Preliminary Maximum Achievable Control Technology (MACT) Determination and Technical Evaluation
Seabring Marine Industries
Monterey Boats – Williston Cruiser Plant

Seabring Marine Industries, Inc., the applicant, proposes to expand and operate a boat manufacturing facility at Williston Airport Industrial Park, off Highway 41, Williston, Levy County, Florida.

This facility is designed for the construction of vessels under 20 meters in length. The applicant has estimated the maximum annual tonnage of regulated hazardous air pollutants (HAPs) to be emitted as follows:

Pollutants	Potential Emissions (tons/year)	MACT Significant Emission Rate (tons/year)
Styrene	116.3	10
Total HAPs	144.3	25

Florida Administrative Code Rule 62-204.800(10)(d)2 requires a MACT review for all major sources of HAPs that are to be constructed or reconstructed, unless:

1. the source is specifically regulated or exempted from regulation under a standard issued pursuant to Section 112(d) "emission Standards," Section 112(h) "Work Practice Standards and Other Requirements," or Section 112(j) "Equivalent Emission Limitation by Permit," and incorporated in another subpart of 40 CFR Part 63; or
2. the owner or operator of the major source received an air construction permit for the construction or reconstruction project before July 1, 1997, or the source was constructed or reconstructed before July 1, 1997.

<u>MACT Determination Requested by the Applicant</u>

Seabring has requested to control styrene emissions at this facility by switching from a 44 percent styrene resin to a 39 percent styrene resin, and by replacing existing spray applicators with Magnum FIT flow applicators. Seabring states that "the FIT, while more expensive than a flow coater, operates with 80 percent less pressure, 90 percent fewer orifices and a noticeable reduction in resin "bounce back" from the substrate. The FIT's design advantages over the flow coater, of less resin agitation and surface exposure, will likely result in reduction of styrene emissions greater than 45 percent (attributed by EPA to flow coaters), as compared with current spray applicators."

<u>MACT Determination Procedure</u>

In accordance with 40 CFR 63 Subpart B, which was adopted in Florida Administrative Code Chapter 62-204, *Maximum Achievable Control Technology (MACT) emission* *limitation for new sources* means the emission limitation which is not less stringent than the emission limitation achieved by the best controlled similar source, and which reflects the maximum degree of (r)eduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed source.

Similar source means a stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed source such that the source could be controlled using the same control technology.

In addition, the regulations state that in making the MACT Determination, the Department should give consideration to:

(a) Any Environmental Protection Agency proposed relevant emission standard pursuant to section 112(d) or section 112(h) of the Act or an adopted presumptive MACT determination for the source category which includes the constructed or reconstructed major source.

(b) Available information as defined in 40 CFR 63.41.

EPA is currently working on a proposed MACT for reinforced boat manufacturing sources. Add-on control devices have been considered, but at this point in time, the MACT for new and reconstructed sources is expected to be:

1. the use of production resins that contain a maximum average of 35% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

2. the use of non-atomizing application equipment for production resins;

3. the use of pigmented gel coats and base gel coats that contain a maximum average of 33% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

4. the use of sprayed tooling resins, used for repair of molds, that contain a maximum average of 30% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

5. the use of non-atomized tooling resins, used for making and repair of molds, that contain a maximum average of 39% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

6. the use of tooling gel coats, used for making and repair of molds, that contain a maximum average of 40% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

7. no control of hazardous air pollutants emitted from mold sealing, releasing, stripping, and repair materials;

8. no control of hazardous air pollutants emitted from wood coating;

9. the use of resin and gel coat cleaning solvents that contain no HAPs;

10. the use of carpet and fabric adhesives that contain no HAPs;

11. no control on the use of carpentry adhesives;

12. the use of the highest styrene content in calculations when Manufacturer's Safety Data (MSD) Sheets with styrene content ranges are used.

