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PERMITTEE:

Gatsby Spas
 4408 Airport Road
 Plant City, FL 33567-1112

PERMIT/CERTIFICATION

Permit No.: 0570468-004-AC
 County: Hillsborough
 Expiration Date: 02/28/99
 Project: Spa Manufacturing
 Operation

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 62-204, 62-210, 62-212, 62-296, 62-297, and 62-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the EPC and made a part hereof and specifically described as follows:

For the modification of a spa manufacturing operation to install three (3) spray booths, each equipped with a filter media, a fan rated at 10,000 ACFM and a stack of approximately 35 feet high. A high volume/low pressure hand held spray gun will be used at each spray booth to minimize overspray and maximize transfer efficiency. Allowable emissions (VOC/HAP) will increase by approximately 25 TPY. Most of this increase is due to the use of higher emission factors as proposed on a revised document by EPA for styrene based gelcoat and resin applications. The spa manufacturing operation includes forming of the mold and woodworking to make the outer shell. In the process, an acrylic sheet is clamped on a mold, heated by a natural gas catalytic oven, and vacuum formed to make the spa shell. Resin, fiberglass and foam are then applied to the outer shell via spray layup. Emissions from the spray layup operations, primarily styrene, will be evacuated and exhausted through the stacks. The application of Gelcoat (a resin) is by spray layup in another building with a ventilation fan. Plumbing, cleaning and frame fitting are done after the foam spray application.

Volatile organic compound (VOC) emissions generated from the usage of resins, cleanup solvents, PVC cements, and polymerization initiators (catalysts) are controlled by limitations placed on material usage and by the use of reasonable precautions.

Particulate matter (PM) emissions generated from the woodworking and fiberglass cutting operations are controlled by a rebuilt cyclone and are exhausted outside. PM emissions from fiberglass cutting are vacuumed into a filter bag inside the building. These operations are not subject to PM-RACT.



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PERMITTEE:
Gatsby Spas

Permit/Certification No.: 0570468-004-AC
Project: Spa Manufacturing Operation

Location: 4408 Airport Road, Plant City

UTM: 17-385.40E 3098.00N NEDS NO: 0468

Point ID: 01 - Fiberglass Resin Applications
02 - Wood Working

Modifies and References Permit No.: 0570468-001-AC. Also amends Title V application (File No. 0570468-004-AV) received June 12, 1996.

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PERMITTEE:
Gatsby Spas

Permit/Certification No.: 0570468-004-AC
Project: Spa Manufacturing Operation

SPECIFIC CONDITIONS:

1. A part of this permit is the attached General Conditions. [Rule 62-4.160, F.A.C.]
2. All applicable rules of the Environmental Protection Commission of Hillsborough County including design discharge limitations specified in the application shall be adhered to. The permit holder may also need to comply with county, municipal, federal, or other state regulations prior to construction. [Rule 62-4.070(7), F.A.C.]
3. Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other requirements of Chapters 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C., or any other requirements under federal, state, or local law. [Rule 62-210.300, F.A.C.]
4. As requested by the permittee in order to maintain the facility's minor source status under the PSD program, the VOC emissions from this facility shall not exceed 79 tons for any 12 consecutive month period. [Construction Permit Application and Rule 62-212.300, F.A.C.]
5. As requested by the permittee, in order to exempt the facility from Particulate RACT, maximum allowable particulate emissions shall not exceed 5 pounds per hour and 15 tons per year. [Rule 62-296.700(2)(a), F.A.C.]
6. Visible emissions from the cyclone exhaust and the woodwork area shall not exceed 20% opacity. [Rule 62-296.320, F.A.C.]
7. The permittee shall not cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320, F.A.C.]
8. In order to ensure that the limitations in Specific Condition Nos. 4, 5, and 6 are met, the following shall apply: [Construction Permit Application and Rule 62-4.070(3), F.A.C.]

