




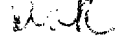
United States  
**CONSUMER PRODUCT SAFETY COMMISSION**  
Bethesda, Maryland 20814

MEMORANDUM

DATE: October 20, 2008

TO : ES

Through: Todd A. Stevenson, Secretary, OS 

FROM : Martha A. Kosh, OS 

SUBJECT: Pool and Spa Safety Act

ATTACHED ARE COMMENTS ON POOL AND SPA SAFETY ACT

| <u>COMMENT</u> | <u>DATE</u> | <u>SIGNED BY</u>                                 | <u>AFFILIATION</u>   |
|----------------|-------------|--|--|
| 1              | 08/29/08    | Bill Soukup<br>President                         | Commercial Pool and Spa<br>Supplies, Inc.<br>1167 East Highway 36<br>Maplewood, MN 55109       |
| 2              | 08/29/08    | Bill Lopez                                       | <a href="mailto:blopez@kiscosl.com">blopez@kiscosl.com</a>                                     |
| 3              | 09/02/08    | John Spoa<br>Maintenance<br>Supervisor           | Oak View Apartments<br><a href="mailto:Jspoa@Sares-regis.com">Jspoa@Sares-regis.com</a>        |
| 4              | 09/04/08    | Terry Rechlin<br>Vice President                  | Clover Home Leisure<br><a href="mailto:trechlin@chleisure.com">trechlin@chleisure.com</a>      |
| 5              | 09/04/08    | R. VanInwegen<br>Vice President                  | Chester Pool Systems, Inc.<br><a href="mailto:bobv@chesterpools.com">bobv@chesterpools.com</a> |
| 6              | 09/10/08    | Carol Ofiesh                                     | 3304 Dye Drive<br>Falls Church, VA 22042   |
| 7              | 08/15/08    | Donna Kather                                     | <a href="mailto:dlkather@cox.net">dlkather@cox.net</a>   |
| 8              | 09/16/08    | Allen Crumley<br>Director of<br>Field Operations | The Pool Management Group<br>1210 Warsaw Rd, Suite 900<br>Roswell, GA 30076                    |
| 9.             | 09/16/08    | Tim Durfee                                       | <a href="mailto:timdurfee@yahoo.com">timdurfee@yahoo.com</a>                                   |
| 10.            | 09/17/08    | Christie   | L&J Pools<br>Bethel, CT<br><a href="mailto:ljpools@aol.com">ljpools@aol.com</a>                |

## Pool and Spa Safety Act

11. 09/18/08 Gary L. Siggins Underwriters Laboratories,  
Principle Engr. Inc.  
455 E. Trimble Avenue  
San Jose, CA 95131-1230 USA
12. 09/24/08 C. Moody Virginia Pool Sales &  
Manager Service Inc.  
4347 Old Cave Spring Road  
Roanoke, VA 24018
13. 09/29/08 Steve O'Brien A.O. Smith Electrical  
Vice President Products Company  
531 N. Fourth Street  
Tipp City, OH 45371
14. 10/10/08 Paul Pennington Pool Safety Consortium  
Pool Safety 336 West College Ave.  
Consortium Santa Rosa, CA 95401
15. 10/13/08 Michael Wolfe 22 Old Bridge Way  
Member of APSP Ormond Beach, FL 32174  
and FPSA
16. 10/13/08 NDPA Directors National Drowning Prevention  
Officers or Alliance  
Advisory 7731 Woodwind Drive  
Council Members Huntington Beach, CA 92647
17. 10/14/08 David Stingl Stingl Products, LLC  
Founding Partner [Jager100@aol.com](mailto:Jager100@aol.com)  
&  
Anthony Sirianni  
President
18. 10/14/08 Randy Davis Williams & Jensen  
Intern'l Assoc. [tdtaylor@wms-jen.com](mailto:tdtaylor@wms-jen.com)  
Of Amusement  
Parks and  
Attractions  
&  
Rich Root  
World Waterpark  
Association
19. 10/14/08 Debbie Schultz Congress of the US  
Member of House of Representatives  
Congress Washington, DC 20515
20. 10/14/08 Tanya C. Ross Safe Kids, USA  
Sr. Public [tross@safekids.org](mailto:tross@safekids.org)  
Policy Assoc.

**Pool and Spa Safety Act**

- |     |          |                                 |  |
|-----|----------|---------------------------------|--|
| 21. | 10/14/08 | C. DiGiovanni                   | Association of Pool &<br>Spa Professionals<br>2111 Eisenhower Ave.<br>Alexandria, VA 22314 |
| 22. | 10/15/08 | Wendy Morse<br>General Counsel  | The Richdale Group<br>10040 Regency Circle<br>Suite 200<br>Omaha, NE 68114                 |
| 23. | 10/19/08 | Mike Corkery<br>Owner/President | Pool Guard<br>12087 62 <sup>nd</sup> St., N<br>Suite #8<br>Largo, FL 33773                 |

**Stevenson, Todd**

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**From:** Wolfson, Scott  
**Sent:** Friday, August 29, 2008 5:11 PM  
**To:** Stevenson, Todd  
**Cc:** Edwards, Erlinda; Whitfield, Troy  
**Subject:** FW: CPSC - Draft Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

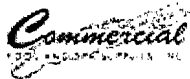
Public comment.

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**From:** Bill Soukup [mailto:billsoukup@commercialpool.com]  
**Sent:** Friday, August 29, 2008 5:06 PM  
**To:** Wolfson, Scott  
**Subject:** RE: CPSC - Draft Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

Dear Mr. Wolfson:

In section 2.2, you fail to mention an unblockable cover as an option. As I read it, the Federal Regulation clearly indicates unblockable covers are acceptable options.



Bill Soukup  
President  
Commercial Pool & Spa Supplies, Inc.  
1167 East Hwy 36  
Maplewood, MN 55109  
651-766-6666  
Fax 651-765-9924  
billsoukup@commercialpool.com

**From:** Wolfson, Scott [mailto:SWolfson@cpsc.gov]  
**Sent:** Friday, August 29, 2008 3:31 PM  
**Subject:** CPSC - Draft Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

We are releasing today the staff's draft interpretation of Sec. 1406 of the Act, on the minimum state law requirements. Just as we did with our interpretation of Sec. 1404, we are opening a public comment period starting today. We welcome your input.

I have promised many of you that a one-page poster on how to comply with Sec. 1404 and a comprehensive listing of drain cover manufacturers was also forthcoming. The agency needs a little more time to clear those documents, which I hope to disseminate to all of you during the 2<sup>nd</sup> week of September.

We understand and appreciate the concern that many of you have about the upcoming December deadline. CPSC remains committed to working with all of you to ensure that the law is complied with and that child drownings and entrapments are prevented.

8/29/2008

Thank you,  
Scott Wolfson  
Project Manager, Pool & Spa Safety Act  
Deputy Director, Office of Information and Public Affairs  
U.S. Consumer Product Safety Commission  
(301) 504-7051  
[www.cpsc.gov/whatsnew.html#pool](http://www.cpsc.gov/whatsnew.html#pool)

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**Stevenson, Todd**

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**From:** Bill Soukup [billsoukup@commercialpool.com]  
**Sent:** Tuesday, September 16, 2008 1:25 PM  
**To:** CPSC-OS; Bill Soukup  
**Subject:** Main drain comments

To whom it may concern:

2.1 & 2.2 state "Non-public pools" Shouldn't this be for "public" pools?

Why doesn't 2.2 address using unblockable covers?



Bill Soukup  
President  
Commercial Pool & Spa Supplies, Inc.  
1167 East Hwy 36  
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651-766-6666  
Fax 651-765-9924  
billsoukup@commercialpool.com

**Stevenson, Todd**

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**From:** Lopez, Bill [blopez@kiscosl.com]  
**Sent:** Friday, August 29, 2008 6:55 PM  
**To:** CPSC-OS  
**Cc:** jspoa@sares-regis.com  
**Subject:** Pool Spa Safety

Section 2.2 of the Staff Interpretation Document does not mention requirements for already existing pools and spas that have a " Multiple Drain System Without Isolation Capabilities". I imagine they would need an ASME/ANSI A112.19.8 compliant cover. But will they need one of the following

- (i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 *Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems* and/or ASTM F2387 *Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming Pools, Spas and Hot Tubs* or
- (ii) A properly designed and tested suction-limiting vent system or
- (iii) An automatic pump shut-off system anti entrapment device other than

As the newly constructed pools will ?

Stevenson, Todd

From: John Spoa [JSpoa@Sares-Regis.com]  
 Sent: Tuesday, September 02, 2008 12:09 PM  
 To: CPSC-OS  
 Cc: spoa\_john@msn.com  
 Subject: FW: Pool Spa Safety

Section 2.2 of the Staff Interpretation Document does not mention requirements for already existing pools and spas that have a " Multiple Drain System Without Isolation Capabilities". I imagine they would need an ASME/ANSI A112.19.8 compliant cover. But will they need one of the following

- (i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming Pools, Spas and Hot Tubs or
- (ii) A properly designed and tested suction-limiting vent system or
- (iii) An automatic pump shut-off system anti entrapment device other than

As the newly constructed pools will ?

Please reply to jspoa@sares-regis.com

John Spoa  
 Maintenance Supervisor  
 Oak View Apartments



**Stevenson, Todd**

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**From:** trechlin@cloverhomeleisure.com  
**Sent:** Thursday, September 04, 2008 12:56 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

Office of the Secretary  
U.S. Consumer Product Safety Commission

To Whom it May Concern,

Thank you for your diligence and hard work in formulating the Pool and Spa Safety Act 2008. During the course of it's development we in New York have tackled a few concerns that may be worth consideration in your final publication. We operate under a broad based definition for "pools" which encompasses spas and hot tubs and makes no distinction for commercial or residential. We have worked out exemptions for spas in two areas that I do not see delineated in your draft.

**Under section 1 Barriers:** spas should receive an exemption provided they are equipped with a manual safety cover that complies with ASTM F1346 ( in NY the exemption is AG105.5). *(It is unimaginable to consider a scenic residential setting with a beautifully designed spa surrounded by a chain link fence.)*

**Under section 3. Additional Layers of Protection:** Again, in New York we have an exemption for spas in regard to alarm systems, provided the spa is ASTM F1346 compliant. This is primarily due to our definition, a spa is a pool (residential or commercial, no distinction), and also because there is no alarm system currently available that complies with ASTM F2208 for residential spas.

I am concerned that the adoption of the Federal version of this act (as it stands), with the grant monies tied to compliance, may over-ride over some of the solutions we have been able to work through here in New York (particularly pertaining to spas as referenced above), thereby unfairly restricting or possibly eliminating the consumers access to the product. The economic impact on small businesses (like mine) and at the manufacturing level, would likely be devastating.

Thank you for considering my comments. I would greatly appreciate your response.

Regards,  
Terry Rechlin

|   |                             |
|---|-----------------------------|
| <i>Clover Home Leisure</i>                    | <i>We Have All The Fun!</i> |
| <b>Terry Rechlin</b><br><i>Vice President</i> | <b>Clover Home Leisure</b>  |
| <i>trechlin@chleisure.com</i>                 |                             |

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**Stevenson, Todd**

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**From:** trechlin@cloverhomeleisure.com  
**Sent:** Wednesday, October 01, 2008 2:42 PM  
**To:** CPSC-OS  
**Subject:** Pool and Spa Safety Act

I am following up on my previous correspondence. Please review your proposed requirements for residential spas in the areas of Barriers (sect 1.1) and Additional Layers of Protection (sect. 3). Residential spa equipped with manual safety covers meeting ASTM F1346 requirements should not be included in these requirements. It is not prudent or reasonable to suggest or require residential spa owners to fence in their spa, or equip it with an alarm system designed for a swimming pool that will not work in a spa. (There are no reasonable spa alarm alternatives, and a properly covered spa presents no hazard anyway.)

Sincerely,  
Terry Rechlin

|  |                             |
|--|-----------------------------|
| <i>Clover Home Leisure</i>             | <i>We Have All The Fun!</i> |
| <b>Terry Rechlin</b><br>Vice President | <b>Clover Home Leisure</b>  |
| <i>trechlin@chleisure.com</i>          |                             |

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Stevenson, Todd

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**From:** Robert VanInwegen [bobv@chesterpools.com]  
**Sent:** Thursday, September 04, 2008 8:03 AM  
**To:** cpssc-os@  
**Subject:** "Pool & Spa Safety Act"

There seems to be a lot of confusion about who need to replace their drain covers with new approved covers.

For instance, a YMCA pool has two 12" x 36" drains 15' apart, connected in parallel, and flowing to a balance/surge tank (gravity flow). Do the drain covers need to be replaced? The state of Kentucky seems to think they do. A hotel pool has two 12" square drains separated by over 3' and connected to the pump suction along with two skimmer connections to the same pump. Do these drain covers need to be replaced? There are many community pools with two or more large drains flowing by gravity to a vacuum D.E. filter. Do these drains need to be replaced.

The law needs to be more specific.

Chester Pool Systems, Inc.  
Robert VanInwegen  
VP Engineering  
(800) 248-5486  
(812) 949-7337 Fax  
<http://www.chesterpools.com>

6

**Stevenson, Todd**

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**From:** Carol Ofiesh [centaur@erols.com]  
**Sent:** Wednesday, September 10, 2008 8:12 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act - Comment period

I would like to submit the following suggestion with regard to the Pool & Spa Safety Act:

My suggestion is to have a raised metal grate installed over the drain cover and bolted to the bottom of the pool. The grate would prevent anyone from coming in contact with the drain. The raised grate need only be a few inches higher than the drain cover. It would be quick and easy to install, and no excavation work would be needed. The grate in conjunction with the new drain covers would seem to be a viable solution.

Carol Ofiesh  
3304 Dye Dr.  
Falls Church, VA 22042  
703-641-0729  
Email: [centaur@erols.com](mailto:centaur@erols.com)

7  
**Stevenson, Todd**

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**From:** Donna Kather [dlkather@cox.net]  
**Sent:** Monday, September 15, 2008 12:56 PM  
**To:** CPSC-OS  
**Subject:** Technical question for compliance with Pool and Spa Safety Act

I own a company that services commercial pools. In assessing these pools for compliance with the Pool and Spa Safety Act Section 1404 I am looking for clarification on one issue:

Is an equalizer connected to multiple skimmers in a pool/spa considered a single outlet similar to a main drain? Do each of the skimmers need to be split?

Thank you in advance for your assistance.

Regards,  
Donna Kather

**Stevenson, Todd**

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**From:** Allen Crumley [acrumley@poolmanagementgroup.com]  
**Sent:** Tuesday, September 16, 2008 11:06 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

I have two questions regarding the Pool & Spa Safety act:

1. In a pool with multiple Main Drains – More than two – must all drains be more than 36" apart?
2. In a Dual Drain setup, must the drains be 36" apart if one of the drains is on a vertical wall? This particular setup is on a large tubular slide with a manufactured dual 12x12 grate frame that has one suction grate on the wall and the other approx 8" – edge to edge – on the floor, like an L.

Thanks for any information you can provide.

---

Allen Crumley  
Director of Field Operations  
The Pool Management Group  
1210 Warsaw Rd, Suite 900  
Roswell, GA 30076  
770.993.4665 x111  
[www.poolmanagementgroup.com](http://www.poolmanagementgroup.com)  
[www.swimjobs.com](http://www.swimjobs.com)

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**Stevenson, Todd**

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**From:** Tim Durfee [timdurfee@yahoo.com]  
**Sent:** Tuesday, September 16, 2008 7:33 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

To whom it may concern,

Obviously the main reason I am sending this e-mail is my huge concerns on the new law that has been passed concerning splitting main drains. The letter that was sent out to all owners of commercial pool and spas has started a fire storm. What I mean by that is the letter that was sent out was not clear enough about what to do to becoming compliant in this new law. A lot of apartments etc. are hiring non licensed service people to do the work and in most cases the work is being done incorrectly. Permits are not being pulled for the work so the work is not being inspected. So what is happening is the owners are thinking they are compliant and they are not. What I see happening is some one losing their life and then finding out that the drains were not split properly. In some cases what is being installed is a vacume system that is supposed to sense any extra blockage in the drain line( this instead of splitting the main drain) the pamphlet that is with this system writes that it will not sense hair entrapment, so what good is it ! Now it is my understanding that the approved stamping on the drain covers is no longer being used. I see one way to stop a potential loss of life, is to inform everyone of these problems and to make it clear on the proper stamping and to also recommend the best way and in my opinion the only way to solve this main drain problem is to go with the best way and that is splitting the main drains and to make sure all counties need to have permits issued. I can be reached at 760-489-1847 Name Tim Durfee owner of Outback Builder Pool and Spa

Respectfully,  
Tim Durfee

**Stevenson, Todd**

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**From:** ljpools@aol.com  
**Sent:** Wednesday, September 17, 2008 3:24 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act



Please note:

We have been installing SVRS systems as required by CT code, despite having two main drains in our pools. The boss decided to experiment; to see if it was even possible to set off the safety release in multi-drain pools. It is not possible. There is simply not enough pressure.

SO... consumers are stuck with paying thousands of extra dollars for something that accomplishes exactly nothing.

You are entirely correct – two main drains does indeed make it impossible for entrapment to occur.

The idea of 'you can't be too safe' is good, but it is pointless in this instance, and very costly for consumers.

Kudos for clarifying to the states that SVRS devices are not needed in multiple main drain pools (from the department of redundancy department...).

Here's hoping that Connecticut will take note - -

Christie  
L&J Pools  
Bethel, CT

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**Stevenson, Todd**

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**From:** Gary.L.Siggins@us.ul.com  
**Sent:** Thursday, September 18, 2008 6:07 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

2008-09-18

**Subject:** Public comment on June 18, 2008 Staff Interpretation of Section 1404: "Federal Swimming Pool and Spa Drain Cover Standard"

Portable Spas - The improved suction outlets under the scope of ASME A112.19.8-2007, as well as the other entrapment prevention constructions specified in Section 1404

- (I) Safety Vacuum Release System
- (II) Suction-Limiting Vent System
- (III) Gravity Drainage System
- (IV) Automatic Pump Shut-off System
- (V) Drain Disablement

are features/constructions for in-ground spas, wading pools and swimming pools. All of these types of "pools" are assembled in the field and their circulation systems can use these various options. Unfortunately the Act (1403 (6)) has portable spas under the broad definition of swimming pool or spa. Options I-V are not applicable to the circulation systems used in them.

Portable spas are factory assembled and are evaluated and certified for safety as a complete appliance as it leaves the factory. There are a number of Nationally Recognized Testing Laboratories (NRTLs) that provide this service. They have their own safety standard, "UL Standard for Safety for Electric Spas, Equipment Assemblies, and Associated Equipment, UL 1563." The current version is the Fifth Edition. Both hair and body entrapment are addressed in the standard. Both hair and body entrapment have been addressed in UL 1563 since the late 1980's. Spas have been required to have at least two suction outlets for many years.

Forcing manufacturers to retest all of their suction fittings for factory produced portable spas to ASME A112.19.8-2007 will not improve the safety of the spa. You would be evaluating the fitting to a standard written for products intended for a different application. All the changes made to the standard in the 2007 edition were to address entrapment issues in swimming pools. The requirements in the previous edition combined with those in UL 1563 address the entrapment issue for the portable spas.

#### Recommendations

(1) Revise Page 6, "(VI) OTHER SYSTEMS " staff interpretation to read as follows:

Staff interpretation: This will allow the development of future products. Currently, the Commission has not determined that any other system presently used in the construction of swimming and wading pools or in-ground spas is equally effective as, or better than, the systems described in subclauses (I) through (V) of this clause. Further, there are no voluntary standards for such other systems.

Portable spas certified to UL Standard for Safety for Electric Spas, Equipment Assemblies, and Associated Equipment, UL 1563 by a NRTL are considered to comply with the provisions of the Act.

Gary L. Siggins  
Principal Engineer (PDE)- Swimming Pool  
Spa and Whirlpool Bath Equipment  
Underwriters Laboratories Inc.  
Email: Gary.L.Siggins@us.ul.com

Underwriters Laboratories Inc.  
455 E. Trimble Avenue  
San Jose, CA 95131-1230 USA  
Telephone: 408-754-6594  
Facsimile: 408-689-6594

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**Stevenson, Todd**

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**From:** Gary.L.Siggins@us.ul.com  
**Sent:** Thursday, September 18, 2008 5:31 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

**Subject:** Public comment on September 2008 CPSC Staff Draft Technical Guidance on Section 1406: Minimum State Law Requirements

Section 2.1 - Even though this text mirrors the Act, I believe you could delete Item C "No main drain." Options A and B would require a construction with no main drain.

Section 2.2 - When the provisions of this section are to be applied is not specified. New construction is covered under 1406(a)(iii). I assume this covers existing pools and spas. This implies all existing pools and spas with a single main drain that is not unblockable, shall have the suction outlet replaced with a new cover meeting ASME A112.19.8-2007.

Is it the intent of the CPSC that each State determine when this shall be required?

Portable Spas - The improved suction outlets under the scope of ASME A112.19.8-2007, as well as the other entrapment prevention constructions specified

- (A) Safety Vacuum Release System
- (B) Suction-Limiting Vent System
- (C) Gravity Drainage System
- (D) Automatic Pump Shut-off System
- (E) Drain Disablement
- (F) Other systems determined by the Commission to be equally effective....

are features/constructions for in-ground spas, wading pools and swimming pools. All of these types of "pools" are assembled in the field and their circulation systems can use these various options.

Unfortunately the Act has portable spas under the broad definition of swimming pool or spa. Options A - E are not applicable to the circulation systems used in them.

Portable spas are factory assembled and are evaluated and certified for safety as a complete appliance as it leaves the factory. There are a number of Nationally Recognized Testing Laboratories (NRTLs) that provide this service. They have their own safety standard, "UL Standard for Safety for Electric Spas, Equipment Assemblies, and Associated Equipment, UL 1563." The current version is the Fifth Edition.

Both hair and body entrapment are addressed in the standard. Both hair and body entrapment have been addressed in UL 1563 since the late 1980's. Spas have been required to have at least two suction outlets for many years.

Forcing manufacturers to retest all of their suction fittings for factory produced portable spas to ASME A112.19.8-2007 will not improve the safety of the spa. You would be evaluating the fitting to a standard written for a different product.

Recommendations

(1) Please add to this technical guidance document a statement that states with statutes that require portable spas sold to be certified to UL 1563 by a NRTL are considered to comply with the provisions of the Act.

Gary L. Siggins  
Principal Engineer (PDE)- Swimming Pool  
Spa and Whirlpool Bath Equipment  
Underwriters Laboratories Inc.  
Email: Gary.L.Siggins@us.ul.com

Underwriters Laboratories Inc.  
455 E. Trimble Avenue  
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\*\*\*\*\*

Pool  
Spa

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**Stevenson, Todd**

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**From:** Chris Moody [chris@vpssi.roacoxmail.com]  
**Sent:** Wednesday, September 24, 2008 11:30 AM  
**To:** CPSC-OS  
**Subject:** Wading Pool Requirements; interpretation of Graeme Baker Law

I am trying to clarify the requirements for Wading Pools vs regular pools. In an earlier draft of the Graeme Baker Law, it stated that wading pools, due to there shallow water and small children, that they would require BOTH a dual drain system with proper covers AND a SVRS unit or equivalent set up. In the most recent copy of the GBSA, it does not specify this. It says a minimum of (1) of these items. I am trying to find out so as to provide the correct info and service to my customers.

I was given Scott Wolsten's name as a contact with the CPSC when I spoke with the people at Vac-Alert. If you can clarify this or know who I could contact, please email or call me. Thanks for your help in this matter.

Christopher Moody, Manager  
Virginia Pool Sales & Service Inc.  
4347 Old Cave Spring Road  
Roanoke, Va 24018  
540-774-5992 phone  
540-774-5595 fax



September 25, 2008

Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

***Subject: Pool and Spa Safety Act***

Dear Secretary:

This letter is sent pursuant to the request for comments about the Pool and Spa Safety Act ("PSSA"). It is our understanding that the Consumer Product Safety Commission ("CPSC") is reviewing the Pool and Spa Safety Act to determine, among other things: 1) if a safety vacuum release system ("SVRS") as defined by regulation (or an equivalent) should be used in all pools including those with multiple drains, and 2) if the Act should require a retrofit of existing pools to include certain devices.

While we agree that the APSP-7 entrapment avoidance standard and allowance of multiple drains provides the primary entrapment avoidance method, we wish to express our strong support for additional wording related to the extra protection of an SVRS device such as that found in CPSC document 363, section 2.3 (this section recommends use of an additional layer of protection even on multiple drain pools). We believe this is important for a few reasons:

- A multiple drain pool with proper covers has been shown to be the best way to prevent entrapment. Should one of the drains become blocked, however, there is potential for an entrapment hazard. In those instances, a back-up device such as an SVRS could provide added protection against a full body entrapment.
- While proper flow rates can minimize the entrapment force, a pump change could occur that resulted in a higher horsepower pump being used than that which was originally installed. This too could result in creating a potential entrapment hazard, especially if a drain cover is missing, broken, or otherwise not functioning. In those instances, a SVRS device could provide added protection against a full body entrapment.



A primary objection raised by the pool industry to requiring or recommending a SVRS on all pools seems to be that a SVRS is too expensive, and only a hand full of devices are approved to the ASME A112.19.17 standard. We wish to point out that such an objection may be outdated as there now exist several cost-effective devices that could provide that "extra layer" of protection against full body entrapment. Installation of these SVRS devices has also become simplified.

Given the benefits associated with new SVRS devices, we encourage the CPSC to consider requiring an SVRS on all pool pumps, together with any other regulations the CPSC may deem appropriate. Indeed, motors with SVRS devices incorporated into them could be used when the original motor needs to be replaced. Again, new SVRS technologies make this possible.

Finally, we wish to point out that SVRS's, including the A.O. Smith eMod, is designed to protect against full body entrapment as defined by the industry and is not designed to protect a bather against other forms of entrapment and/or injury such as evisceration, hair entanglement or object / limb entrapment.

For this reason, we agree that steps must be taken to prevent entrapment such as those steps pointed out in CPSC's document 363 and the APSP-7 standard. We are simply pointing out that affordable, effective back-up devices exist and can be effective in releasing full body entrapment. This is a true "layers of protection" approach, much like requiring air bags, seat belts and speed limits in automobile transportation.

Please contact me if you have any questions or wish to discuss this further.

Regards,

A handwritten signature in black ink that reads "Steve O'Brien".

Steve O'Brien  
VP / GM HVAC

**Stevenson, Todd**

---

**From:** O'Brien, Steve [EPC/TCOH] [Steve.Obrien@aosepc.com]  
**Sent:** Monday, September 29, 2008 5:42 PM  
**To:** CPSC-OS  
**Subject:** Pool & Spa Safety Act  
**Attachments:** CPSC from AOS.pdf

Please see the attached comments regarding the Pool and Spa Safety Act.

I can be reached any time to discuss this further.

Regards,

Steve O'Brien  
phone: 937-667-2431 X2610  
cell: 937-271-6377



Pool Spa 14



October 10, 2008

Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

To Whom It May Concern:

On behalf of the Pool Safety Consortium (a non-profit corporation composed of the manufacturers of pool safety equipment and others who advocate for the enactment of accepted national building codes to reduce accidents in swimming pools and spas), I am writing in response to a request for comments about the U.S. Consumer Product Safety Commission's (CPSC) staff guidance document for Section 1406 of the Virginia Graeme Baker Pool And Spa Safety (Act).

On August 29, 2008 CPSC issued the *CPSC Staff Draft Technical Guidance of Section 1406* minimum state law requirements for a 30-day public comment period. This staff interpretation was consistent with the provisions of the Act which require three layers of entrapment protection. Then, only 18 days later, on September 16, 2008, CPSC issued a *Revised CPSC Staff Draft Technical Guidance of Section 1406*. The revised guidance asserted that "some technical inaccuracies were found" in the initial draft and declared that "the revision addresses specific comments that were received early in the comment period."

The revised CPSC draft completely rewrote section 1406 "Entrapment Protection" eliminating the requirement of all three layers of protection. As a substantive matter, Section 1406 (a) (1) (A) (IV), which established by law the requirement of three layers of protection has been all but eliminated. CPSC has frustrated the entire intent of the key entrapment prevention provisions of the Act. CPSC also has completely abandoned its own explicit recommendation of layers of protection which were made in the testimony of the CPSC Acting Deputy Executive Director in a May 2006 Senate hearing on the Act.

The swimming pool industry has been promoting in its advertisements an unblockable drain cover that fits into a standard sized single drain fitting. Those ads incorrectly claim that use of these covers is sufficient to achieve compliance with the Act. That assertion is based on a clear conflation of an "unblockable drain cover" and an "unblockable drain" as required by the Act. More importantly, drain covers may frequently come off the drain for a variety of reasons. When one of these drain covers come off in a pool where there are no additional layers of protection, there is no entrapment protection at all. CPSC has not clarified in this latest

**Dedicated to the prevention of child drowning worldwide.**

336 West College Avenue Santa Rosa, CA 95401 Phone: 877-222-4289 Fax: 707-576-8286

revision of its interpretation the obvious fact that oversized drain covers are not unblockable drains and therefore do not provide any basis for an exception to the "unblockable drain" requirement of the Act.

In a document issued on October 1, 2008 CPSC staff further recommended that "to eliminate and not just mitigate a drain entrapment hazard pool owners should disable old drains or build new pools without any drain..." CPSC staff is surely aware that few pool owners would desire, nor local health authorities permit a pool with no drain, because it would pose a major sanitation hazard.

The recent entrapment death of a firefighter in Lake County, Illinois demonstrated with tragic clarity that the CPSC interpretation of the Act to require only dual drains without a backup layer of protection is an unrealistic concession to pool industry demands and cannot be effective in protecting lives. Another entrapment incident in Wheaton, Illinois, which was investigated by the CPSC, Task Number 04038HCC2367, demonstrates the need for backup layers of protection.

In drafting the Act, the Congress clearly required that all three layers of protection be present in newly constructed pools: safety drain covers AND multiple drains AND, equally important, the anti-entrapment devices enumerated in the Act: Safety Vacuum Release Systems, a Suction-Limiting Vent System, Automatic Pump Shut-Off System or a Drain Disablement Device. The CPSC may not simply erase that requirement on its own initiative.

The CPSC's casual elimination of the requirement for this third layer of protection significantly undermines a goal of the Act. The CPSC's current interpretation of the law will result in greater danger for those who swim in the pools of the United States and would likely lead to an increase in the number of deaths and injuries that occur as a result of entrapment in pool drains. To comply with the law, the CPSC must abandon its unreasonable reading of the exception for "unblockable drains" and revise its advice to require all three layers of protection against entrapment in pool drains: safety drain covers, multiple drains and anti-entrapment devices as the essential "backup" layer of protection.

Finally, the barrier requirements contained in the draft technical guidance document, in most instances, accurately reflects the directives of the Act, but those directives and their safety benefits represent the minimum standard of protection needed to prevent or reduce the incidences of unintentional drownings in at least one respect. For instance, the Act allows a state to enact a requirement that allows a dwelling wall that has a door to serve as part of the barrier if there are also secondary devices in place (i.e., audible door alarms or power safety covers). The dwelling wall with backup secondary devices was allowed in lieu of isolation fencing in the Act not because that safety framework offered better or at least equal protection as isolation fencing, but rather was included as a political compromise to some Members of Congress to illicit or retain their support. However, the draft guidance document fails to mention the superior safety benefits of isolation fencing despite the fact that the CPSC website and its educational materials regularly tout their efficiency. The CPSC should emphasize that the Act and the accompanying guidance document represent only the minimum states can enact in order to protect children from traditional forms of drowning receive and still receive an incentive grant. In particular, we believe the CPSC should call attention to the battery-operated and easily removable tape alarm system that is commonly used on door and windows that serve as part of the pool barrier. The CPSC would provide a useful service if it were to publicize the failure of these systems to effectively deter drownings.

**Dedicated to the prevention of child drowning worldwide.**

336 West College Avenue Santa Rosa, CA 95401 Phone: 877-222-4289 Fax: 707-576-8286

Thank you for your attention to our concerns. Our hope is that you will follow the passion for safety that has been exhibited in the past and is necessary if the goals of the Act are to be achieved.

Sincerely,

Paul E. Pennington  
Pool Safety Consortium

**Stevenson, Todd**

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**From:** Paul Pennington [Paul@poolsafetyconsortium.org]  
**Sent:** Monday, October 13, 2008 1:37 PM  
**To:** CPSC-OS  
**Cc:** Wolfson, Scott  
**Subject:** Pool and Spa Safety Act  
**Attachments:** Public Comment 1406.doc

*Pool and Spa*

15

**Stevenson, Todd**

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**From:** Michael Wolfe [m.l.wolfe@ieee.org]  
**Sent:** Monday, October 13, 2008 6:32 PM  
**To:** CPSC-OS  
**Subject:** Pool and Spa Safety Act Comments

Office of the Secretary

U.S. Consumer Product Safety Commission

Re: Pool and Spa Safety Act Section 1406 Public Comments

I was very impressed with the CPSC staff statement that we should "ELIMINATE and not just MITIGATE the drain entrapment hazard in pools and spas." It seemed like a real cry from the heart; with which, I completely concur!

The public, rightly, should expect that a complete entrapment AVOIDANCE solution is intended under the VGB Pool and Spa Safety Act. At present, the best they have are "catch and release" stopgaps, not complete solutions.

My experience as a Systems Engineer leads me to point out some obvious gaps that remain unresolved in paragraph 2:

- If possible, a sensor should provide anticipation of an impending entrapment, entanglement or evisceration and accordingly shut-down the pump and also vent the suction line to eliminate the hazard as needed.
- If possible, a sensor should provide proof that the drain cover is in place; and not missing, forming a lethal trap. If the drain cover is not detected in its normal position the pump is shut-down immediately and alarms energized.
- Present SVRS also have a major weakness in terms of field reliability over years of time with no requirements for periodic, automatic calibration, testing, and traceability of such tests. Experience with outdoor installations shows that there are three primary hazards to automatic safety and control system reliable operation:
  - If possible, a sensor should be automatically self-testing at frequent intervals because lightning and induced power surge damage occurs rapidly and can easily go undetected without frequent testing.
  - If possible, a sensor should be automatically self-calibrating at frequent intervals because corrosion is slow but steady, and reliability is unpredictable without frequent calibration and testing.
  - If possible, fail-safe logic is used to assure priority to shut-down the pump in the event of a system or component failure.

- Most or all present SVRS devices are hydraulically dependent sensors, so that:  
  
changing flow circulation conditions due to poor filter maintenance, pump speed changes, changes in valve settings, cleaning system variables, dual drains with one blocked, etc. can have a serious effect upon the suction sensor functioning properly when it must.
- fail-safe principles in design, fabrication and installation are not required or applied in any systematic, verifiable, way in these SVRS devices.