MACT Determination

After reviewing the applicant's proposed MACT, information from EPA, information concerning facilities permitted in other states, and existing NESHAP standards, the Department has made the determination that Maximum Achievable Control Technology (MACT) for this facility shall be:

1. the use of production resins that contain a maximum average of 35% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

2. the use of non-atomizing application equipment for production resins;

3. the use of pigmented gel coats and base gel coats that contain a maximum average of 33% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

4. the use of sprayed tooling resins, used for repair of molds, that contain a maximum average of 30% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

5. the use of non-atomized tooling resins, used for making and repair of molds, that contain a maximum average of 39% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

6. the use of tooling gel coats, used for making and repair of molds, that contain a maximum average of 40% total HAP content, based on Manufacturer's Safety Data (MSD) Sheets, with compliance determined on a 3-month rolling average;

7. no control of hazardous air pollutants emitted from mold sealing, releasing, stripping, and repair materials;

8. no control of hazardous air pollutants emitted from coating processes for exterior wood parts.

9. the use of marine coatings for coating surfaces (except for wood parts) that are compliant with 40 CFR 63 Subpart II – NESHAPs for Shipbuilding and Ship Repair (Surface Coating);

10. the use of resin and gel coat cleaning solvents that contain no HAPs. An exception is the use solvent cleaning machines which comply with the requirements of 40 CFR 63 Subpart T- Halogenated Solvent Cleaning.

11. the use of carpet and fabric adhesives that contain no HAPs;

12. the use of carpentry adhesives that achieve a volatile hazardous air pollutant (VHAP) limit for contact adhesives, excluding aerosol adhesives and excluding contact adhesives applied to nonporous substrates, of no greater than 0.2 kg VHAP/kg solids (0.2 lb VHAP/lb solids), as applied using either of the compliance methods in 40 CFR 63.804(e).

13. the use of the highest styrene content in calculations when Manufacturer's Safety Data (MSD) Sheets with styrene content ranges are used.

Seabring may request alternative emissions standards in lieu of the above standards. For the FDEP to approve a request for alternative emissions standards, Seabring must satisfy requirements, not limited to but including the following:

a. provide reasonable assurance of the of the resulting emissions being equivalent to FDEP's MACT level;
b. propose a method of demonstrating compliance; and,
c. propose a means of demonstrating on-going compliance.

Recordkeeping and Reporting Requirments:

1. Seabring shall compile records on a monthly basis and maintain those records for a minimum of 5 years. At a minimum, these records shall include:
   a. the identification of all coatings used (resins, gelcoats, marine coatings, adhesives, etc.),
   b. certification of the as-supplied HAP/VOC content of each batch of coating,
   c. certification of the as-applied HAP/VOC content of each batch of coating,

d. the volume of each coating applied,
e. amount of thinner used, and
f. determination of compliance with the appropriate HAP limit.

2. Within 60 days following the end of each 6-month period after startup, Seabring shall submit a semi-annual compliance report.

Details of the Determination may be Obtained by Contacting:

Cindy L. Phillips, P.E.
MS 5505
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Recommended by:

Cindy L. Phillips 9-10-99

Cindy L. Phillips, P.E. — Date
Air Toxics/Title III Section
Bureau of Air Regulation

Approved by:

Howard L. Rhodes 9/10/99

Howard L. Rhodes, Director — Date
Division of Air Resources Management

C. H. Fancy 9/10/99

C. H. Fancy, P.E. — Date
Chief
Bureau of Air Regulation

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 525-98-02

August 24, 1999

RECEIVED
SEP 03 1999
BUREAU OF AIR REGULATION

Ms. Cindy Phillips
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Monterey Boats - Williston Cruiser Plant
File 0750033-002-AC

Dear Ms. Phillips:

This is a follow up to our telephone conversation yesterday regarding the appropriate permit language to allow flexibility in meeting MACT for the above referenced project.

The following language should accompany a MACT determination by the Department:

"Monterey Boats may meet the HAP emission levels prescribed in this permit using alternate means of emission control after prior FDEP approval. The alternate means of emissions control must satisfy the following criteria:

a. provide reasonable assurance of the resulting emissions being equivalent to FDEP's MACT level;
b. propose a method of demonstrating compliance; and,
c. propose a means demonstrating on-going compliance."

If you have any questions, please call me.

Very truly yours,

KOOGLER & ASSOCIATES

Raval

Pradeep Raval

par
encl.

c: F. J. Gombash, Monterey
R. Felton-Smith, FDEP Jacksonville

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 525-98-02

June 25, 1999

Ms. Cindy Phillips
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Monterey Boats - Williston Cruiser Plant
File 0750033-002-AC

Dear Ms. Phillips:

Enclosed is additional information on the FIT applicator recently introduced by Magnum, proposed for the new Monterey facility.