A) Materials shall be limited accordingly:

<u>Material</u>	<u>Maximum Percent VOC By Weight for Each and Every Gallon Used</u>	<u>Usage (lbs.) for Any 12 Consecutive Month Period</u>
i. Styrene Based Resins	45	965,000
ii. Styrene Based Gelcoat	53	400
iii. Styrene Monomer	100	3,000
iv. Foam Coating (BASF products)	Variable	82,000
v. Catalyst (MEKP)	3	19,200
vi. Isopropanol	100	15,400
vii. Adhesive Cement	100	9,000
viii. Waterborne Stain	2	19,100

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PERMITTEE:
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SPECIFIC CONDITIONS: (continued)

- B) All spraying except the application of Gelcoat shall be done in the corresponding spray booth in the manufacturing building. Each spray booth shall be equipped with a fan capable of moving at least 10,000 acfm. These fans shall be operating during any fabrication and/or material usage containing styrene or other VOC materials and remain in operation at least two hours after the last material usage has been completed.
- C) Particulate matter emissions generated during the woodwork operation shall be vented through the cyclone. The cyclone shall be maintained in good repair and inspected daily. The wood working operation shall be restricted to supporting the manufacturing of the spas fabricated at this site.
- D) The heat input to the catalytic oven shall not exceed 0.6 million BTU per hour as fired on natural gas.
- E) Only one spray gun shall be used at each booth and no more than 3 guns at any time.
- F) Upon completion of installation of the three spray booths covered in this permit, the permittee shall remove or disable the operation of the existing two stage carousel spray booths (old booths).

9. Compliance with the emission limitations of Specific Condition No. 6 shall be determined using EPA Method 1,2,4,5 and 9 contained in 40 CFR 60, Appendix and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for stack sampling facility, source sampling and reporting, shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A.

10. Compliance with the emission limiting standard of Specific Condition No. 4 shall be determined by use of the following emission factors. [Rule 62-4.070(3), F.A.C. and EPA Guidance Document of December 1, 1997]

<u>Operation</u>	<u>Emission Factor</u>
Resin (Spray application)	0.259
Resin (Non-spray application)	0.154
Gelcoat	0.521
Styrene Monomer (surface cleaner)	1.00

11. Test the cyclone exhaust and the enclosure housing the woodworking operation for visible emissions annually, within 60 days prior to June 27. The EPA Method 9 test observation period on this source shall be at least 30 minutes. The test shall be conducted when high production rates are expected to occur. Two copies of the test data shall be submitted to the Air Management Division of the Environmental Protection Commission of Hillsborough County within 45 days of testing. Testing procedures shall be consistent with the requirements of Rule 62-297, F.A.C.

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PERMITTEE:
Gatsby Spas

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SPECIFIC CONDITIONS: (continued)

12. The permittee shall notify the Air Compliance Section of the Environmental Protection Commission of Hillsborough County at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, and the contact person who will be responsible for coordinating and having such test conducted. [Rule 62-297.310(7)(a)9., F.A.C.]

13. In order to demonstrate compliance with Specific Condition No. 4 and 8, the permittee shall maintain monthly records for each operations for the most recent 24 months. The records shall be made available to the Environmental Protection Commission of Hillsborough County, state, or federal air pollution agency upon request. The records shall include, but are not limited to, the following: [Construction Permit Application and Rule 62-4.070(3), F.A.C.]

- A) Month and year
- B) Usage of each material, in pounds
- C) VOC/HAP content of each material, in percent by weight
- D) Most recent 12-month rolling total of 12.B) above
- E) Supporting documentation such as MSDS, purchase orders, laboratory analysis, etc.

14. When the Environmental Protection Commission of Hillsborough County (EPC) after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in Rules 62-204, 62-210, 62-212, 62-296, or 62-297, F.A.C., or in a permit issued pursuant to those rules is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the EPC. For the purpose of confirming compliance with the emission limitations in this permit, the EPC may require the use of EPA Methods 18 and 24 or other approved methods, as deemed necessary. [Rules 62-297.310(7)(b), and 62-4.070(3), F.A.C.]

15. The permittee shall not store, handle, process, or use in any process the volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems as follows and as deemed necessary and ordered by the Environmental Protection Commission of Hillsborough County: [Rule 62-296.320, F.A.C.]

- A) Maintain tightly fitting cover, lids, etc. on all containers when they are not being handled, tapped, etc.
- B) Where possible and practical, procure/fabricate a tightly fitting cover for any open trough, basin, etc. of VOC so that it can be covered when not in use.
- C) Immediately attend to all spills/waste as appropriate.

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PERMITTEE: Permit/Certification No.: 0570468-004-AC
Gatsby Spas Project: Spa Manufacturing Operation

SPECIFIC CONDITIONS: (continued)

16 The use of property, facilities, equipment, processes, products, or compounds, or the commission of paint overspraying or any other act, that causes or materially contributes to a public nuisance is prohibited, pursuant to the Hillsborough County Environmental Protection Act, Section 16, Chapter 84-446, Laws of Florida, as Amended.