Regarding Swimming Pool Alarms in paragraph 3:

- other sensor types responding to direct detection of a child falling into a pool are possible and should be included in addition to the 3.2.1 surface waves and 3.2.2 subsurface pressure waves paragraphs. In fact, an effective combination of the Entrapment Avoidance function and the Pool Alarm function in a single device may be possible with new technology.

I think that the work that the CPSC staff and organization, are doing is a real public service that can lead to a major improvement in pool and spa safety systems to the benefit of many children and their families. The Baker family is certainly to be commended for their dedication and effective actions.

Yours truly,

Michael L. Wolfe

Member of APSP and FPSA

22 Old Bridge Way  
Ormond Beach FL 32174

[m.l.wolfe@ieee.org](mailto:m.l.wolfe@ieee.org)  
386-672-9978

Pool + Spa



October 13, 2008

Scott Wolfson  
Project Manager, Pool & Spa Safety Act  
Deputy Director, Office of Information and Public Affairs  
U.S. Consumer Product Safety Commission

**RE: Commentary on Virginia Graeme Baker Pool & Spa Safety Act**

This commentary statement has been developed by a committee of the National Drowning Prevention Alliance (NDPA) designated to respond to the CPSC's call for comments on the Virginia Graeme Baker Pool & Spa Safety Act, and the NDPA's officers. The NDPA is a non-profit 501(c)(3) organization that includes parents who have experienced the tragedy of drowning in their own families, along with representatives of health and safety organizations, pool and water safety product manufacturers, government agencies, and aquatic professionals from across the United States.

We strongly recommend that state minimum standards include **isolation fencing and layers of protection** which can combine to maximize drowning prevention, especially of young children in backyard swimming pools. We believe that multiple layers are necessary due to the documented failures of a single barrier, such as when a child drowns because a gate was propped open.

We also make a strong recommendation that pool owners be **required to attend a water safety class** that includes drowning risk awareness, prevention techniques and rescue with CPR from a CPSC authorized organization. A certificate proving attendance should be required before a building code official signs off on the completion or remodeling of every pool.

Supervision is vital, but no one can watch a child 24-hours-of-the-day. Barriers must be in place to provide the few minutes needed to re-establish contact when it's been momentarily lost.

We believe that **mandating a fence around every pool is ethical legislation**, as it's the only barrier with proven effectiveness in reducing childhood drowning. We realize that in most states, the safety of neighboring children has typically been the public health issue warranting property-line fencing. Few states have current laws requiring fencing between a pool and a home. Pool owners have historically fought against environmental modifications meant to protect the children living in or invited into their homes. Approximately 60% of children under five who drown do so in their own backyard pools due to lack of barriers.

We recommend CPSC rulemaking language that mandates that states that receive grant funding have enacted legislation that **requires a primary barrier consisting of a permanent 4-sided isolation fence**. We do not recommend that a dwelling wall be an acceptable fourth side of the fence unless **that part of the house has no doors leading into the pool area, and window guards on all windows that are included within this barrier**. As CPSC staff recommends, this fence must have a self-closing, self-latching gate with the latch release mounted a minimum of 54" from the ground. **The NDPA recommends that a secondary barrier be required even if an isolation fence is in place**, due to the frequency of drowning occurring due to issues like gates not closing or being propped open.

**If either permanent or non-permanent barriers are used, there must be a minimum of two “layers of protection” in place around every pool.** This would consist of two of the following products: isolation fencing; removable pool safety fencing; an automatic, semi-automatic or manual pool safety or load bearing cover; or door or pool (water) alarms. All products must meet applicable ASTM standards.

We concur with the CPSC’s recommendations, and agree that minimum standards for pool fencing must include a "Non Climbable Zone" of 45 inches for vertical barriers/fencing, and a minimum of 2" of space allowed between the fence and the ground for a non-solid surface; 4" over paved surfaces.

It’s especially important to ensure that if chain link is allowed, it’s a maximum 1 ¼” mesh size, which is smaller than ICC codes allow (2 ¼”—an error we’ve been attempting to correct).

We know we’ve set the bar high, but we believe that mandating proven barriers in multiple layers of protection is the ethical choice. The Consumer Product Safety Commission is in an ideal position to make a difference in saving children’s lives.

Let us know if there’s anything the NDPA can do to help. You’ll note that we have not commented on sections of the ACT pertaining to anti-entrapment. We know that there are many organizations and individuals (such as APSP, ASTM, ANSI) as well as anti-entrapment device manufacturers that have more expertise in that area, so we made a decision to focus on the areas of the ACT on which we have the most expertise. Thank you for the opportunity to submit comments.

Sincerely,  
***National Drowning Prevention Alliance (NDPA)***

Comments endorsed by the following NDPA Directors, Officers or Advisory Council Members:

Kim Burgess, International Swim Instructors Assn.  
Mary Ann Downing, Pool Safety Solutions  
Gerald M. Dworkin, Lifesaving Resources  
Kristin Goffman, NDPA Administrator  
Diane Holm, Lee County (Florida) Public Safety  
Johnny Johnson, Swim for Life Foundation and NDPA President  
Nadina Riggsbee, Drowning Prevention Foundation  
Maureen Williams, D&D Technologies



Pool  
Spa

October 14, 2008

Office of the Secretary  
U.S. Consumer Product of Safety Commission  
4300 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

RE: Pool and Spa Safety Act, Section 1406, Public Comment Period

To Whom It May Concern:

### **Introduction and Background**

Stingl Products has been involved in swimming pool entrapment prevention for over 14 years. We have been active in the promulgation of pool safety standards, state laws and codes regarding entrapment, and The Virginia Graeme Baker Pool and Spa Safety Act. We were contacted many times by members of Congress for our expertise in this matter.

### **Comments Regarding United States Consumer Protect Safety Commission Interpretation of Section 1406 of the Act**

#### **Entrapment Prevention**

The Commission correctly interpreted section 1406 on August 29, 2008. Due to "technical error" the commission reinterpreted the Act and removed the the layer of protection intended by Congress. Section 1406, Minimum State Law Requirement, 1406 (c) (1) (ii) requires "*That all pools and spas be equipped with devices and systems designed to prevent entrapment by pool or spa drains*". Section 1406 (a) (1) (iii) (I) requires that all pools built 1 year after the date of enactment to be required with "*more than one drain*".

In section 1406 (d) (1) states either the Commission shall require, at a minimum, 1 or more of the following, (except for pools without a single main drain)

- (A) Safety Vacuum Release System
- (B) Suction Liming Vent System
- (C) Gravity Drainage System
- (D) Automatic Pump Shut Off System
- (E) Drain Disablement
- (F) Other Systems

Though confusing the wording “without a single main drain” means without a main drain. The English language dictates this. If you left your house “without a single dollar bill in your pocket”, how many dollars would you have? This is clearly the intent of the drafters of this bill, as previously stated above; all pools shall be built with more than one drain. Thus it would be impossible to build a pool with one drain unless it was unblockable. As most pools will use the unblockable drain exemption and build with channel drains currently available on the market, this would only apply to those who chose to install small multiple drain systems. Work on the ASTM 15.51 Committee has shown that these are being built in an unsafe manner. Also, there are examples of entrapments on dual drain systems. In shallow bodies of water, north of the freeze line, these must have the drain covers removed and plugs installed to prevent freezing. These systems fill with sand, plaster and other debris making them an invisible hazard. For the builder who chose to use a multiple drain system the cost of installing vent line would not exceed \$200.00. A minuscule cost in the overall cost of the pool construction.

We urge the Commission to reverse its revised interpretation back to the original and correct interpretation. With this and the requirements from the ASME 19.8., we think this will finally put an end to entrapment drowning and injuries.

### **Barriers**

The draft technical guidance document barrier requirements accurately reflect the directives of the Virginia Graeme Baker Pool and Spa Safety Act. However, due to political compromises made to illicit or retain support for the bill in Congress, we feel that the directives represent only the **minimum** standard of protection needed to reduce or prevent incidents of accidental drowning.

Stingl Products feel that the Consumer Product Safety Commission should **strongly emphasize** that the Virginia Graeme Baker Pool and Spa Safety Act and the corresponding technical guidance document represent only the **minimum requirements** that states can enact and still qualify for the grant incentives. The most effective prevention of unwanted, unfettered access to a backyard pool or spa is to enclose it inside a true 4-sided barrier fence and we feel that the draft technical guidance document should actively promote their installation and use even though the Virginia Graeme Baker Pool and Spa Safety Act does not directly require them.

### **Above-Ground, On Ground, and Inflatable Pools and Spas Should Not Be Exempt**

The draft technical guidance document allows “barrier features” built into a product to exempt said product from the Act. Who will conduct the testing required to determine which barrier features are safe? We feel that that the Consumer Product Safety Commission’s interpretation is inconsistent with the Act. The Act defines “swimming pool” as any outdoor or indoor structure intended for swimming or recreational bathing, including in-ground and above-ground structures, and includes hot tubs, portable spas, and non-pools as defined above, need to be enclosed by “barriers to entry that will

effectively prevent small children from gaining unsupervised, unfettered access”. Allowance of a barrier feature built into a pool or spa to serve as a perimeter barrier not consistent with the Act, and the Acts of a pool combined with the barrier directives states that the above-ground, on-ground, or inflatable pool or spa should be covered by the same standard of protection required for traditional in-ground pools and spas.

Respectfully,

Stingl Products, LLC

David Stingl, Founding Partner

Anthony R. Sirianni, President

**Stevenson, Todd**

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**From:** Jager100@aol.com  
**Sent:** Tuesday, October 14, 2008 11:17 AM  
**To:** CPSC-OS  
**Cc:** Wolfson, Scott; Jager100@aol.com  
**Subject:** Pool & Spa Safety Act  
**Attachments:** Oct14\_2008\_Letter\_to\_US\_CPSC.doc

Please find our comments attached in a MS Word document.  
Thank You  
David Stingl  
Stingl Products

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New **MapQuest Local** shows what's happening at your destination. Dining, Movies, Events, News & more. [Try it out!](#)

Pool &  
Spa  
18

**October 14, 2008**

**Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408**

**Comments of the International Association of Amusement Parks and Attractions  
and the World Waterpark Association on the Pool & Spa Safety Act**

The waterpark industry welcomes this opportunity to offer a public comment on the Consumer Product Safety Commission's (CPSC's) interpretation of the regulations pertaining to the pool and spa drain cover standard as set forth in Title 14 of Public Law 110-140. Guest safety is the attractions industry's top priority and the waterpark industry supports the intent of the Virginia Graeme Baker Pool and Spa Safety Act – to prevent drowning due to drain entrapment.

**Waterpark Industry in the U.S.**

Two associations, the International Association of Amusement Parks and Attractions (IAAPA) and the World Waterpark Association (WWA) collectively represent a majority of waterparks in the United States. We are submitting this comment on behalf of both organizations.

The waterpark industry is a fast growing industry, both in the United States and internationally. There are more than 1,000 waterparks in North America, serving over 85 million guests annually. Waterparks are operated by both large and small companies, municipalities, hotel resorts and community centers. They employ between 20 to 5,000 workers per park. A number of waterparks in the U.S. are indoors or in warmer southern states so many parks will be open on December 20 and going into the busiest part of the year.

**Summary**

Although we believe the definition of "swimming pool" and "spa" in Section 1403(6) of the Virginia Graeme Baker Pool and Spa Safety Act does not include waterpark attractions, the waterpark industry wants to do everything possible to meet appropriate safety standards. However, the industry has identified several challenges it will face in complying with the Act (see attached presentation for more detail):

- Water attractions differ greatly from traditional pools. Waterparks currently employ multiple layers of anti-entrapment features not typically found in traditional pools which have not been taken into consideration.

- While operators universally agree that safety is paramount at aquatic facilities, the timeline for compliance has proved to be impossible to meet for the country as a whole.
- At the time of these comments, approved drain covers for field fabricated or larger drains such as those found in waterpark pools do not exist in the marketplace. Our understanding is that many of these covers may not be available in the marketplace until November at the earliest, potentially making compliance difficult.
- Rushing to interpret and implement the provisions of the Virginia Graeme Baker Pool and Spa Safety Act in waterparks could actually create additional safety risks such as trip hazards.
- Applying ANSI/IAF-9, ASTM, and other technical standards is a viable solution that we would like the CPSC to consider. We welcome future inclusion in the Act when appropriate technical standards are developed.

### **Unique Design Elements**

Water attractions are not traditional pools. Waterpark attractions are unique in design and configuration, with specific safety performance requirements. Common pools and spas feature flat water, smaller drain systems, few walking surfaces and few interactive features.

In contrast, water attractions tend to be larger and feature moving, shallow water (zero depth to five feet), walking surfaces, interactive features, and frequent use of tubes, rafts and mats. Additionally, multiple anti-entrapment features are utilized such as large unblockable drains (larger than 18" x 23"), gravity drains, multiple drains and water velocities of less than 1.5 ft/sec through the drains. These unique features should be taken into consideration by the CPSC in the implementation and enforcement of the Act.

Our industry supports laws that enforce anti-entrapment compliance. The waterpark industry agrees all single source, blockable, direct-suction drains need to be eliminated as these types of drains pose a significant entrapment risk. However there are few, if any of those types of drains in the industry. Consideration of the unique features of water attractions is needed.

### **Market Supply**

It is uncertain whether appropriate drain covers will be available in time for the December 20, 2008 implementation deadline outlined in the Act. At the time of these comments, approved drain covers for field fabricated or larger drains such as those found in waterparks do not exist in the marketplace. While several manufacturers are in various stages of designing and certifying traditional drain covers that will comply with the new

standard, we currently do not know of any manufacturer who will have the large drain covers utilized by waterparks available for installation in time for the December deadline.

### **Unintended Safety Hazards**

Applying ANSI/ASME A112.19.8 to water attractions is not appropriate. It creates technical & operational issues, which may result in safety hazards. We are concerned some drain covers that will be available create a safety hazard when used in the shallow-depth water often found in waterparks. When placed in zero-depth entries, splash pools or waterslide catch pools, domed covers will create a tripping hazard for guests. Additionally, the design of some domed drain covers available on the market could result in toe entrapment and injury when used in shallower depths. (Please see Appendix A for illustration.)

Changing the grate could also increase the flow velocity and result in non-compliance with the ASME standard. The safest drain covers for most waterpark attractions are large, flush mounted grates that reduce the likelihood of entrapment because of their size, construction, or relationship to the rest of the drain system.

Many waterpark drains will require custom-made covers. While the Act has a provision for field-fabricated (custom) drain covers, designing them and certifying their use by licensed engineers, manufacturing, and installing them will take time.

For these reasons, we request that CPSC implement different requirements for water attractions.

### **Possible Solutions**

The ANSI/ASME standard referenced by the Act was not written with waterpark facilities in mind. Technical requirements for anti-entrapment should be addressed in other ANSI and ASTM standards specific to waterpark attractions. Technical experts are reevaluating and writing anti-entrapment standards for waterpark attraction design through the ASTM International waterpark standards writing process, but this will take some time.

We would like clarification that the Act and ANSI/ASME A112.19.8 does not apply to water attractions so we may work on an ASTM standard WK 21536 to incorporate existing standards and address the specific challenges discussed in this comment. We welcome future inclusion in the Act when appropriate technical standards are developed.

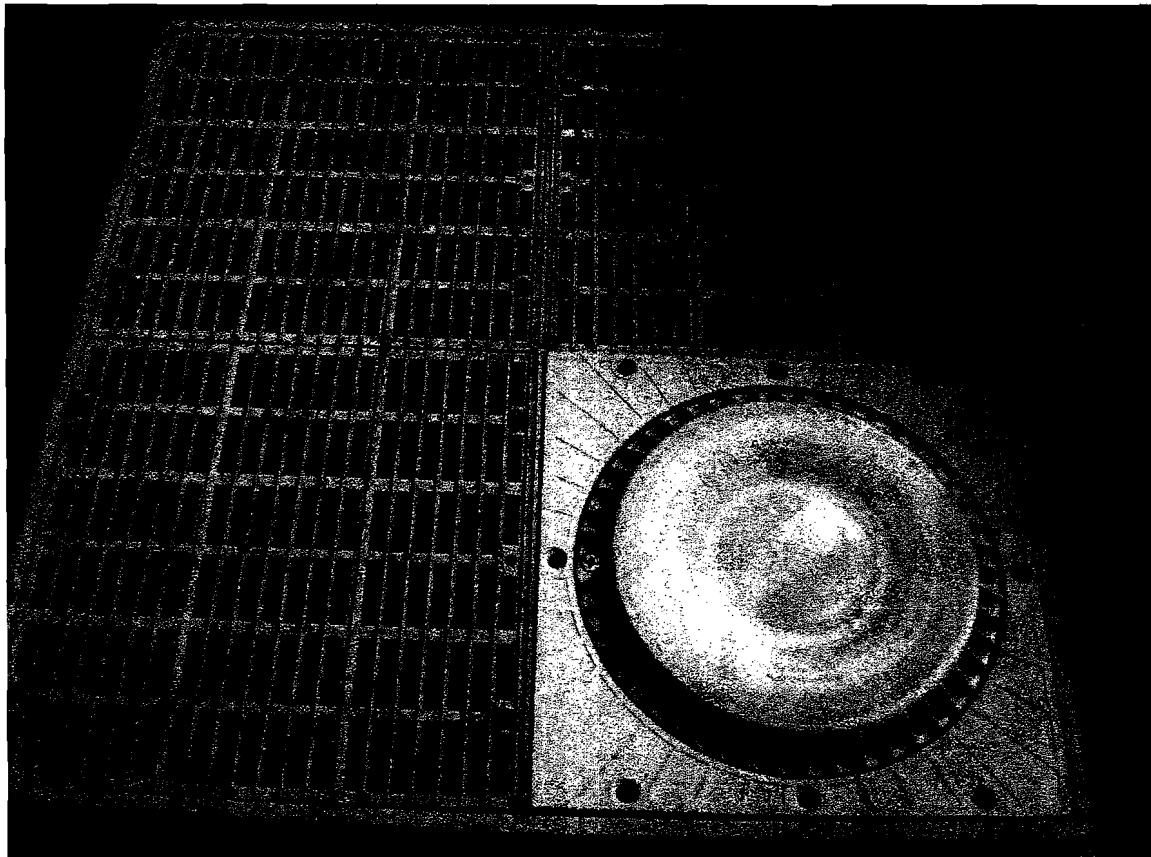
**Respectfully submitted,**

**Randy Davis  
International Association of Amusement Parks and Attractions**

**Rick Root  
World Waterpark Association**

**Appendix A**

**Example of existing drain with one section modified to comply with ANSI/ASME  
A122.19.8:**





# Virginia Graeme Baker Act

Waterpark Industry

# Overview

- We support the goals of the Act
- Single, blockable drains should comply with the Act.
- Water attractions are not traditional pools
- Waterparks currently employ multiple layers of anti-entrapment features
- Applying ANSI/ASME A112.19.8 to water attractions is not appropriate. It creates technical & operational issues, which may result safety hazards.
- Applying ANSI/IAF-9, ASTM, and other technical standards is a viable solution

# Waterpark Industry

- Outdoor and indoor waterparks –
  - more than 1,000 waterparks in North America
  - Over 85 million in attendance annually
  - growth average 3-5% each year
- Communities served –
  - Private companies large and small
  - Municipalities
  - Hotel Resorts
  - Community Centers
- Suppliers & Manufacturers
- Body of professionals dedicated to waterpark safety standard writing (ASTM and ANSI)
- Employee base ranges from 20 to 5,000 persons per park
- Many parks will be open December 20<sup>th</sup> going into the busiest part of the year.



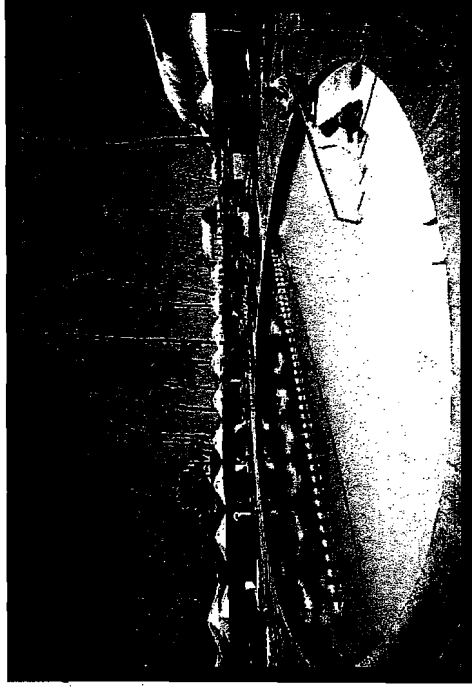
**What is a typical swimming pool?**

# Virginia Graeme Baker Act – Definition of Swimming Pool or Spa

From Section 1403

Swimming pool; spa. The term "swimming pool" or "spa" means **any outdoor or indoor structure intended for swimming or recreational bathing, including in-ground and above-ground structures, and includes hot tubs, spas, portable spas, and non-portable wading pools."**

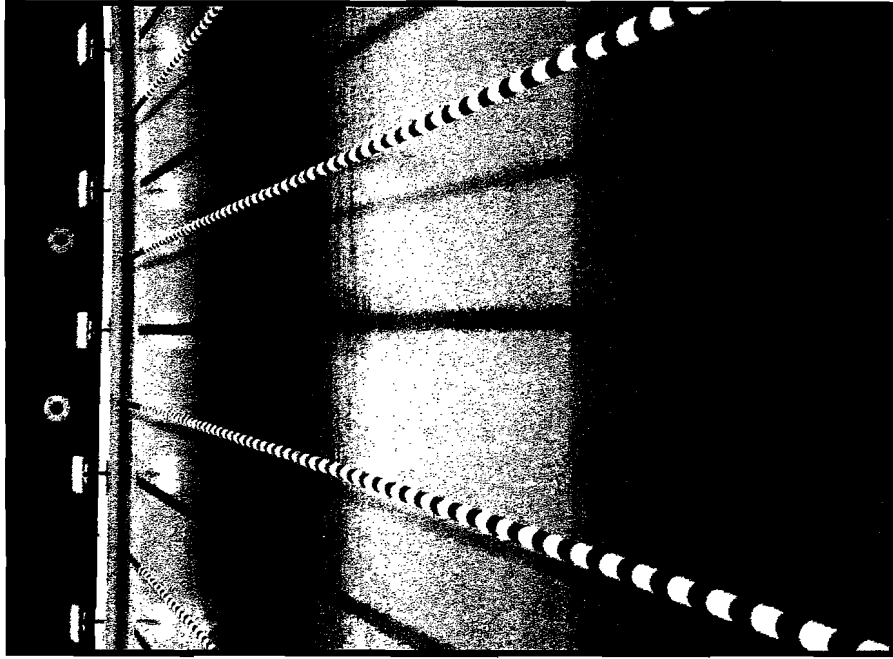
# Typical Swimming Pools



Community Pools



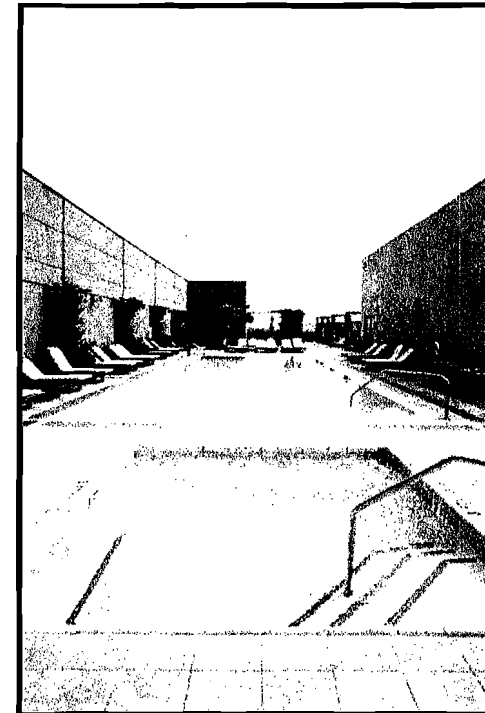
Residential Pools



Competitive Pools

# Typical Swimming Pool & Spa Features

- Flat water
- Smaller systems and drains
- Few walking surfaces
- Few interactive features



**What is a waterpark  
attraction?**



# ANSI/IAF-9 Defines Aquatic Recreation Facilities as:

**Class D, other pool:** Any pool operated for medical treatment, therapy, exercise, lap swimming, recreational play, and other special purposes, including, but not limited to, wave or surf action pools, activity pools, splashers pools, kiddie pools, and play areas.

**Class D-1, wave action pools:** Wave action pools include any pool designed to simulate breaking or cyclic waves for purposes of general play or surfing;

**Class D-2, activity pools:** Activity pools are those pools designed for casual water play ranging from simple splashing activity to the use of attractions placed in the pool for recreation;

**Class D-3, catch pools:** Catch pools are bodies of water located at the termination of a manufactured waterslide attraction provided for the purpose of terminating the slide action and providing a means for exit to a deck or walkway area.

**Class D-4, leisure rivers:** Manufactured streams of near-constant depth in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices.

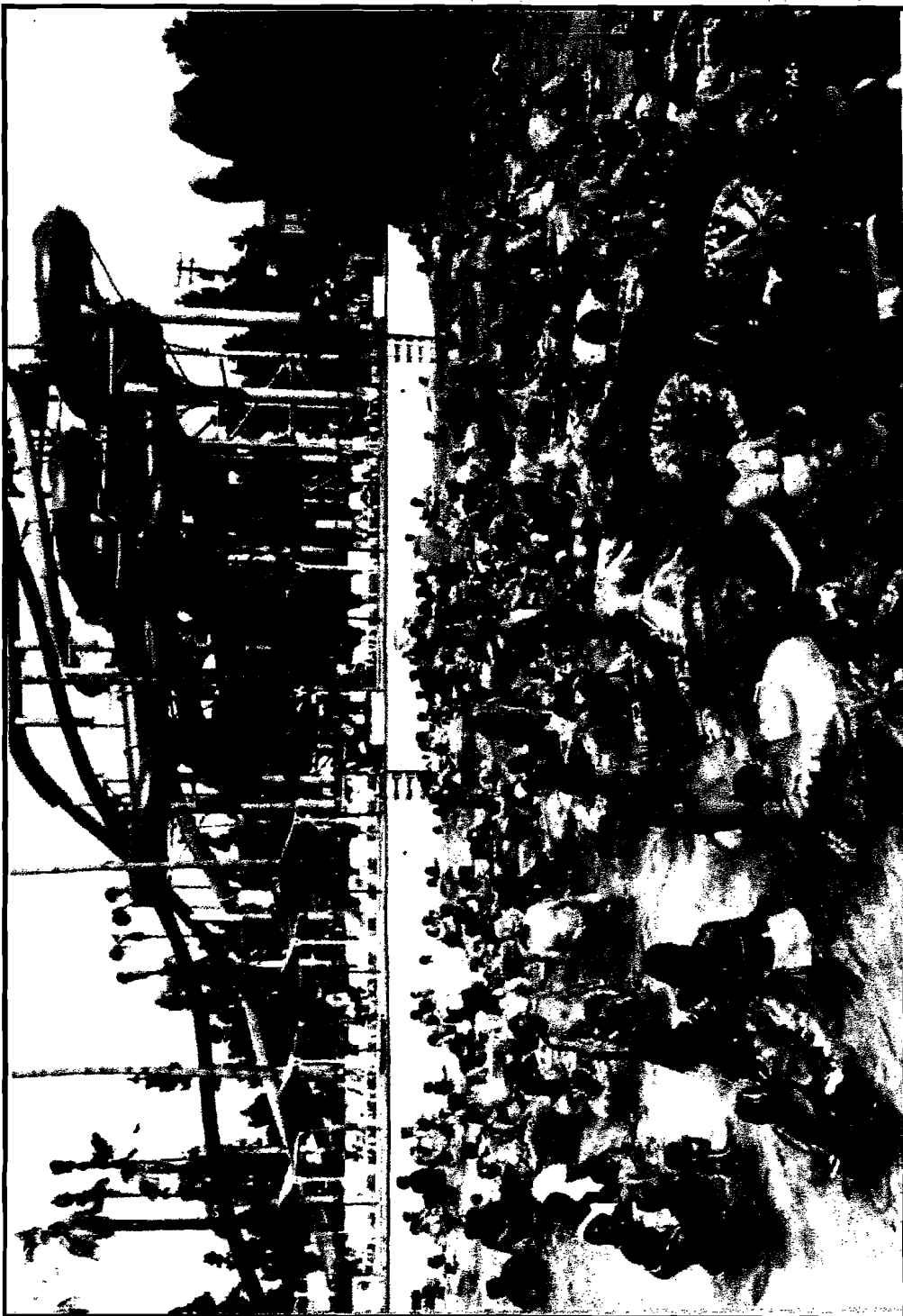
**Class D-5, vortex pools:** Circular pools equipped with a method of transporting water in the pool for the purpose of propelling riders at speeds dictated by the velocity of the moving stream.

**Class D-6, interactive play attractions:** Only water treatment and filtration for these attractions are within the scope of this standard. A manufactured water play device or a combination of water-based play devices in which water flow volumes, pressures, or patterns are intended to be varied by the bather without negatively influencing the hydraulic conditions of other connected devices. Class D-6 attractions may incorporate devices or activities such as slides, climbing and crawling structures, visual effects, user-actuated mechanical devices and other elements of bather-driven and bather-controlled play. Class D-6 attractions do not incorporate captured or standing water greater than 12 inches deep as part of the bather activity area.

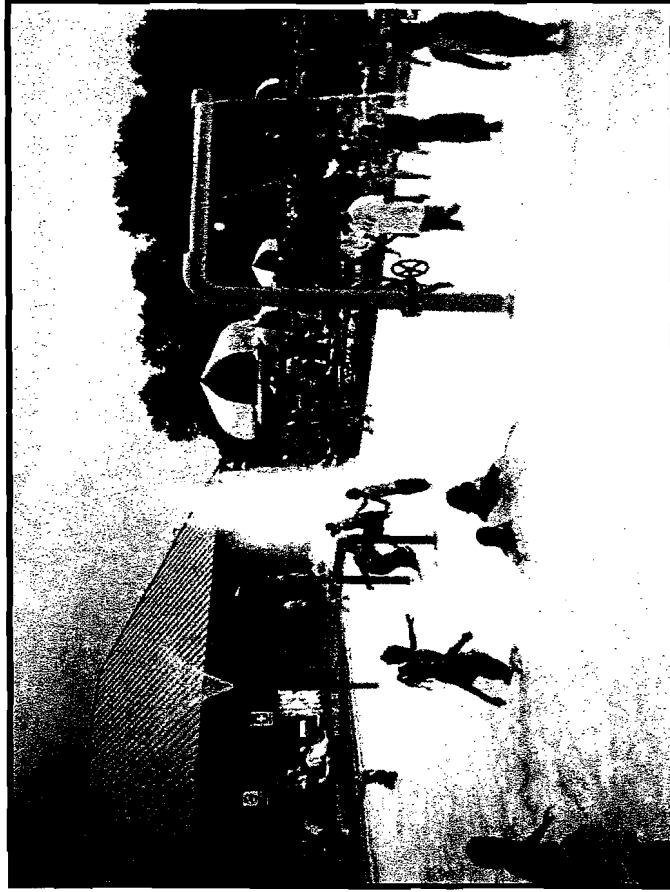
**Class D-7, amusement park attractions:** Attractions or rides traditionally found in amusement parks that are designed to permit bather contact with water.

**Class D-8, natural bodies of water:** Those natural or man-made aquatic play areas normally regarded as oceans, lakes, ponds, streams, quarries, or bodies of water that the local jurisdiction has designated as Natural Bodies of Water. The design or construction of these facilities is not included in the scope of ANSI/NSPI standards.