If you have any questions, please call me.

Very truly yours,

KOOGLER & ASSOCIATES

Raval

Pradeep Raval

par
encl.

c: F. J. Gombash, Monterey
R. Felton-Smith, FDEP Jacksonville

The Next Generation of FLO COATING

FIT™

FLUID IMPINGEMENT TECHNOLOGY

- BETTER THAN AIRLESS
- ELIMINATES TIP PLUGGING
- NO STRIPES
- FILLED RESINS

Beyond your Wildest Dream

PATENTED WITH PATENTS PENDING

FOR MORE INFORMATION CONTACT YOUR SALES REP OR CUSTOMER SERVICE AT (727) 573-2955

MAGNUM
INDUSTRIES

5148 113TH Ave., N. Clearwater, FL, tel. (727)573-2955, fax.(727)572-6895 . www.magnumindustries.com

MAGNUM

I N D U S T R I E S

FIT ADVANTAGES OVER CONVENTIONAL FLOCOAT

1. *VERY LOW PRESSURE*
   Lowest on the Market at 75-110 psi Resin Pressure
   - Reduced Maintenance on:
     Gun Seals
     Gun Valve
     Gun Seat
     Resin Pump Seals
     Resin Pump Shafts
     Resin Pump Cylinders
     Resin FIT Tip
   - Low Pressure Hose
   - 30% Less Air Consumption
   - No Blow Back or Bounce off
   - SAFER – NO Injection Risk
   - LOW EMISSIONS!!

2. *LESS AIR ENTRAPMENT*
   - Easier Roll-Out
   - Better Laminate Physicals
   - Wets Out Glass Evenly

3. *UNIFORM PATTERN*
   - Edge to Edge Glass Distribution.
   - No Glass Fallout
   - More Uniform Thickness
   - No lines or Stripes
   - Easy Glass Introduction into Pattern
   - User Friendly
   - Reduced Roll-out over Flocoat

4. *LARGE ORIFICE TIP*
   - NO PLUGGING
   - Less Wear
   - Better Laminates due to Elimination of Plugging
   - Easy Cleaning
   - Lower in Cost vs. Flocoat
   - No Extensive Filtration Required

5. *LARGE TIP SELECTION*
   - 55 Tip Variations Available
   - Easier to match existing airless outputs and widths
   - Larger Selection over all Competitive Flocoaters
   - Ability to match Tips to Application

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 525-98-02

June 14, 1999

RECEIVED
JUN 15 1999
BUREAU OF
AIR REGULATION

Ms. Cindy Phillips
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Monterey Boats - Williston Cruiser Plant
File 0750033-002-AC

Dear Ms. Phillips:

This is in response to your letter dated May 5, 1999, requesting additional information on the above project. The issues are addressed in the order of your questions.

1. The particulate matter emissions are generated in the wood working area. Wood use will increase as a result of the production increase. However, the dust collector exhaust volume, particulate loading and operation hours will remain the same. Therefore, the proposed production increase is not expected to have any measurable effect on the particulate matter emissions from the facility.

2. The current operation is permitted to use 44 percent styrene content resin and spray applicators for resin. Under the proposed MACT, Monterey proposes to use a 39 percent styrene content resin and use non-atomized resin applicators. The proposed changes will result in significant reductions in styrene emissions.

   In anticipation of the MACT requirements, Monterey has been making a transition from a 44 percent styrene resin, used in hull manufacture, to a 39 percent styrene resin (representative of MACT). This transition is necessary for MACT compliance without compromising product quality. It is not practical or prudent for a facility to make drastic changes in the materials used and the manufacturing methods as it has a direct impact on product quality. This is especially true for Monterey as their product has a five-year warranty on structural integrity.

   Furthermore, Monterey proposes to replace existing spray applicators with applicators resulting in lower emissions. Under consideration is a new FIT applicator, recently introduced by Magnum. The FIT, while more expensive than a flow coater, operates with 80 percent less pressure, 90 percent fewer orifices and a noticeable reduction in resin "bounce back" from the substrate. The FIT's design advantages over the flow coater, of less resin agitation and surface exposure, will likely result in reduction of styrene emissions greater than 45 percent (attributed by EPA to flow coaters), as compared with the current spray applicators. However, as the item is new on the market, we are not aware of any emission control studies conducted using a FIT.

