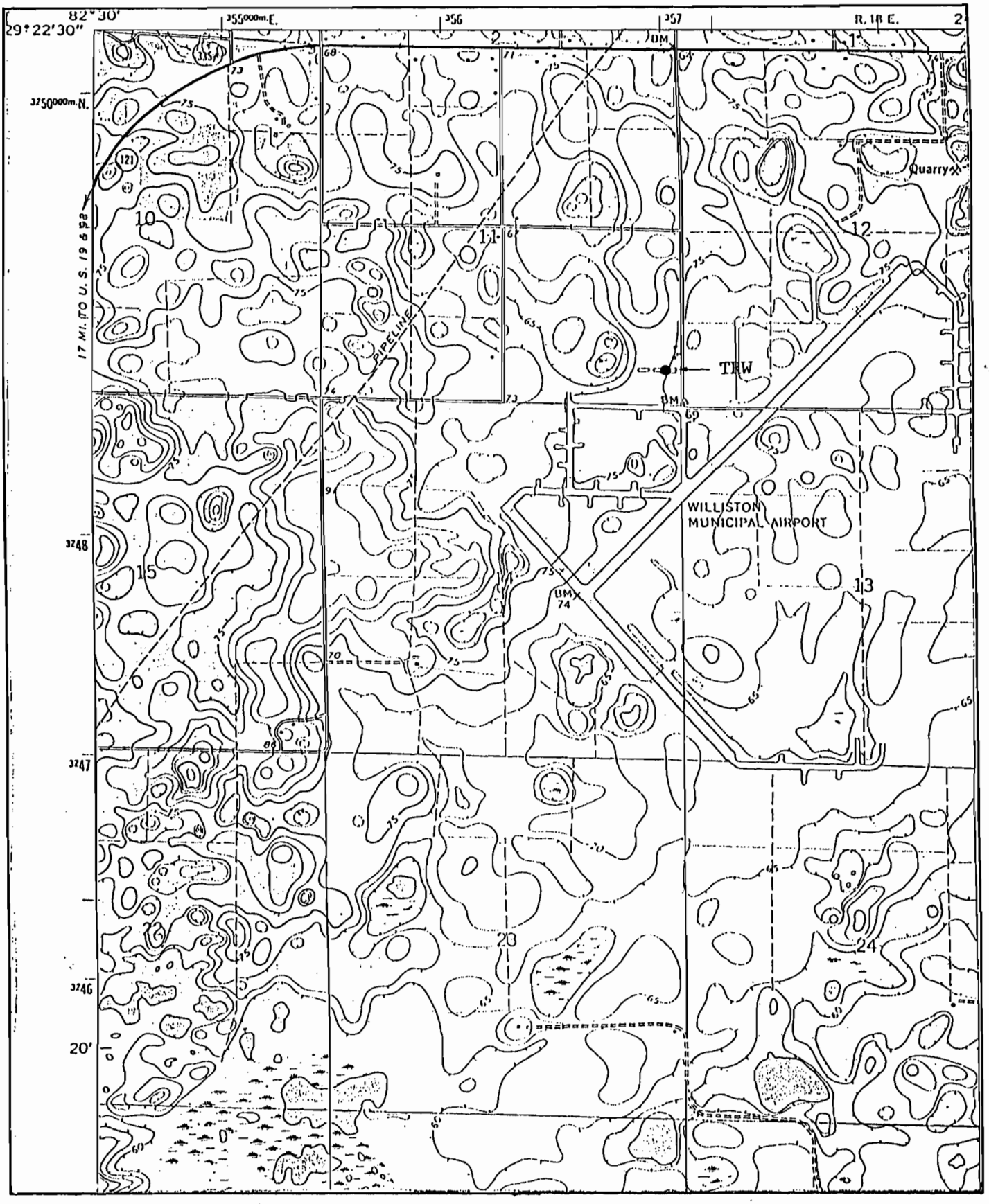
E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