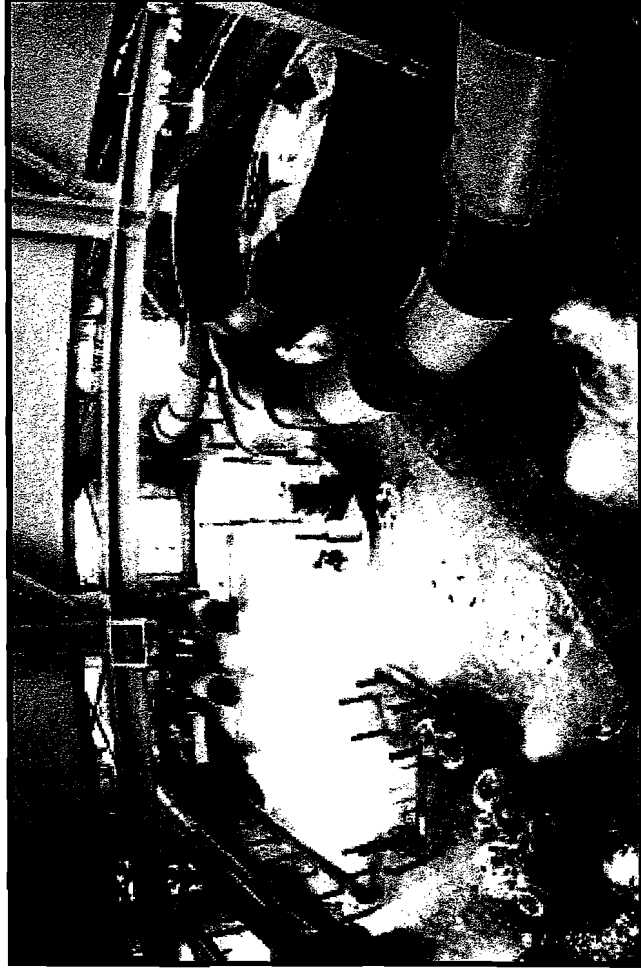
# Wave Pools



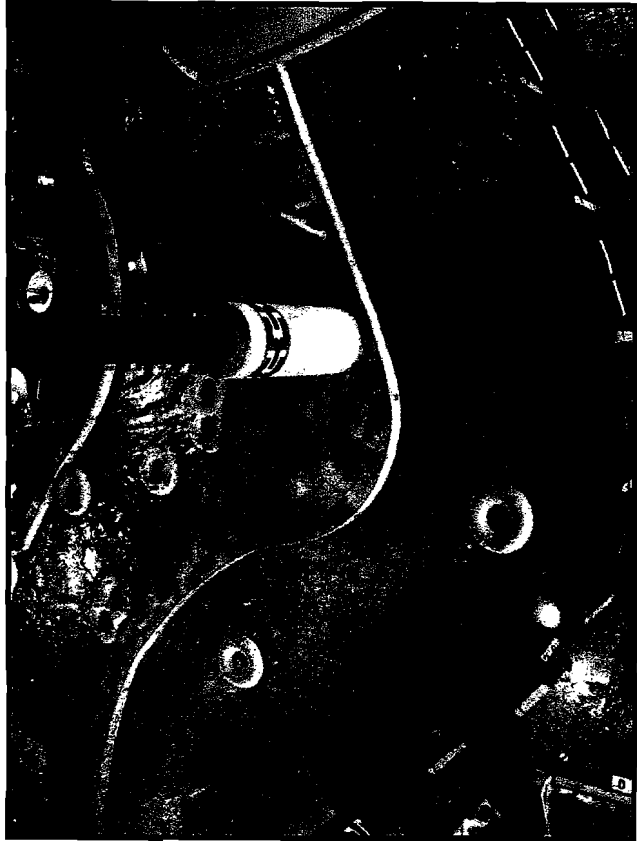
# Activity Pools



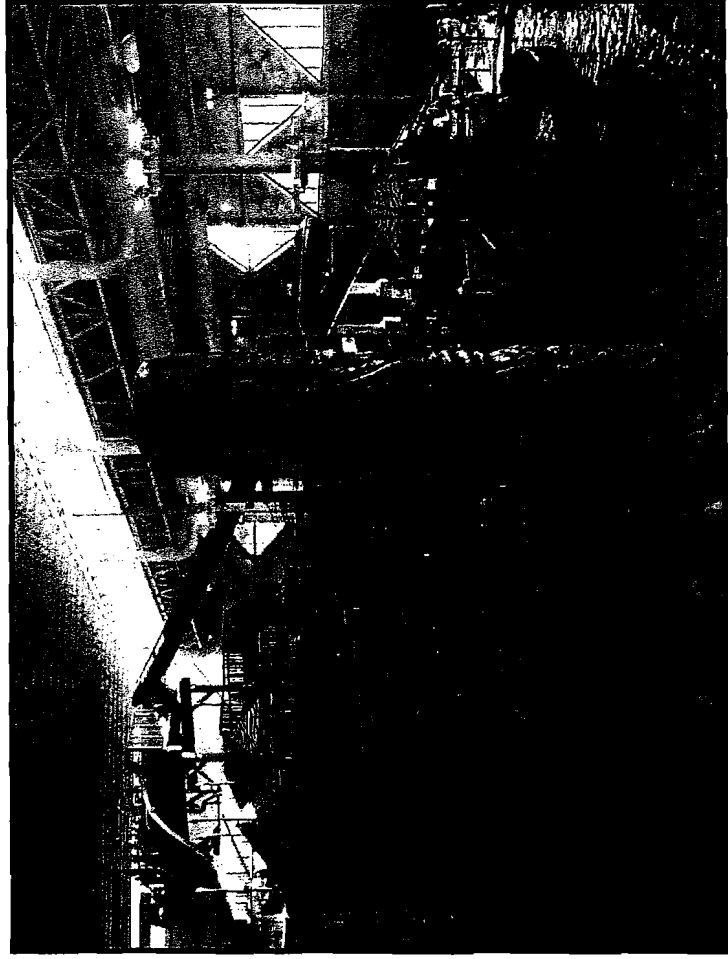
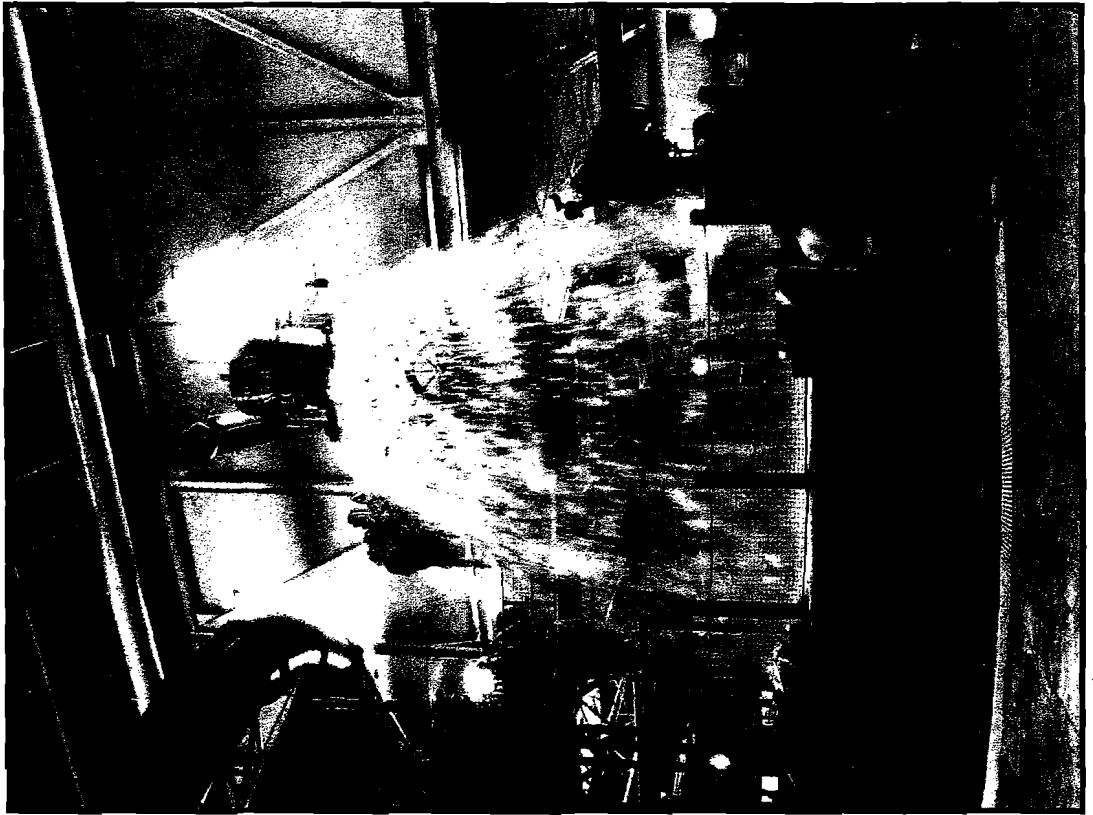
# Waterslides



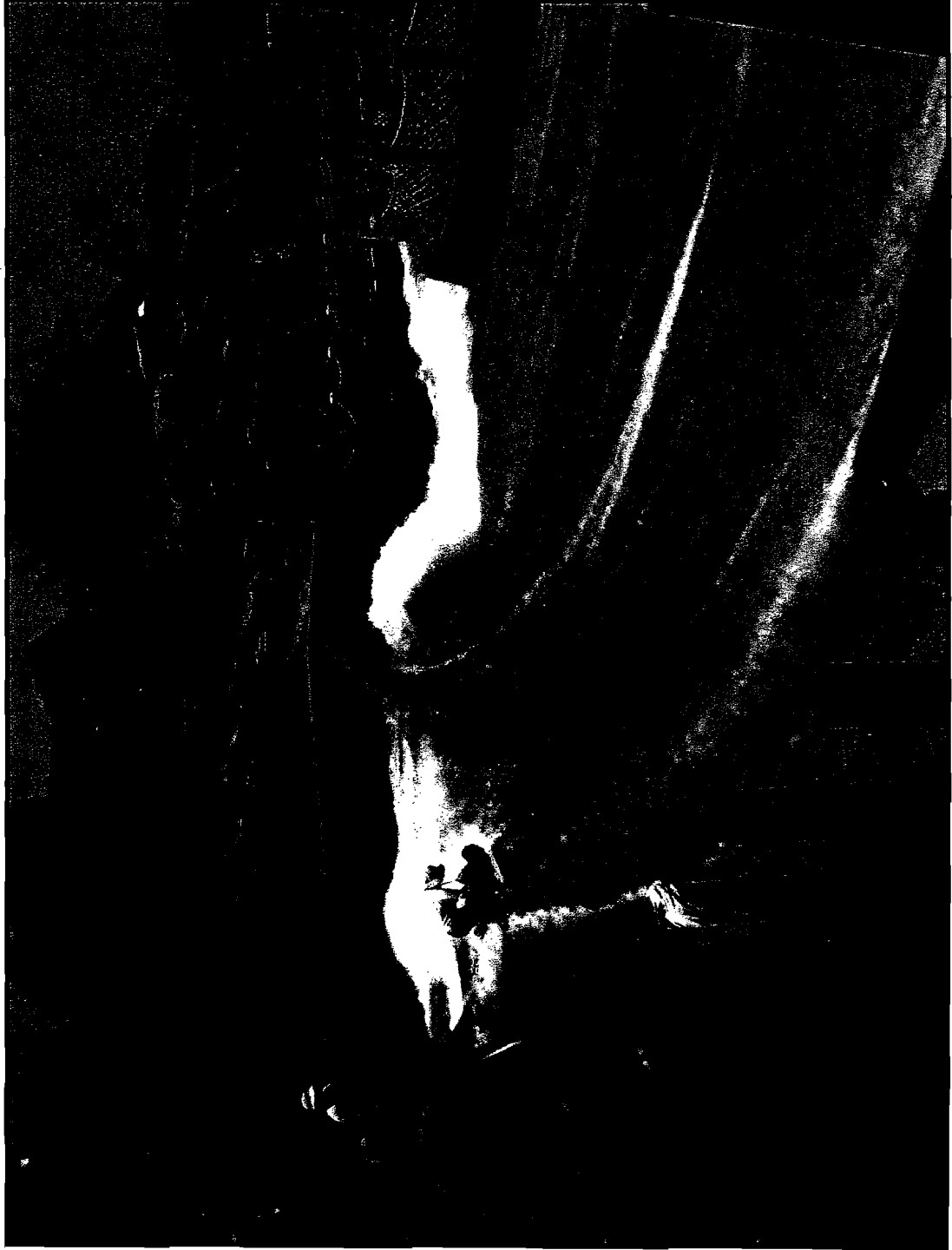
# Leisure and Action Rivers



# Interactive Aquatic Play Structures



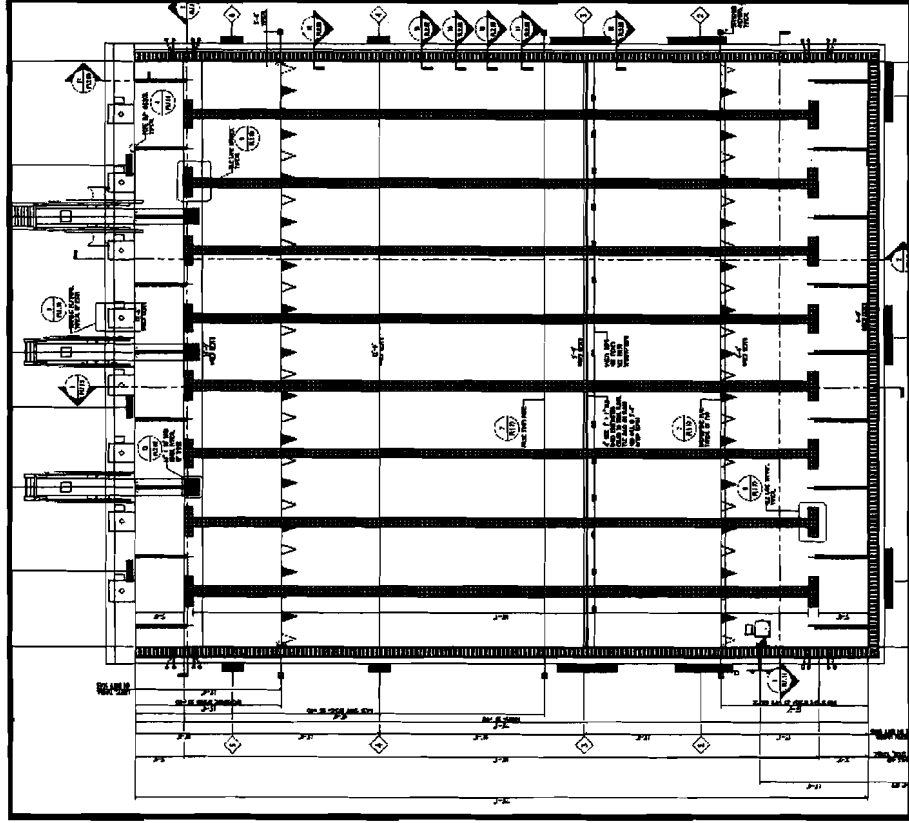
# Simulated Surf Rides



**What makes waterpark  
attractions different from a typical  
swimming pool?**

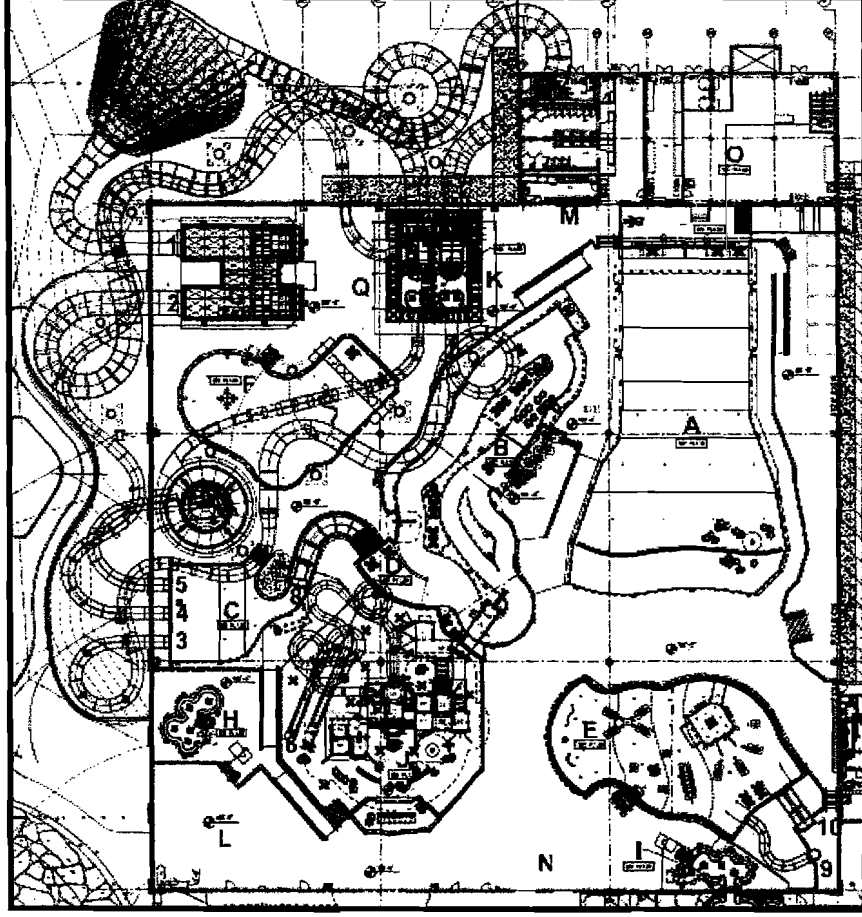


# Waterparks are complex



Typical swimming pool

~3 drains, <18x23



Waterpark

~30+ drains, various sizes

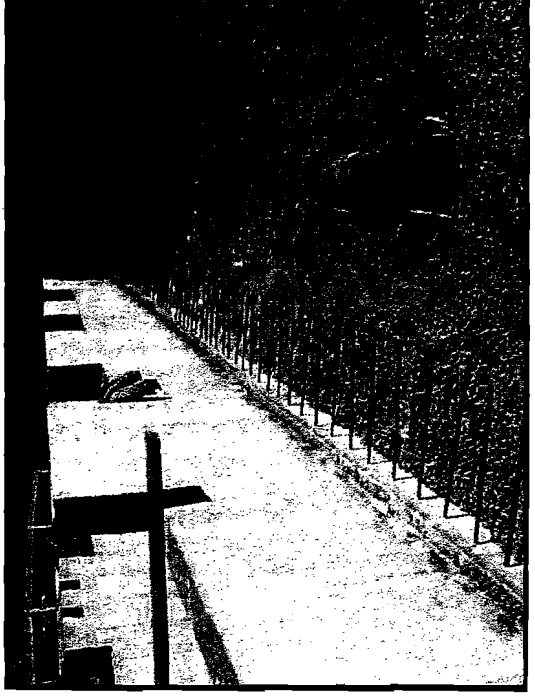
# Comparison on Dimensions & Use

|             | <b>Standard Pool</b> | <b>Water Attractions</b>                         |
|-------------|----------------------|--|
| Size        | Kidney to Olympic    | Widely varied                                    |
| Depth       | 2.5 – 9 feet         | Zero depth to 5 ft                               |
| Drain       | 12"x12", 9"x9"       | Many larger than 18"x23" (unblockable)           |
| Drain Sq Ft | 10+ square feet      | Up to 1000 square feet                           |
| Uses        | Swimming & wading    | Sliding, playing, jumping, floating, wave riding |

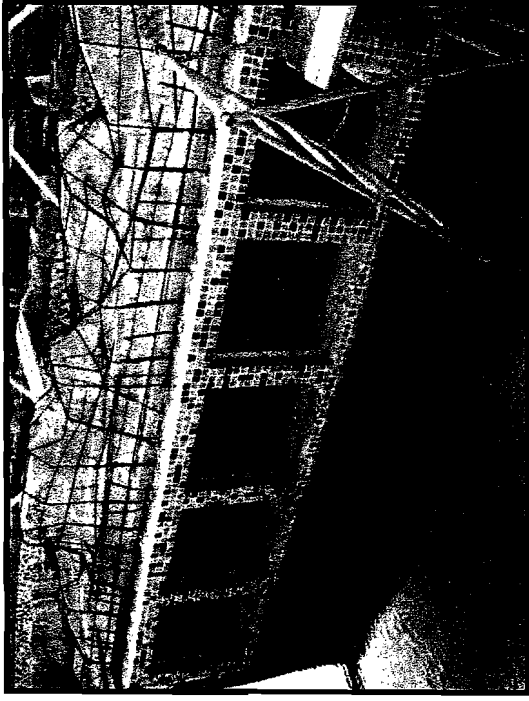
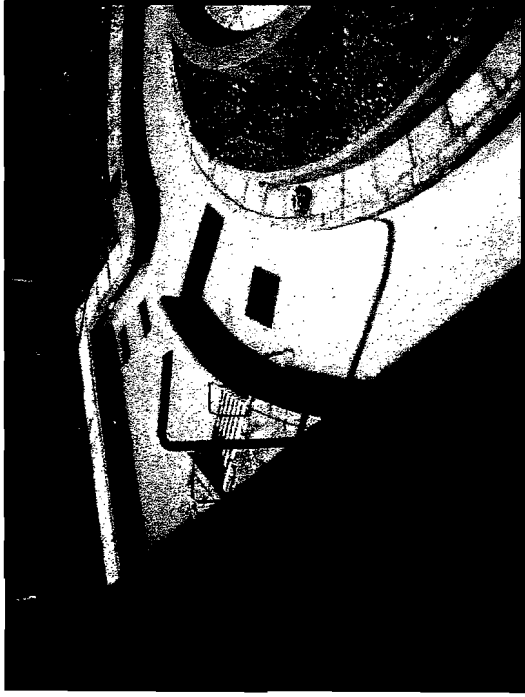
# Unique Features of Waterpark Attractions

- Large bodies of water
  - Moving, shallow water
  - Walking surfaces
  - Interactive features
  - Use of tubes, rafts, mats
  - Partially submerged skimmers
  - Lifeguards
- Several anti-entrapment features are utilized
- Large unblockable drains
  - Gravity drains
  - Multiple drains
  - Water velocities at drains less than 1.5 ft/sec

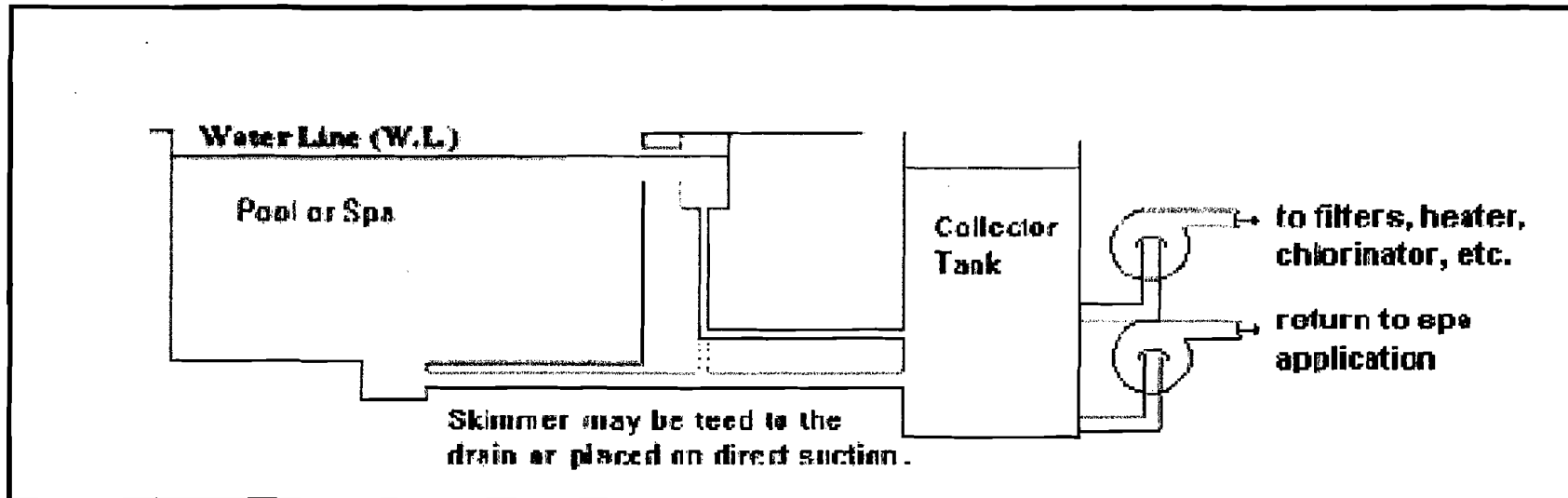
Circulation grates are larger than 18"x23"  
(unblockable) and multiple drains are installed



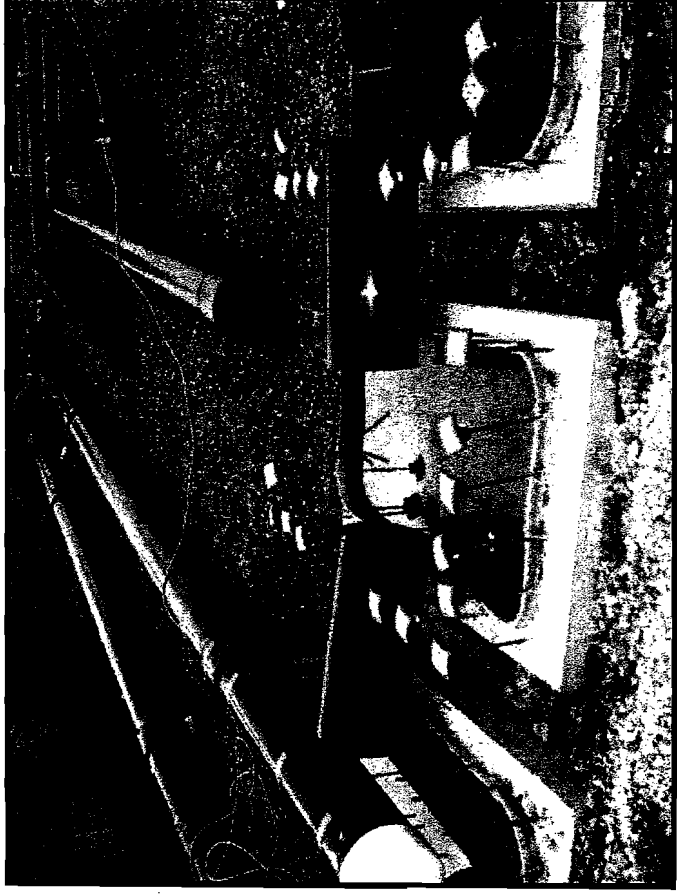
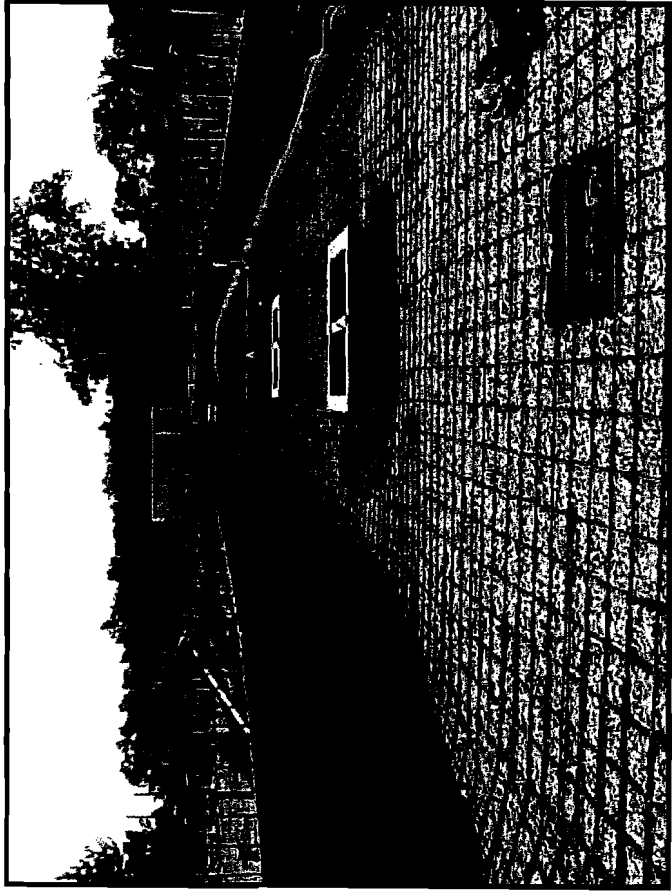
Drain grates are large and designed  
to achieve water velocity of  
less than 1.5 ft/second



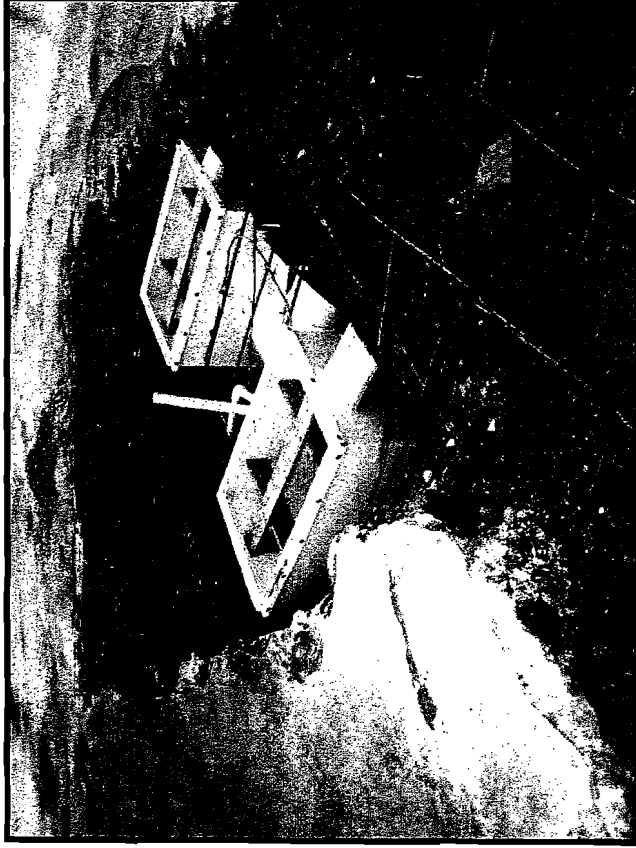
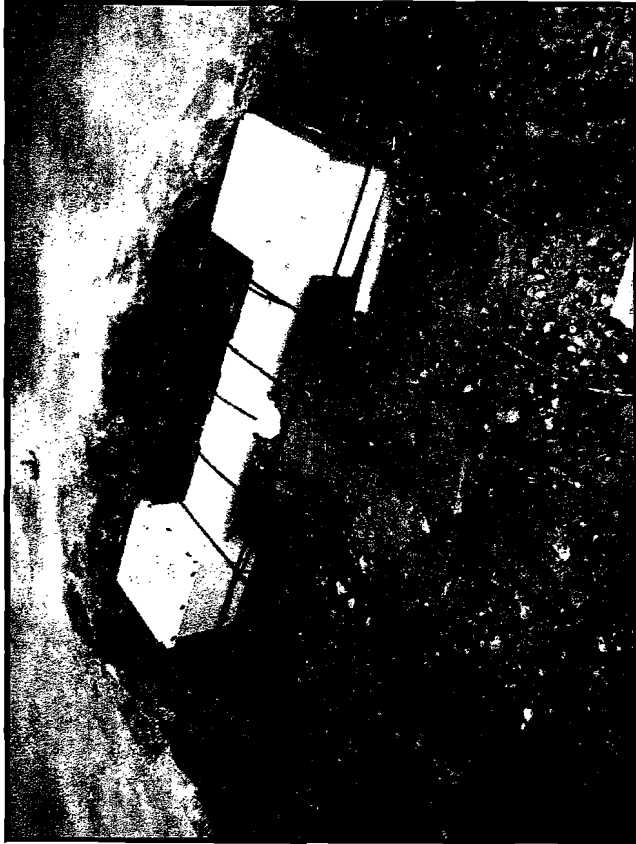
# Gravity Drainage System



Multiple main drains with drain cover centers at least 3 feet apart



# Dual Sumps

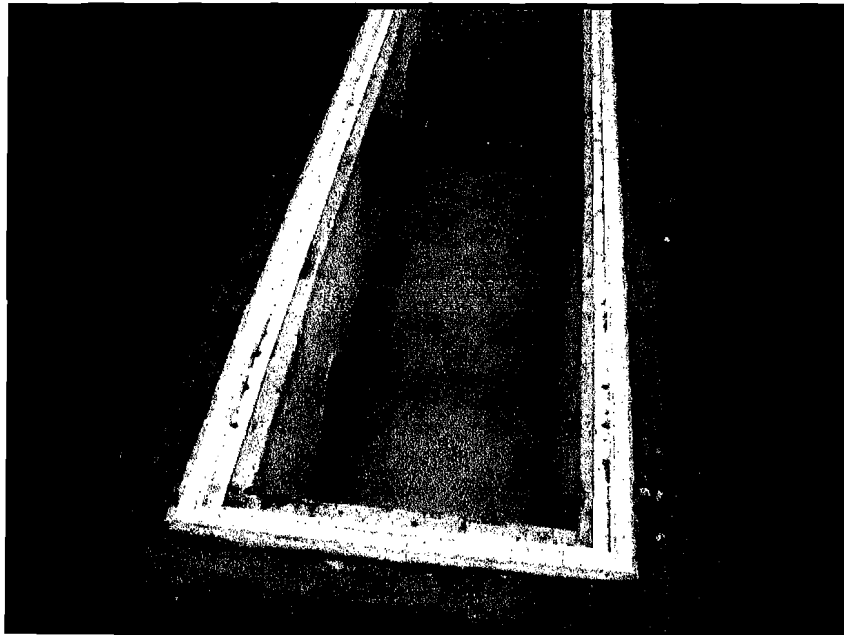




# Drain Grates larger than 18"x23" (unblockable)



# Large, unblockable drains



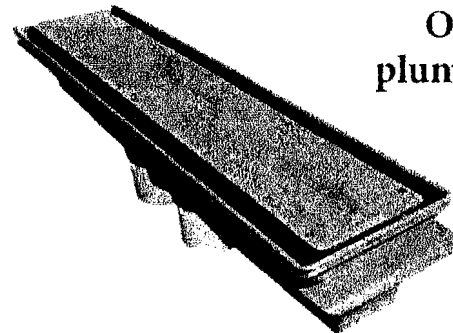
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## Dual Pumps



One drain can be  
plumbed with single or  
dual pumps!



# Challenges

## Challenge:

Drain grates, larger than 18"x23" are prevalent in waterparks.

Compliant grates in sizes larger than 18x23 are not available.

Year-round operations will be in violation of the law without alternatives on December 20<sup>th</sup>

## Today:

Water attractions employ various layers of anti-entrapment features

- Multiple drains
- Velocities less than 1.5 ft/sec
- Drains are unblockable

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| Model Number   | Size       | Description     | Flow Rate |
|----------------|------------|-----------------|-----------|
| WG1030AVPAK2   | 7 7/8" Dia | Dual pack White | 125       |
| WG1030AVBPAK2  | 7 7/8" Dia | Dual pack Black | 125       |
| WG1030AVGRPAK2 | 7 7/8" Dia | Dual pack Gray  | 125       |
| WG1048E*       | 7 7/8" Dia | Floor Cover     | 125       |
| WG1048EW*      | 7 7/8" Dia | Wall Cover      | 72        |
| WG1048E        |            | Vinyl Ring      | --        |

Open Area - 14 sq. in.  
 \*Add BLK for Black or GR for Gray color.

### Hydrostatic Relief Valve

| Model Number | Size       | Description   |
|--------------|------------|---------------|
| SP1056       | 1 1/2", 2" | Spring Loaded |

### Main Drain Collector Tube

| Model Number | Size       | Description             |
|--------------|------------|-------------------------|
| SP1055       | 1 1/2", 2" | 12" long collector tube |

### Suction Outlets for Concrete

| Model Number | Side   | Bottom | Description                            |
|--------------|--------|--------|--|
| WG1051AVPAK2 | 1 1/2" | 1 1/2" | Dual Sumps with covers, for Concrete   |
| WG1052AVPAK2 | 2"     | 1 1/2" | Dual Sumps with covers, for Concrete   |
| WG1053AVPAK2 | 1 1/2" | 2"     | Dual Sumps with covers, for Concrete   |
| WG1054AVPAK2 | 2"     | 2"     | Dual Sumps with covers, for Concrete   |
| WB1051V      |        |        | Adjustable Collar for Plaster Concrete |

Open Area - 7 sq. in.  
 \*Standard screws are 3/16" max, wall thickness

### Suction Outlets for Vinyl or Fiberglass

| Model Number | Size   | Description                                     |
|--------------|--------|---|
| WG1048AVPAK2 | 1 1/2" | Dual Sumps with covers, for Vinyl or Fiberglass |
| WG1048VPAK2  | 2"     | Dual Sumps with covers, for Vinyl or Fiberglass |

Open Area - 8.1 sq. in.  
 \*Standard screws are 3/16" max, wall thickness

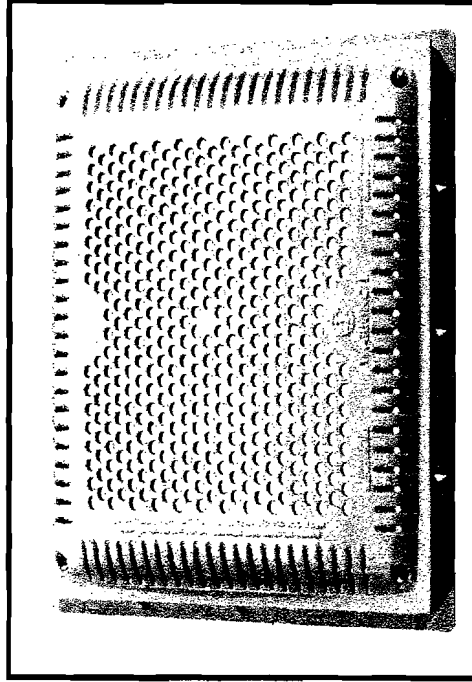


Entry/exit to zero depth attraction

Challenge:

Commercially available, compliant drain grates are domed or raised.