17 All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provision in Rule 62-296.310, F.A.C. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alterations, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling. Reasonable precautions shall include, but are not limited to the following:

- A) Ensure that all ducts leading to the cyclone are free of holes and properly connected to the cyclone.

18 Submit to the Environmental Protection Commission of Hillsborough County each calendar year on or before March 1, completed DEP Form 52-210.900(5), "Annual Operating Report for Air Pollutant Emitting Facility", for the preceding calendar year. All emission calculations are to be done using the method which most closely estimates actual emissions. At the time of issuance of this permit, the most accurate method has been determined to be as described in Specific Condition No. 10 [Rule 62-210.370(3), F.A.C.]

19 The pollution control equipment (cyclone) shall be maintained in good repair to perform adequately the function for which it was intended. Maintenance shall include, but is not limited to, bi-weekly inspections and replacement or repair of faulty equipment when necessary or as required by the manufacturer. Any maintenance/repair performed should be recorded. Records shall be maintained for the most recent 12 month period and made available for inspection upon request. [Rule 62-4.070(3), F.A.C.]

20 No alterations shall be made to this facility that have the potential to increase or change the type of air pollutant emissions without prior written approval from the EPC. [Rules 62-210.300 and 62-4.070(3), F.A.C.]

21 The permittee may request a modification to this permit by properly applying to the Environmental Protection Commission of Hillsborough County. [Rule 62-4.080(3), F.A.C.]

22 The permittee shall apply for a timely revision of this permit, if affected by the promulgation of any federal NESHAP standards for this type of operation. [Rule 62-4.070(3), F.A.C.]

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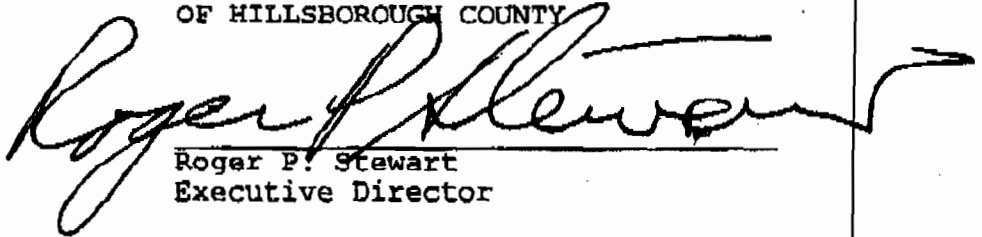
PERMITTEE:
Gatsby Spas

Permit/Certification No.: 0570468-004-AC
Project: Spa Manufacturing Operation

SPECIFIC CONDITIONS: (continued)

23. The permittee shall continue the search for lower styrene base resins or other vapor suppressant resins and continue to experiment with them. They shall submit a written report on their experience to date with the low styrene products. This report shall include evidence of product quality problems with the low styrene built spas. Correspondence from customers or distributors detailing the problems should be included as well. Also there should be an economic cost analysis on the annual use of the low styrene resins/gelcoats versus the higher styrene material. [Permit 0570468-001-AC]