3. Based on information available to us, Corsair manufactures only sail powered catamarans. The differences between sailing catamarans and motor powered cruisers indicate why the technology used by Corsair is not appropriate for Monterey. The speed, and hence the impact between hull and water, is much lower for sail powered boats than for motor powered boats. Therefore, the level of structural strength and hull durability required for sailing catamarans is less than that for cruisers. Monterey cannot switch to a 35 percent styrene resin without assurances on hull structural integrity and durability.

   Also, catamaran components are smaller, thus making vacuum bagging manageable. It is not practical, as noted by EPA, to use vacuum bagging techniques in making large hulled boats. Furthermore, it is our understanding that Corsair uses vacuum bagging after resin application and, therefore, the overall control achieved may not be significantly different from Monterey using a slightly higher styrene content resin with flowcoater application. Also, it is our understanding that Corsair uses much less resin than Monterey and, therefore, can use brush/bucket application without restricting production.

4. The styrene emissions reduction estimated from the use of flowcoaters, of 45 percent, is from EPA's presumptive MACT memorandum by Madeleine Strum, dated January 15, 1997.

5. The new VOC control techniques, addressed in the application, are based on EPA's assessment in EPA/600/SR-96/109. This includes hybrid systems that preconcentrate VOCs by adsorption, then desorb VOCs for recovery by condensation or for destruction by thermal/catalytic oxidation; a biofiltration process that biodegrades the VOCs; and, a process utilizing ultraviolet light and ozone to destroy the VOCs. The pre-concentration/recovery/oxidation hybrid systems include the proprietary technologies of PADRE, MIAB, C&C fluidized bed and Polyad systems.

Further discussion of these technologies is not provided herein, as these technologies are not used by similar facilities and cannot be justified based on the cost analysis presented in the permit application. The reason boat builders are not using these technologies, as noted by EPA, is the practice of dilution ventilation to meet OSHA standards; thus, treating a low concentration, high air volume stream is not cost effective.

Other common emission reduction technologies include vacuum bagging, closed molding and non-atomized resin application. Vacuum bagging and closed molding techniques are generally implemented by small craft manufacturers. These techniques are not practical for production of the proposed cruisers. Non-atomized resin applicators are used within the industry as a means of reducing styrene emissions. The most commonly used are flow coaters. As mentioned above, Monterey is proposing hand application and FIT application of resin at the proposed facility to reduce emissions.

It is our understanding that some fiberglass boat manufacturers have recently started using 35 percent styrene content resin. Some of the lower styrene content resins do not provide equivalent structural strength to the resin used by Monterey. There are some facilities, however, that have recently started using lower styrene content resins that do provide equivalent structural strength. The facilities that have done so, and that make boats similar to those made by Monterey, are much larger companies than Monterey. This issue is critical in the economic evaluation of the use of high strength, lower styrene content resins. The cost of these resins (with lower styrene content and equivalent structural strength) is from 50 percent to more than 200 percent higher than the cost of the resin used by Monterey. Larger companies are able to negotiate preferential pricing on their resin purchases and remain competitive in the market. This is not possible for smaller companies. Monterey is not a large company by comparison and cannot purchase the resin in sufficient quantities to significantly alter the purchase price. It is also not possible to buy large resin shipments at one time in order to get favorable pricing, as there is an expiration date associated with the resin. Therefore, under the present economic climate and based on the current company size, it is not economically feasible for Monterey to use a 35 percent styrene content resin.

Further, an analysis of the cost of styrene emission reduction from the use of the high strength, low styrene content resin, indicates that it is cost prohibitive. The cost differential for the least expensive alternative resin is $817,320 per year (see attached calculations). The reduction in styrene emissions amounts to 8.7 tons per year. The cost associated with emission reduction, amounts to over $90,000 per ton of styrene. For the next best alternative material, this cost goes up to over $170,000 per ton of styrene reduced. Material substitution with these resins is clearly cost prohibitive.