Domed drain grates on walking surfaces pose a tripping hazard. Play areas need flush mounted grates.

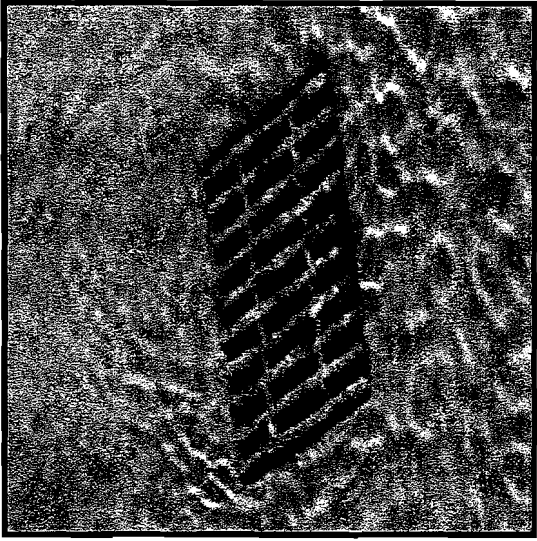


ASME compliant grates would protrude creating trip and fall hazards

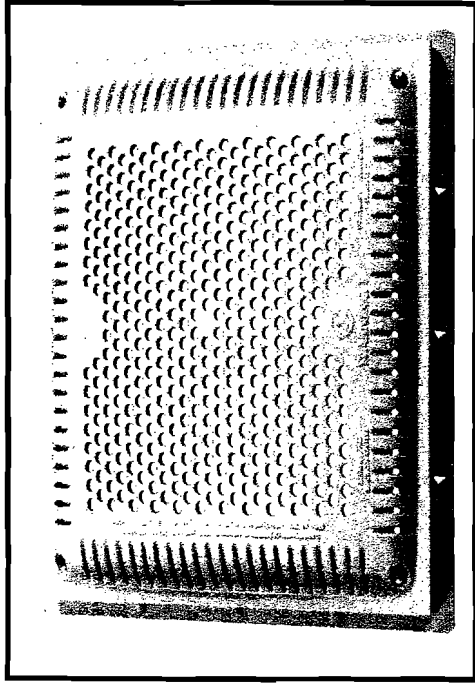
Today:

Flush drain covers comply with ANSI/IAF-9:

- Multiple drains spaced appropriately
- Drains larger than 18"x23"
- Gravity drains
- Flows less than 1.5 feet per second



Drain cover has specific sized opening to achieve flow velocity



ASME compliant grate could have smaller openings resulting in change in flow velocity

Challenge:

- Compliant grates have a different design from the existing grate.
- Changing the grate could increase the flow velocity to exceed the system design or could starve the pump.
- Could also result in non-compliance with the ASME standard regarding flow velocity.

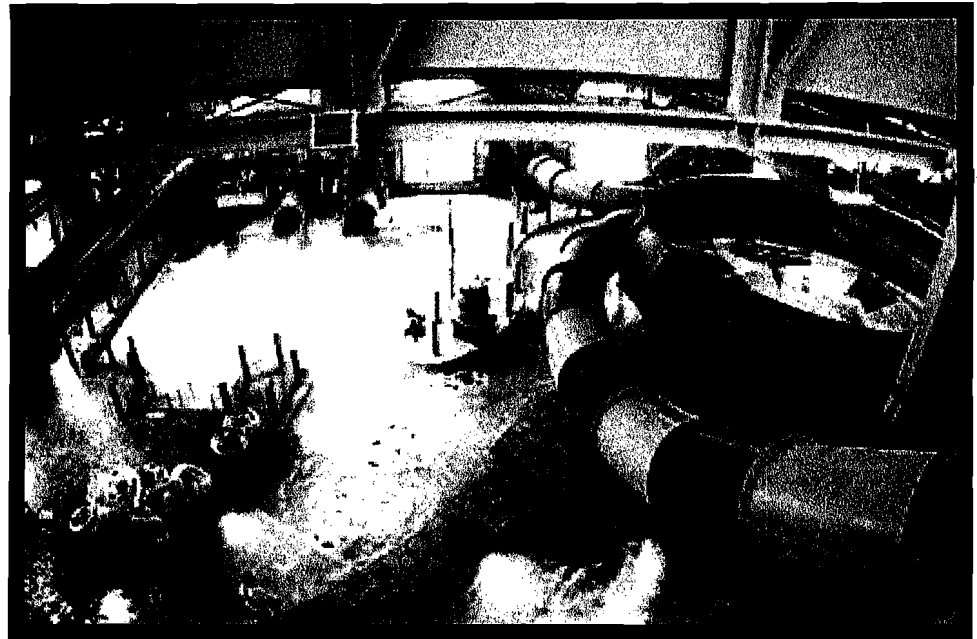
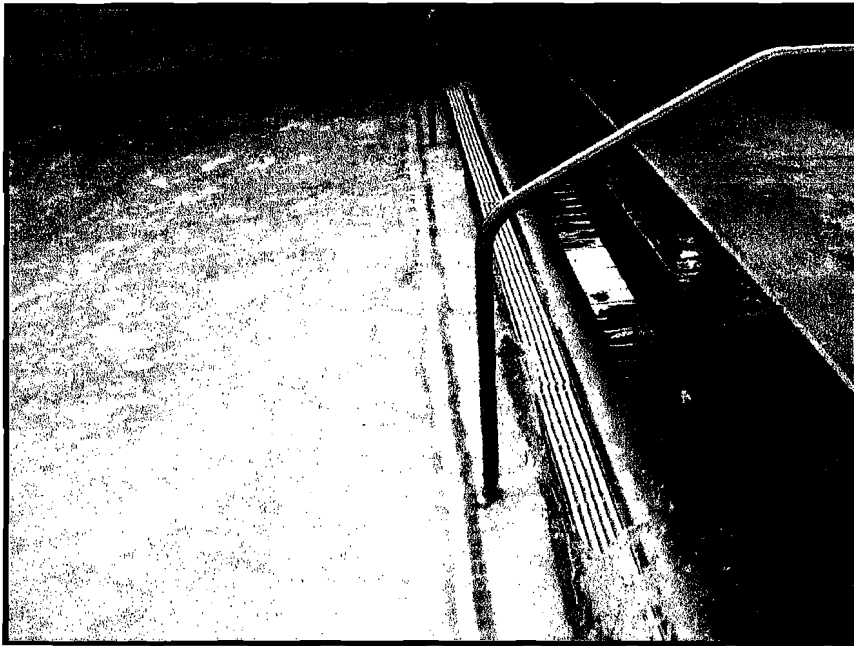
Today:

Drains compliant with ANSI/IAF-9 to achieve anti-entrapment:

- Multiple drains spaced appropriately
- Drains larger than 18"x23"
- Gravity drains
- Flows less than 1.5 feet per second

## Challenge:

Even if the cover meets the requirements of the standard, there is a reluctance by licensed engineers to certify existing drain grates.



# Summary

- 1 - The ANSI/ASME standard was not written with waterpark facilities in mind.
- 2 - Our industry supports laws that enforce anti-entrapment compliance. Consideration of the unique features of water attractions is needed.
- 3 - Technical requirements for anti-entrapment should be addressed in other ANSI and ASTM standards specific to waterpark attractions.
- 4 – Rushing to implement ANSI/ASME 112.19.8 for water attractions may lead to additional unanticipated safety hazards.



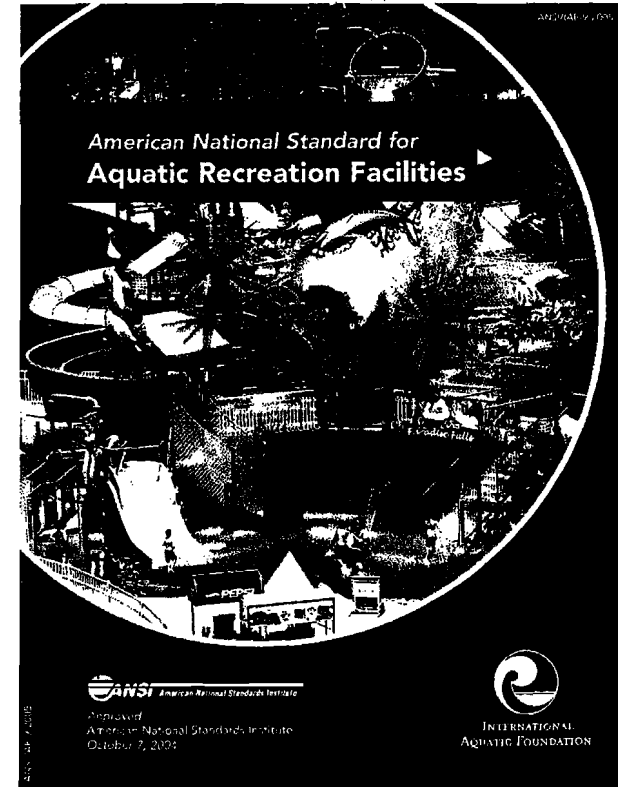
# Proposed Solutions

ASME A112.19.8-2007

(Revision of ASME/ANSI A112.19.8M-1997 (R1996))

## Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs

AN AMERICAN NATIONAL STANDARD



### ASME

- Addresses design and testing of drain grates and sumps
- Defines anti-entrapment based on water flow velocity and drain dimensions
- Refers to ANSI/IAF-9 for other anti-entrapment solutions
- Test methods limited to 18x18 grates
- Written by commercial pool suppliers, manufacturers, consultants, etc.

### IAF-9

- Addresses **design and construction of Aquatic Recreation Facilities (waterparks)**
- Defines anti-entrapment features required of the entire system, regardless of drain size.
- Written by waterpark operators, designers, safety consultants, and suppliers.

# Each document presents only a part of the overall system

- A specific standard is needed to address the unique requirements of drains in water attractions
- ASTM F24.70 has a task group organized to incorporate the existing standards and address the specific requirements of water attractions.
- This standard would address the specific challenges identified in this presentation.

## **Standard Specification for Drains in Water Attractions**

This standard is issued under the fixed designation F XXXX; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### **1. Scope**

1.1 This standard addresses the unique drain and drain cover requirements for water attractions.

1.2 This practice shall not apply to:

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### **2. Referenced Documents**

### **3. Terminology**

### **4. Materials**

### **5. Notification Requirement**

### **6. Structural Design**

### **7. Performance Requirements**

### **8. Test and Inspection Methods**

### **9. Identification Marking**

9.1 Installed systems shall be identified in accordance with Specification F 698.

### **10. Manufacturer Responsibilities**

---

<sup>1</sup>This practice is under the jurisdiction of ASTM Committee F24 on Amusement Rides and Devices and is the direct responsibility of Subcommittee F24.70 on Water Related Amusement Rides and Devices.

# Conclusion

- Although we believe the definition of "swimming pool" and "spa" in Section 1403(6) of the Virginia Graeme Baker Pool and Spa Safety Act does not include waterpark attractions, the waterpark industry wants to do everything possible to meet appropriate safety standards.
- The waterpark industry currently employs safe anti-entrapment features and practices.
- Waterparks are unique in design and configuration, with specific safety performance requirements.
- Therefore, we would like clarification that the Act and ANSI/ASME A112.19.8 does not apply to water attractions so we may work on an ASTM standard WK 21536 to incorporate existing standards and address the specific challenges shown above.
- We welcome future inclusion in the Act when appropriate technical standards are developed.

**Stevenson, Todd**

---

**From:** Tracy D. Taylor [tdtaylor@wms-jen.com]  
**Sent:** Tuesday, October 14, 2008 4:57 PM  
**To:** CPSC-OS  
**Subject:** "Pool & Spa Safety Act"  
**Attachments:** Pool & Spa Safety Act Comments.doc; Virginia\_Graeme\_Baker\_Act\_10 7 08.ppt

Comments by the International Association of Amusement Parks and Attractions and the World Waterpark Association on the Pool and Spa Safety Act. <<Pool & Spa Safety Act Comments.doc>>  
<<Virginia\_Graeme\_Baker\_Act\_10 7 08.ppt>>

Tracy Doherty Taylor  
Principal  
Williams & Jensen  
(202) 659-8201  
(202) 659-5249 fax

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October 14, 2008

Office of the Secretary  
 U.S. Consumer Product Safety Commission  
 4330 East West Highway  
 Suite 502  
 Bethesda, MD 20814-4408

**RE: Pool & Spa Safety Act, Section 1406, Public Comment Period**

To Whom It May Concern:

I am writing in response to a request for comments about the U.S. Consumer Product Safety Commission's (CPSC) draft staff guidance document for Section 1406 of the *Virginia Graeme Baker Pool & Spa Safety Act* (hereinafter "P & S Act").

**I. Introduction and Background**

As the original sponsor of the *Virginia Graeme Baker Pool & Spa Safety Act*, I have been intimately involved with the advocacy, passage and awareness efforts surrounding the new law. My history with the P & S Act, combined with the passage of a Florida state law which I authored as a Florida State Senator, uniquely qualifies me to offer comments on the draft guidance document and the minimum state law requirements needed to qualify for a grant. Although I do not have the technical expertise to comment specifically on the engineering implementation of the guidance document, I have worked with Safe Kids Worldwide and other swim safety organizations to provide general supportive comments and suggestions on how to improve the public guidance of Section 1406:

**II. General Comments of Support and Suggestions for Improvements**

**A. Additional Technical Advocacy Support Documents Needed**

There is no doubt that the P & S Act is a complicated and highly technical law that may prove confusing to state legislators interested in preventing drownings or entrapments in residential pools by enacting or amending pool/spa safety statutes. I agree with Safe Kids

Worldwide, however, that the guidance provided in the CPSC draft document may not provide enough assistance to interested state legislators.

Safe Kids has worked for several years with their coalition networks to help enact public policy changes in the states for various injury prevention risk areas (i.e., child safety seat use laws, bike helmet use laws and smoke alarm use laws). Through their experiences, it has been shown that well-crafted model/sample legislation is often the catalyst for a bill's introduction and ultimate passage. While this draft guidance document contains helpful information, the addition of technical assistance tools (model legislation and a layman's explanation/FAQs about the CPSC's recommended pool and spa requirements) would prove most helpful for state legislators who are most likely unfamiliar with the breadth and depth of pool safety devices. National advocacy groups, who are often at the forefront of injury prevention policy improvements, would also benefit greatly by a CPSC provided model legislation that, if used and passed by state legislators, would trigger receipt of the incentive grant at the state level.

#### **B. Isolation Fencing Should Be Required**

The barrier requirements contained in the draft technical guidance document, in most instances, accurately reflects the directives of the P & S Act, but those directives and their safety benefits represent the minimum standard of protection needed to prevent or reduce the incidences of unintentional drownings in at least one critical respect. Most concerning, the P & S Act allows a state to enact a requirement that allows a dwelling wall that has a door to serve as part of the barrier if there are also secondary devices in place (i.e., audible door alarms or power safety covers). The dwelling wall with backup secondary devices was allowed in lieu of isolation fencing in the P & S Act not because that safety framework offered better or at least equal protection as isolation fencing, but rather was included as a political compromise to some Members of Congress to elicit or retain their support. Admittedly, these secondary safety devices are better than no backup at all when a dwelling wall counts as a side of the barrier around the pool/spa, but public health authorities overwhelmingly agree (documentation has been provided) that true four-sided isolation fencing is the *only* way to prevent unfettered access to the water.

Significantly, I agree with Safe Kids Worldwide that the draft guidance document fails to mention the superior safety benefits of isolation fencing despite the fact that the CPSC website and its educational materials regularly tout their efficacy. The CPSC must better emphasize that the P & S Act and the accompanying guidance document represent only the minimum states can enact in order to protect children from traditional forms of drowning still receive an incentive grant. In fact, the true pursuit of drowning prevention demands that states go further by passing laws to require the most effective way of preventing young children from wandering into a backyard pool or spa – isolation fencing.

As you are aware, an overwhelming majority of drowning deaths occur when a child falls in a swimming pool undetected. It is therefore my strong belief that the Guidance Draft should require the use of four-sided isolation fencing.



## **C. Above- and On-ground Pools/Spas and Inflatable Pools Need the Barriers Contemplated by the P & S Act**

### **1. Above-and On-ground Pools/Spas Need Constructed Fencing**

The CPSC staff guidance document allows above-ground pools or on-ground pools with certain “barrier” features built in to the product itself to escape the barrier requirements contemplated and required by the P & S Act. I agree with Safe Kids Worldwide that the CPSC interpretation is misguided and is not consistent with the Act. The P & S Act defines “swimming pool” as “any outdoor or indoor structure intended for swimming or recreational bathing, including **in-ground and aboveground structures**, and includes hot tubs, spas, portable spas, and non-portable wading pools”.

Congress also directed in the P & S Act that all outdoor residential pools, as defined above, need to be enclosed by “barriers to entry that will effectively prevent small children from gaining unsupervised and unfettered access”.

The Act does not allow engineered features in the product itself to serve as the barrier to prevent access to the pool. To the contrary, the Act’s definition of pool combined with the barrier directive contemplates that above-ground and on-ground pools should be protected by the same barriers as traditional, in-ground residential pools. CITATION HERE

Not only does the law itself require constructed barriers, but public safety demands this level of protection. According to the CPSC’s *Pool and Spa Submersion: Estimated Injuries and Reported Fatalities Report*, above-ground pools accounted for 18 percent of fatalities to children less than five years of age from 2003 – 2005. Above-ground pools also have low construction costs when compared to in-ground pools, so we expect their popularity to only increase. I strongly urge that the CPSC re-consider exempting above-ground pools from the constructed barrier requirements of the P & S Act.

### **2. Inflatable Pools Need Constructed Fencing**

In addition, it is my belief that the definition of a “pool” in the P & S Act includes larger inflatable pools. While the law exempts portable wading pools, larger inflatable pools are not moveable once they are filled with water, so they should also be subject to the barrier requirements of the P & S Act. Once the larger inflatable pools are filled with water (in some cases, such a pool can hold close to 6,000 gallons of water), then these products are certainly not portable. In fact, one manufacturer states that an inflatable pool can be left assembled year round depending on the climate where one lives. Depending on the size, inflatable pools should be viewed the same as their constructed, hard-sided counterparts, and thus should be required to have barriers under a state’s law in order for an incentive grant to be awarded.

Inflatable pools have also grown in popularity due to their relatively inexpensive cost. According to the CPSC, small inflatable pools can cost \$50 and larger pools can cost close to \$200. Furthermore, the CPSC received reports of 47 child fatalities due to inflatable pools between 2004 – 2006. The Agency itself recommends that parents consider additional layers of protection for inflatable pools since these products are often not accounted for in building codes, so barriers are not required by law. If the CPSC is advocating for parents to consider safety precautions for inflatable pools, it is my hope that a state will need to require barriers for this type of pool in order to qualify for a grant. Therefore, I urge the CPSC to include a requirement for constructed fencing barriers around inflatable pools.

**D. Entrapment Prevention Benefitted by Layers of Protection on All Existing Residential Pools**

It has come to my attention that portions of Section 1406 are confusing and may be subject to multiple interpretations. As author of the act, it was my intention that in the case of a single main drain, additional anti-entrapment devices are to be required. I agree with Safe Kids Worldwide that when the language of the P & S Act is subject to different, reasonable explanations, the CPSC should interpret the law as to benefit maximum safety. For instance, some interpret the introductory language of Section 1406(d)(1), "...requiring, at a minimum, 1 or more [anti-entrapment devices] (except for pools constructed without a main drain)", as requiring the listed anti-entrapment devices on every pool no matter the number of drains, except for those without a drain at all. Others believe the introductory language requires the listed safety devices only on residential pools with a single main drain that is not otherwise unblockable. I would urge the CPSC to interpret and implement the law in a manner that promotes safety and prevents entrapment in all configurations that pose a real risk. The CPSC has determined, as indicated in its *Guidelines for Entrapment Hazards: Making Pools and Spas Safer*, that the devices listed in Section 1406(d)(1)(A-F) do serve a valuable, real safety benefit regardless of the number of drains at the bottom of a pool/spa. Therefore, the law should be interpreted so as to require the entrapment prevention devices.

**III. Conclusion**

I highly commend the staff of the CPSC for their efforts to properly implement the *Virginia Graeme Baker Pool & Spa Safety Act*. I do realize that there are many intricate details to consider in the implementation process, and I thank the staff for their hard work and continued outreach. As always, I look forward to working with the CPSC on this and other issues in the future.

Sincerely,



Debbie Wasserman Schultz  
Member of Congress

**Stevenson, Todd**

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**From:** Wolfson, Scott  
**Sent:** Tuesday, October 14, 2008 2:28 PM  
**To:** Elder, Jacqueline; Whitfield, Troy; Falvey, Cheryl; Parisi, Barbara; CPSC-OS  
**Subject:** FW: Public Comment Regarding Sec. 1406 of the P&SSAct  
**Attachments:** 10-14-08 CPSC Comments from Rep Wasserman Schultz.PDF

For inclusion with all other public comments.

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**From:** Rayder, Ian [mailto:Ian.Rayder@mail.house.gov]  
**Sent:** Tuesday, October 14, 2008 2:21 PM  
**To:** Wolfson, Scott  
**Subject:** Fw:

Scott - Here is the Congresswoman's comments. Similar to Safe Kids Worldwide with some key differences. Hope all is well.

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Sent using BlackBerry



October 14, 2008

Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

**RE: Pool & Spa Safety Act, Section 1406, Public Comment Period**

To Whom It May Concern:

On behalf of Safe Kids USA, a member of Safe Kids Worldwide (hereinafter "Safe Kids"), I am writing in response to a request for comments about the U.S. Consumer Product Safety Commission's (CPSC) draft staff guidance document for Section 1406 of the *Virginia Graeme Baker Pool & Spa Safety Act* (hereinafter "P & S Act").

**I. Introduction and Background**

Safe Kids has been intimately involved with the advocacy, passage and awareness efforts surrounding the new law. Our history with the P & S Act uniquely qualifies us to offer comments on the draft guidance document and the minimum state law requirements needed to qualify for a grant. Although Safe Kids does not have the technical expertise to comment specifically on the engineering implementation of the guidance document, we can provide general supportive comments and suggestions on how to improve the public guidance of Section 1406:

**II. General Comments of Support and Suggestions for Improvements**

**A. Additional Technical Advocacy Support Documents Needed**

There is no doubt that the P & S Act is a complicated and highly technical law that may prove confusing to state legislators interested in preventing drownings or entrapments in residential pools by enacting or amending pool/spa safety statutes. The guidance provided in the CPSC draft document, however, may not provide enough assistance to interested state legislators.



Safe Kids has worked for several years with our coalition network to help enact public policy changes in the states for various injury prevention risk areas (i.e., child safety seat use laws, bike helmet use laws and smoke alarm use laws). Through our experiences, we have found that well-crafted model/sample legislation is often the catalyst for a bill's introduction and ultimate passage. While this draft guidance document contains helpful information, the addition of technical assistance tools (model legislation and a layman's explanation/FAQs about the CPSC's recommended pool and spa requirements) would prove most helpful for state legislators who are most likely unfamiliar with the breadth and depth of pool safety devices. Our nationwide Safe Kids coalitions, who are often at the forefront of injury prevention policy improvements, would also benefit greatly by a CPSC provided model legislation that, if used and passed by state legislators, would trigger receipt of the incentive grant at the state level.

#### **B. Isolation Fencing Not Required, but Should be Strongly Recommended**

The barrier requirements contained in the draft technical guidance document, in most instances, accurately reflects the directives of the P & S Act, but those directives and their safety benefits represent the minimum standard of protection needed to prevent or reduce the incidences of unintentional drownings in at least one respect. For instance, the P & S Act allows a state to enact a requirement that allows a dwelling wall that has a door to serve as part of the barrier if there are also secondary devices in place (i.e., audible door alarms or power safety covers). The dwelling wall with backup secondary devices was allowed in lieu of isolation fencing in the P & S Act not because that safety framework offered better or at least equal protection as isolation fencing, but rather was included as a political compromise to some Members of Congress to illicit or retain their support. Admittedly, these secondary safety devices are better than no backup at all when a dwelling wall counts as a side of the barrier around the pool/spa, but public health authorities agree that true four-sided isolation fencing is the ideal way to prevent unfettered access to the water. Significantly, Safe Kids notes that the draft guidance document fails to mention the superior safety benefits of isolation fencing despite the fact that the CPSC website and its educational materials regularly tout their efficacy. The CPSC should better emphasize that the P & S Act and the accompanying guidance document represent only the minimum states can enact in order to protect children from traditional forms of drowning receive and still receive an incentive grant. In fact, the true pursuit of drowning prevention demands that states go further by passing laws to require the most effective way of preventing young children from wandering into a backyard pool or spa – isolation fencing. The guidance draft document should directly promote their use even though the Act does not require it.



**C. Above- and On-ground Pools/Spas and Inflatable Pools Need the Barriers Contemplated by the P & S Act**

**1. Above-and On-ground Pools/Spas Need Constructed Fencing**

The CPSC staff guidance document allows above-ground pools or on-ground pools with certain “barrier” features built in to the product itself to escape the barrier requirements contemplated and required by the P & S Act. We believe the CPSC interpretation is misguided and is not consistent with the Act. The P & S Act defines “swimming pool” as “any outdoor or indoor structure intended for swimming or recreational bathing, including **in-ground and aboveground structures**, and includes hot tubs, spas, portable spas, and non-portable wading pools” (emphasis added).

Congress also directed in the P & S Act that all outdoor residential pools, as defined above, need to be enclosed by “barriers to entry that will effectively prevent small children from gaining unsupervised and unfettered access”.

The Act does not allow engineered features in the product itself to serve as the barrier to prevent access to the pool. To the contrary, the Act’s definition of pool combined with the barrier directive contemplates that above-ground and on-ground pools should be protected by the same barriers as traditional, in-ground residential pools.

Not only does the law itself require constructed barriers, but Safe Kids believes that public safety demands this level of protection. According to the CPSC’s *Pool and Spa Submersion: Estimated Injuries and Reported Fatalities Report*, above-ground pools accounted for 18 percent of fatalities to children less than five years of age from 2003 – 2005. Above-ground pools also have low construction costs when compared to in-ground pools, so we expect their popularity to only increase. Safe Kids strongly recommends that the CPSC re-consider exempting above-ground pools from the constructed barrier requirements of the P & S Act.

**2. Inflatable Pools Need Constructed Fencing**

In addition, Safe Kids believes that the definition of a “pool” in the P & S Act includes larger inflatable pools. While the law exempts portable wading pools, Safe Kids would make the case that larger inflatable pools are not moveable once they are filled with water, so they should also be subject to the barrier requirements of the P & S Act. Once the larger inflatable



are filled with water (in some cases, such a pool can hold close to 6,000 gallons of water), then these products are certainly not portable. In fact, one manufacturer states that an inflatable pool can be left assembled year round depending on the climate where one lives. Depending on the size, inflatable pools should be viewed the same as their constructed, hard-sided counterparts, and thus should be required to have barriers under a state's law in order for an incentive grant to be awarded.

Inflatable pools have also grown in popularity due to their relatively inexpensive cost. According to the CPSC, small inflatable pools can cost \$50 and larger pools can cost close to \$200. Furthermore, the CPSC received reports of 47 child fatalities due to inflatable pools between 2004 – 2006. The Agency itself recommends that parents consider additional layers of protection for inflatable pools since these products are often not accounted for in building codes, so barriers are not required by law. If the CPSC is advocating for parents to consider safety precautions for inflatable pools, then Safe Kids hopes a state will need to require barriers for this type of pool in order to qualify for a grant.

#### **D. Entrapment Prevention Benefitted by Layers of Protection on All Existing Residential Pools**

There is no doubt that portions of Section 1406 are also confusing and subject to multiple interpretations. The fact that the CPSC staff felt it was necessary to issue “revised” guidance is proof positive. Safe Kids believes that when the language of the P & S Act is subject to different, reasonable explanations, the CPSC should interpret the law as to benefit maximum safety. For instance, some interpret the introductory language of Section 1406(d)(1), “...requiring, at a minimum, 1 or more [anti-entrapment devices] (except for pools constructed without a main drain)” (emphasis added), as requiring the listed anti-entrapment devices on every pool no matter the number of drains, except for those without a drain at all. Others believe the introductory language requires the listed safety devices only on residential pools with a single main drain that is not otherwise unblockable. Each interpretation is possible, but Safe Kids would urge the CPSC to interpret and implement in a manner that promotes safety and prevents entrapment in all configurations that pose a real risk. In other words, if the CPSC determines or has determined, as indicated in its *Guidelines for Entrapment Hazards: Making Pools and Spas Safer*, that the devices listed in Section 1406(d)(1)(A-F) do serve a valuable, real safety benefit regardless of the number of drains at the bottom of a pool/spa, then the law should be interpreted so as to require the entrapment prevention devices.



### III. Conclusion

Safe Kids commends the staff of the CPSC for their efforts to properly implement the *Virginia Graeme Baker Pool & Spa Safety Act*. We realize that there are many intricate details to consider in the implementation process, and we thank the staff for their hard work and outreach to safety organizations like Safe Kids. As always, we look forward to working with the CPSC on this and other issues in the future.

Sincerely,

A handwritten signature in black ink, appearing to be 'Alan Korn', written over a horizontal line.

Alan Korn  
Director of Public Policy & General Counsel



**Stevenson, Todd**

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**From:** Tanya Chin Ross [tross@safekids.org]  
**Sent:** Tuesday, October 14, 2008 12:51 PM  
**To:** CPSC-OS  
**Cc:** Wolfson, Scott; Alan Korn  
**Subject:** Pool & Spa Safety Act  
**Attachments:** CPSC Pool and Spa Safety Act Comments Section 1406 Safe Kids.pdf

Please see the attached comment letter from Safe Kids USA regarding the Draft Technical Guidance Document about Section 1406 of the Virginia Graeme Baker Pool & Spa Safety Act. Thank you.

Tanya Chin Ross, M.P.A.  
Senior Public Policy Associate  
Safe Kids Worldwide  
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The Global Source and Voice for the Recreational Water Industry

October 14, 2008

Via Email: [cpsc-os@cpsc.gov](mailto:cpsc-os@cpsc.gov)

Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

Dear Secretary:

The Association of Pool and Spa Professionals (APSP) appreciates the opportunity to comment on the CPSC Draft Technical Guidance on section 1406 of the Virginia Graeme Baker Pool and Spa Safety Act. The APSP has a long history of working closely with the CPSC on issues relating to pool and spa safety. The attached comments are directed to the issues of Entrapment Avoidance and Barriers. The APSP also requests an open meeting with the Commission during the week of October 27-31, 2008 to discuss the issues raised in these comments.

#### ENTRAPMENT

As explained in the attached comments, the APSP believes that to achieve maximum safety and better acceptance, understanding and compliance with any qualifying State Law that the Commission should adopt and reference the ANSI/APSP-7 2006 American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs and, Catch Basins. This is the only document that addresses all five recognized forms of entrapment injuries. The ANSI/APSP-7 standard was approved by a consensus voting body that included numerous public state and local health officials, Underwriters Laboratories, The National Sanitation Foundation and various experts from within and outside the industry.

This standard has also now been adopted by the International Code Council (ICC) through its rigorous government review process at the ICC Final Action Hearing in Minneapolis, on September 21, 2008. This hearing was attended by code officials from all 50 states, who voted overwhelmingly to replace existing language in the International Residential Code (IRC) and International Building Code (IBC) on entrapment with a

reference to the ANSI/APSP-7 standard. The change will appear in the body of the 2009 IBC and in appendix G of the 2009 IRC. This confirms the universal acceptance of this standard.

Should the Commission decline to adopt and reference this standard, then the APSP offers the specific comments attached and summarized below.

1. The minimum state law requirements should require that all drains on residential pools, including unblockable drains, employ covers and systems that comply with ASME/ANSI A112.19.8 2007.
2. The ANSI/APSP-7 minimum state law requirements should limit the flow rate to 6 feet per second (1.829 mps) when one of a pair of outlets is blocked and 3 feet per second (0.914 mps) during normal operation (section 4.4). This is essential for eliminating hair entanglement, which is a leading cause of entrapment injury and death.
3. "Multiple drain system" should be defined to include drains on separate planes for portable residential spas. We refer the commission to our detailed comments on this subject.

## BARRIERS

The APSP believes that the Commission should adopt and reference the ANSI/APSP-8 American National Standard Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs. This standard provides a series of options designed to prevent unauthorized access to pools and spas by children. It is our belief that the Layers of Protection approach found in the Model Barrier Code is consistent with the definition of Barrier in section 1403(2). Much of the language in the Model Barrier Code with regard to fence height, clearance and spacing of members also appears in the CPSC Technical Guidance.

Should the Commission decline to adopt and reference this standard, then the APSP offers the specific comments attached, and summarized below.

1. Any barrier requirement should exempt hot tubs with lockable covers that comply with ASTM F1346, as provided in 1403(3), and as referenced in the CPSC "Safety Barrier Guidelines For Home Pools," the International Residential Code and the Model Barrier Code.
2. Any barrier requirement should exempt pools that have safety covers that comply with ASTM F1346, as provided in the Model Barrier Code.
3. Section 1.3 should be revised to include reference to self-closing doors with self-latching devices, as referenced in the CPSC "Safety Barrier Guidelines For Home Pools," the International Residential Code and the Model Barrier Code.

The APSP looks forward to working with the Commission with regard to the attached comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Carvin DiGiovanni', written in a cursive style.

Carvin DiGiovanni  
Senior Director, Technical and Standards



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Alexandria VA 22314-4695

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The Global Source and Voice for the Recreational Water Industry

The following is submitted on behalf of the Association of Pool and Spa Professionals (APSP) as comments to the CPSC Draft Technical Guidance with regard to The Pool and Spa Safety Act, section 1406.