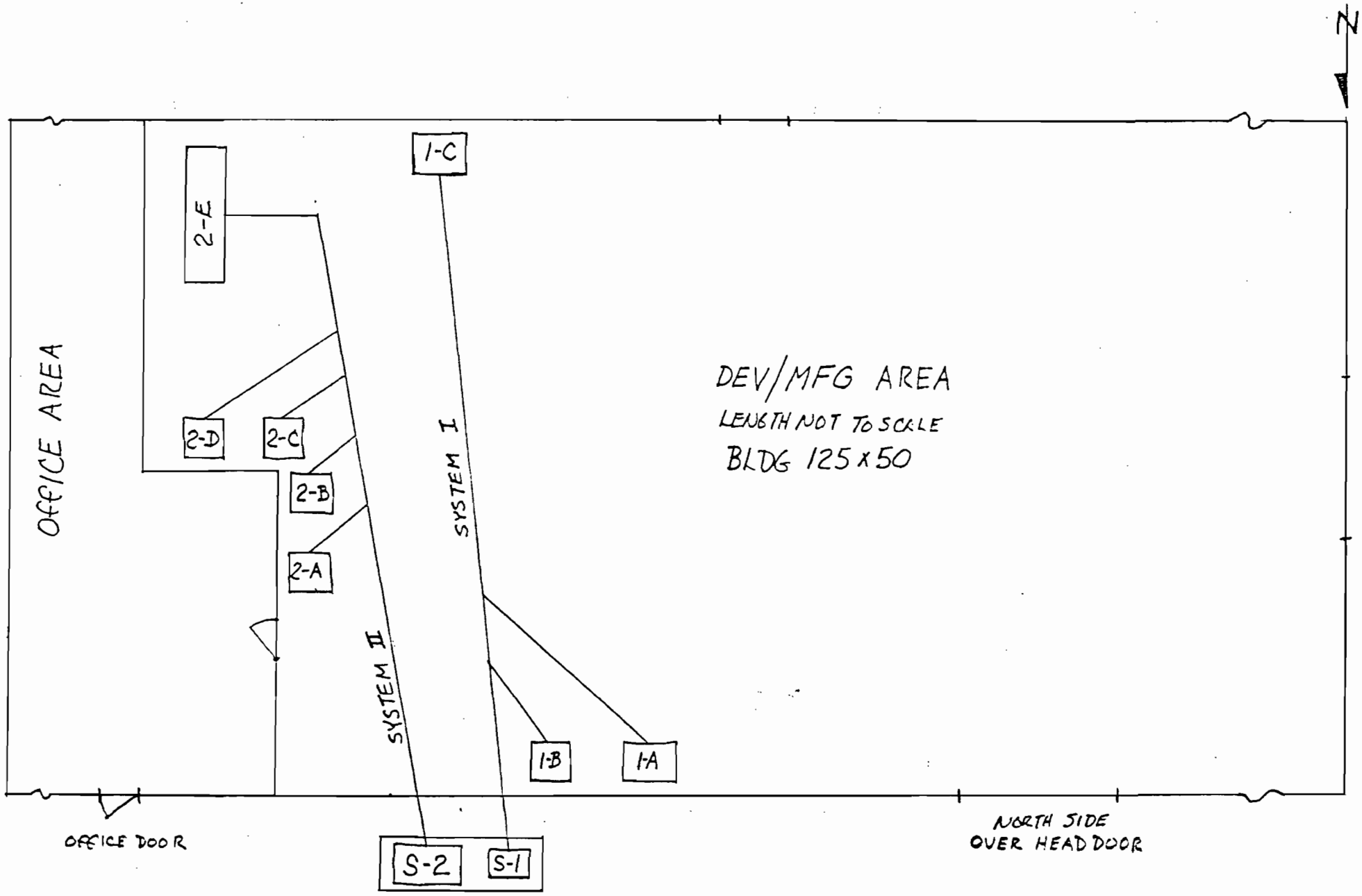
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.



Location of TRW Facility

KBN



TRW BEAR TECH
DUST COLLECTOR SYSTEMS
4/7/88 JOE BAILEY
SCALE 1"=10'0"

ATTACHMENT A

SECTION II.A

TRW is engaged in the manufacture of fiberglass composite leaf springs at the Williston facility. Both light duty and heavy duty springs are produced, and are used for suspension in automobiles and trucks. The light duty springs are used in automobiles such as Corvettes, while the heavy duty springs are used in trucks. Current maximum production at the facility is 25 light springs per day or 9 heavy springs per day.