It should be noted, however, that Monterey's proposed MACT, of using the FIT applicators with a 39 percent styrene content resin is probably equivalent to a facility using flow coaters with a 35 percent styrene content resin. Also, Monterey will be experimenting with lower styrene content resins for certain parts of the boat. Once the product quality criteria are satisfied, those lower styrene content resins will be used for those parts in regular production.

6. Wood shop attachments and collectors are not being proposed as part of the production increase. They are currently used at the Archer Plant and will be used at the Williston Cruiser Plant.

7. The new application form does not require substantive additional information beyond that already submitted to FDEP.

We trust that the above information will complete your review of the application and allow you to provide prompt feedback to Ms. Rita Felton-Smith for the issuance of a draft permit.

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
encl.

c: F. J. Gombash, Monterey
R. Felton-Smith, FDEP Jacksonville

ATTACHMENT 1

EMISSION REDUCTION CALCULATIONS

MONTEREY BOATS – WILLISTON CRUISER PLANT

The following materials, offering equivalent or better strength, are available from the resin supplier:

Q6301, at approx. 39% styrene..................... $ 0.515/pound (currently proposed)
AME1000, at approx. 35% styrene................ $ 0.793/pound (alternative 1)
AME4000, at approx. 34% styrene................ $ 1.123/pound (alternative 2)

Note: The small quantity of 44% styrene resin proposed has been included in the amount of primary use resin, for the sake of this discussion.

The cost differences for the alternative resins are:

Alternative 1 = $0.793 - $0.515 = $0.278 per pound of resin

Alternative 2 = $1.123 - $0.515 = $0.608 per pound of resin

The cost of alternative resins, based on 2,940,000 pounds of resin use per year are:

Alternative 1 = 2,940,000 lbs resin/yr x $0.278 per pound = $817,320 /year

Alternative 2 = 2,940,000 lbs resin/yr x $0.608 per pound = $1,787,520 /year

The styrene emissions resulting from each of the three resin types, shown on the attached spreadsheets, are:

Proposed = 116.3 tons styrene emitted per year

Alternative 1 = 107.6 tons styrene emitted per year

Alternative 2 = 106.0 tons styrene emitted per year

The styrene emission reductions for the alternative resins are:

Alternative 1 = 116.3 tpy - 107.6 tpy = 8.7 tpy styrene emissions reduction

Alternative 2 = 116.3 tpy – 106.0 tpy = 10.3 tpy styrene emissions reduction

The cost of styrene emissions reduction for the alternative resins is:

Alternative 1 = $817,320 / 8.7 tons = $ 93,945 per ton styrene emissions reduced

Alternative 2 = $1,787,520 / 10.3 tons = $ 173,546 per ton styrene emissions reduced

PROPOSED

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.440	0.120	23232.0	11.6	
Styrene (44%)		0.440	0.120	23232.0	11.6	11.6
Resin	2500000	0.390	0.110	107250.0	53.6	
Styrene (39%)		0.390	0.110	107250.0	53.6	53.6
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					227.7	144.3

INDIVIDUAL HAP EMISSIONS	**TPY**
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	116.3
Xylene	9.1
TOTAL	144.3

ALTERNATIVE 1

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.350	0.110	16940.0	8.5	
Styrene (35%)		0.350	0.110	16940.0	8.5	8.5
Resin	2500000	0.350	0.110	96250.0	48.1	
Styrene (35%)		0.350	0.110	96250.0	48.1	48.1
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					219.0	135.6

INDIVIDUAL HAP EMISSIONS	**TPY**
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	107.6
Xylene	9.1
TOTAL	135.6

ALTERNATIVE 2

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.340	0.110	16456.0	8.2	
Styrene (34%)		0.340	0.110	16456.0	8.2	8.2
Resin	2500000	0.340	0.110	93500.0	46.8	
Styrene (34%)		0.340	0.110	93500.0	46.8	46.8
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					217.4	134.0

INDIVIDUAL HAP EMISSIONS	**TPY**
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	106.0
Xylene	9.1
TOTAL	134.0

RECEIVED
JUN 1 0 1999
BUREAU OF AIR REGULATION

PROJECT 525-98-02

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

FAX TRANSMITTAL FORM

TO: Cindy Phillips, DEP - Tallahassee

FAX NO.