## 1. ABOUT THE APSP

The APSP, formerly the National Spa and Pool Institute (NSPI) is the world's largest trade association in the pool and spa (hot tub) industry and a leading industry advocate representing the industry. Its members include manufacturers, manufacturer's agents, distributors, retailers, builders, installers, and service professionals. All members agree to adhere to a code of business ethics and share a commitment to promote the safe design, construction, and use of pools and spas. The APSP promotes professional best practices through education, certification, research, safety initiatives, and the development of voluntary national consensus standards under the auspices of the American National Standards Institute (ANSI). The APSP was also a strong supporter of the Virginia Graeme Baker Pool and Spa Safety Act, and served as a source of advice and information to several of its sponsors.

The APSP has a long history of working closely with the CPSC on issues relating to pool and spa safety. It worked cooperatively on the CPSC Entrapment Guidelines, and other safety initiatives and the CPSC has been represented on the Consensus Voting Body of several ANSI/APSP and ANSI/NSPI Standards. The APSP notes that there appear to be some potential inconsistencies in the Act as there might be in any legislation, and would like to continue to work cooperatively with the CPSC so that questions regarding the interpretation and implementation of the Pool and Spa Safety Act can be resolved to the satisfaction of both organizations, so as to better protect the public and so that APSP members and the industry as a whole can obtain guidance and act to meet any requirements in a timely manner. The CPSC has previously received input from the APSP on the Entrapment Guidelines prior to requesting comments from the public. The APSP believes the CPSC staff and the public would continue to benefit from APSP input as CPSC staff provides additional interpretations of the Act.

## 2. THE CPSC SHOULD RELY ON AND REFERENCE THE ANSI/APSP STANDARDS

Section 1406 (a)(4)(A) directs the CPSC, when developing Minimum State Law Guidelines, to consider "national performance standards." While the CPSC will certainly

examine its own existing guidelines first (which were developed in cooperation with the APSP), there are several instances where the existing ANSI/APSP national voluntary consensus standards provide better and more detailed guidance.

The ANSI/APSP-7 2006 American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs and, Catch Basins is the only document that addresses all five recognized forms of entrapment injuries:

1. Hair entrapment
2. Limb entrapment
3. Body suction entrapment
4. Evisceration/disembowelment
5. Mechanical entrapment

This is because the design and performance requirements of the Standard are based on sound engineering principles, research and repeatable scientific testing, which was observed by the CPSC in Fayetteville, TN last year.

The ANSI/APSP-7 standard was approved by a consensus voting body that included numerous public state and local health officials, Underwriters Laboratories, The National Sanitation Foundation and various experts from within and outside the industry.

The ANSI/APSP-7 standard has also now been adopted by the International Code Council (ICC) through its rigorous government review process at the ICC Final Action Hearing in Minneapolis, on September 21, 2008. This hearing was attended by code officials from all 50 states, who voted overwhelmingly to replace existing language in the International Residential Code (IRC) and International Building Code (IBC) on entrapment with a reference to the ANSI/APSP-7 standard. The change will appear in the body of the 2009 IBC and in appendix G of the 2009 IRC. This confirms the universal acceptance of this standard.

ANSI/APSP-7 incorporates performance-based criteria for each identified hazard.

First, it specifically includes an option for pools and spas to be built without a main drain. Fluid Dynamics shows that water flow is strongly dominated by inlet jets, not outlets.

Second, whenever submerged outlets are present, the Standard requires that they be protected by outlet covers that comply with the most current version of ASME/ANSI A112.19.8. The Standard recognizes that there is no substitute because no other device can provide protection against all five recognized forms of entrapment.

Third, for new construction, the standard provides for either multiple outlets, or an outlet that cannot be blocked by even the largest bather, such as a channel. Multiple outlets must be located three feet apart or on different planes. Review of all reported

incidents and communication with officials of all 50 states reveals not a single reported entrapment injury where properly spaced dual drains were in place.

Fourth, ANSI/APSP-7 is the first standard that limits flow rate. The flow rate must not exceed 6 fps, or 3 fps when divided amongst dual outlets. This lower suction force helps prevent hair entrapment and limits the differential pressure when one of the multiple outlets is blocked.

Fifth, where a single outlet is present, the standard calls for either disablement of the drain, converting the outlet to a return, addition of a properly spaced second outlet, use of a Safety Vacuum Release System (SVRS), vent line, gravity system or any other method that would comply with ANSI/ASME A112.19.17- 2002, the standard for Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems. While these devices can help mitigate against at least one form of entrapment injury in a single outlet installation, scientific testing which was observed by the CPSC staff shows that an SVRS may only activate when there is blockage of the sole source of suction. ("Association of Pool and Spa Professionals Technical Committee Report on Suction Outlet Safety and the Effectiveness of ANSI/APSP-7," October 5, 2007, copy attached as **Exhibit "A."**).

Hence, neither the standard nor the Act calls for the use of SVRS or other such devices where dual suction outlets comply with ANSI/APSP-7. SVRS devices also cannot protect against evisceration, limb, hair or some types of mechanical entrapment.

A comparison of the ANSI/APSP-7 Standard and the Act is attached as **Exhibit "B,"** and demonstrates that the Standard meets or exceeds all of the requirements found in Section 1406 of the Act and the Staff Interpretation. Any installation that complies with this Standard will comply with Section 1404 and the "Minimum State Law Requirements" on entrapment as specified in 1406, as will be explained below.

APSP members and others in the industry are familiar with and are already building to comply with the ANSI/APSP-7 standard. Code officials will also become familiar with this standard now that it has been incorporated into the 2009 IBC and IRC and will be charged with enforcing its requirements in many states. To maximize compliance and minimize any possible confusion with regard to the Act, the Commission should explicitly state that the provisions of ANSI/APSP-7 meet or exceed those found in section 1406 of the Act and that therefore installations that are built or retrofitted so as to comply with this standard will also comply with the "Minimum State Law Requirements" and the Technical Guidance proposed by the CPSC.

The ANSI/APSP-8 American National Standard Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs provides a series of options designed to prevent unauthorized access to pools and spas by children. It is our belief that the Layers of Protection approach found in the Model Barrier Code is consistent with the definition of Barrier in section 1403(2). Much of the language in the Model Barrier Code

with regard to fence height, clearance and spacing of members also appears in the CPSC Technical Guidance.

### 3. SPECIFIC COMMENTS ON SECTION 1406

The APSP agrees with certain provisions in the Technical Guidance on 1406, including the following:

1. The acknowledgement that a dwelling wall may serve as part of a “barrier” or fence provided one or more means of added protection are employed.
2. That such means include power safety covers, and alarm systems.
3. That states should specifically permit i) that pools be built with no main drains and ii) that drains on existing pools may be disabled or “reversed” to function as return inlets. No main drain is the only method that completely eliminates all entrapment hazards.

The APSP disagrees and wishes to raise concern with regard to the following issues:

#### BARRIERS

1. Section 1 of the CPSC Technical Guidance on 1406 calls for states to require barriers, which it defines as “fence and/or wall” on residential all pools or spas.” This section must be corrected because
  - a. This is directly contrary to Section 1404(3) which defines “BARRIERS” to “include, for a hot tub, a lockable cover.” The clear intent of Congress in this definition is that hot tubs or portable spas should NOT be required by states to have fences or walls, provided if they are equipped with a lockable cover. Such covers have been consistently proven safe and adequate for preventing unsupervised access by children. The CPSC Technical Guidance on 1406 overlooks this exemption. Asking states to require walls or fences on portable hot tubs is also inconsistent with the CPSC “Safety Barrier Guidelines For Home Pools,” which provides

“A portable spa with a safety cover which complies with ASTM F1346-91 listed below should be exempt form the guidelines presented in this document.”
  - b. A review of existing state laws also requires this exception. States with the most extensive barrier requirements are those that have adopted Appendix G of the International Residential Code (IRC). The IRC states in AG 105.5



“Spas or hot tubs with a safety cover which complies with ASTM F 1346, as listed in section AG 107 shall be exempt from the provisions of this appendix.”

Requiring the addition of a fence or second barrier for hot tubs where a lockable cover is present would impose requirements well beyond any current state law that we are aware of.

c. The ANSI/APSP-8 American National Standard Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs provides in section 14.1

“A manual safety cover or a powered safety cover for a hot tub or spa that complies with ASTM F1346-91 is acceptable as a barrier when the spa/hot tub is not in use.”

d. Requiring the addition of a fence or second barrier for hot tubs where a lockable cover is present would also impose an extreme hardship on the portable residential spa industry, by drastically increasing the cost of a hot tub while providing no significant additional protection.

2. Section 1.3 provides that if a dwelling wall forms part of the barrier, that pool or spa must have either
  - a. an alarm system that complies with UL “standard UL 2107...” or
  - b. a power safety cover.

This section must be corrected because

- a. the correct UL reference for alarms is UL 2017, not 2107, and
- b. this section is inconsistent with the CPSC “Safety Barrier Guidelines For Home Pools,” which also allows for “other means of protection, such as a self closing door with self latching devices” ..so long as the degree of protection is not less than provided by an alarm or power safety cover.
- c. It is inconsistent with Appendix G of the International Residential Code, section AG105.2 (9.3) which also allows for a self closing door with self latching device.

Self closing and self latching mechanisms have been an effective safety option for many years, and are specifically recognized as alternatives to alarms by not only the Commission and the

International Codes, but by the Codes and legislation of many states, including California and Florida.

3. The minimum state requirements in the Draft Guidelines require a wall or fence even when a safety cover is present.

This section must be corrected because

a. It is not consistent with the section 14.2 of the ANSI/APSP-8 Model Barrier Code. This code correctly recognizes that fences and walls are not required when a compliant power safety cover that complies with ASTM F1346-91 is present.

b. Laws of several states, such as California and Florida, specifically exempt pools with compliant safety covers from additional barrier requirements and have been credited with producing a substantial reduction in child drowning per number of pools.

c. Covers prevent access to the specific hazard and thus, in some cases, may be superior to fences.

Based on the above, the APSP proposes the following changes to the Draft Technical Guidance section on Barriers

## 1. **Barriers**<sup>1</sup>

These provisions apply to barriers for use around outdoor residential swimming pools and spas. The provisions are intended to provide protection against potential drowning or near-drowning of young children by restricting access to swimming pools and spas.

1.1 **Fences and/or Walls.** Outdoor swimming pools, such as in-ground, above-ground, or on-ground pools, and spas shall have a barrier (e.g., fence and/or wall or power safety cover which complies with the following:

1.1.1 The top of a fence or wall used as a barrier shall be a minimum of 48 inches (1219 mm) above grade. The bottom of a fence shall be no more than 4 inches (102 mm) above grade when that grade is a hard surface such as cement/asphalt. The bottom of a fence shall be no more than 2 inches (51 mm) above grade when that grade is a soft surface such as grass or ground/natural surface. All measurements shall be taken on the barrier side farthest from the pool.

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<sup>1</sup> Based on *CPSC Safety Barrier Guidelines for Home Pools*, CPSC Publication No. 362, U.S. Consumer Product Safety Commission, Washington, DC

- 1.1.1.1 Solid barriers such as brick or rock walls shall have no indentations or protrusions that can provide hand and/or foot holds, other than normal construction tolerances and masonry joints.
- 1.1.2 For above-ground or on-ground pools, the pool structure itself may serve as a ground level barrier. If the top of the pool structure is less than 48 inches above grade and a barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
  - 1.1.2.1 Where access to an above-ground pool is provided by a ladder or steps, then:
    - 1.1.2.1.1 The steps or ladder shall be designed to be secured, locked, or removed to prevent access, or
    - 1.1.2.1.2 A barrier such as one described in Section 1.1.1 above shall surround the steps or ladder.
- 1.1.3 A power safety cover may serve as a barrier if it meets the requirements of ASTM F1346 *Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas, and Hot Tubs*.
- 1.1.4. For Portable Hot Tubs, a lockable cover that complies with ASTM F1346 may serve as a barrier.
- 1.1.5 Where a barrier (fence) is constructed of horizontal and vertical members, then:
  - 1.1.5.1 If the distance between the top of a horizontal member and ground level is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. The spacing between the vertical members shall not exceed 1-3/4 inches (44 mm) in width. Any decorative cutout spacing within vertical members of the fence shall not exceed 1-3/4 inches (44 mm) in width.
  - 1.1.5.2 If the distance between the top of a horizontal member and ground level is 45 inches (1143 mm) or more, the spacing between the vertical members shall not exceed 4 inches (102 mm) in width. Any decorative cutout spacing within vertical members of the fence shall not exceed 1-3/4 inches (44 mm) in width.

- 1.1.5 The maximum mesh size for a chain link fence shall not exceed 1-1/4 inches (32 mm) square [1-3/4 inches (44 mm) diagonal]. A larger mesh size may be used if slats fastened at the top or bottom of the fence are used to reduce mesh openings to no more than 1-3/4 inches (44 mm). See Figure A below.

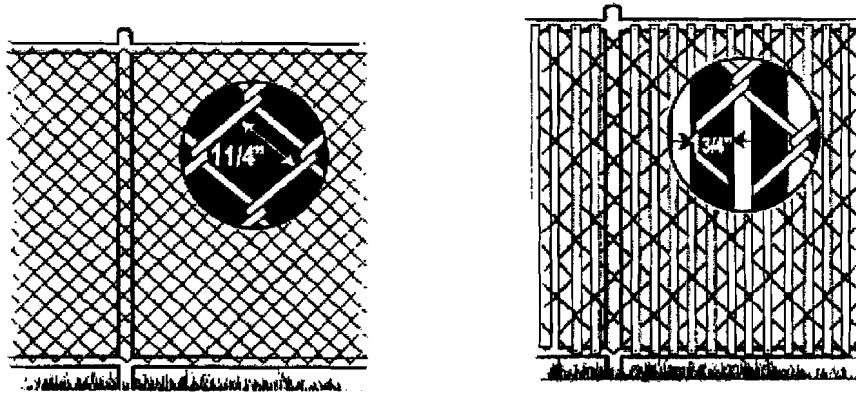


Figure A. Maximum chain link fence opening.

- 1.1.5 For a barrier made up of diagonal members (latticework), the maximum opening between the diagonal members shall not exceed 1-3/4 inches (44 mm).
- 1.2 **Access Gates.** Access gates shall meet the requirements of Section 1.1 (Fences and/or Walls) above and shall be equipped to accommodate a locking device.
- 1.2.1 Pedestrian access gates shall open outward away from the pool and shall be self-closing and self-latching. A locking device shall be included in the gate design. Where the release mechanism of the self-latching device is less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings must comply with the following:
- 1.2.1.1 The release mechanism shall be on the pool side of the gate at least 3 inches (76 mm) below the top of the gate, and
- 1.2.1.2 The gate and barrier shall have no opening greater than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.
- 1.2.2 Gates other than for pedestrian access shall be equipped with a self-latching device.

- 1.3 **Dwelling Walls.** For swimming pools or spas where walls and/or fences are employed and dwelling walls serve as a part of a barrier, one of the following shall be in place:
  - 1.3.1 A door in the wall that provides direct access to the pool shall be equipped with an audible alarm system meeting Underwriters Laboratories Inc. (UL) standard UL 2017 *General-Purpose Signaling Devices and Systems*, Section 77, Residential Water Hazard Entrance Alarm Equipment.
    - 1.3.1.1 The alarm system shall be equipped with a manual means to temporarily deactivate the alarm for not more than 15 seconds.
    - 1.3.1.2 The deactivation means shall be located not less than 54 inches (1372 mm) from the floor or threshold of the door.
  - 1.3.2 A power safety cover that meets the requirements of ASTM F1346 *Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas, and Hot Tubs*.
    - 1.3.2.1 Manual covers for spas shall be used whenever the spa is not in use. Manual safety covers shall meet all the requirements of ASTM F1346.
  - 1.3.3. a self closing door with self latching device.

## ENTRAPMENT

For the reason stated above, the Commission should reference and incorporate the ANSI/APSP-7 standard as the Minimum State Law Requirement with regard to entrapment avoidance. This national consensus standard meets and exceeds all of the requirements of section 1406. Additionally, the International Code Council, at its Final Action Hearings, voted to adopt the ANSI/APSP-7 standard into the 2009 International Building Code and 2009 International Residential Code. These codes are accepted, reviewed, and enforced by thousands of state and local government officials nationwide. Adopting and referencing ANSI/APSP-7 in the Technical Guidance will ensure Minimum State Law Requirements that are universally recognized as safe, effective, and enforceable in every state.

Should the Commission decline to reference this standard, the APSP offers the following specific comments.

1. While not mandated by 1406, the CPSC should require that all unblockable drains on residential pools (new and existing) employ covers and systems that comply with ASME/ANSI A112.19.8
  - a. Expanding this requirement to unblockable drains is consistent with section 1404, which requires that all drains in all public pools and spas employ such covers.
  - b. Pursuant to 1404(b), as of December 20, 2008, it will be a violation of the Consumer Product Safety Act to manufacture or offer to sell a cover for any drain of any size that does not meet the ASME standard.
  - c. Unblockable drains without proper covers do not eliminate the risk of:
    - Limb entrapment, which can occur, even where an unblockable drain is present because the pipe diameter beneath the cover is small enough to allow for an arm or leg to be caught when a proper cover is not in place.
    - Hair entrapment, which is a leading cause of entrapment injury or death. This is prevented by limiting of water velocity and ASME/ANSI 19.8 2007 covers.
    - Mechanical entrapment.
2. The CPSC Technical Guidance does not address flow rate or water velocity. ANSI/APSP-7 limits the flow rate to 6 feet per second (1.829 mps) when one of a pair of outlets is blocked and 3 feet per second (0.914 mps) during normal operation (section 4.4). This is essential for eliminating hair entrapment, which is a leading cause of entrapment injury and death.
3. The Draft Technical Guidance does not define "multiple drain system" or single drain either with regard to 2.1 or 2.2. Section 2.1 states:
 

"A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8 *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs* (shall be used after December 20, 2008)...and either:.."

If the Commission intends to define these terms as they were defined in the Staff Interpretation to Section 1404, then the APSP wishes to raise

grave concern with regard to the impact the Technical Guidance would have on hot tubs.

**A. "PORTABLE" OR FACTORY PRODUCED SPAS REQUIRE DIFFERENT CONSIDERATION THAN POOLS AND IN GROUND SPAS.**

i. In providing Technical Guidance to prevent entrapment under Section 1406, it is important that the Commission recognize that Portable Electric Spas are factory produced and self contained, and are a unique entity, different from pools and in-ground spas. Unlike pools or in-ground spas, which must be built and certified as acceptable on sight, Portable Electric Spas are tested and monitored by a Nationally Recognized Test Laboratory on a continuing basis. The NRTL's Authorization to Mark is applied to all products built by the manufacturers.

For this reason, regulations and options for compliance that are intended for pools and / or in ground spas do not always make sense from a safety or practical perspective in Portable Electric Spas. The application of such regulations to these products can often foreclose effective and viable alternative solutions in Portable Spas that would not be available in a pool or in ground spa application. Hence, when it comes to Portable Spas, one must look to entrapment protections beyond those provided by geometry alone.

ii. The shapes, contours, and varying multi-level features molded into the hot tub foot wells, in addition to options available in plumbing and construction allow the Portable Electric Spa manufacturer to create a reliable and consistent, "Suction Limiting System", not based purely on the hot tub's geometry. The use of these alternatives will still provide the bather with the required protections against entrapment laid out in Virginia Graeme Baker Act.

It is with this in mind we ask the CPSC to revisit and review the alternatives to bather entrapment that are presented below and that may be discussed at an open meeting.

**B. THE 2 PLANE OPTION IS RECOGNIZED IN SEVERAL CONSENSUS STANDARDS**

i. While the CPSC staff interpretation of "single main drain" and "multiple drain" under section 1404 (c) correctly identifies a minimum spacing of 3 feet from center to center, as specified in section 4.7 of ANSI/APSP-7, the interpretation does not recognize

the 2<sup>nd</sup> portion of this section, which permits, as an alternative to a 3 foot separation, that the drains be on “2 different planes, i.e. one (1) on the bottom and one (1) on the vertical wall, or, one (1) each on two (2) separate walls.”

The CPSC participated in the ANSI Consensus Review Process for the ANSI/APSP-7 standard, as it has for several other ANSI/APSP and ANSI/NSPI standards. While the CPSC does not cast a ballot in this process, it has provided comments on many of these standards and related drafts. At no time did the CPSC raise any concern or objection with regard to the separate plane issue.

ii. As noted above, the ANSI/APSP-7 standard has now been adopted into the 2009 IRC and 2009 IBC.

iii. The placement of multiple drains on 2 different planes accomplishes the same safety result as the 3 foot distance, in that it is not possible for a single bather to block both outlets. In addition to the position of the two drains, all drains must be tested and pass the ASME/ANSI A112.19.8 – 2007 body block test which means a single drain would be effective in preventing bather entrapment.

iv. The option of placing of multiple drains on 2 different planes as an alternative to 3 foot spacing is also specifically recognized in section 7.2.1 of the ASME/ANSI A112.19.8 2007 Standard for Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs. This standard is referenced in Section 1404(b) and has been adopted by the Act as the national “Drain Cover Standard.” It is also referenced in 1404 (c) (i), and in the CPSC Staff Interpretation of 1404 as a controlling standard on drain cover safety.

v. The placement of multiple drains on 2 different planes is specifically recognized in the ANSI/APSP-6 1999 American National Standard for Portable Spas, section 8.2.2.

**C. THERE ARE NO REPORTED ENTRAPMENT INJURIES IN SPAS THAT COMPLY WITH THESE STANDARDS AND SUCH INCIDENTS ARE NOT REASONABLY FORESEEABLE.**

i. These products have had an excellent safety record. Communications with the APSP/ANSI-7 writing committee and ANSI/APSP-6 writing committee confirm that we are not aware of a single reported entrapment incident involving a portable spa with multiple drains on separate planes.



ii. Underwriters Laboratory has advised us that in their twenty plus years of testing and certifying portable spas, they are not aware of a single reported entrapment incident involving a portable spa with multiple drains on separate planes. Underwriters Laboratory supports this comment.

iii. We have communicated with representatives of most of the leading manufacturers of portable spas who confirm that none of them are aware of a single reported entrapment incident involving a portable spa with multiple drains on separate planes.

iv. Portable spas also have much smaller drain openings and lower suction force and therefore have not been associated with the types of entrapment injuries that SVRS or shut off devices are designed to address, such as body or limb entrapment. Entrapment protection in these spas is also provided by ASME 19.8 compliant covers as required by the Act and ANSI/APSP-7, and by reduced flow rate.

v. A CPSC Incident Report, task # 021219HCC1219 was reviewed and we agree with the conclusions in the case file that states:

“The incident described in this report appears to involve 2 drains for a single pump which were less than 3 feet apart. According to the description provided, these outlets appear to have been LOCATED ON THE SAME PLANE on the bottom in the foot-well area of the spa. The “Post Incident” section of the report states “the secondary pump has two suction returns both located in the bottom foot well area,” and that, according to the engineer retained by the victim, “the spa...violates NSPI standards...” A letter to the Commission from counsel for the victim of April 25, 2003 also states that the two outlets that were involved in this incident were on the same plane on the bottom of the spa and thus were not in compliance with ANSI/NSPI standards.”

#### D. THE APSP WOULD LIKE TO WORK WITH THE COMMISSION ON THIS ISSUE AND REQUESTS AN OPEN MEETING

i. The APSP has a long history of working with the commission with regard to pool and spa safety in general and entrapment avoidance in particular and would like to continue to work with the Commission on this specific issue. The APSP requests an open meeting with the Commission the week of October 27-31, 2008.

ii. While the APSP believes that the current standards are adequate in all respects, including the definition of 2 planes, it also understands that the Commission has expressed some desire to incorporate a different and/or more detailed description of “different planes” within the definition of “multiple drain system,” as that term is used in the Draft Technical Guidance with regard to Section 1406 and the Staff Interpretation of Section 1404. The APSP is convening a Technical Working Group to provide possible further definitions. The group will consider 1) the placement of one or more outlets outside the foot well, 2) the use of an 18 x 23 blocking element for performance testing 3) suction limiting systems and 4) other possible solutions.

iii. The APSP requests that the Commission provide any Data Analysis or review concerning entrapment injuries sustained in portable spas that complied with the above standards, or which are relied on by the Commission in preparing the Draft Technical Guidance on this subject.

#### E. ELIMINATION OF THE 2 PLANE OPTION WILL PLACE A SUBSTANTIAL BURDEN ON HOT TUB MANUFACTURERS

i. The 2 different planes option is heavily relied upon by manufacturers of portable electric spas, which generally are not large enough to permit a 3 foot distance between outlets. Most portable spas or hot tubs have two pumps, requiring 4 suction outlets, which cannot be spaced at the 3 foot distance. Eliminating the 2 different planes option provided in section 4.7 would also have a devastating economic impact on the portable electric spa industry. Communication with many of the leading manufacturers indicates that approximately 90 percent of portable spas will be unable to achieve a 3 foot separation, and would therefore be adversely affected by the current interpretation. Attached as **Exhibit “C”** are examples of configurations from many manufacturers demonstrating the inability to achieve 3 foot spacing in most models. While some manufacturers do make a few models large enough to allow for such spacing, these are by far the most expensive models and are cost prohibitive for most consumers and in many cases several times the cost of most small, mid size or even “large” models.

ii. The Draft Technical Guidance, at 2.1, calls upon states to require that all new installations include either

a. no submerged outlets,

- b. one or more unblockable outlets, or
- c. a “multiple main drain system”.

iii. Portable spas cannot practically be built without outlets. Fluctuating water levels with varying bather loads would not allow skimmers to adequately, consistently, supply water to the pump and for that reason, drains are necessary.

iv. Single unblockable drains, as defined by the CPSC (18 x 23 or larger or large channel drain) and by the ANSI/APSP-7 standard will also not work in many models or units.

v. Hence the only practical option for many models is the use of properly covered multiple drains on different planes, as provided in the ANSI/APSP-7 Standard. If this is not permitted, a substantial majority of portable hot tubs would effectively be banned as an industry by any state seeking to apply for a grant. It is therefore critical that the Commission clarify that with regard to portable electric spas/hot tubs, a “multiple main drain system” includes drains on “2 different planes.”

4. Should the Commission undertake further rulemaking, as indicated in 2.2, it should expressly state that pools with more than one drain, as defined in 2.1, are exempt from such further requirements, since they do not have a “single main drain.”

a. This interpretation is consistent with the language of 1406(d) which exempts “pool and spas constructed without a single main drain.”

The APSP believes that the clear intent is for this section to be interpreted consistent with Section 1404 (c), in that it exempts pools and spas with no drains or outlets as well as those with properly spaced multiple outlets.

This interpretation is not only consistent with the language in 1404 but it is also the only logical and legally permissible interpretation given the use of the word “single” in the above parenthetical phrase. An analysis of this provision and relevant case law concerning its interpretation is attached as **Exhibit “D.”**

b. This interpretation is not only required by law, but is also consistent with the testing and research observed by the Commission, which confirms that while SVRS devices or other such systems can help mitigate against at least one form of entrapment

injury in a single outlet installation, they do not reliably activate when there is more than one source of suction, even when one of those sources is blocked (“Association of Pool and Spa Professionals Technical Committee Report on Suction Outlet Safety and the Effectiveness of ANSI/APSP-7,” October 5, 2007, copy attached as Exhibit “A”).

This is also confirmed by the SVRS standard, ASME/ANSI A 112.19.17, which only provides for testing of SVRS devices on a single suction outlet (3.2.1) and Figure 1, which shows a single outlet. This standard also prohibits the use of Hydrostatic valves, which mimic the effects of a second outlet (2.4.2.2).

Literature from some SVRS Manufacturers also state that these products are not intended for use where hydrostatic valves are present and are only to be used in multiple outlet systems where the maximum flow rate complies with the 6 and 3 ft per second figures that are found in ANSI/APSP-7. With flow rates limited in this manner, it is impossible for a triggering event to occur that would cause an SVRS to need to activate. Put in simpler terms, SVRS manufacturers only seek to have their devices to be used in multiple drain systems that are designed so that the device can never be needed.

c. The International Code Council voted at its Final Action hearings to replace the existing entrapment avoidance language in the International Building Code and the International Residential Code with a reference to ANSI/APSP-7. This standard correctly recognizes that such devices are not indicated and do not provide additional protection in pools with compliant multiple outlets.

d. This interpretation is consistent with the Commission’s publication “Guidelines for Entrapment Hazards: Making Pools and Spas Safer,” which is referenced in 1406 (a) (4) (B).

e. Requiring such devices on existing hot tubs that have multiple drains on separate planes is not warranted for the reasons stated above. Manufacturers also estimate that the cost of equipping new units with one or more of the devices specified in 1406 (d) will be substantial. This would have a devastating impact on sales even in a strong economy, let alone one where consumers and commercial purchasers are becoming ever more price sensitive.

Retrofitting existing installations with such devices, (as would be required as part of a “minimum state law requirement” under 1406),

is also highly problematic, and would require digging out the unit and reconfiguring the plumbing. In many existing configurations, this may be impossible, requiring complete unit replacement, (which would then be unlawful as discussed above). In other installations, it may impair performance and reliability. Where it can be done, the cost of retrofitting existing portable spas would be between \$1,000 and \$2,000 per unit.

Hence, the APSP proposes that the Draft Technical Guidance section on Entrapment be revised as follows:

**2. Entrapment Protection/Prevention Device**

Section 1406 also sets forth that States must have certain minimum requirements to prevent entrapment in order to be eligible for a grant. The provisions of this section apply to the use of entrapment protection/prevention devices on swimming pools and spas that are not covered by section 1404's requirements for anti-entrapment on public pools<sup>2</sup> ("non-public pools").

To be eligible for a grant, a State statute must require that all pools and spas are equipped with anti-entrapment devices or systems. Pub. L. No. 110-140, §1406(a)(1)(A)(ii). The devices/systems described are intended to provide protection against drowning or near-drowning due to suction entrapment.

**DEFINITIONS**

"Multiple Drain System" shall consist of, at a minimum, two fully submerged suction outlets per pump, with drain cover centers at least 3 feet apart, or on 2 different planes, i.e. one (1) on the bottom and one (1) on the vertical wall, or, one (1) each on two (2) separate walls.

2.1 Non-public pools or spas constructed more than one year after enactment of the State statute establishing requirements that comply with provisions of the Act, shall use:

- (A) More than one drain (CPSC staff believes a multiple main drain system without isolation capability with covers on each submerged suction outlet that meet ASME/ANSI A112.19.8 Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs), would meet such a requirement, provided the drain cover centers are at least 3 feet apart, or,

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<sup>2</sup> Public pools and spas must comply with section 1404 of the statute. Section 1404(c)(2) defines public pool and spa as a swimming pool or spa that is "(A) open to the public generally, whether for a fee or free of charge; (B) open exclusively to - - (i) members of an organization and their guests; (ii) residents of a multi-unit apartment building, apartment complex, residential real estate development, or other multi-family residential area (other than a municipality, township, or other local jurisdiction); or (iii) patrons of a hotel or other public accommodations facility; or (C) operated by the Federal Government (or by a concessionaire on behalf of the Federal Government) for the benefit of members of the Armed Forces and their dependents or employees of any department or agency and their dependents.

in the case of a portable spa or hot tub, on 2 different planes, i.e. one (1) on the bottom and one (1) on the vertical wall, or, one (1) each on two (2) separate walls.; or

- (B) One or more unblockable drains; or
- (C) No main drain.

Pub. L. No. 110-140, §1406(a)(1)(A)(iii).

2.2 All non-public pools and spas with one or more main drains shall be required to use a suction outlet cover that meets ASME/ANSI A112.19.8. Pub. L. No. 110.140, § 1406(a) (1) (A) (iv).

Should the Commission undertake such a rulemaking to establish additional minimum state requirements, the Commission is required by the Act to require the use of one of the following except in pools constructed without a single main drain (meaning that pools with a multiple drain system) :

- (A) Safety Vacuum Release System
- (B) Suction-Limiting Vent System
- (C) Gravity Drainage System
- (D) Automatic Pump Shut-off System
- (E) Drain Disablement
- (F) Other systems determined by the Commission to be equally effective as, or better than, the systems described in subparagraphs (A) through (E).

Pub. L. No. 110-140, §1406(d).

2.4 Flow Rate. The flow rate or water velocity for residential pools and spas shall be limited to 6 feet per second ((1.829 mps) when one of a pair of outlets is blocked and 3 feet per second (0.914 mps) during normal operation.

## REQUEST FOR MEETINGS

The APSP requests an open meeting with the Commission to discuss the APSP comments on Section 1406.

Individual APSP members have specific issues concerning enforcement matters. APSP requests closed meetings with the CPSC staff and individual APSP members to discuss these enforcement matters.

**Association of Pool and Spa Professionals  
Technical Committee Report on Suction  
Outlet Safety and the Effectiveness of ANSI/APSP-7**

October 5, 2007

## Introduction

Suction Entrapment has gained considerable attention over the last decade. It has been the subject of voluntary standards, building codes, and national legislation. Increased media attention due to tragic accidents has focused industry leaders, health and building officials, and code writers toward making a significant effort to protect bathers from potential entrapments. Unfortunately, the principal cause of various modes of entrapment can be confusing and difficult to understand without careful study of the underlying physical phenomena. This has resulted in widespread misunderstanding of how one can successfully avoid all modes of entrapment. Many code and standard efforts have focused primarily on the easiest of the mode of entrapment to prevent, body entrapment. This oversimplification, if not addressed, could lead to building codes, or even laws, that do not adequately protect bathers from all dangers present in pools and spas and may create a false sense of security.

A survey of the Epidemiological Reports on Suction Entrapment collected by the U.S. Consumer Product Safety Commission by the Association of Pool and Spa Professionals (APSP) Technical Committee yielded 5 distinct modes of Entrapment:

- **Hair Entrapment** - Hair becomes knotted or snagged in an outlet cover
- **Limb Entrapment** - A limb sucked or inserted into an opening of a circulation outlet with a broken or missing cover resulting in a mechanical bind or swelling.
- **Body Entrapment** - Suction applied to a large portion of the body or limbs resulting in an entrapment
- **Evisceration/Disembowelment** - suction applied directly to the intestines by a circulation outlet with a broken or missing cover.
- **Mechanical Entrapment** - Potential for jewelry, swimsuit, hair decorations, finger, toe, or knuckle to be mechanically caught in an opening of a suction outlet or cover.