ENVIRONMENTAL PROTECTION COMMISSION
OF HILLSBOROUGH COUNTY



Roger P. Stewart
Executive Director

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INSPECTION REPORT FORM ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY				
FACILITY New Gatsby Spas, Inc.			PAGE 1 OF 8	
FACILITY ADDRESS 4403 Airport Road			CITY Plant City	
MAILING ADDRESS 4403 Airport Road		CITY Plant City	ST FL	ZIP 33567-1112
INSPECTION DATE 11/8/99	TIME IN 12:30 p.m.	TIME OUT 3:45 p.m.	INSPECTION TYPE III	STATUS In Compliance
NEDS NO. 0570468-007-AV and 0570468-008-AC				
SOURCE DESCRIPTION Spas manufacturing and Wood working operation				
CONTACT(S) Dan Clements and Kenneth W. Sorah - (813) 754-4122 or 800-393-3399, Fax (813) 752-5716; Ronald J. Schott - Tel. (973) 376-7700, Fax (888) 325-9596				
<p>New Gatsby Spas, Inc. (NGS) applied to modify the spa manufacturing facility and revise Title V permit. Therefore, Alice Harman and I inspected the facility. Mr. Dan Clements, the Plant Engineer. Mr. Ronald J. Schott, the counselor at law, and Mr. Miller accompanied us throughout the inspection.</p> <p>First we met Mr. Clements. We walked to the meeting room and met the facility president and the counselor. We briefed them that the primary purpose of our inspection was to assess what NGS has and versus what they propose to construct. We walked to the manufacturing plant. The following was noted or discussed:</p> <p>1) Operation: Vacuum forming Number of Operators: One Equipment or components: Vacuum forming station (1X), catalytic converter (heater)(1X), mold, sheet holding fixture (variable) and mold mounting trolley (3X). Description: They clamp a precut acrylic sheet on the sheet holding fixture and slide the mold mounting trolley under the converter. Mr. Clements explained the converter is similar to an automobile converter. The converter is heated by combustion of natural gas. There is no flame. Due to the converter heat the sheet becomes soft (elastic). Then, vacuum is created to pull the sheet to get transformed in the shape of a mold. There are nine gauges. The gauge pressures were in the range of 7.0 to 7.2 inches of water height. According to Mr. Clements only CO2 and steam are emitted. The forming temperature is 360° to 385°F. There is no temperature gauge. Observation: No odor was present Cycle Time: 6 to 7 minutes</p> <p>2) Operation: Fiberglass application Number of operators: One</p>				
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ENVIRONMENTAL PROTECTION COMMISSION CONTINUATION SHEET PAGE 2 OF 8

FACILITY

New Gatsby Spas, Inc.

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Equipment or components: Spray booth (2X) [Only one booth was in use and one operator was working]. The booth includes a turntable, two side-curtains, an airflow system, a set of filters, an exhaust stack, a resin supply, a fiberglass feed system, and a spray gun.

Description: The acrylic shell is cleaned with a styrene and placed on a base. The side-curtains of the spray booth are rolled up. The shell is moved and positioned by an automatic guided vehicle (AGV) system. The operator uses a gun to spray the resin and chopped fiberglass (FG) on the bottom side of the formed acrylic sheet while the turntable revolves slowly. The FG strands are pulled and chopped by a rotating mechanism. The rotating mechanism is in integral part of the spray gun. The chopped FG is saturated with styrene and sprayed on the mold. The resins overspray either falls on the booth floor or the filter set captures it. The gases exhaust through the stack. After the first coat is applied to the mold, currently, the mold goes around the entire process loop. NGS has constructed second spray booth for the application of the second coat. The second coat is applied immediately after the attachment of rope pieces and wooden blocks. Based on the purchased records and the resin and number of molds produced in a year they consume 79 lbs. of resin per spa.

Observation: Entangling and snapping problem of the FG strands were noticed. Resin odor was present. The wall filters looked saturated. They change the filters every four hours. Because overspray of the resin on the floor the booth floor looked very messy. They have to scrap the booth floor to clean it. First coat is light and the second coat is heavy.

Cycle time: 12 minutes (6 minutes per coat). This operation is identified as a bottleneck of the process. Mr. Clements estimated that if the NGS would use two spray booths and finish the two coatings in one loop cycle, and they could produce 10 spas per hour. According to him the NGS targets to manufacture 15 spas per hour.

3) Operation: Rolling

Number of operators: Four

Equipment or components: Mold holding fixture (1X) and hand rollers (variable; one roller per operator)

Description: After the spray coated mold is brought to the roller station the operators use hand held rollers to flatten the chopped FG. The rolling operation eliminates air bubbles.

Observation: Resin odor was present and few operators were wearing masks.

Cycle Time: 4 minutes.

4) Operation: Preparation and attachment of filter shell

Number of operators: One

Equipment or components: A mold holding fixture, a custom built turret machine with 16 stations, a hand lay-up station, precut FG mattress/sheets, and miscellaneous supply items.