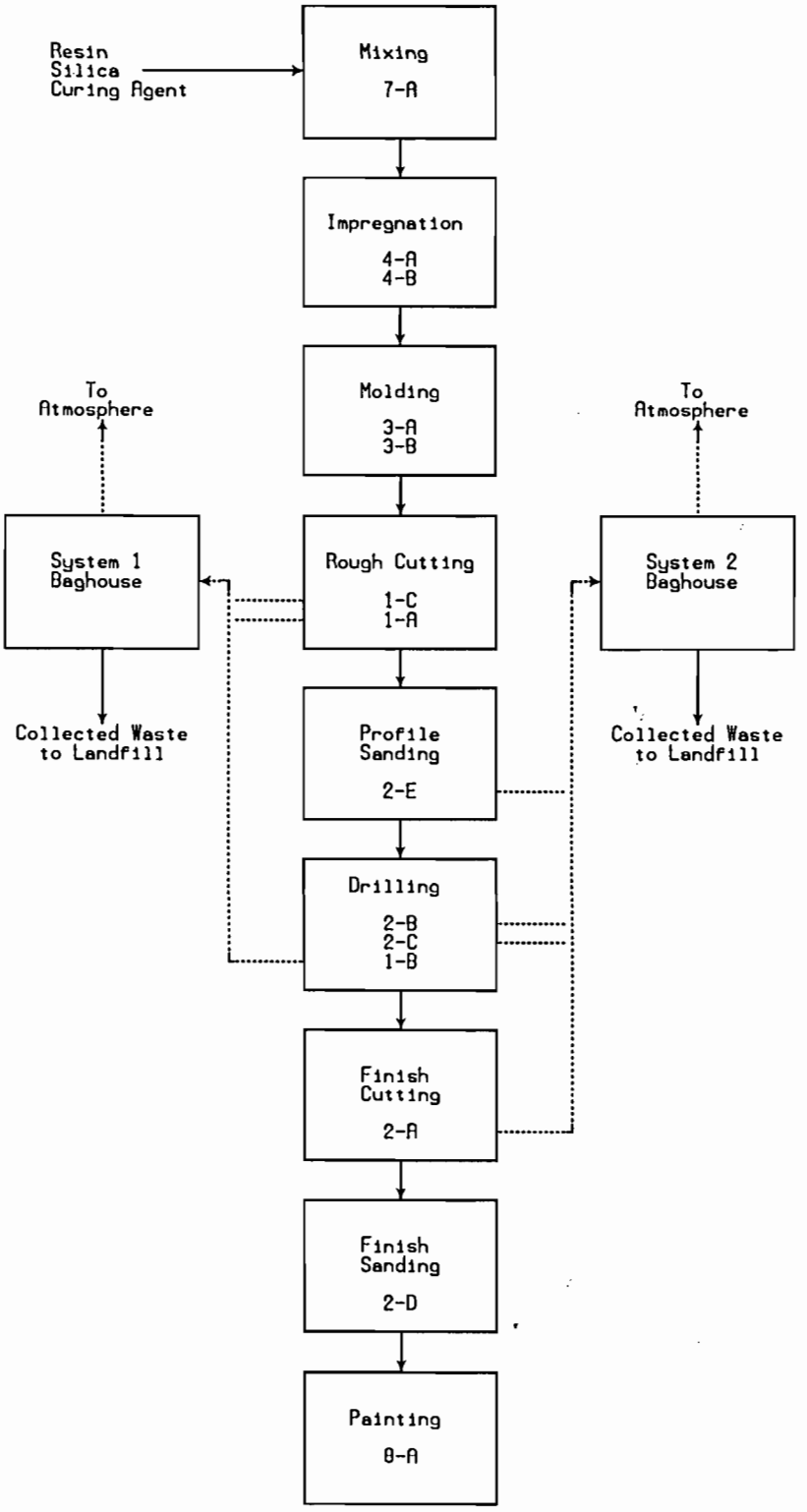
Springs are manufactured manually through a multi-step process. The steps in the process are described below. A unique source identification number is associated with each piece of equipment to allow easy reference to other sections of the permit application.

* Resin used in the fiberglass production process is mixed in the MIXING ROOM (7-A). Materials are manually combined into a mixing vessel, and then are automatically stirred.

* Fiberglass threads are fed through an IMPREGNATOR wherein the threads are wetted with resin and then wrapped on a steel frame. There is one production impregnator (4-A) and one developmental impregnator (4-B), which is used for research.

* The steel frame carrying the impregnated fiberglass is then carried to one of the two MOLDING PRESSES. The molding presses mold the material into an unfinished fiberglass composite leaf spring through high temperature and pressure. The presses use heated oil supplied through an electrically heated system. There is one large production molding press (3-A) and one smaller press (3-B) which is currently being used for research purposes.

Fiberglass Spring Manufacturing
Process Flow Diagram



* The unfinished fiberglass springs are next taken to a **BAND SAW** for rough cutting of the spring. Currently, one 26" saw (1-C) is used for rough cutting. Another 20" saw (1-A) is used for samples and research. Both band saws are vented to the System 1 baghouse for dust control.

* The springs are next sanded to specification using a **PROFILE SANDER**. The PROFILE SANDER (2-E) is an automated operation. and is vented to the System 2 baghouse for dust control.

* The springs are next taken to a **DRILL PRESS** where holes are drilled in the springs. Two drill presses are used for production purposes- a 16" drill press (2-B) and a 12" drill press (2-C). Both presses are vented to the System 2 baghouse for dust control. A third drill press (1-B) is used for sampling and research only at this time.

* A 20" **BAND SAW** (2-A) is used to make final end cuts on light springs only. This source is vented to the System 2 baghouse.

* A **FLAP SANDER** (2-D) is used to produce a final finish on the springs. This source is vented to the System 2 baghouse.

* The springs are spray painted by hand in a **PAINT BOOTH** (8-A). The paint booth is used to ventilate the painting operation.

* A Devilbiss **PAINT BOOTH** (6-A) is used to control and ventilate dust from power or free hand sanding operations of pre-production samples.

* A small **HIGH TEMPERATURE MUFFLE FURNACE** (5-A), electrically heated, is used for product control and laboratory purposes to test the cured fiberglass.

* Acetone is used for **GENERAL CLEANUP** (11) at the end of each day.

The installation dates for the various pieces of equipment are as follows:

1980 - 1-A Band Saw
1-B Drill Press
1-C Band Saw
2-A BAnd Saw
2-B Drill Press
2-C Drill Press
2-D Flap Sander
3-A Molding Press
3-B Molding press
4-A Impregnator
4-B Impregnator
7-A Mixing Room
System 1 Baghouse

1983 - 2-E Profile Sander
6-A Dust Booth
8-A Paint Booth
New System 1 Baghouse

1987 - 5-A Muffle Furnace
System 2 Baghouse

This permit application is for the System 2 Baghouse. This baghouse vents one band saw (2-A), two drill presses (2-B and 2-C), the Profile Sander (2-E) and the Flap Sander (2-D). This application also covers other miscellaneous sources at the facility.