There are three basic underlying physical phenomena that govern all 5 modes of entrapment:

- Suction (or delta pressure)
- Water flow rate through the outlet or cover
- Mechanical binding

The ANSI/APSP-7 standard includes methods for protecting bathers against all modes of entrapment, which include all three underlying phenomena. Unfortunately the focus is typically on only one of the three underlying causes, suction (or delta pressure) because it is very easy to grasp, while the more common cause of entrapments, flow and mechanical, is inadequately addressed. Without addressing all underlying causes, it is very difficult to build redundancy, or backup scenarios, in these latter modes of entrapment, which leads to further obfuscation of the problem. Perhaps the most regrettable legislative and regulatory impediment to protecting bathers is actually created by semantics; the term "layers of protection" has been falsely applied to the various modes of entrapment on circulation components. While this term was first used, correctly, in areas of fencing requirements, it does not apply to entrapment and



its use causes widespread misunderstandings concerning effective methods of entrapment mitigation. Extensive use of the layers of protection label just compounds industry, health, and building official's confusion about how various entrapment mitigation scenarios protect bathers.

Table 1 lists a summary of the various standards related to entrapment along with a brief scope and developmental status. These standards basically fall into two categories:

- Device and Component Standards – specific certification and test protocol for devices or field fabricated components
- Pool Construction Standards – describes methodology to construct swimming pools and spas to circumvent and/or mitigate entrapment.

While device component standards are critical for certifying operation of pool components, they address only the specific entrapment areas covered by the standard. For example, ASME/ANSI A112.19.17-2002 covers the testing and certification of Safety Vacuum Relief Systems (SVRS) involving Suction (delta pressure) relating to primarily body entrapment, but does not test or alleviate flow rate or mechanically induced entrapments involving Hair, Limb, and Mechanical categories. In addition, it explicitly excludes protection against evisceration/disembowelment. So this particular standard effectively covers only 1 of the 5 reported modes of entrapment and only attempts to alleviate one of the three root causes of entrapment, suction (delta pressure).

Similarly ASME/ANSI A112.19.8-2007 covers testing and certification for outlet covers tests a full head of hair and adds body block tests. Both of these tests are used to determine a maximum flow rating for the cover. Finger entrapment is evaluated using a probe to determine digit access. An important update to the 2007 version of the standard is the addition of UV weathering exposure prior to structural testing. Since UV degradation plays a significant role in covers breaking, this can significantly reduce the frequency of covers being easily broken or removed.

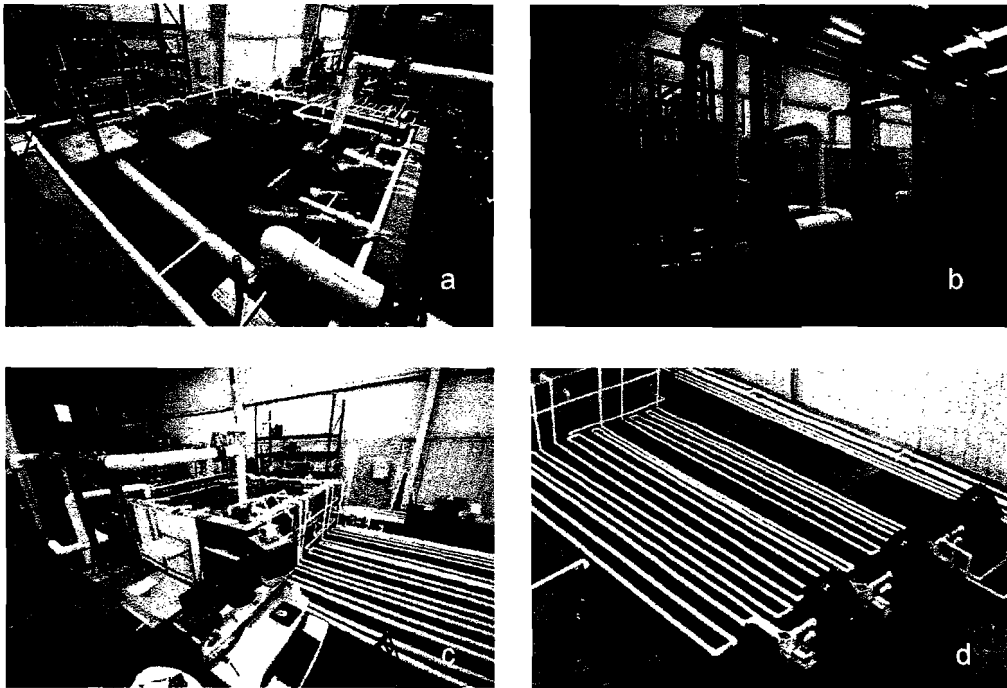
In contrast, the ANSI/APSP-7 standard addresses methodologies for pool construction that effectively cover all 5 modes of entrapment. It is a systems level approach to pool construction. It describes systems that range from elimination of entrapment hazard through completely removing fully submerged suction outlets from installation, to various methods for constructing and protecting submerged suction outlets by alternate means. It does not mandate or advocate any one method, but rather gives the pool builder the choice of constructing the pool in various modes, all of which effectively circumvent or mitigate submerged suction outlet entrapment. Additionally, it is applicable to both residential and public pools and for flow rates from a few gallons per minute to thousands of gallons per minute.

Since all methods will not work effectively with all installations, it does not mandate any one single installation method. It does not use the erroneous “layers of protection” approach, but rather depends on individual or combination of systems to address all 3 underlying physical phenomena (root causes) and consequently all 5 modes of entrapment.

Recently the “dual drain” approach has come under some criticism for being less than adequate in effectively dealing with entrapment, specifically suction (or delta pressure) entrapment. It has been asserted that when a drain cover becomes broken, missing, or one outlet is blocked, the dual outlet system ineffective and therefore a requirement should be levied for system redundancy. This committee performed testing to investigate this claim and in the process uncovered some alarming issues concerning current SVRS testing protocol. Furthermore, it has the testing confirmed that pools built in conformance with ANSI/APSP-7 do in fact prevent all modes of suction outlet entrapment.

### Materials and Methods

Testing was conducted using various piping and suction outlet (drain) configurations. The test facility is pictured in Figure 1a-d. A 5000 gallon test tank is configured with various components used in pool circulation systems. Submerged piping is used on all tests as it closely replicates what one finds in the field. The test tank has a pair of bulkhead fittings that are used to pass water from the tank. It is then connected to a manifold that allows 2” suction side piping runs to be configured in 25 ft increments up to 200 ft as called out in ASME/ANSI A112.19.17-2002. In addition, return side is configurable for 25ft or 100 ft per ASTM F2387-2003. Note that ASME A112.19.17 - 2002 does not include a return side specification.



**Figure 1** overall system configuration including pump elevation rack, high flow rate system pumps and parallel equipment testing configuration

Pumps are located on a rack and allow testing at -3 feet (flooded), ground Level, +3 feet, and +5 feet with distances measured from waterline to center of the pump impeller. With this design, one can rapidly change between various configurations of

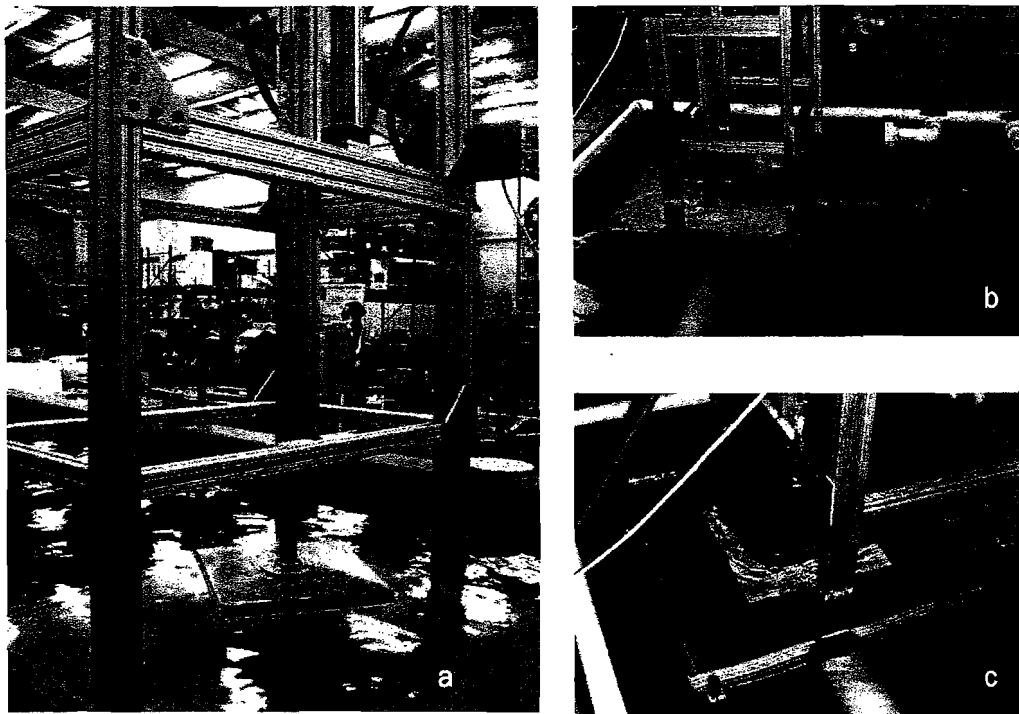
pipe length and pump elevation to test a wide range of arrangements commonly found in pool and spa installations. In addition to these piping configurations for the ASME/ASTM SVRS testing protocols, there is an additional capability to test situations found outside of the small range of piping and pumps covered by these standards.

For larger commercially oriented systems, a dual 5 HP parallel pump system allows testing flow rates up to 850 GPM with larger size outlet openings. Vent tests can be conducted on extremely high flow rates on single or dual outlets up to 36 x 36 in. Should SVRS technology be developed for such large flow rates as found in large residential water features or commercial installations, the facility will easily accommodate this testing.

Finally, three flooded piping/equipment pad systems are used to make direct comparison tests on piping configurations found in typical pool systems. Each of these systems can be outfitted with identical equipment (filter, heater, pump, etc), and are plumbed with 75 ft of piping on both the return and suction side. The water can be returned through a series of return jets as commonly found in pools and spas or it can be returned through a single open pipe for low back pressure configurations. The three systems are plumbed using 2 ½, 2, and 1 ½ inch schedule 40 PVC. In this way, real time comparative tests of power consumption, flow rate, suction side loss, and system pressure can be performed. In these tests, piping size is the only variable and piping effects can be separated from overall equipment specific dependencies.

The data acquisition system is capable of 16 simultaneous channels at 200 Ksamples/second can be seen in the foreground of Figure 1c. Data is displayed during real time testing and can be stored at a wide range of data rates to be analyzed at a later time. The system includes a Balanced Flow Meter (BFM) developed by NASA, which accurately measures flow rates for all tests. This allows extremely accurate and verifiable flow rates, which are critical when determining the affect of flow rate on various tests protocols. Multiple pressure transducers are available to simultaneously measure sump, line, and pump pressures at varying locations. A complete digital video system also allows for real time recording, above and below water, at 30 frames per second for each test. Once captured with the non-linear editing system, it can be edited and distributed on DVD. The system can be reconfigured for real time streaming to the internet, should remote test viewing be required.

All SVRS testing is accomplished using the Autonomous Suction Outlet Test Apparatus (ASOTA) as shown in Figure 2a. This device allows pneumatically applied 15 lbs buoyant closed cell foam block to a test suction outlet as described in both ASME/ANSI A112.19.17-2002 and ASTM F2387-2003. Blocking element approach speeds and removal speeds are fully adjustable. In addition, it can be reconfigured to apply a known amount of downward force to a blocking element as described in tests found in ASME/ANSI A112.19.8 -2007. In addition to the test protocols of ASME/ASTM for single drains the ASOTA can be configured with a load cell to pull vertically using center or eccentric pull of the blocking element to capture the release force. The test apparatus can also be plumbed to a second outlet so that testing protocol described in both the ASTM and ASME SVRS Standards can be applied directly to dual outlet systems (Figure 2b).



**Figure 2** a) *Autonomous Outlet Testing Apparatus (ASOTA) configured to test a single outlet system. b) Configured to test dual outlets analogous to ASME/ASTM SVRS Standards c) Configured for a single outlet 18 x 18 inch cover vent test*

## Results

Drain SVRS testing was conducted on the entire range of piping configurations and pump elevations described in both the ASTM and ASME SVRS Standards. In addition, testing was performed in configurations outside of the protocol described in both of these standards. These additional tests included larger flow rates, variable pump size, variable piping sizes, multiple outlets and ground level pump location. This additional testing was completed to verify testing protocol on a wider range of variables than are found in the published SVRS standards, but in configurations that are common in pool installations.

Various commercially available, and some not yet available, manufactured devices were tested. These tests were conducted over several months by members of the APSP Technical Committee, several SVRS manufacturers, and representatives of the Florida Swimming Pool Association (FSPA).

Initial testing, performed at the request of the FSPA, of commercially available SVRS devices produced results in many cases in which the tested SVRS device failed to trip when second outlets (e.g. drains, partially blocked drains, or skimmers) were present.

Testing performed, for the purpose of this study, focused on the underlying technology behind SVRS devices. Three basic types of SVRS technology were evaluated: venting only, venting plus pump power shut down, and pump power shut down only.

Finally, initial qualitative testing was conducted on sump venting (field fabricated vents) as described in ASTM 15.51 currently under development. Venting of various configurations of dual and single drains on flow rates as high as 420 GPM have been successfully demonstrated with various U-tube configurations.

Specifically this report will focus on:

- Single Outlet SVRS Tests with submerged pump
- Dual Outlets – 3, 6, 8, and 10 fps using ASME/ASTM SVRS protocol
- Dual Outlets – with SVRS Backup
- Single 18 x 18 outlet U-Tube venting at 20, 30, and 37 ¾ inch depths

Figures 4, 5 and 6 are graphs representing the results of these tests. The first series Figure 4 a-b illustrates an example of SVRS vent-only system failure on a single 8 inch drain sump. For these tests, a multiple orifice manifold was connected to the drain plug of the pump strainer. Orifice size varied from 0.075 – 0.30 in. Evaluations were made at ground level until the correct orifice size was established that could reliably release the 15 pound buoyant blocking element. In this case the size of the orifice used was approximately 0.30 inch. Once this was effectively established, the tests were repeated at the flooded (- 3 foot elevation) level. Various flow rates were tested until one was established that was right on the edge of passing. The test was repeated until several instances of pass and fail were established. Figure 4a shows a result typical of a passing test. As can be seen from the graph of pump/sump pressure vs. time, pressure (psia) is quite stable as measure at the drain sump, but there is a 0.65 psia fluctuation at the pump. This is typical of measurements at the pump.

One can easily recognize the point at which the drain becomes blocked with a severe depression in pressure. As the SVRS is releasing, one can see a pressure oscillation through the base line pressure and a positive swing that reaches nearly 20 psia. These swings are typical of SVRS releases and are a result of the dynamics of water in the pipe, in particular water hammer. In this case the release is completed in slightly less than 2 seconds and clearly passes the SVRS release standard. The pump begins to prime and the sump pressure returns to its pre test levels.

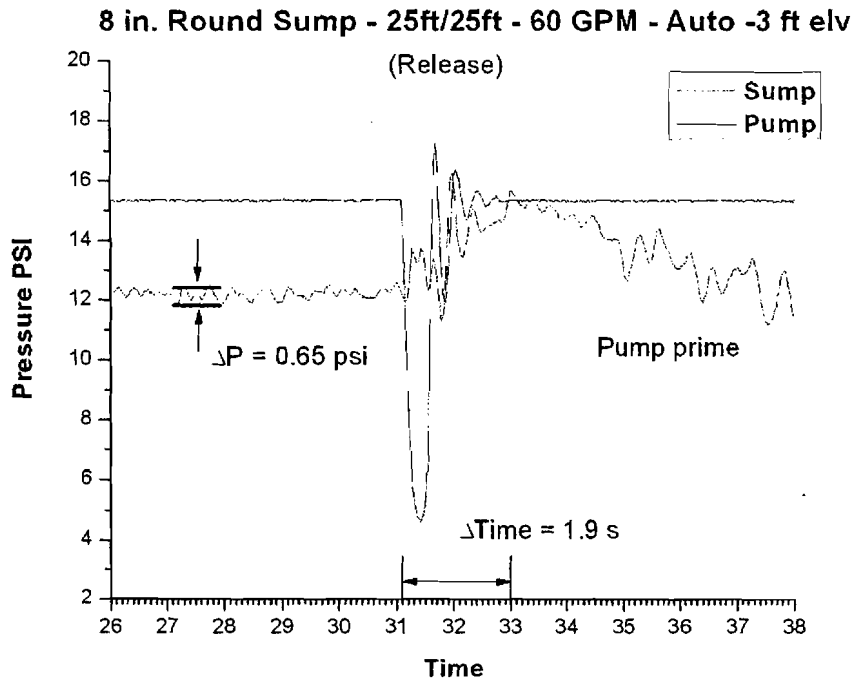


Figure 4a

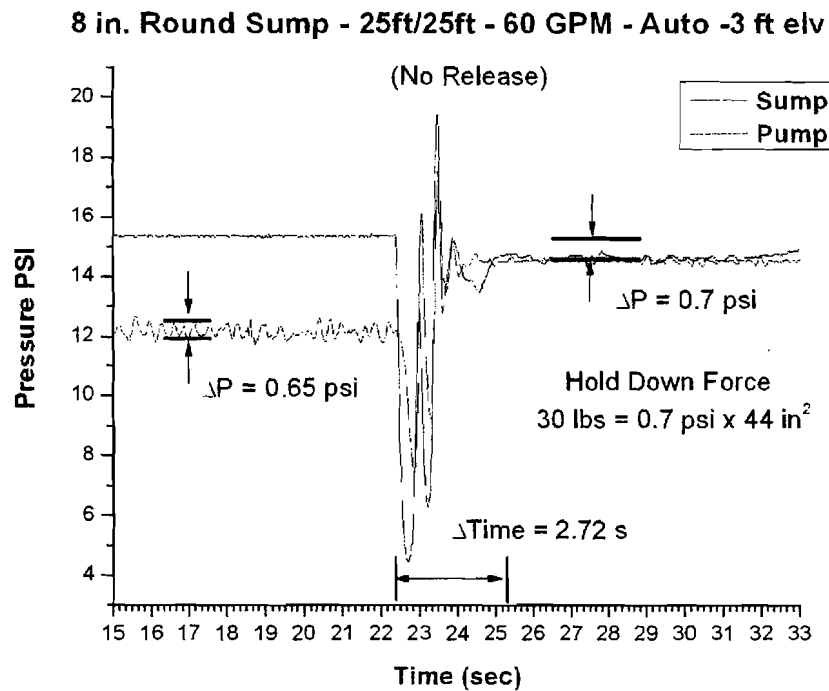


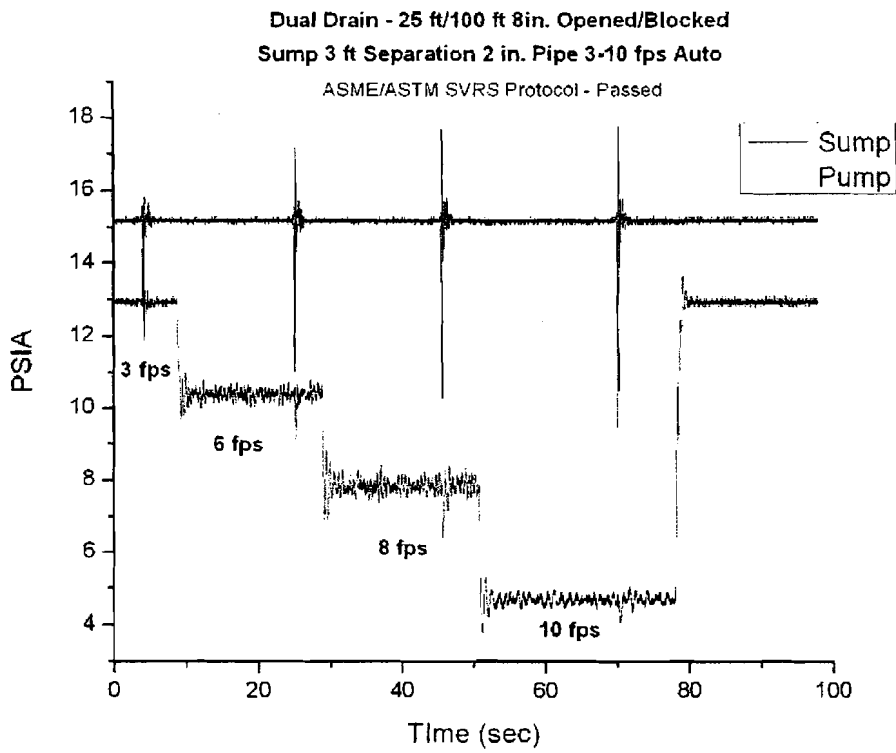
Figure 4b

An Identical test shows a dramatically different result. In this case the blocking element does not release. Baseline pressure levels were identical to the first test. In this case water hammer and dynamic effects continued for 2.72 seconds – nearly as long as allowed for release in the standard. Because the blocking element does not release both the sump and pump pressures end at the same value. What is interesting about this new depressed level, 0.7 psia, is the effect of the pump trying to prime. Even though the SVRS is tripped, the pump continues into remove air from the system at the rate the SVRS allows air into the pump. This results in a hold down force of 30 lbs – double of what is allowed in both the ASTM and ASME standards.

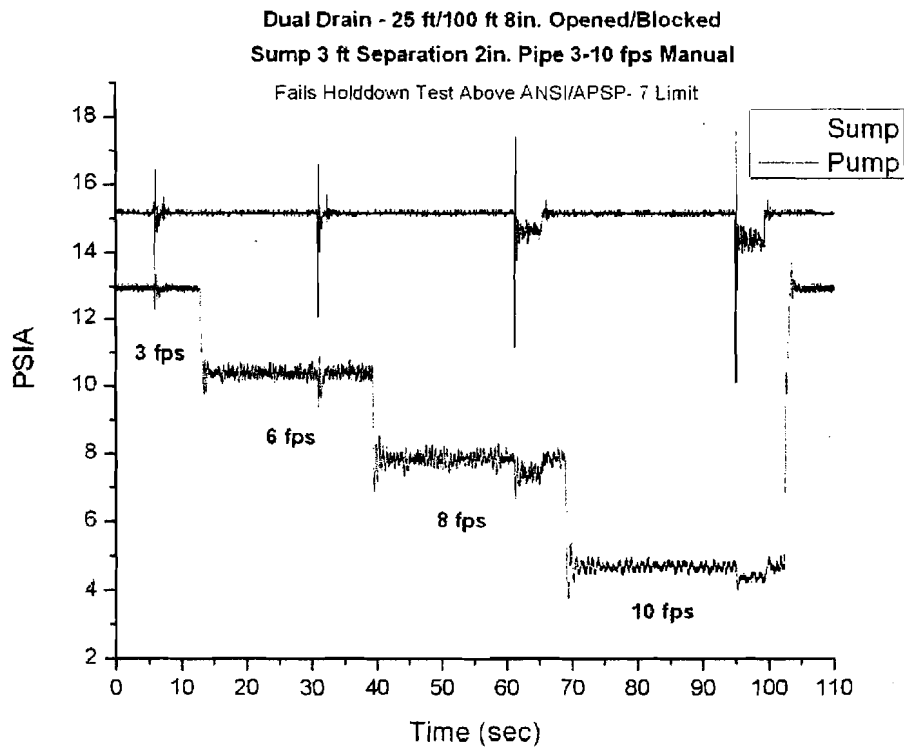
This result could easily be repeated using smaller orifice sizes. What this revealed is that a device can be calibrated and “pass” the limited piping and pump configurations set out in the test protocol then fail as shown in Figure 4 b. This leads to the concern that current standards do not adequately test these devices to the release levels and times called out under the ASME/ASTM standard’s scope. The limited, pump size, piping size and flow rates specified in these standards do not approach those found in the field and they do not evaluate piping elevation versus water level.

With this result a similar set of tests were performed using dual-outlet standard 8 inch sumps, 3 ft separation, with one cover missing and the other in place (Figure 5 a-c). The blocking element was applied to the sump via the ASOTA with the missing cover while the remaining drain was allowed to flow. It should be mentioned that this was exactly the test configuration where several SVRS devices certified to the ASME and/or ASTM standards did not successfully detect a blockage. In this case blocking was attempted with the automatic test device as described in the ASME/ASTM standard at line velocities of 3, 6, 8 and 10 fps. In 2 inch pipe this represents 31.4, 62.8, 83.7, and 104.6 GPM. The test allowed the blocking element to be momentarily contacted with the open (uncovered drain) in the analogous fashion to SVRS testing.

In each case during the automatic testing the blocking element is never trapped on the uncovered drain – *even at flow rates that exceed the ANSI/APSP-7 standard maximum of 6 fps*. These were surprising results and so the test was repeated, except that the blocking element was held in place manually for several seconds allowing water dynamics to subside. Figure 5 b shows this result. At 3 and 6 fps, the blocking element releases; however, at 8 and 10 fps the blocking element is held down as can be seen in both the sump and pump depression of pressure (Figure 5 c), after which the blocking element was manually removed. This could be repeatedly performed and underscores an important flaw in the testing protocol of the ASME/ASTM tests. At flow rates greater than allowable rates prescribed in ANSI/APSP-7 the Dual Drain passes the ASME/ASTM test protocol, but in similar tests that allows water dynamics to subside, fails.



**Figure 5a**



**Figure 5b**



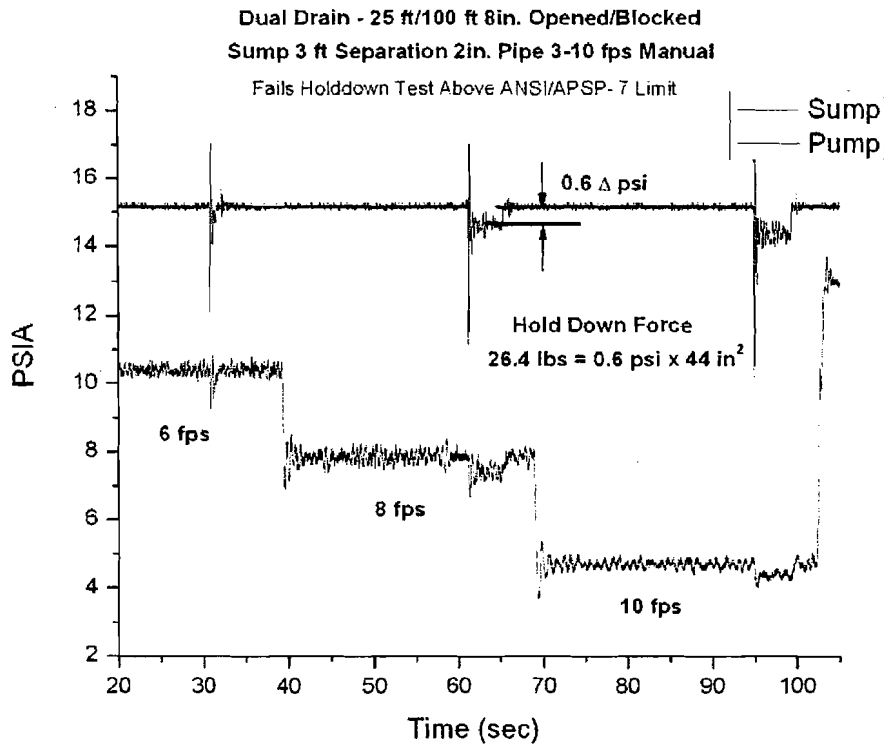


Figure 5c

A series of tests were conducted as a qualitative assessment of vent line designs for very large piping and flow configurations. The ASTM 15.51 writing subcommittee is currently drafting a standard to address field fabricated vent design. This vent test system used 6" piping with a dual 5 HP pumps. Flow rate through the single 18 x 18 inch cover averaged 420 GPM. A 1" PVC U-Tube vent was connected suction side piping approximately 11 feet from the sump, just under waterline. Tests were conducted with the U-Tube depth at 20, 30, and 37 ¾ inches from water level. Maximum drawdown at 37 ¾ depth was 10." Figure 6 a-d show the results of these tests. Test shown in Figure 6 a-c use a larger buoyant blocking (See Figure 2c) to completely block the single suction outlet and in Figure 6 d a Human was used to block the flowing single suction outlet.

In each case using the blocking element, the sump pressure depresses down, trips the vent and in a very short interval (2.5-3.2 sec), the sump returns to the pre-blocking pressure levels. In the case of the Human Blocking attempt (Figure 6d), it was impossible for the test subject to block this large 18 x 18 inch cover alone. The test subject was placed on his back on the flowing single drain with arms down along the sides to seal both edges. The test subject was then forced down on the cover by a second person pressing down on the center of the test subject's chest. According to the test subject the actual blockage was almost imperceptible from a "suction" point of view, but the test subject did report feeling the flow of water around his body, in particular between his arms and torso. It was reported that the actual sensation was no where near the sensation of blocking off an 8 inch single sump. The vent trip, even at 37 ¾ inches of depth, was very fast and efficient at alleviating all delta pressure at the sump.

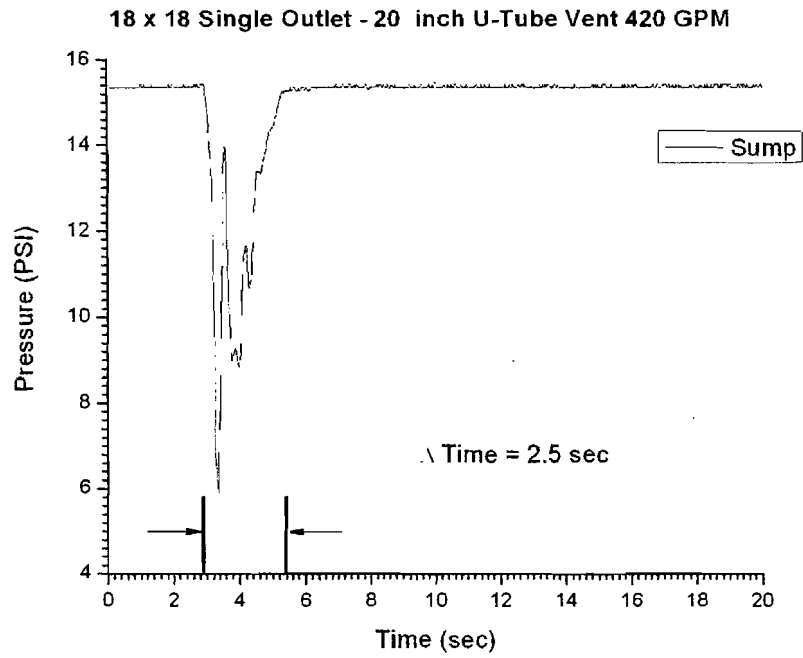


Figure 6a

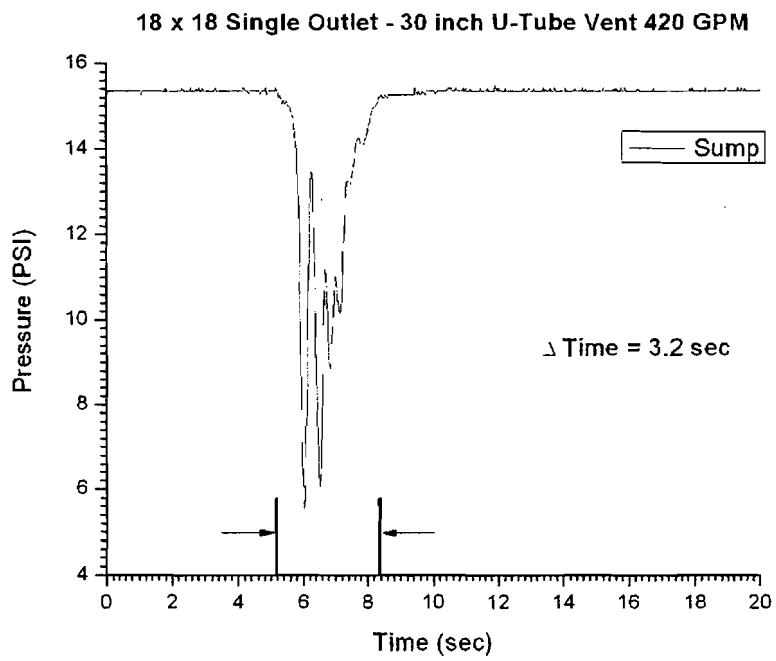
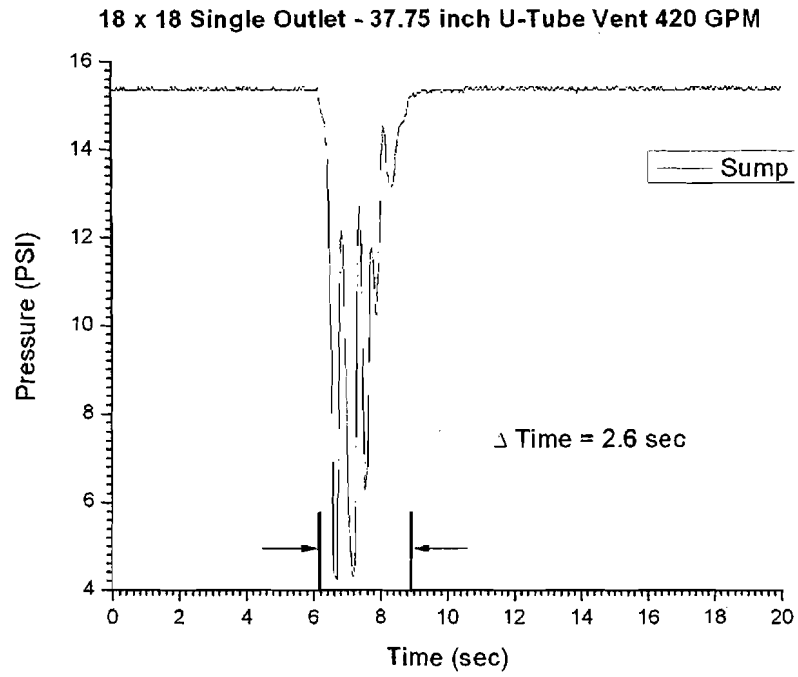
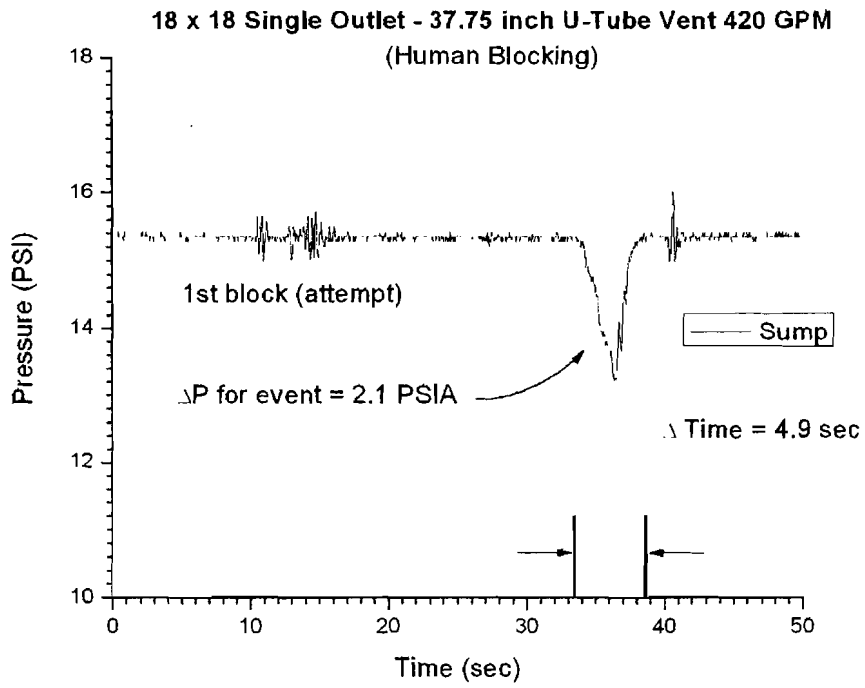


Figure 6b



**Figure 6c**



**Figure 6d**

## Conclusion and Recommendations

The APSP Technical Committee Tests have demonstrated the validity and comprehensive approach of the ANSI/APSP-7 standard. It is recommended that in future code and legislative language one move away from the narrow definition of bather entrapment as being dominated by “suction” or delta pressure across an open or improperly covered sump/drain. The solution requires a multi-dimensional approach such as that mandated in ANSI/APSP-7. The assertion that a simple “back-up” or redundancy can protect bathers from improperly installed or maintained pool circulation systems is misleading and dangerous.