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ENVIRONMENTAL PROTECTION COMMISSION CONTINUATION SHEET PAGE 3 OF 8	
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New Gatsby Spas, Inc.	
<p>Description: The filter shell prep workstation may not be necessary regarded as a part of the synchronized manufacturing system. The attachment of the prepped filter shell is very much an integral part of the manufacturing line. Pre-molded filter shell is covered with the FG sheet and resin No. 38L is applied with brush. The resin serves as a bonding-sealing agent. The spa is dried at ambient temperature. The filter shell is made with polyester resin by hand laid method.</p> <p>Observation: Resin odor was present.</p> <p>Cycle Time: 1 to 2 minutes (filter attachment time)</p> <p>5) Operation: Hook and wooden block assembly</p> <p>Number of operators: One</p> <p>Equipment or components: A mold holder, wooden blocks and rope pieces.</p> <p>Description: The pre-drilled wooden blocks are placed on the mold and glued. Three pieces of ropes are attached at strategic places. The resin serves as a bonding agent.</p> <p>Observation: Resin odor was present.</p> <p>Cycle Time: 2 minutes</p> <p>6) Operation: Foam Application</p> <p>Number of operators: One</p> <p>Equipment or components: Spray booth (1X). The booth includes a turntable, two side-curtains, an airflow system, a set of filters, an exhaust stack, a polyurethane resin supply system, and a spray gun.</p> <p>Description: They receive two components of polyurethane in two separate tanks. They pressurize the tanks with N2 and feed the resin to the gun. At gunpoint the two components are mixed and sprayed on the mold. The turntable rotates the mold while the foaming agent is being sprayed. They spray 5 lbs. of polyurethane per minute (includes the two components of the resin). The components are mixed in one to one ratios. The polyurethane solidifies immediately.</p> <p>Observation: Resin odor was present. The resins overspray either falls on the booth floor or the set of filters captures it. The gases exhaust through the stack. Polyurethane foam coat layer is half an inch thick. The filters were dirty and resin odor was present.</p> <p>Cycle Time: 5 to 7 minutes.</p> <p>7) Operation: Rough cut</p> <p>Number of operators: One</p> <p>Equipment or components: Turntable (1X) and portable circular saw (1X)</p> <p>Description: At the end of foam application the operator gives a rough cut to trim the</p>	
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New Gatsby Spas, Inc.	
<p>Edge of the mold while the table continues to turn. The operator picks up the cutting and disposes of.</p> <p>Observation: This trimming operation was very noisy. Some resin odor was present. Cycle time: 2 minutes.</p> <p>8) Operation: Final cut Number of operators: One Equipment or components: A two feet high platform equipped with a rotary table. A pillar mounted circular saw, and an air suction system discharging into a dust collector. Cycle time: 2 minutes. Description: The molded spa is maintained in upside down position and laid flat on the turntable by keeping dead weight on the spa. A manual hoist crane is used to handle the spa. Using master blocks the motor height is adjusted. The system is switched on. The saw arm has a pressure sensitive device due to which the arm can swing in and out. The spa wall exerts pressure on the saw blade and the saw arm responds. Hence, a rectangular spa also could be cut accurately like a profile tracer. The airflow system picks up the dust caused by the cutting operation and discharges to the dust collector. The operator picks up the cuttings and dispose of. Observation: This operation was very noisy. The dust collector looked like a bag. The bag was approximately 10 feet high and 5 feet in diameter. No visible emissions were noticed. Approximately 15 feet north of the dust collector there is a large exterior door. Cycle time: 3 to 4 minutes</p> <p>9) Operation: Drilling Number of operators: One Equipment or components: Pilot drills a pneumatic gang drill, a hole saw, and a paper template. Description: The master mold has a sort of projection formed at various places to form depressions in the mold. Each depression indicates the center point of a pilot hole. 16 to 20 pilot holes are drilled while accessing from the interior side of the spa. Using the gang drill the operator enlarges the hole and counter bores at the same time. The hole-saw is used to drill large sized holes. The fiberglass powder falls on the shop floor. The paper template and a reciprocating power saw are used to make a control panel cut out. Observation: The drilling operation was very noisy. No visible emissions were noticed. There were 6 spas in process. Mr. Mill said they could create a maximum 12 drilling workstations in the same area.</p>	
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New Gatsby Spas, Inc.

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Number of operators: Nine

Equipment or components: Hose connectors, hose assemblies, hand tools and caulking tubes. The area looked messy. They sweep the floor at the end of the shift.

Cycle time: 4 minutes

10) Operation: ABS jets mounting, plumbing and hardware assembly

Description: Initially a PVC insert is passed through the spa wall, and a plastic nut is screwed on or a hose receptacle is mounted to the connector. The nut is on the exterior side of the spa. They caulk the connector assembly to prevent a possible leak. The insert is glued with PVC cement. At one workstation they use a 4' x 4' stand to keep the spa at a comfortable working height. And two operators work as a pair to carryout the connector assembly. One operator works from the interior side and the other works from the exterior side of the spa. They also assemble skimmer, filter valve, control panel and miscellaneous components at this station.