ATTACHMENT B
EMISSION ESTIMATES

II. SYSTEM TWO

2-A. 20" Band Saw:

Fiberglass cutting production saw. Material fiberglass reinforced epoxy resin only. Final end cuts light spring only.

Output - currently 149 lbs per year, maximum production 447 lbs per year.

Status - possible source

Control - dust collector

2-B. 16" Drill Press:

Drilling operation light springs only - material fiberglass reinforced epoxy.

Output - currently 20.9 lbs per year.

Maximum - 62.8 lbs year

Status - possible source

Control - dust collector

2-C. 12" Drill Press:

Hole saw operation light springs only - material fiberglass reinforced epoxy.

Output - currently 118.3 lbs per year, max 354.9 lbs/yr

Status - possible source

Control - dust collector

2-D. Vonnegut (Flap Sander):

Production final finish all springs - removes very little material. Breaks glaze for better paint adhesion. 2.22 square feet sanding surface.

Output - N/A

Status - exempt per Regulation 17-2.210-(3)(i)

Control - dust collector

2-E. Profile Sander:

All springs to date require profile sanding. Light springs are deflashed, heavy springs are sanded to profile.

Output - current light spring 500 lbs per year, maximum 1500 lbs per year. Heavy springs 7560 lbs/year total maximum output of 9060 lbs per year.

Status - a possible source and our largest producer of possible air pollutants.

Control - dust collector

System II Dust Collector:

DCE 350 - the above equipment 2-A through 2-E is connected to this dust collector. It is mounted outside and exhaust to the atmosphere. This unit is currently collecting 1040 lbs/year including heavy springs samples.

The maximum/year could be 9924.7 lbs. This unit is stated by the manufacturer to be 99.9 percent efficient. Therefore, this unit could emit as much as 10 lbs of dust to the atmosphere per year.

Status - possible source

Control - none - although air could be recirculated into production area.

III MOLDING PRESSES

3-A. 150 Ton Production Press With Oil Heated Molds:

Currently equipped with single cavity mold for light spring production. Maximum capacity - 3 cavity light spring or 2 cavity heavy spring.

Emissions - little to none with heavy epoxy resin, however one system does contain styrene and has a loss factor (per Shell Chemical) of .78 Grams/Ft2/hr. Calculated styrene loss per 10 hr day with 3 cavity tool:

- end area exposed 6 X 4X10 = 240in2
- .78 grams X 1.67 = 1.30 grams/hr
- 240/144 = 1.67 ft2
- time of cycle .3 hours
- max cycles/10hr day = 25
- 25 X .3hrs = 7.5 hours
- 7.5 X 1.30 G/hr = 9.75 grams styrene lost per 10 hour day.

Current rate is 1/3 this or 3.25 G/day

= Currently .0007 tons/year, or maximum .0022 tons/year

Status - not considered a source

Control - normal ventilation

3-B. 75 Ton Press With Oil Heated Platens and Mold:

Non production, sample press currently being used for heavy spring development and material system tests maximum capacity 2 light or 1 heavy spring cavity tooling.

Emissions - little to none with heavy epoxy resin, one system contains styrene and has loss factor (per Shell Chemical) of .78 grams/ft2/hr. calculated styrene loss per 10 hour day with single cavity heavy spring:

-end area exposed 2 X 8 X 17" = 272

-272/144 = 1.89 ft2

-.78 X 1.89 = 1.47 Grams per hour

-time of cycle .75 hr

-max cycles/10 hr day 9

-9 X .75 = 6.75 hr

-6.75 X 1.89 = 12.76 grams styrene lost per 10 hour day

Emissions maximum = .0028 tons/year

Note: this press does not run continually, average rate less than once a week.

Status - not considered a source

Control - normal ventilation

IV. IMPREGNATORS

4-A. Production Impregnator:

Used for wetting fiberglass with resin. This unit for production light springs and sample heavy springs.

Currently impregnates 25 light springs per day or 9 heavy springs.

Since emissions are low from this operation only the maximum exposed material condition will be shown.
Only known emissions - styrene .78 grams/ft2/hr.
Maximum exposure - 3 light springs, there are 3 elements of exposure:

1 - tank/resin surface

2 - impregnated glass to frame

3 - frame.

Wrapping time 12 minutes, 25 cycles/10 hr day max.

Areas:

-tank - 15 X 8 =	120in2
-tank to frame* = 96 X 4 X 2 =	768in2
-frame* = 4 X 54 X 2 =	432in2
	1320in2

-Maximum elements 3 X 1320in2 = 3960in2

-3969/144 = 27.5ft2

-.78grams X 27.5 = 21.45 grams loss

-per cycle X 25 = 536 grams loss per day maximum or .1181 tons/yr.

Current production rate 1/3 of this or 178.8 grams per day, or .0394 tons/yr.

* - Includes both exposed sides

Status - not considered a source

Control - normal ventilation

4-B. Developmental Impregnator:

Use to wet fiberglass with epoxy resin. This unit is used to study material orientation and its effect on product life. Running frequency less than once a week.