The scientific/engineering data presented has clearly moved the basic knowledge beyond the limited approach taken just a few short years ago. The ANSI/APSP-7 is a published American National Standard and has endured numerous levels of scrutiny. It effectively addresses all 5 modes of entrapment and all 3 underlying phenomena that represent the physical root cause. First and foremost ANSI/APSP-7 is a pool construction standard and as such does not include the individual certification of components. The ANSI/APSP-7 is comprehensive where current code language does not address flow and often exempts large suction outlet covers from testing and certification. In addition, this standard contemplates all pools, including large commercial installations, complex residential installations, and provides alternate approaches to achieve safe circulation system construction in all installations.

Tests conducted on dual outlets configured as described in ANSI/APSP-7 demonstrate:

- The size of the outlets and piping do have an effect on safe installation
- Water velocity tested in excess of the 6 fps ANSI/APSP-7 recommended maximum *passed* an analogous ASME/ASTM SVRS test protocol, but *failed* testing that included a damping period for water dynamics
- Although data has been circulated that suggest a dual drain cannot achieve the 15 lbs release force, this is very cover, flow rate, and sump specific. When one uses covers that pass the latest revision (ASME A112.19.8-2007) along with piping as described in ANSI/APSP-7 this concern is completely alleviated.
- Multiple submerged outlets, when installed according to ANSI/APSP-7, are a backup for suction outlet entrapment. Multiple outlets pass the same tests; react faster than the 3 seconds described in ASTM/ASME standards, and work properly in combination with skimmers.

Tests conducted on SVRS systems and both the ASME/ASTM SVRS standards demonstrate:

- Not all SVRS tested to the ASME/ASTM SVRS Standards will reliably “trip” when combined with dual outlets and/or skimmers – Those that fail seem to interpret residual flow from the second outlet as a priming pump.
- Not all SVRS tested to the ASME/SVRS Standards “trip” with partial blockage, e.g. towel or deflated toy over drain.
- Venting only SVRS technology may pass the ASME/ASTM SVRS testing protocol, but when used in submerged suction (e.g. raised spas) and with a NSF rated self-priming pump such devices may continue to expose bather to hold down forces in excess of what is currently allowed by the ASME/ASTM SVRS standard.

- All tests conducted by APSP used submerged piping typical of that found in pools and spas in the field. When piping is elevated above waterline, release is artificially assisted by water seeking its own level, a condition rarely found in the field.
- Water dynamics, in particular water hammer can facilitate release. Once the block is forced off the cover by these spikes in pressure, it floats to the surface. Neutrally buoyant blocks have been documented to “hammer” on and off open pipes for several seconds.
- Water dynamics continue for several seconds. The longest on an SVRS test lasted 2.72 seconds and this length of time may call into question the validity of the arbitrary 3 second limit.

Tests conducted on a U-Tube Vent on a single 18 x 18 suction outlet demonstrates:

- A single 18 x 18 drain grate can be successfully vented operating at 420 gpm with a 1 inch PVC vent pipe.
- Release is very fast – shortest release was 2.5 seconds
- While it was difficult to completely block the drain using a Human test subject, it was possible to do so sufficiently to trip the vent. The actual suction sensation of this experience was far less than what is experienced when an 8 inch sump is blocked.

Based on this testing, it is clear dual outlets, vents, and SVRS technology all have a role protecting bathers from entrapment hazards. While not tested or demonstrated for this report, gravity flow systems can also achieve superior levels of bather protection and are allowed by ANSI/APSP-7. Not all current codes address the wide range of requirements for large public pools, residential pools with water features, multi-speed pumping systems, and various elevated spa installations. These all necessitate an inclusive comprehensive approach with the best entrapment mitigation methods from ANSI/APSP-7 used. Sometimes the hazard can be simply eliminated completely by removing all submerged suction outlets. Other times a vent or SVRS can be effectively used. Multiple outlets dramatically reduce the opportunity for hair entrapment by dividing the flow between 2 or more covers rated at 100% of the flow. Unlike SVRS systems, they are not defeated by check valves commonly used on spas and hydrostatic valves necessary for pools installations in areas of high water table. Vents can also be effectively used at extremely high flow rates that are beyond the scope of the current SVRS ASME/ASTM standards.

What is apparent is that codes and legislation can not continue focus on single underlying events, i.e. suction, as the only hazard to address. At the same time one must move away from the notion of “layers of protection” and must move toward a more comprehensive approach that always protects bathers from all 5 modes of entrapment and the 3 underlying root causes of entrapment: Flow rate through the outlet, Suction (or delta pressure), and mechanical. These have been placed in a Venn diagram in Figure 7a. It is evident from this diagram that all modes of entrapment fall into one of the three underlying physical phenomena. The approaches prior to ANSI/APSP-7 were all driven by individual solutions seeking to address one of the five hazards. If properly addressed during pool construction and renovation, all potential hazards can be completely alleviated.

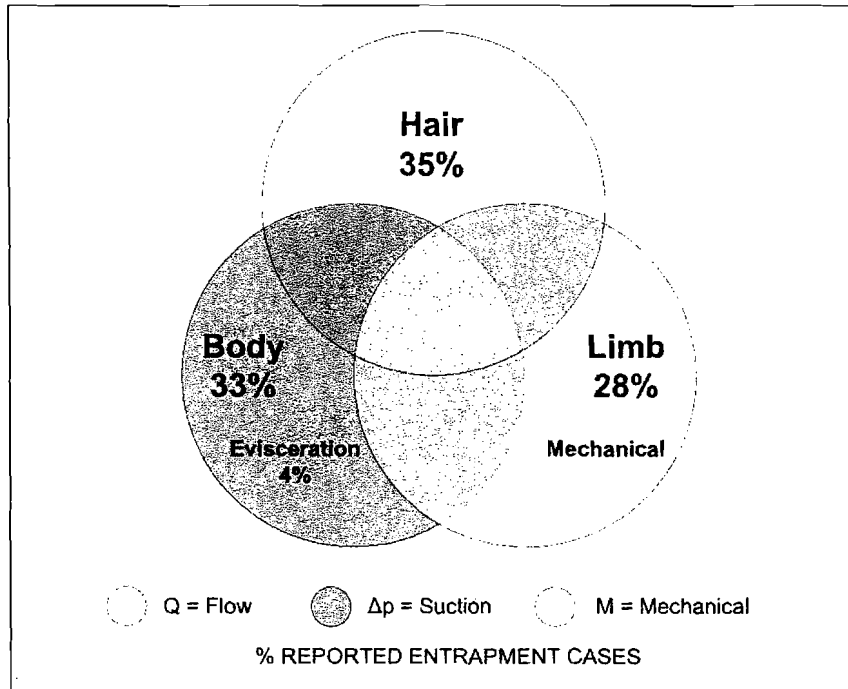


Figure 7a

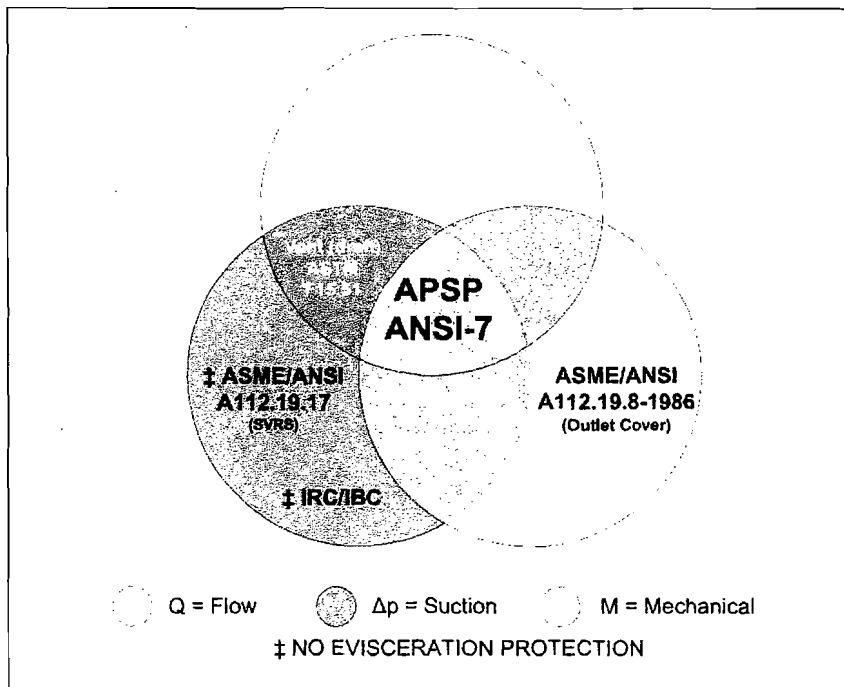


Figure 7b

The regulatory and legislative question is; how can one best protect all bathers from all hazards related to submerged suction outlets? The clear answer, as illustrated above in Figure 7b, is ANSI/APSP-7. What ANSI/APSP-7 has brought to the table is a comprehensive approach to pool construction that prevents, to the maximum extent any standard can, an entrapment from occurring. Figure 7b shows all current standards, published and under development, on a diagram against a backdrop illustrating the three underlying root causes of all entrapments. As can be seen, only ANSI/APSP-7 addresses all 3 root causes and it incorporates by way of reference all the other relevant standards shown. Based on the results achieved in the testing outlined above, the ANSI/APSP-7 *Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins* stands alone as the only standard offering comprehensive protection against all known entrapment hazards.

**Table 1 – Summary of Standards Related to Entrapment**

| Standard Title  | Brief Scope of Standard  | Current Status  |
|---|--|---|
| <p><b>ANSI/APSP-7</b> American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins</p>                               | <p>Building standard covering design and performance criteria for circulation systems, including standards for fittings, safety devices and piping to protect against all suction entrapment hazards.</p>  | <p>Approved as an American National Standard September 2006. Reaffirmed by ANSI February 2007 following a Withdrawal for Cause challenge by proponents of competing safety language. Competing language replaced by ANSI/APSP-7 in Florida.</p> |
| <p><b>ASME/ANSI A112.19.8M -1987</b> (Reaffirmed 1996) Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Appliances</p>                         | <p>Suction Fitting standard which requires UV stabilizers, flow rating based on Ponytail hair test, structural testing on new parts.</p>   | <p>Effectively for 2007, this is the current standard, because the 2007 version published March 30, 2007. The new standard will impact product Listing when they renew annually.</p>  |
| <p><b>ASME/ANSI A112.19.8 -2007</b> Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs</p>  | <p>Updated version tests a full head of hair and adds body block tests both of which are used to determine maximum flow rating. UV weathering now precedes structural testing, and finger entrapment is now evaluated using a probe to determine digit access.</p>   | <p>This version was approved March 30, 2007.</p>  |
| <p><b>ASME/ANSI A112.19.17-2002</b> Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems</p> | <p>SVRS standard which tests vacuum breaking devices on a single, eight inch suction fitting connected to two inch pipe flowing at 60 gpm. This system is then blocked with a 15 lbs buoyant blocking element which is allowed to float free the moment it touches the suction outlet fitting.<br/>An American National Standard.</p>  | <p>Current version. The ASME Task Group is working on the next version which will address known issues, including large pumps and small flow rates, water hammer and buoyancy of the blocking element.</p>                                      |
| <p><b>ASTM F2387-2003</b> Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming Pools, Spas and Hot Tubs</p>                                      | <p>SVRS standard similar to ASME's SVRS standard. Tests vacuum breaking devices on a single eight-inch suction fitting connected to two inch pipe flowing at 60 gpm through 100ft of suction pipe and 100ft of pressure pipe. This system is then blocked with a 15 lbs buoyant blocking element that is allowed to float free the moment it touches the suction outlet fitting.</p> | <p>Current version. This SVRS standard is not widely referenced or recognized because the ASME standard is an American National Standard which has gone through more structured approval process.</p>   |
| <p><b>ASTM F15.51</b> Sub-Committee developing a Vent Line and Vent Line Cap Standard.</p>  | <p>This draft vent standard will provide performance criteria for Professional Engineers to design vent systems that limit differential pressure at suction outlets. A second standard addresses the vent termination point, which can be a molded part or even a custom tile.</p>   | <p>Draft in progress. This standard will likely be referenced by other standards and within building codes.</p>   |
| <p><b>NSF 50 – 2005</b> Circulation system components and related materials for swimming pools, spas/hot tubs</p>   | <p>This standard evaluates circulation system components for performance, toxicity and efficacy. Included is a pump self-priming test that requires pumps be able to remove air from the suction piping when place 10 feet above water level.</p>  | <p>Current version. Widely referenced in APSP standards and in commercial building codes.</p>   |





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## COMPARISON OF VIRGINIA GRAME BAKER POOL AND SPA SAFETY ACT 2007\* AND ANSI/APSP-7 STANDARD

|  |   |
|--|---|
| <p><b>1404 (b)</b><br/>FEDERAL ACT <sup>2</sup><br/>Requires that <b>all</b> drain (suction outlet) covers be tested and certified to ASME/ANSI A112.19.8-2007</p>                         | <p><b>Yes</b><br/>Section 4.5</p>   |
| <p><b>1404(b)</b><br/>FEDERAL ACT<br/>Requires future covers to comply with “any successor standard” or version of 19.8</p>  | <p><b>Yes</b><br/>Section 4.5</p>   |
| <p><b>1404 (c)(1)(A)(i)</b><br/>FEDERAL ACT<br/>Requires ASME/ANSI certified covers on all drains regardless of size in <b>public</b> pools and spas</p>                                   | <p><b>Yes</b><br/>Section 1.1<br/>Section 4.5</p>   |
| <p><b>1404 (c)(1)(A)(ii)(V)</b><br/>FEDERAL ACT<br/>Specifically allows for the disablement of drain(s) thus creating a drainless pool and eliminating the potential entrapment hazard</p> | <p><b>Yes</b><br/>Section 6.3<br/>Section 5.2</p>   |
| <p><b>1404 (c)(1)(A)(ii)</b><br/>FEDERAL ACT<br/><b>Public</b> pools and spas with a single drain that is not unblockable to have added protection</p>                                     | <p><b>Yes</b><br/>Section 1.1<br/>Section 6.3<br/>Note: single blockable drain prohibited in new construction</p> |

|   |   |
|---|---|
| <p><b>1404 (c)(1)(A)(ii) (I-VI)</b><br/> <b>FEDERAL ACT</b><br/> Allows all options recognized in ASME/ANSI A112.19.17 to protect single drain installations in <b>public</b> pools and spas</p>  | <p><b>Yes</b><br/> Section 7</p>  |
| <p><b>1404 (c)(1)(A)(ii) (I-VI)</b><br/> <b>FEDERAL ACT</b><br/> Allows all devices that comply with ASTM F2387 to protect single drain installations in <b>public</b> pools and spas</p>   | <p><b>Yes</b><br/> Section 7.1</p>  |
| <p><b>1404 (c)(1)(A)(ii)</b><br/> <b>FEDERAL ACT</b><br/> Recognizes that Safety Vacuum release System (SVRS) or other devices are not required on <b>public</b> pools or spas with multiple drains or an unblockable drain</p>   | <p><b>Yes</b><br/> Section 5.5.2</p>  |
| <p><b>1406(a)(1)(A)(iii)</b><br/> <b>STATE VOLUNTARY GRANT PROGRAM<sup>s</sup></b><br/> Applies to <b>residential</b> pools and spas only if participating states have enacted minimum state laws called for by CPSC<br/> Expressly permits pools without any main drains</p> | <p><b>Yes</b><br/> Section 5.2</p>  |
| <p><b>1406(a)(1)(A)(iii)</b><br/> <b>STATE VOLUNTARY GRANT PROGRAM</b><br/> New construction to have multiple drains, unblockable drain or no drain</p>   | <p><b>Yes</b><br/> Section 5</p>  |
| <p><b>1406(a)(1)(A)(iv)</b><br/> <b>STATE VOLUNTARY <u>GRANT PROGRAM</u></b><br/> Requires ASME/ANSI certified covers on all drains that are not unblockable</p>  | <p><b>Yes</b><br/> Section 4.5<br/><br/> Note: requires certified covers on all drains.</p> |
| <p><b>1406(a)(1)(A)(iv)</b><br/> <b>STATE VOLUNTARY <u>GRANT PROGRAM</u></b><br/> Requires such covers to comply with “any successor standard” or version of ASME/ANSI A112.19.8</p>  | <p><b>Yes</b> Section 4.5</p>   |
| <p><b>1406(d)(1)(A-F)</b><br/> <b>STATE VOLUNTARY <u>GRANT PROGRAM</u></b><br/> Existing pools with single drain that is not unblockable to have added protection</p>   | <p><b>Yes</b><br/> Section 6.3</p>  |

|  |                                      |
|--|--------------------------------------|
| <p><b>1406(d)(1)(A-F)</b><br/> <b>STATE VOLUNTARY GRANT PROGRAM</b><br/> Allows all options recognized in ASME/ANSI A112.19.17 to protect single drain installations in residential pools and spas</p>                 | <p><b>Yes</b><br/> Section 7</p>     |
| <p><b>1406(d)(1)(A-F)</b><br/> <b>STATE VOLUNTARY GRANT PROGRAM</b><br/> Allows all devices that comply with ASTM F2387 to protect single drain installations in residential pools and spas</p>                        | <p><b>Yes</b><br/> Section 7.1</p>   |
| <p><b>1406(d)(1)(A-F)</b><br/> <b>STATE VOLUNTARY GRANT PROGRAM</b><br/> Recognizes that SVRS or other devices are not required on pools or spas with multiple drains or an unblockable drain in residential pools</p> | <p><b>Yes</b><br/> Section 5.5.2</p> |

<sup>1</sup> ANSI/APSP-7 2006 Standard for Suction Entrapment Avoidance in Swimming Pools, wading Pools, Spas, hot Tubs and Catch Basins.

<sup>2</sup> Federal Act refers to section 1404, which creates a Federal Swimming Pool and Spa Drain Cover Standard, and requires that public pools be equipped with certain devices.

\* The Federal Pool and Spa safety Act also known as the Virginia Graeme Baker Pool & Spa Safety Act

<sup>3</sup> Refers to section 1406, which creates a Federal "State Grant Program". To be eligible for a grant, a state must pass legislation which meets or exceeds the "minimum State law requirements" as defined in the Act.

**Stevenson, Todd**

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**From:** Carvin DiGiovanni [CDiGiovanni@APSP.org]

**Sent:** Tuesday, October 14, 2008 6:23 PM

**To:** Carvin DiGiovanni

**Subject:** Exhibit C

**Attachments:** PDC Spas - LX FIJI 2008.pdf; PSS-1 suction-distance.pdf; Scallop-suction distance.pdf; SOS-1 suction-distance.pdf; Townhouse.JPG; Bermuda.gif; Calypso.JPG; FootDimensions.doc; Gemini.JPG; hot-tub-footwells-001.gif; hot-tub-footwells-004.gif; hot-tub-footwells-005.gif; hot-tub-footwells-006.gif; hot-tub-footwells-008.gif; hot-tub-footwells-009.gif

<<PDC Spas - LX FIJI 2008.pdf>> <<PSS-1 suction-distance.pdf>> <<Scallop-suction distance.pdf>> <<SOS-1 suction-distance.pdf>> <<Townhouse.JPG>> <<Bermuda.gif>> <<Calypso.JPG>> <<FootDimensions.doc>> <<Gemini.JPG>> <<hot-tub-footwells-001.gif>> <<hot-tub-footwells-004.gif>> <<hot-tub-footwells-005.gif>> <<hot-tub-footwells-006.gif>> <<hot-tub-footwells-008.gif>> <<hot-tub-footwells-009.gif>>

The message is ready to be sent with the following file or link attachments:

PDC Spas - LX FIJI 2008

PSS-1 suction-distance

Scallop-suction distance

SOS-1 suction-distance

Townhouse

Bermuda

Calypso

FootDimensions

Gemini

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hot-tub-footwells-004

hot-tub-footwells-005

hot-tub-footwells-006

hot-tub-footwells-008

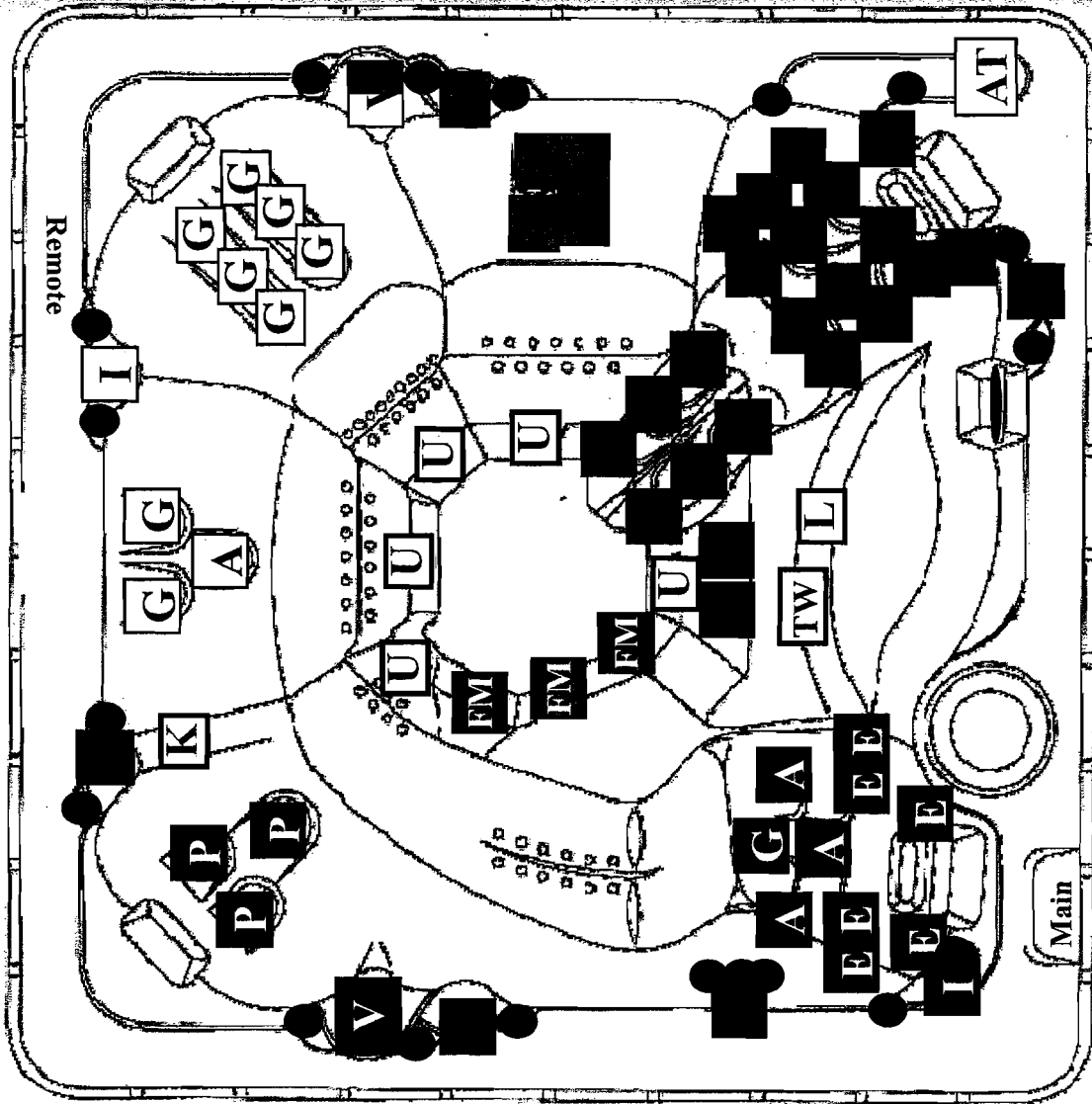
hot-tub-footwells-009

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# LX SERIES

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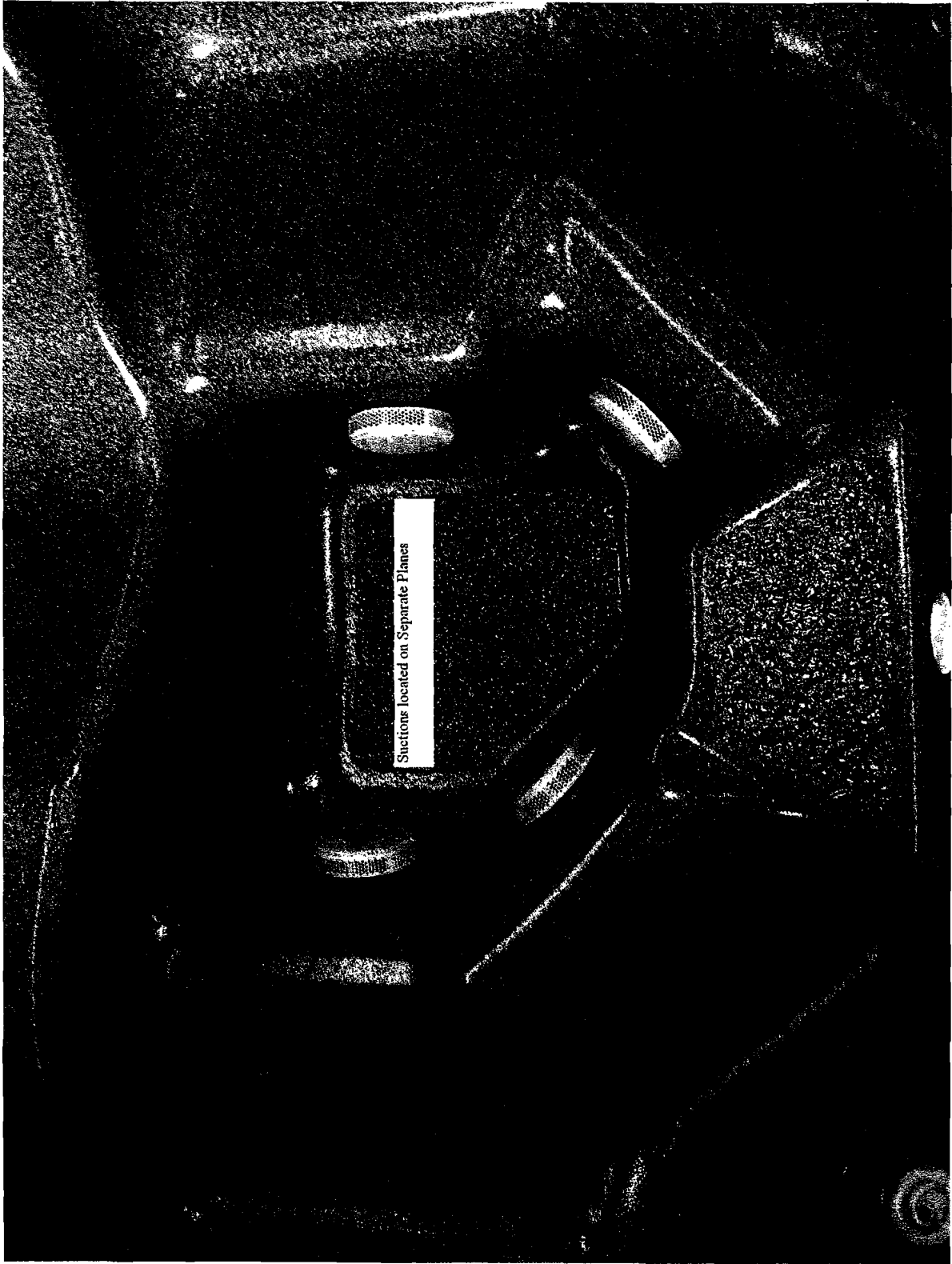


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| 1   | AT     | AROMATHERAPY                    |          |
| 26  | E      | LARGE EURO JET WITH EYEBALL     | ■ JETS 1 |
| 3   | FM     | FOOT JET                        | ■ JETS 2 |
| 11  | G      | MEGA'SSAGE JET                  | □ JETS 2 |
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| 1   | K      | MINI SKIMMER                    | ■ JETS 3 |
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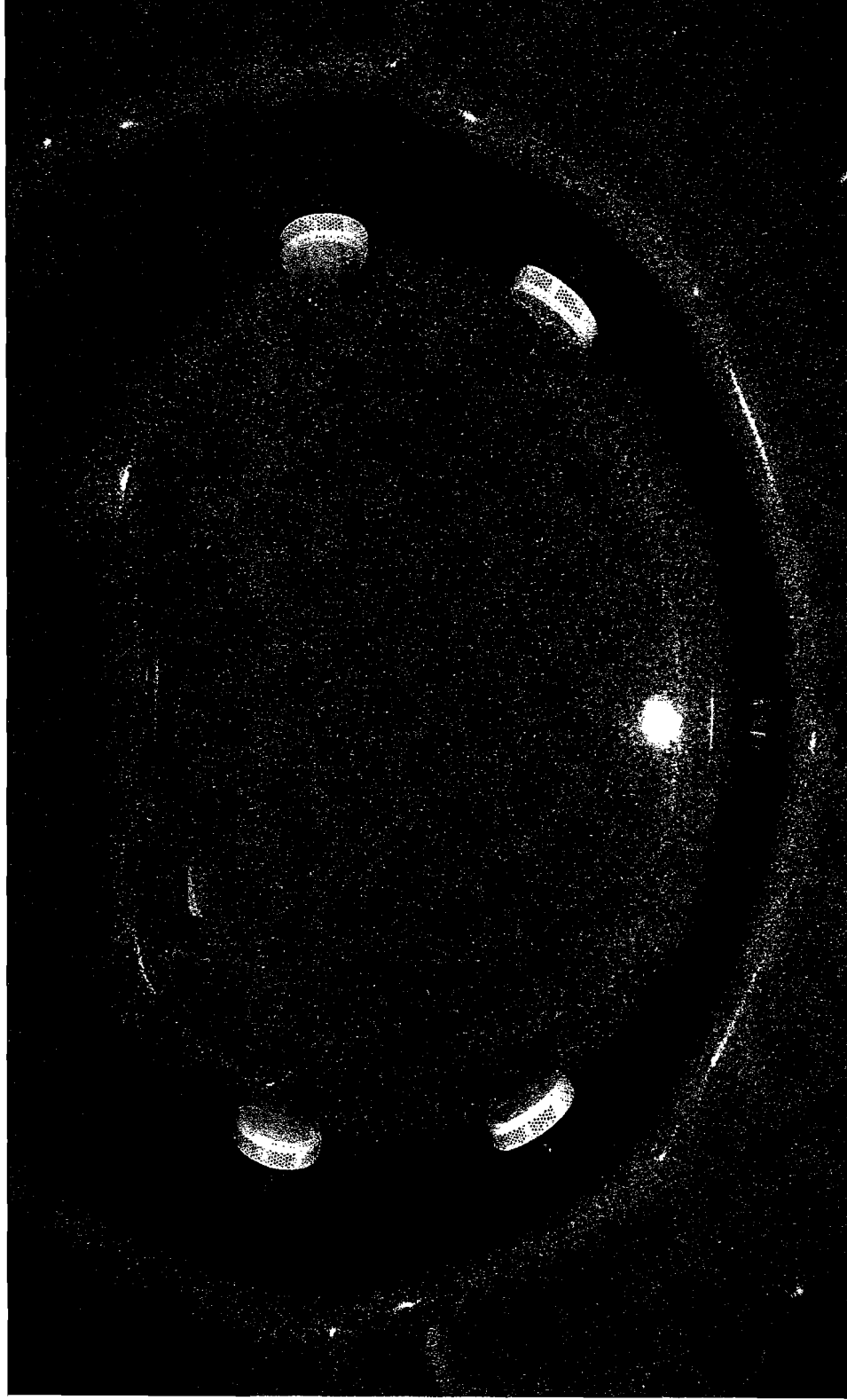
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spas

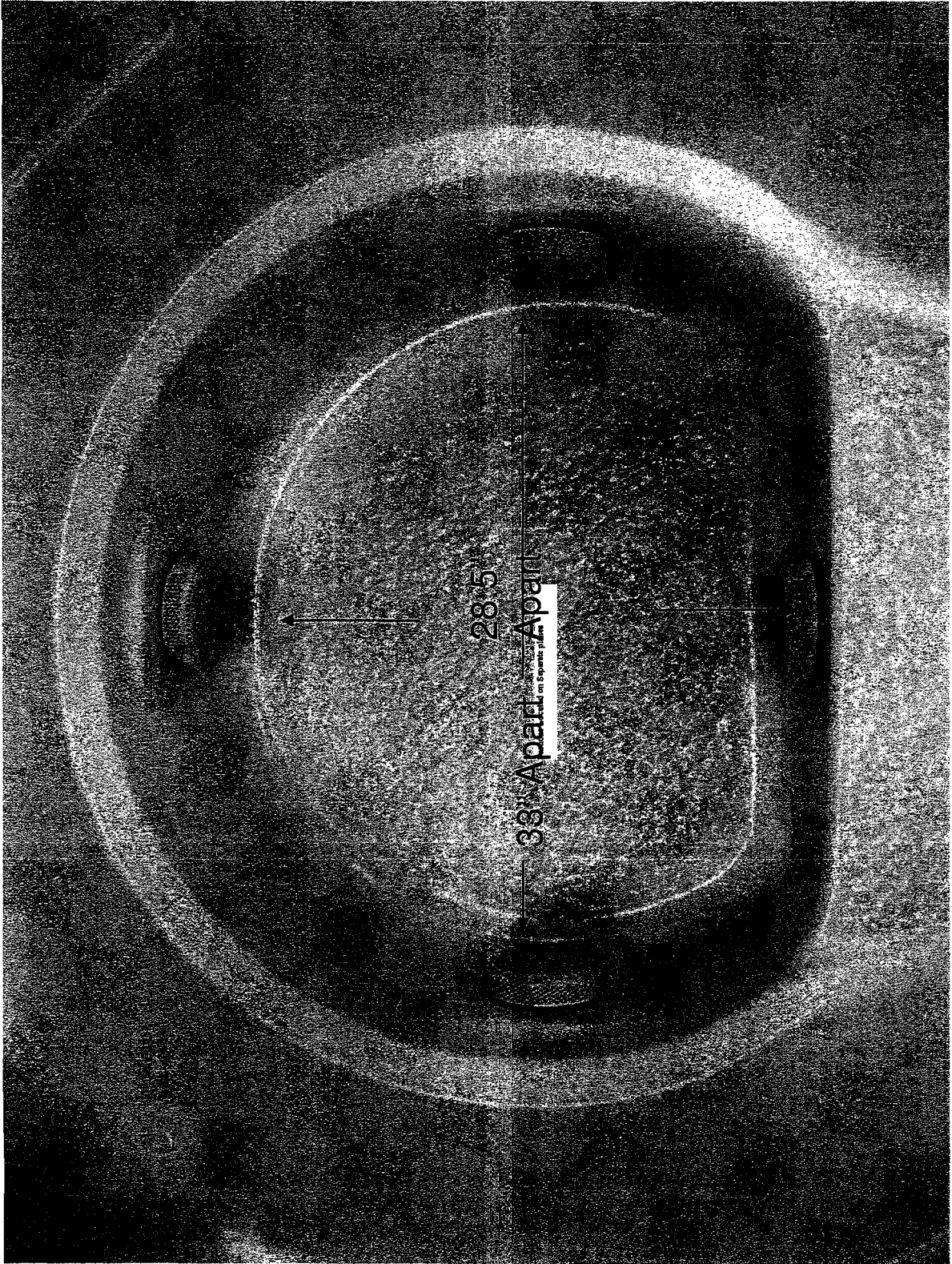
Manufacturer reserves the right to alter product without advance notice.