Observation: These operations looked tedious. No emissions are caused except due to the usage of the caulk and PVC cement. A pre-assembled PVC terminator (hose assembly) is connected to the ABS jets. They use spring clamps to fasten the hoses. There were 8 spas in process. Mr. Mill said they could create maximum 16 workstations in the same area.

Cycle Time: 4 minutes

11) Operation: Frame mounting

Number of Operator: Two

Equipment or components: Hand tools, a red wood collar frame assembly, a workstation and a flip over mechanism

Description: A pre-assembled red wood collar frame (generally it is in a rectangular shape) is brought from a nearby storage. A hoist is utilized to transport the frame. The frame is manually positioned manually on the outer edge of the spa. The spa is centered and screwed on the wooden blocks. The frame is pre-drilled for mounting of the screws. 12 to 16 screws are used to mount a collar frame. The frame supplied to the floor as a subassembly. Next, they assemble 8 to 10 structural pinewood panels to the collar frame.

Cycle Time: 4 minutes

12) Operation: Electrical assembly

Number of operators: Two

Equipment or components: Hand tools and an electrical panel assembly. The panel assembly includes a motor, a pump, an electrical control box, miscellaneous electrical switches, and connectors.

Description: The spa is flipped over. The electrical panel and electrical components are

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assembled to the spa. The spa is plumbed to completion.

Observation: They were using two stations and Mr. Mill said they could hold 7 assembled spas in the area. The area already looked congested except for a small empty pocket in the southeast part of the water testing area.

Cycle time: 4 minutes

13) Operation: Water Testing

Number of operators: Two

Equipment or components: The plumbed spa is filled with water. The ABS jets are actuated. The heaters and control panels are tested. At the end of the test cycle, the water is pumped out, and sent to a water storage tank. The tank water is passed through a sand bed before it is recycled. When the tank is full the water overflows. The overflow water is sent to the retention pond. The city water is used as make up water. The floor of the water test area has a drainage system. The water spilled in the test area flows to a pit. A pump is used to empty the pit and sent to the water storage tank for recycling purposes.

Cycle time: 30 minutes

14) Operation: Final Finish

Number of Operators: Five

Equipment or components: Work station (4x), hand wipes, and supplies

Description: The test spa is cleaned, dried and paneled. The spa is hand polished. The spa with a gloss finish requires greater effort and time to finish the acrylic shell. Final inspection is carried out and the cosmetic defects are worked upon. The spa is marked at the bottom and made ready for packaging.

Observation: This operation causes insignificant emissions.

Cycle Time: 5 to 6 minutes

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New Gatsby Spas, Inc.	
<p>15) Operation: Packaging Number of Operators: Two Equipment or components: Packaging stations (4x), a flipping mechanism, pallets, and packaging supplies Description: A flip station is used to tilt the pallet and spa. The packaging of the spa is completed and it is moved to the open yard on the east. The spa is staged here until shipped by a truck.</p> <p>Peripheral Operations:</p> <p>16) Operation: Resin mixing Number of operators: one Equipment or components: A resin mixing station (an elevated station), and a day tank Description: 40% gypsum (CaSO_4) and 60% polyester resin are mixed in the resin mixing day tank. The gypsum is received in 40 lb. Bags. The bag is slit opened and the powder is dumped inside the mixing tank. The resin is pumped into the mixing tank and an air jet is introduced to agitate the mix. The system can supply the mixed product at a rate of 15 lbs./minute. Observation: The gypsum bag slitting, dropping and mixing are considered sources of particulate matter emissions. The mixing operation emits particulate and VOC emissions. No emission control is used. Currently, the resin mixing station is located in the northwest corner of the plant. They propose to construct two additional day mix tanks and relocate the existing mixing station in a separate building on the west of the plant. Cycle Time: _____</p> <p>17) Operation: Bulk storage tanks Number of Operators: One Equipment or components: A vertical fixed roof tank Description: The polyester resin is received by a tanker truck and pumped into the bulk storage tank. The tank has a vent. Observations: They have two storage tanks. Currently, they use only one tank. The second</p>	
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tank has been disconnected. No odor was noticed. They propose to move the tank to the west of the plant, and construct an additional bulk storage tank of 8700 gallons.

18) Operation: Master mold prep operations

Number of operators: One

Equipment or components: A separate booth (located in the east building), a workstation, hand tools, and supply items

Description: Master mold is prepared by hand lay up process special wax is used in making of the mold. On average they make on mold per month.