Maximum exposure same as production impregnator so styrene emissions will run the same as above or 178.8 grams or less per day, or maximum .0394 tons/yr.

Status - not considered a source

Control - normal ventilation

V. HIGH TEMPERATURE MUFFLE

5-A. 1100 Degrees Fahrenheit Recirculating Air Muffle:

Operation - daily checks of 3 cured fiberglass reinforced epoxy resin samples of approximately 33 grams each for a burn weight of approximately 100 grams. Of the 100 grams 30-34 percent is resin and is burned off. When samples are first placed in the muffle, some whiffs of smoke are visible from the fume vent. These are caught in the hood and expelled from the building and into the atmosphere by a 12" low volume duct fan. The remainder is reduced to water vapor and CO2 by the complete combustion of the muffle.

Status - exempt per regulation 17-2.210(3)(M)

Control - power hood vent

VI. DUST COLLECTING BOOTH

6-A. 8' X 8' X 9' Devilbiss Dry Filter Paint Booth:

This booth is used for dust control when power hand or free hand sanding of pre-production samples. Air powered hand disc and drum sanders are used in this operation. The booth is equipped with a horizontal floor mounted belt sander. Belt size 6 X 119, less than five square feet of sanding area. The exhaust fan on this booth gives air flow speed of 150 F.P.M. which controls the dust for the operator and directs it towards the filters. Most of the heavy dust (100 lbs + per cubic foot) settles to the floor in front of the filters.

Status - exempt per regulation 17-2.210(3)(i)

Control - none

VII. MIXING ROOM VENTILATION

7-A. 12" Dust Fan:

With 2 each 10 X 16 filtered inlets, this system prevents the build up of any resin vapors and directs airborne fumed silica to the filters. The curing agent used in this system is a dry powder that is also directed to the filters should it become airborne.

This material is a strong irritant in contact with moist skin but otherwise biodegradable (see MSDS for Shell 9150). Resin vapor contains styrene and the maximum calculated discharge per 10 hr day would be: Surface area of mixing container 113in2 or .785 ft2 X .78 grams/Ft2 per hour = .61 grams/hr. Maximum frequency for use per day is 6 times per 10 hours or: 3.67 grams of styrene per day, or .0008 tons/yr max.

Status - maybe considered source

Control - filters with change schedule and exhaust inspection.

VIII. PAINT BOOTH AND CONVEYOR SYSTEM

8-A. 8' X 8' X 9' Devilbiss Turbo Clean Waterfall Booth: 150 FPM air velocity 28 GMP water flow 34" stack 84" above roof.

Emission - Output of VOC is controlled by our molding capacity. Using 15,000 light springs + 5,000 heavy as maximum, emissions are calculated as follows, using values published by Sherwin Williams Co., the supplier of our urethane finish - polane dull black F63B7 mixed 7 parts finish to 1 part catalyst V66V29 and then reduced 33 percent by volume with R7K84 reducer.

Note: This is a moisture cure urethane therefore there is a small amount of hexamethylene di-isocyanate (1.2%) in the catalyst. However, due to the chemistry and efficiency of the booth none will be found in the stack emissions.

Our maximum volume of sprayed finished per day would be:

2800 ML polane finish
240 ML catalyst
2000 ML reducer
5200 ML or 5.2L/day maximum

S.W.P. states a maximum VOC of 685 G/L for this system. This system is also lead and chromate free.

Therefore spraying 5.2L of finish/day would give an emission rate of 3562 grams VOC per 10hr day or 7.851 lbs. A 200 work day year would produce an annual emission of 1569.2 lbs VOC per year maximum, or .785 tons/ yr.

Currently we are operating at less than 1/3 that rate or 523.1 lbs per year VOC.

Status - permit required
Controlled - daily check and balance of water chemical content as advised by Calgon Chemical.

8-B. Conveyor System:

The only mention of this is due to solvent flash. The conveyor is arranged so the solvent has flashed off before the product exits the booth to air dry adjacent to it. There is circulation through this area through the conveyor opening. Emissions if any exit through 8-A paint booth stack.

Status - not believed to be a source
Control - non required

IX. HEATING SYSTEM

9-A. 400,000 BTU Propane Shop Heater:

Space heating only

Status - exempt - 17-2.210(3)(J)

10-A. 80,000 BTU Space Heater:

Space heating only

Status - exempt - 17-2.210(3)(J)

X. VENTILATION FANS

10.A, B & C Three Each 42" 7,000 CFM Ventilation Fans:

These fans are located along the south side of the building with power vents located on the northern side. Their purpose is to power ventilate and remove solar radiant and process heat from the shop.

Status - not considered a source

Control - none

XI. CLEANUP OPERATION

11. Acetone is used for general cleanup at the end of each day. Measured emission rate is 0.5 lb which occurs over a 30 minute period.