FROM: Pradeep Raval

DATE: 6/14/99 SENT BY: R

The text being transmitted consist s of 8 page(s) PLUS this one. If you do not receive all of the pages or if there are difficulties with this transmission, please call (352) 377-5822.

REMARKS: I hope this provides you with enough information to evaluate the MACT. I am expecting some info on the FIT applicator from the manufacturer. I will send it as soon as I get it.

Regards, R

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

KA 525-98-02

June 14, 1999

RECEIVED
JUN 15 1999
BUREAU OF
AIR REGULATION

Ms. Cindy Phillips
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Monterey Boats - Williston Cruiser Plant
File 0750033-002-AC

Dear Ms. Phillips:

This is in response to your letter dated May 5, 1999, requesting additional information on the above project. The issues are addressed in the order of your questions.

1. The particulate matter emissions are generated in the wood working area. Wood use will increase as a result of the production increase. However, the dust collector exhaust volume, particulate loading and operation hours will remain the same. Therefore, the proposed production increase is not expected to have any measurable effect on the particulate matter emissions from the facility.

2. The current operation is permitted to use 44 percent styrene content resin and spray applicators for resin. Under the proposed MACT, Monterey proposes to use a 39 percent styrene content resin and use non-atomized resin applicators. The proposed changes will result in significant reductions in styrene emissions.

   In anticipation of the MACT requirements, Monterey has been making a transition from a 44 percent styrene resin, used in hull manufacture, to a 39 percent styrene resin (representative of MACT). This transition is necessary for MACT compliance without compromising product quality. It is not practical or prudent for a facility to make drastic changes in the materials used and the manufacturing methods as it has a direct impact on product quality. This is especially true for Monterey as their product has a five-year warranty on structural integrity.

   Furthermore, Monterey proposes to replace existing spray applicators with applicators resulting in lower emissions. Under consideration is a new FIT applicator, recently introduced by Magnum. The FIT, while more expensive than a flow coater, operates with 80 percent less pressure, 90 percent fewer orifices and a noticeable reduction in resin "bounce back" from the substrate. The FIT's design advantages over the flow coater, of less resin agitation and surface exposure, will likely result in reduction of styrene emissions greater than 45 percent (attributed by EPA to flow coaters), as compared with the current spray applicators. However, as the item is new on the market, we are not aware of any emission control studies conducted using a FIT.

3. Based on information available to us, Corsair manufactures only sail powered catamarans. The differences between sailing catamarans and motor powered cruisers indicate why the technology used by Corsair is not appropriate for Monterey. The speed, and hence the impact between hull and water, is much lower for sail powered boats than for motor powered boats. Therefore, the level of structural strength and hull durability required for sailing catamarans is less than that for cruisers. Monterey cannot switch to a 35 percent styrene resin without assurances on hull structural integrity and durability.

   Also, catamaran components are smaller, thus making vacuum bagging manageable. It is not practical, as noted by EPA, to use vacuum bagging techniques in making large hulled boats. Furthermore, it is our understanding that Corsair uses vacuum bagging after resin application and, therefore, the overall control achieved may not be significantly different from Monterey using a slightly higher styrene content resin with flowcoater application. Also, it is our understanding that Corsair uses much less resin than Monterey and, therefore, can use brush/bucket application without restricting production.

4. The styrene emissions reduction estimated from the use of flowcoaters, of 45 percent, is from EPA's presumptive MACT memorandum by Madeleine Strum, dated January 15, 1997.

5. The new VOC control techniques, addressed in the application, are based on EPA's assessment in EPA/600/SR-96/109. This includes hybrid systems that preconcentrate VOCs by adsorption, then desorb VOCs for recovery by condensation or for destruction by thermal/catalytic oxidation; a biofiltration process that biodegrades the VOCs; and, a process utilizing ultraviolet light and ozone to destroy the VOCs. The pre-concentration/recovery/oxidation hybrid systems include the proprietary technologies of PADRE, MIAB, C&C fluidized bed and Polyad systems.

Ms. Cindy Phillips
Florida Department of
Environmental Protection

June 14, 1999

Further discussion of these technologies is not provided herein, as these technologies are not used by similar facilities and cannot be justified based on the cost analysis presented in the permit application. The reason boat builders are not using these technologies, as noted by EPA, is the practice of dilution ventilation to meet OSHA standards; thus, treating a low concentration, high air volume stream is not cost effective.