Observation: At the time of inspection one operator was working in an enclosed room. The room was filled with strong resin odor.

Cycle Time: It is not an integral part of the manufacturing line but a support function for the vacuum forming process.

19) Operation: Wood working *

Number of operators: XXXX

Description: They receive pre-cut wood strips. They cut the wood, form the grooves and assemble. The finished panels are brought to the shop floor and assembled to the redwood collar frame. At present NGS uses a cyclone to control the particulate matter emissions caused by the wood working operation. They propose to use a baghouse and vent to the interior of the wood working plant.

Cycle time: It is not an integral part of the spa manufacturing.

* By the time we were ready to inspect the wood working plant they had ceased the operation.

NOTE: Currently, they operate the facility only one shift.

INSPECTOR(S)

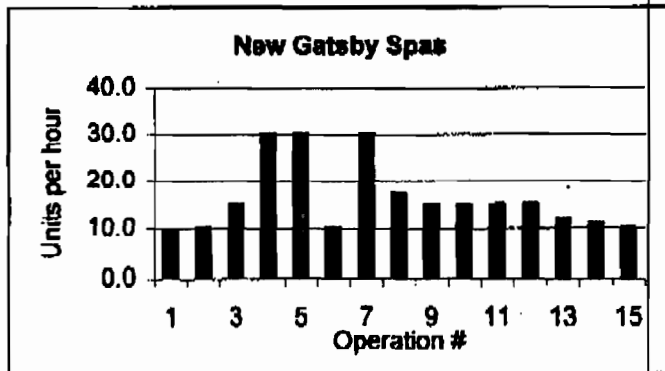
REPORT DATE

BEST AVAILABLE COPY**Description of Processes**

1. The vacuum molds for vacuum forming are made in this process.
2. An acrylic sheet is clamped on a mold and heated between 360°F and 385°F. Once the acrylic is at temperature, vacuum forming of the acrylic follows.
3. The filter well of the spa is hand laid with polyester resin and glass chop mat.
4. The application of fiberglass to the acrylic shell consists of a) cleaning the shell with styrene; b) applying one light coat of polyester resin; and c) applying one heavy coat of polyester resin. After step "b", a filter shell is fibreglassed to the spa shell and sealed in place with the heavy coat of resin (step "c"). The filter shells are made with polyester resin by the hand laid method.
5. On completion of fibreglassing work, each spa shell is coated with ½ inch of polyurethane foam.
6. The spa shells are trimmed of peripheral mold material and cut to their final shape on a rotary table.
7. The spa shells are drilled for plumbing. All plumbing consists of mounting ABS jets and PVC inserts to the shell. PVC hoses are glued to the jets and inserts with PVC cement.
8. A redwood collar frame is screwed to the plumbed spa shell. A structural pine wood frame is then screwed to the collar frame.
9. The redwood collar frame is constructed and stained with water born stain in the wood shop before the boxing assembly of the spas.
10. Framed spas receive electric/electronic components and are plumbed to completion.
11. Each spa is filled with water and checked for leaks and control performance.
12. Spas are cleaned, dried, and panelled. Final inspection of cosmetic defects may require polishing of the acrylic shell. A water born stain is used at the bottom of the wood frame.

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Operation	#	Time estimate by NGS Minutes	Cal avg.	units/hr
Vacuum Farming	1	6 to 7	6.5	9.2
Fiber glass coat 1 or 2	2	8	6	10.0
Rolling	3	4	4	15.0
Prep Filter Shell	4	2	2	30.0
Hooks & wood Blocks	5	2	2	30.0
Foam coat	6	5 to 7	6	10.0
Rough Cut	7	2	2	30.0
Final cut	8	3 to 4	3.5	17.1
Drilling	9	4	4	15.0
ABS jets mount	10	4	4	15.0
Frame Mount	11	4	4	15.0
Electrical Army	12	4	4	15.0
Water Test	13	0 min for	5	12.0
Final Finish	14	5 to 6	5.5	10.9
Packaging	15	6	6	10.0



Peripheral Opms

Resin Mix	16	
Bulk Storage	17	
Master Mold	18	
Wood Work	19	

Fiber glass coating operation # 2 is identified as bottle neck.
 This operation is likely to longer than this time due to the inherent draw backs
 and nature of the operation.

Prepared by Ben Kalra

[File name: I/kalra/new gatsby spas]

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