Annual emissions = 0.5 lb/day x 200 day/yr / 2,000 lb/ton
= 0.05 TPY

Maximum Particulate Emissions

1. Current Production

   Maximum hourly production = 8.5 springs/hr

   Dust per spring = 0.21 lb

   8.5 springs/hr x 0.21 lb/spring = 1.8 lb/hr

   Maximum emissions = 1.8 lb/hr x (1 - 0.999) = 0.0018 lb/hr

2. Potential Maximum Production

   Maximum hourly production = 81 springs/hr

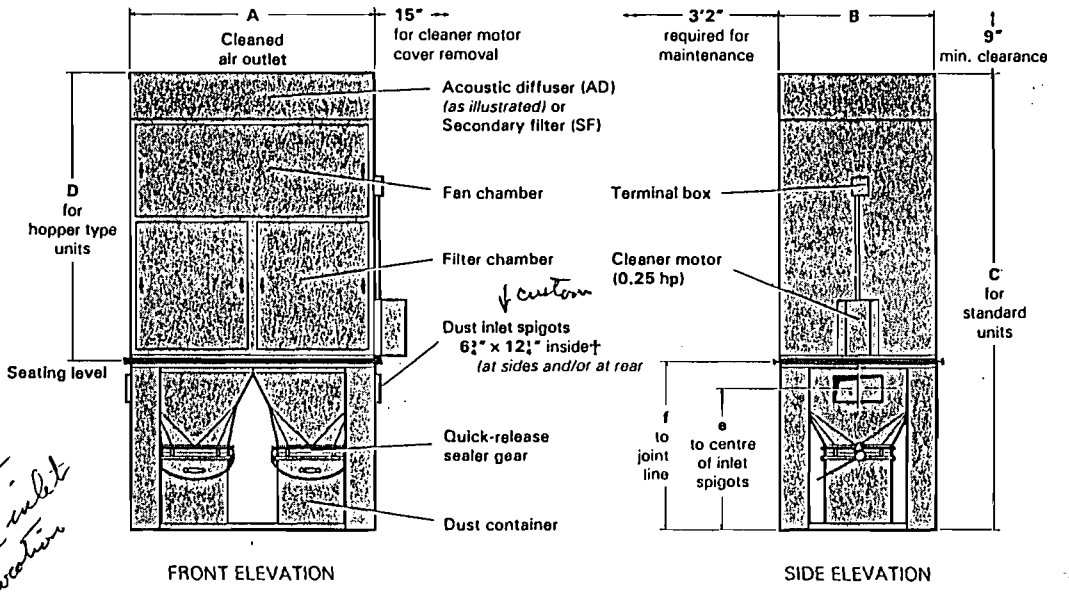
   81 springs/hr x 0.21 lb/spring = 17.0 lb/hr

   Maximum emissions = 17.0 lb/hr x (1 - 0.999) = 0.017 lb/hr

Maximum VOC Emissions

Maximum emissions based upon annual emissions divided by 200 days/yr, 10 hr/day operating time.

Unimaster dust control units Series UMA 350 and 450



Unimaster standard & hopper type dust control units

Suitable for inside locations — Model UMA 454 AD illustrated

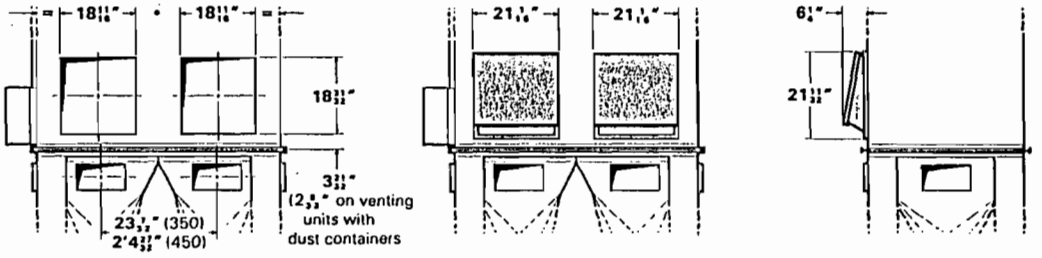
NOTE: The UMA 350 is not supplied with a secondary filter

Type UMA	Filtration area	DIMENSIONS* A	B	C	D	e	f	Dust containers (2 off)
354AD	350ft²	4'0"	3'2"	9½"	—	2'10½"	3'6"	2cu ft
358AD	350ft²	4'0"	3'2"	10½"	—	3'7½"	4'2"	4cu ft
454AD	450ft²	4'11"	3'2"	9½"	—	2'10½"	3'6"	2cu ft
458AD	450ft²	4'11"	3'2"	10½"	—	3'7½"	4'2"	4cu ft
454SF	450ft²	4'11"	3'2"	10½"	—	2'10½"	3'6"	2cu ft
458SF	450ft²	4'11"	3'2"	10½"	—	3'7½"	4'2"	4cu ft
350HAD	350ft²	4'0"	3'2"	—	6'0"	—	—	—
450HAD	450ft²	4'11"	3'2"	—	6'0"	—	—	—
450HSF	450ft²	4'11"	3'2"	—	6'8"	—	—	—

*Tolerance ±½" †DCE tolerance −0" to +⅛" (NOTE: Outside dimensions of duct connectors must not exceed inside dimensions of inlets)