Other common emission reduction technologies include vacuum bagging, closed molding and non-atomized resin application. Vacuum bagging and closed molding techniques are generally implemented by small craft manufacturers. These techniques are not practical for production of the proposed cruisers. Non-atomized resin applicators are used within the industry as a means of reducing styrene emissions. The most commonly used are flow coaters. As mentioned above, Monterey is proposing hand application and FIT application of resin at the proposed facility to reduce emissions.

It is our understanding that some fiberglass boat manufacturers have recently started using 35 percent styrene content resin. Some of the lower styrene content resins do not provide equivalent structural strength to the resin used by Monterey. There are some facilities, however, that have recently started using lower styrene content resins that do provide equivalent structural strength. The facilities that have done so, and that make boats similar to those made by Monterey, are much larger companies than Monterey. This issue is critical in the economic evaluation of the use of high strength, lower styrene content resins. The cost of these resins (with lower styrene content and equivalent structural strength) is from 50 percent to more than 200 percent higher than the cost of the resin used by Monterey. Larger companies are able to negotiate preferential pricing on their resin purchases and remain competitive in the market. This is not possible for smaller companies. Monterey is not a large company by comparison and cannot purchase the resin in sufficient quantities to significantly alter the purchase price. It is also not possible to buy large resin shipments at one time in order to get favorable pricing, as there is an expiration date associated with the resin. Therefore, under the present economic climate and based on the current company size, it is not economically feasible for Monterey to use a 35 percent styrene content resin.

Further, an analysis of the cost of styrene emission reduction from the use of the high strength, low styrene content resin, indicates that it is cost prohibitive. The cost differential for the least expensive alternative resin is $817,320 per year (see attached calculations). The reduction in styrene emissions amounts to 8.7 tons per year. The cost associated with emission reduction, amounts to over $90,000 per ton of styrene. For the next best alternative material, this cost goes up to over $170,000 per ton of styrene reduced. Material substitution with these resins is clearly cost prohibitive.

It should be noted, however, that Monterey's proposed MACT, of using the FIT applicators with a 39 percent styrene content resin is probably equivalent to a facility using flow coaters with a 35 percent styrene content resin. Also, Monterey will be experimenting with lower styrene content resins for certain parts of the boat. Once the product quality criteria are satisfied, those lower styrene content resins will be used for those parts in regular production.

6. Wood shop attachments and collectors are not being proposed as part of the production increase. They are currently used at the Archer Plant and will be used at the Williston Cruiser Plant.

7. The new application form does not require substantive additional information beyond that already submitted to FDEP.

We trust that the above information will complete your review of the application and allow you to provide prompt feedback to Ms. Rita Felton-Smith for the issuance of a draft permit.

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
encl.

c: F. J. Gombash, Monterey
R. Felton-Smith, FDEP Jacksonville

ATTACHMENT 1

EMISSION REDUCTION CALCULATIONS

MONTEREY BOATS – WILLISTON CRUISER PLANT

The following materials, offering equivalent or better strength, are available from the resin supplier:

Q6301, at approx. 39% styrene...................... $ 0.515/pound (currently proposed)
AME1000, at approx. 35% styrene................. $ 0.793/pound (alternative 1)
AME4000, at approx. 34% styrene................. $ 1.123/pound (alternative 2)

Note: The small quantity of 44% styrene resin proposed has been included in the amount of primary use resin, for the sake of this discussion.

The cost differences for the alternative resins are:

Alternative 1 = $0.793 - $0.515 = $0.278 per pound of resin

Alternative 2 = $1.123 - $0.515 = $0.608 per pound of resin

The cost of alternative resins, based on 2,940,000 pounds of resin use per year are:

Alternative 1 = 2,940,000 lbs resin/yr x $0.278 per pound = $817,320 /year

Alternative 2 = 2,940,000 lbs resin/yr x $0.608 per pound = $1,787,520 /year

The styrene emissions resulting from each of the three resin types, shown on the attached spreadsheets, are:

Proposed = 116.3 tons styrene emitted per year

Alternative 1 = 107.6 tons styrene emitted per year

Alternative 2 = 106.0 tons styrene emitted per year

The styrene emission reductions for the alternative resins are:

Alternative 1 = 116.3 tpy - 107.6 tpy = 8.7 tpy styrene emissions reduction

Alternative 2 = 116.3 tpy – 106.0 tpy = 10.3 tpy styrene emissions reduction

The cost of styrene emissions reduction for the alternative resins is:

Alternative 1 = $817,320 / 8.7 tons = $ 93,945 per ton styrene emissions reduced

Alternative 2 = $1,787,520 / 10.3 tons = $ 173,546 per ton styrene emissions reduced

PROPOSED

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.440	0.120	23232.0	11.6	
Styrene (44%)		0.440	0.120	23232.0	11.6	11.6
Resin	2500000	0.390	0.110	107250.0	53.6	
Styrene (39%)		0.390	0.110	107250.0	53.6	53.6
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					227.7	144.3

INDIVIDUAL HAP EMISSIONS	TPY
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	116.3
Xylene	9.1
TOTAL	144.3

ALTERNATIVE 1

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.350	0.110	16940.0	8.5	
Styrene (35%)		0.350	0.110	16940.0	8.5	8.5
Resin	2500000	0.350	0.110	96250.0	48.1	
Styrene (35%)		0.350	0.110	96250.0	48.1	48.1
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					219.0	135.6

INDIVIDUAL HAP EMISSIONS	TPY
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	107.6
Xylene	9.1
TOTAL	135.6

ALTERNATIVE 2

ESTIMATED MAXIMUM EMISSIONS
MONTEREY BOATS - WILLISTON CRUISER PLANT

Material	Annual Usage (lb/yr)	VOC/HAP Content	VOC Release Factor	Estimated Emissions VOC (lb/yr)	VOC (ton/yr)	HAP (ton/yr)
Acetone	400000	1.000	0.000	0.0	0.0	
Catalyst	200000	0.980	0.050	9800.0	4.9	
MEK (2%)		0.020	0.050	200.0	0.1	0.1
Cumene (2.4%)		0.024	0.050	240.0	0.1	0.1
Acetophenone (0.6%)		0.006	0.050	60.0	0.0	0.0
Contact Cement	200000	0.500	1.000	100000.0	50.0	
Gel Coat (Spray)	600000	0.550	0.540	178200.0	89.1	
Styrene (31.5%)		0.315	0.540	102060.0	51.0	51.0
Methyl Methacrylate (6%)		0.060	0.540	19440.0	9.7	9.7
Resin	440000	0.340	0.110	16456.0	8.2	
Styrene (34%)		0.340	0.110	16456.0	8.2	8.2
Resin	2500000	0.340	0.110	93500.0	46.8	
Styrene (34%)		0.340	0.110	93500.0	46.8	46.8
Foam A	300000	0.450	0.002	202.5	0.1	
MDI (45%)		0.450	0.002	202.5	0.1	0.1
Foam B (HFC-134a)	300000	0.000	1.000	0.0	0.0	
Vinyl Paint	70000	0.510	1.000	35700.0	17.9	
Ethyl benzene (5%)		0.050	1.000	3500.0	1.8	1.8
MEK (0.1%)		0.001	1.000	70.0	0.0	0.0
MIK (20%)		0.200	1.000	14000.0	7.0	7.0
Xylene (25%)		0.250	1.000	17500.0	8.8	8.8
Wax	1000	0.980	1.000	980.0	0.5	
Xylene (1%)		0.010	1.000	10.0	0.0	0.0
Mold Release	1000	0.980	1.000	980.0	0.5	
Xylene (60%)		0.600	1.000	600.0	0.3	0.3
Ethyl Benzene (20%)		0.200	1.000	200.0	0.1	0.1
TOTAL:					217.4	134.0

INDIVIDUAL HAP EMISSIONS	TPY
Acetophenone	0.0
Cumene	0.1
Diphenylmethane Diisocyanate (MDI)	0.1
Ethyl benzene	1.9
Methyl Ethyl Ketone	0.1
Methyl Isobutyl Ketone	7.0
Methyl Methacrylate	9.7
Styrene	106.0
Xylene	9.1
TOTAL	134.0