APPROXIMATE NET WEIGHTS (lb) & MOTOR RATINGS

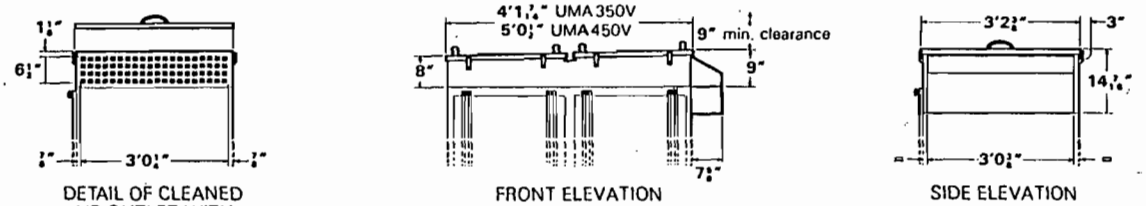
Fan type	UMA type with acoustic diffuser (AD)					UMA type with secondary filter (SF)					Motor rating
	354	358	350H	454	458	450H	454	458	450H	
G10	1070	1090	815	1155	1180	880	1235	1290	990	7½hp
G11	1080	1100	825	1170	1190	895	1280	1300	1005	10hp
G12	—	—	—	1290	1310	1015	1400	1420	1125	15hp



CUTOUTS & REAR INLET SPIGOTS | BACK ELEVATION | SIDE ELEVATION

Unimaster explosion relief panels & rear dust inlet spigots

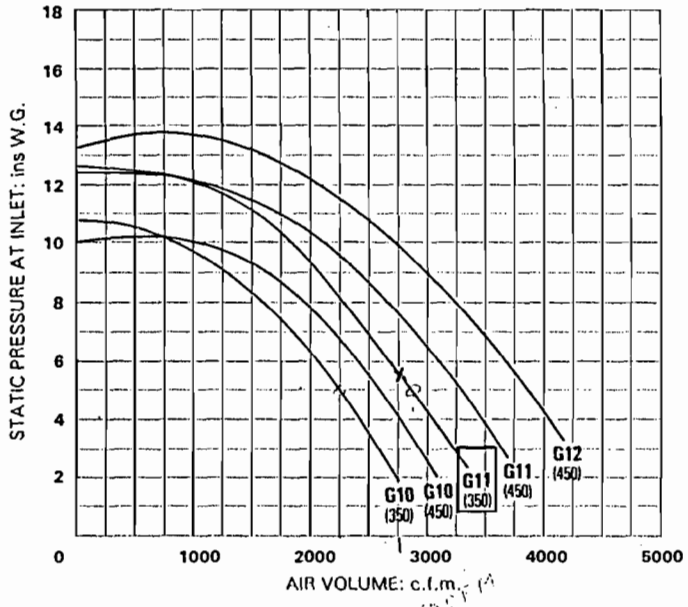
Model UMA 450, standard unit illustrated
*UMA 350 = 5 11/32"; UMA 450 = 10 1/2"



DETAIL OF CLEANED AIR OUTLET WITH WEATHER COWL REMOVED | FRONT ELEVATION | SIDE ELEVATION

Unimaster side outlet box & weather cowl

Model UMA 450V illustrated
Outlet grille is shown as punched



These curves were obtained from volume and pressure readings taken at unit inlet with the filter clean.

Standard and hopper type units

To select the most suitable fan for a given application.

1 Determine the air rate, in c.f.m., needed to entrain the dust.

2 Estimate pressure drop through connected system — i.e. between point of entrainment and unit inlet.

3 Assess pressure drop across filter prior to shaking, usually 2"-4" W.G.

4 Sum of 2 and 3 = W.G. required.

5 Consult graph for fan performances available.

Unit performance curves

DCE, Inc.
11301 Electron Drive
Jeffersontown KENTUCKY 40299-9990
Tel. (502) 267-0707 Telecopier (502) 267-4490
Telex 204306

Visible Emission Test Results

System I and System 2 Baghouses

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
4-20-88	1010	1040

SOURCE NAME: TRW

ADDRESS: Rt 2 Box 670

CITY: Williston | STATE: Fl | ZIP: 32696

PHONE: 904-528-2273 | SOURCE I.D. NUMBER: S-1

PROCESS EQUIPMENT: Band Saw & Sander | OPERATING MODE: 1.65 lb ~~1/2 hr~~

CONTROL EQUIPMENT: Baghouse | OPERATING MODE: 1.65 lb 1/2 hr

DESCRIBE EMISSION POINT
START: Metal Stack STOP: Metal Stack

HEIGHT ABOVE GROUND LEVEL: START 20' STOP 20' | HEIGHT REL. TO OBSERVER: START 20' STOP 20'

DISTANCE FROM OBSERVER: START 60' STOP 60' | DIRECTION FROM OBSERVER: START North STOP North

DESCRIBE EMISSIONS
START: none STOP: none

EMISSION COLOR: START Clear STOP Clear | PLUME TYPE: CONT. ☐ FUGITIVE ☐ INTER. ☑

WATER DROPLETS PRESENT: NO ☑ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START: 1' Above Stack STOP: "

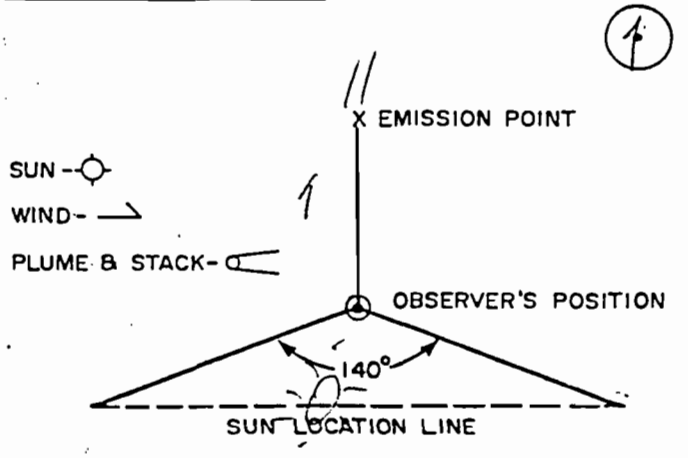
DESCRIBE BACKGROUND
START: Green Trees STOP: Green Trees

BACKGROUND COLOR: START Green STOP Green | SKY CONDITIONS: START Clear STOP Clear

WIND SPEED: START 0-5 STOP 0-5 | WIND DIRECTION: START South STOP South

AMBIENT TEMP: START 73 STOP 73 | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): Sid Carter

COMMENTS:

OBSERVER'S SIGNATURE: Sid Carter | DATE: 4-20-88

ORGANIZATION: Air Consulting & Engineering Inc.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE

TITLE | DATE

CERTIFIED BY: Eastern Tech. Assoc | DATE: 12-5-87

VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 4-20-88	START TIME 1010	STOP TIME 1040

SOURCE NAME: TRW

ADDRESS: Rt 2 Box 670

CITY: Williston | STATE: Fl | ZIP: 32696

PHONE: 904-528-2273 | SOURCE I.D. NUMBER: S-2

PROCESS EQUIPMENT: Band Saw + Sander | OPERATING MODE: 3.69 lb 1½ hr

CONTROL EQUIPMENT: Baghouse | OPERATING MODE: 3.69 lb 1½ hr

DESCRIBE EMISSION POINT
START Metal Stack STOP Metal Stack

HEIGHT ABOVE GROUND LEVEL: START 20' STOP 20' | HEIGHT REL. TO OBSERVER: START 20' STOP 20'

DISTANCE FROM OBSERVER: START 60' STOP 60' | DIRECTION FROM OBSERVER: START North STOP North

DESCRIBE EMISSIONS
START NONE STOP NONE

EMISSION COLOR: START Clear STOP Clear | PLUME TYPE: CONT. ☐ FUGITIVE ☐ INTER. ☑

WATER DROPLETS PRESENT: NO ☑ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START 1' Above Stack STOP "

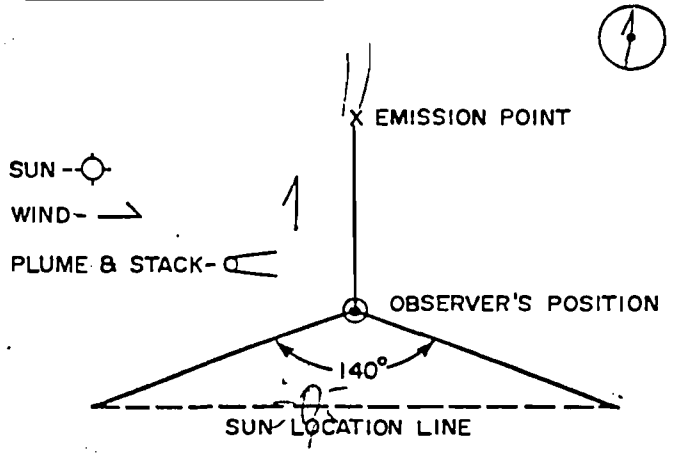
DESCRIBE BACKGROUND
START Blue Sky STOP Blue Sky

BACKGROUND COLOR: START Blue STOP Blue | SKY CONDITIONS: START Clear STOP Clear

WIND SPEED: START 0-5 STOP 0-5 | WIND DIRECTION: START South STOP South

AMBIENT TEMP: START 73 STOP 73 | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): Sid CARTER

COMMENTS:

OBSERVER'S SIGNATURE: Sid Carter | DATE: 4-20-88

ORGANIZATION: Air Consulting & Engineering Inc.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY: Eastern Tech. Assoc | DATE: 12-5-87

VERIFIED BY | DATE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

THIS IS TO CERTIFY THAT

SID J. CARTER , has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

THIS CERTIFICATE EXPIRES Jun 1, 1988

Michael R. Clark
CERTIFICATE OFFICER

Sid Carter
BEARER'S SIGNATURE

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Kid J. Carter

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

Thomas H. Rose
President

119157
Certificate Number

Willie S. Lee
Vice President

Jacksonville
Location

David Savage
Program Manager

December 4, 1987
Date of Issue