Suction located on Separate Planes

# Scallop Spill-Over

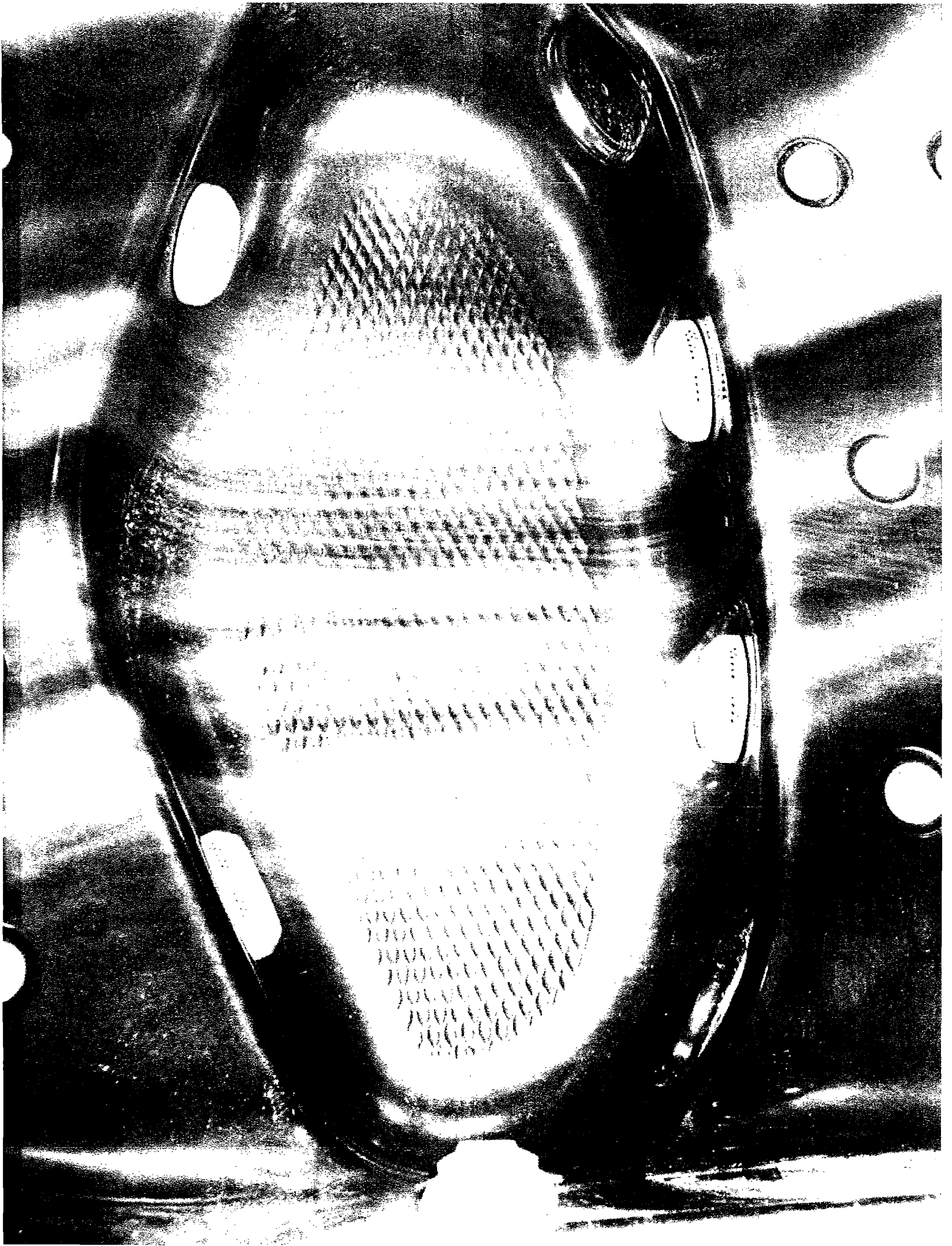


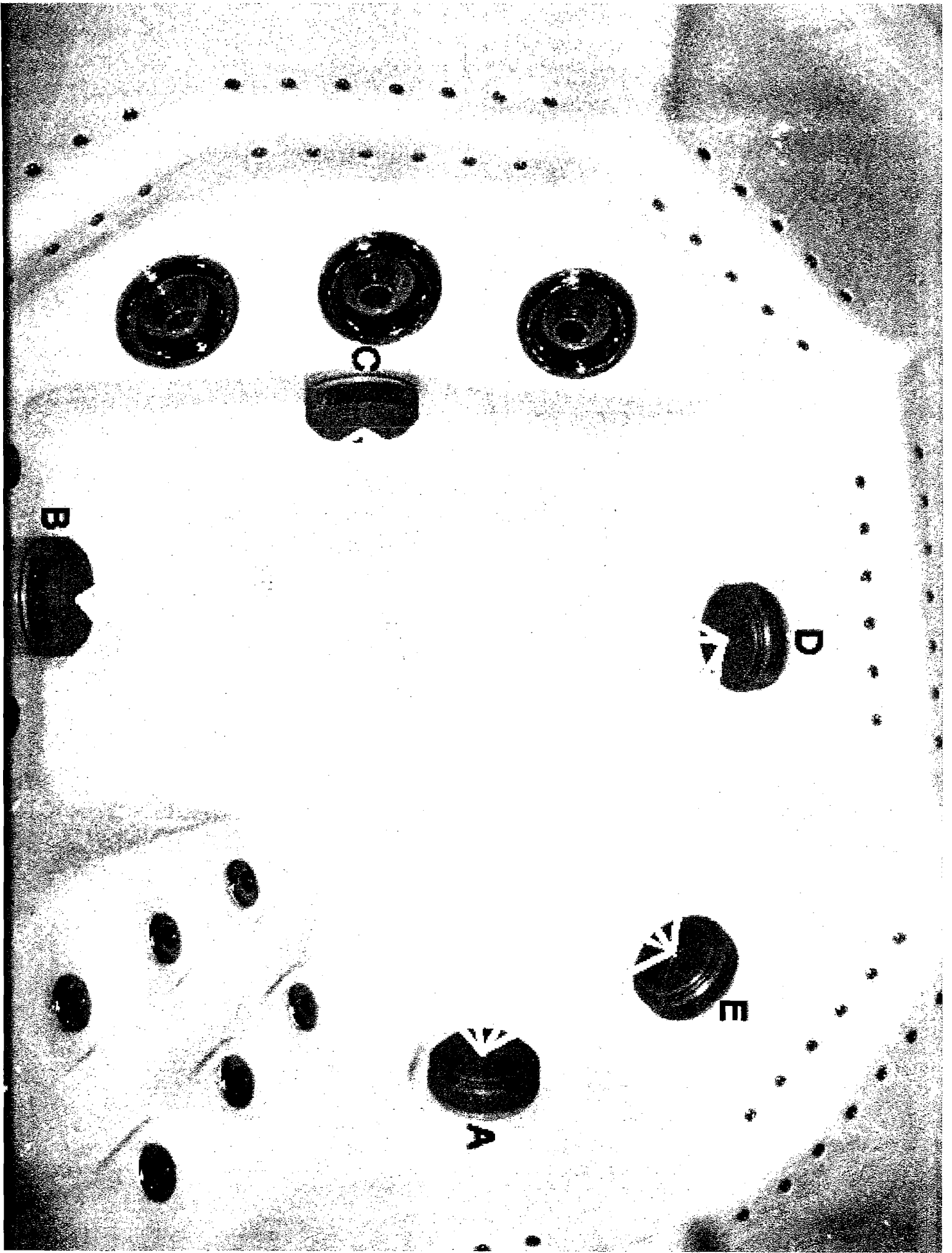


28.5

33" Apart on Center Apart







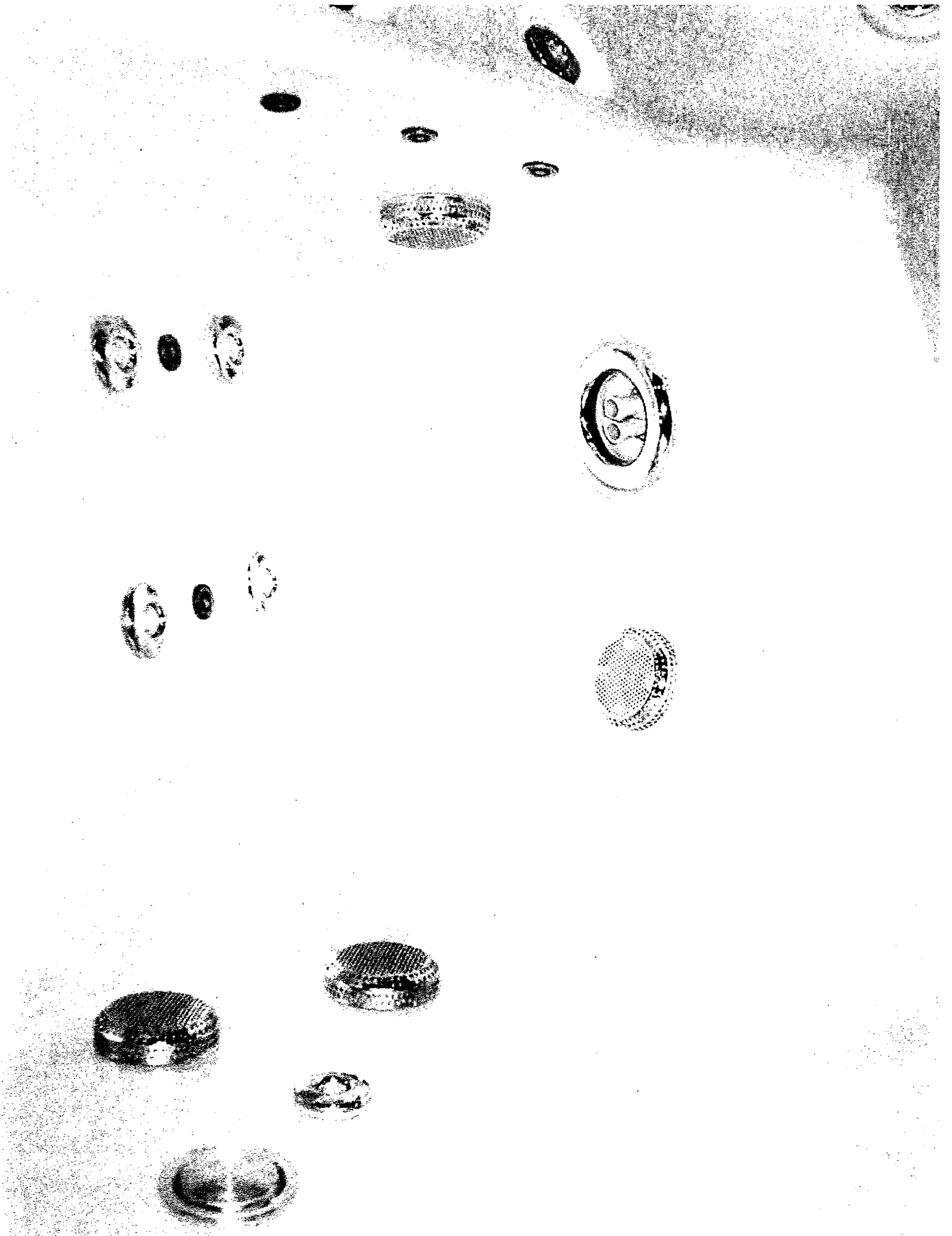
**B**

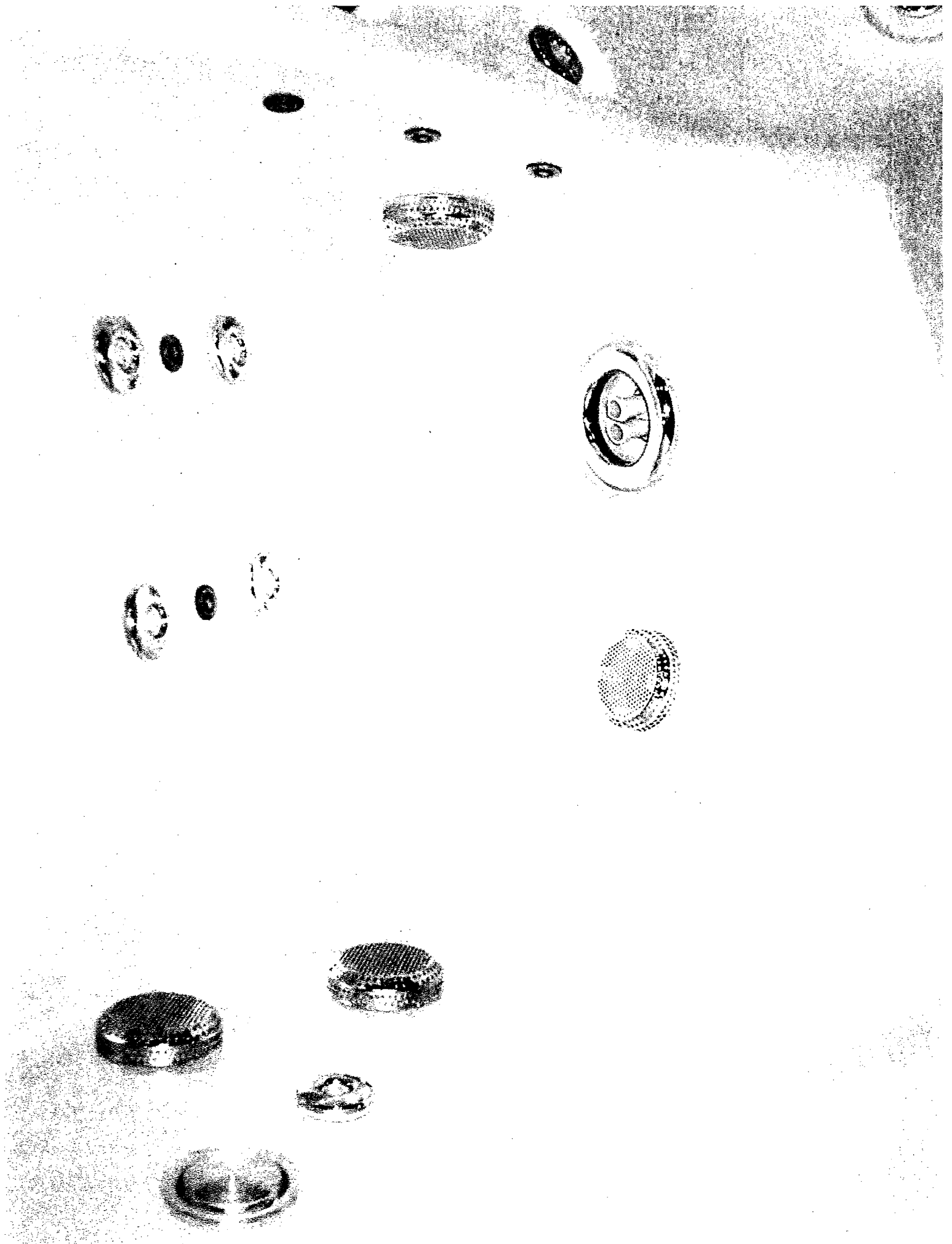
**D**

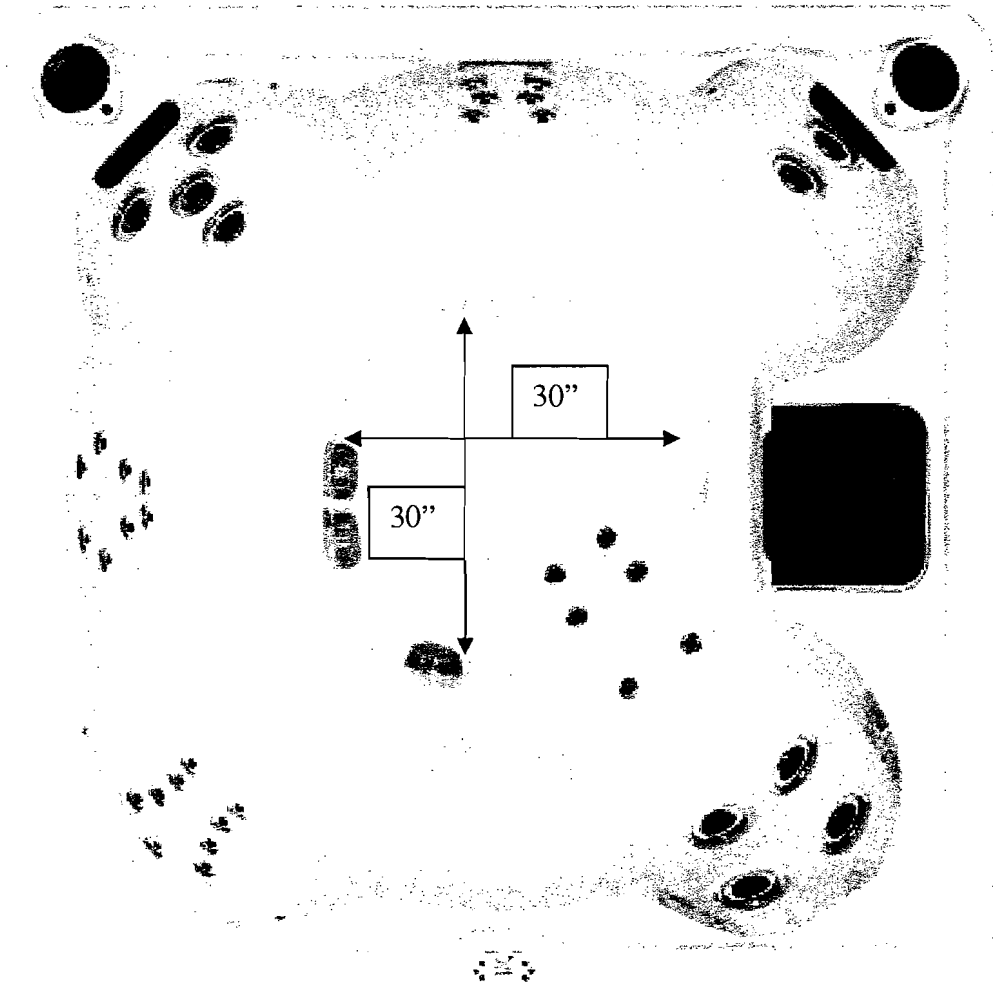
**E**

**A**

**C**

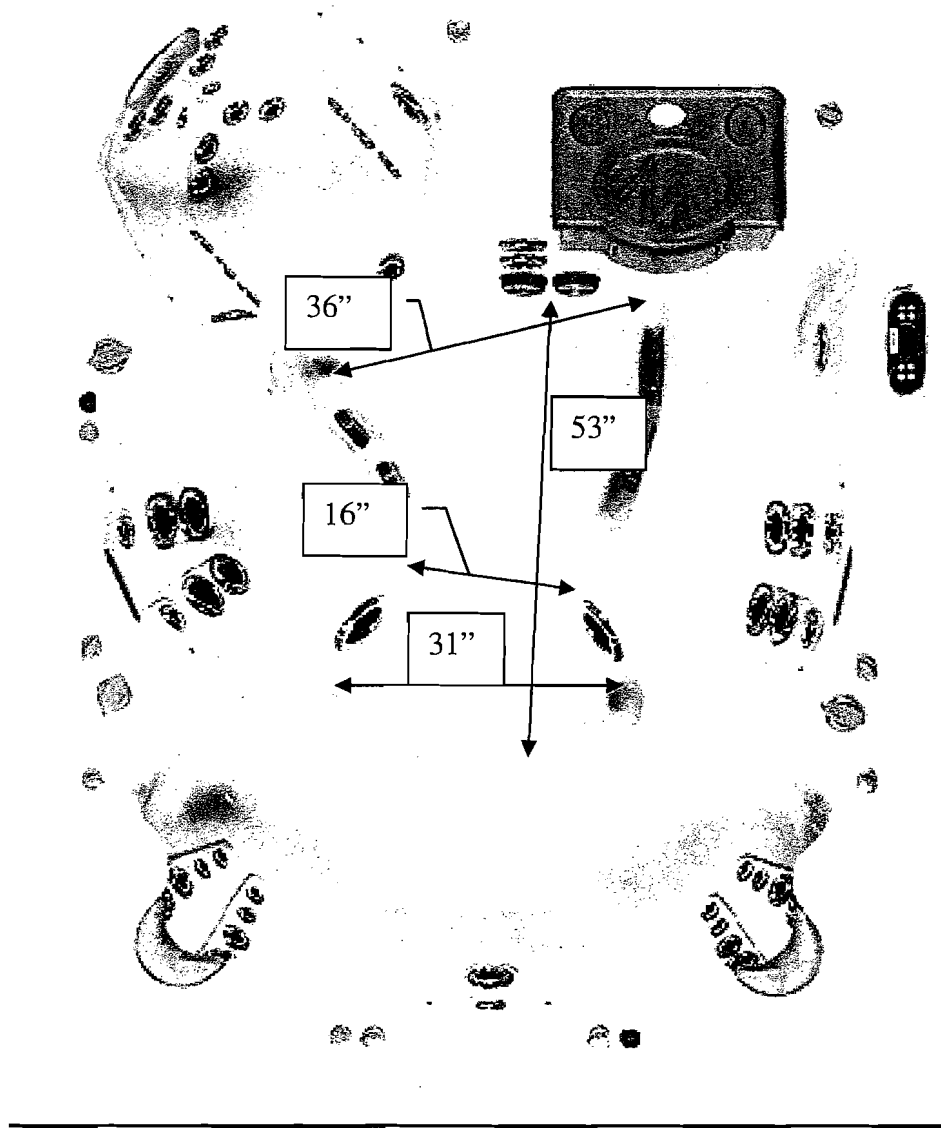






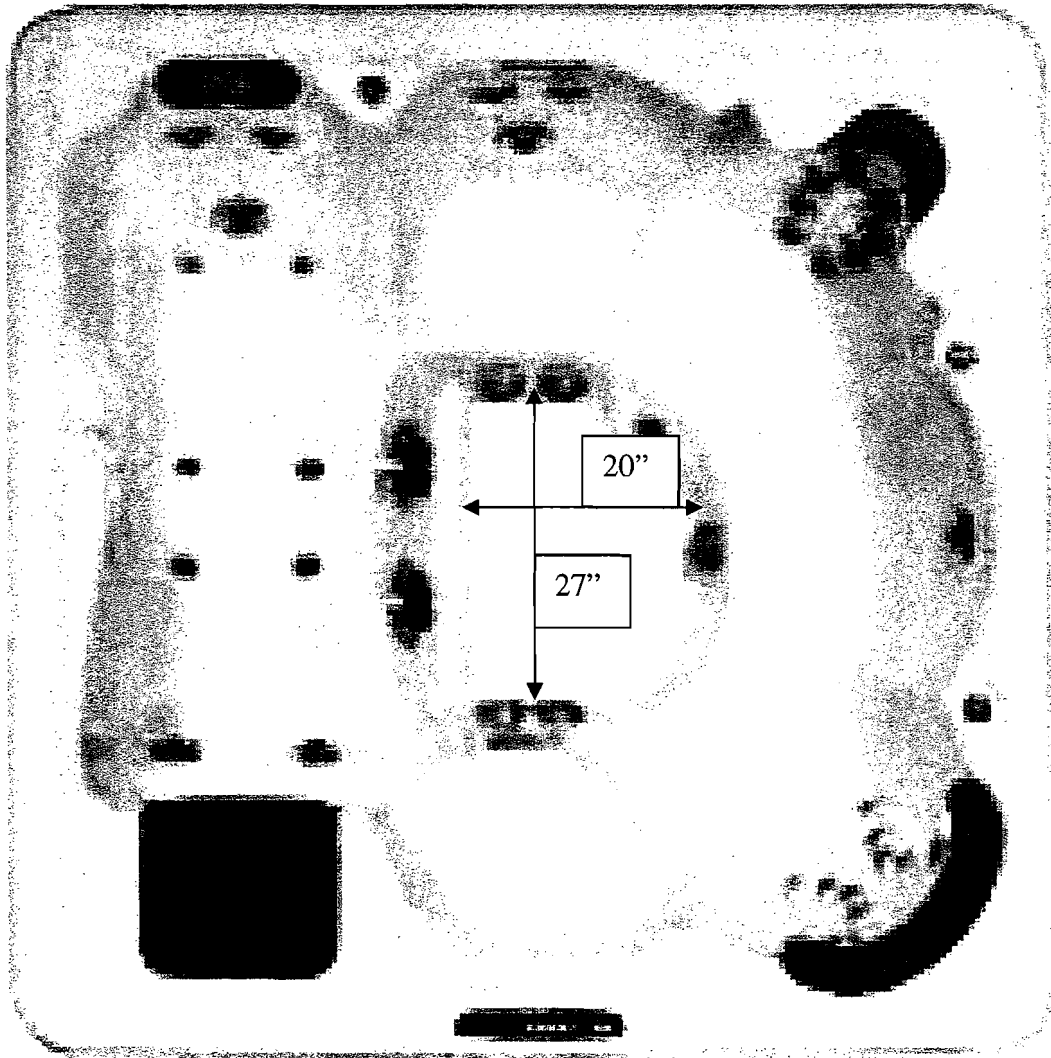
Circumference = 101"  
3 Suctions

Inspire



Circumference = 165"  
5 Suctions

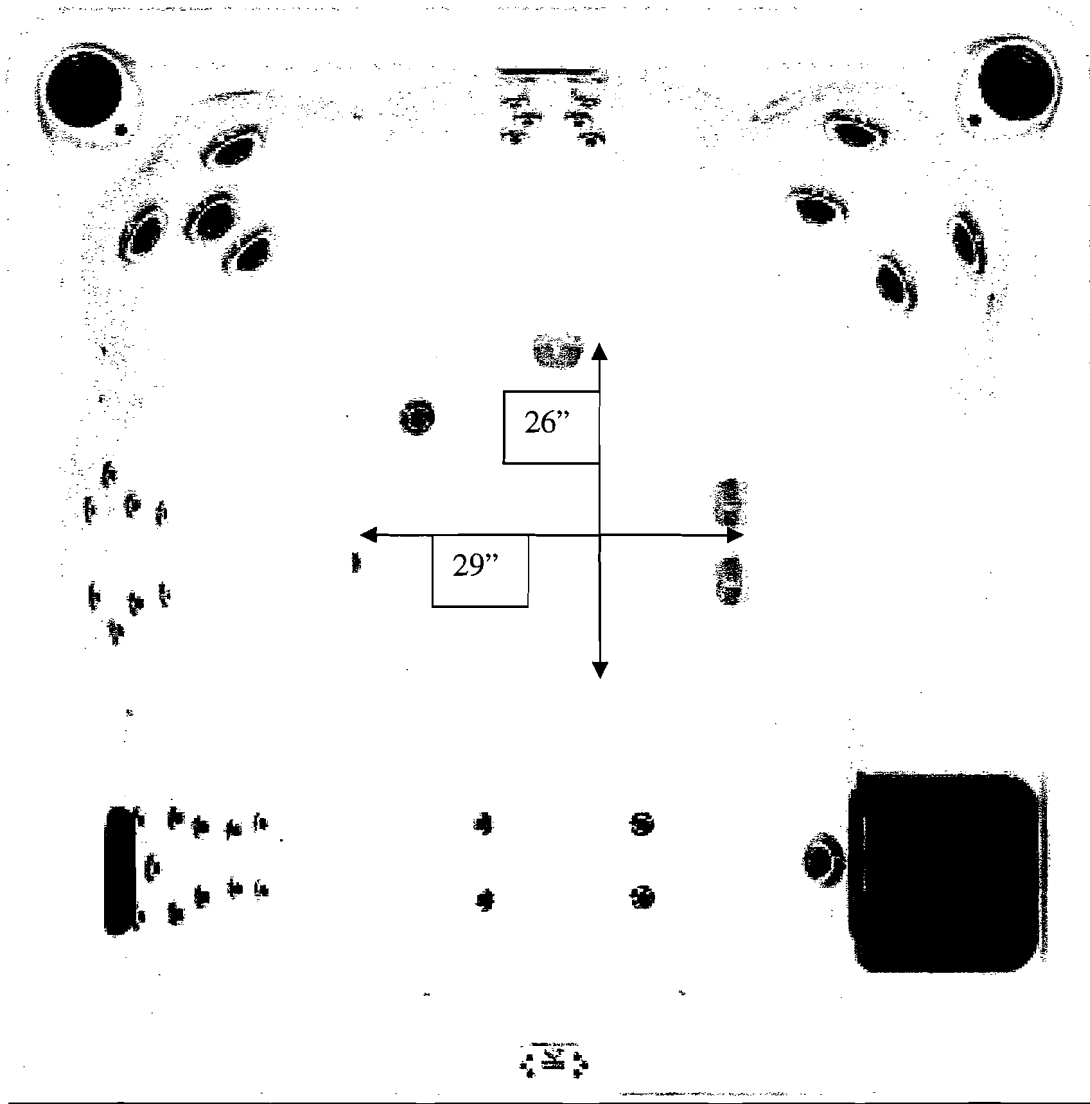
LSX1050



Circumference = 85"

6 Suctions (Picture does not show four pump configuration.)

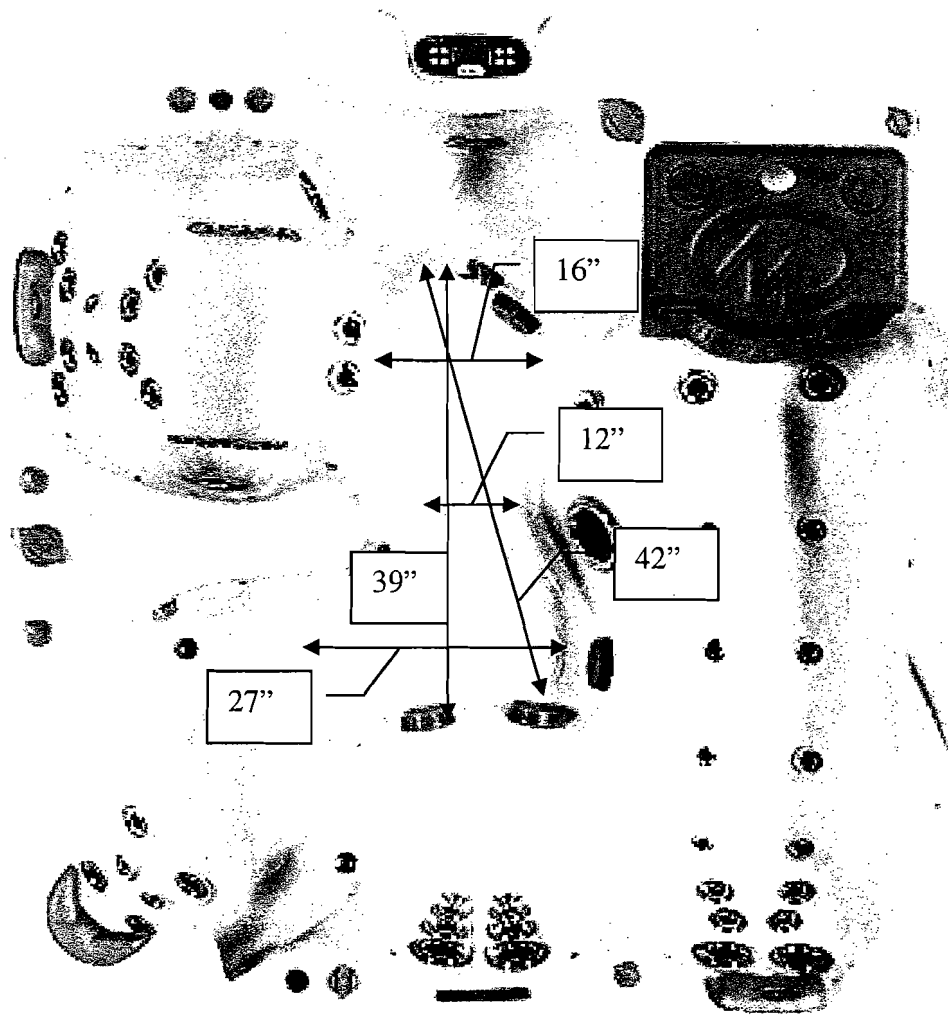
Exeter



Circumference = 98"  
3 Suctions

## Enterprise

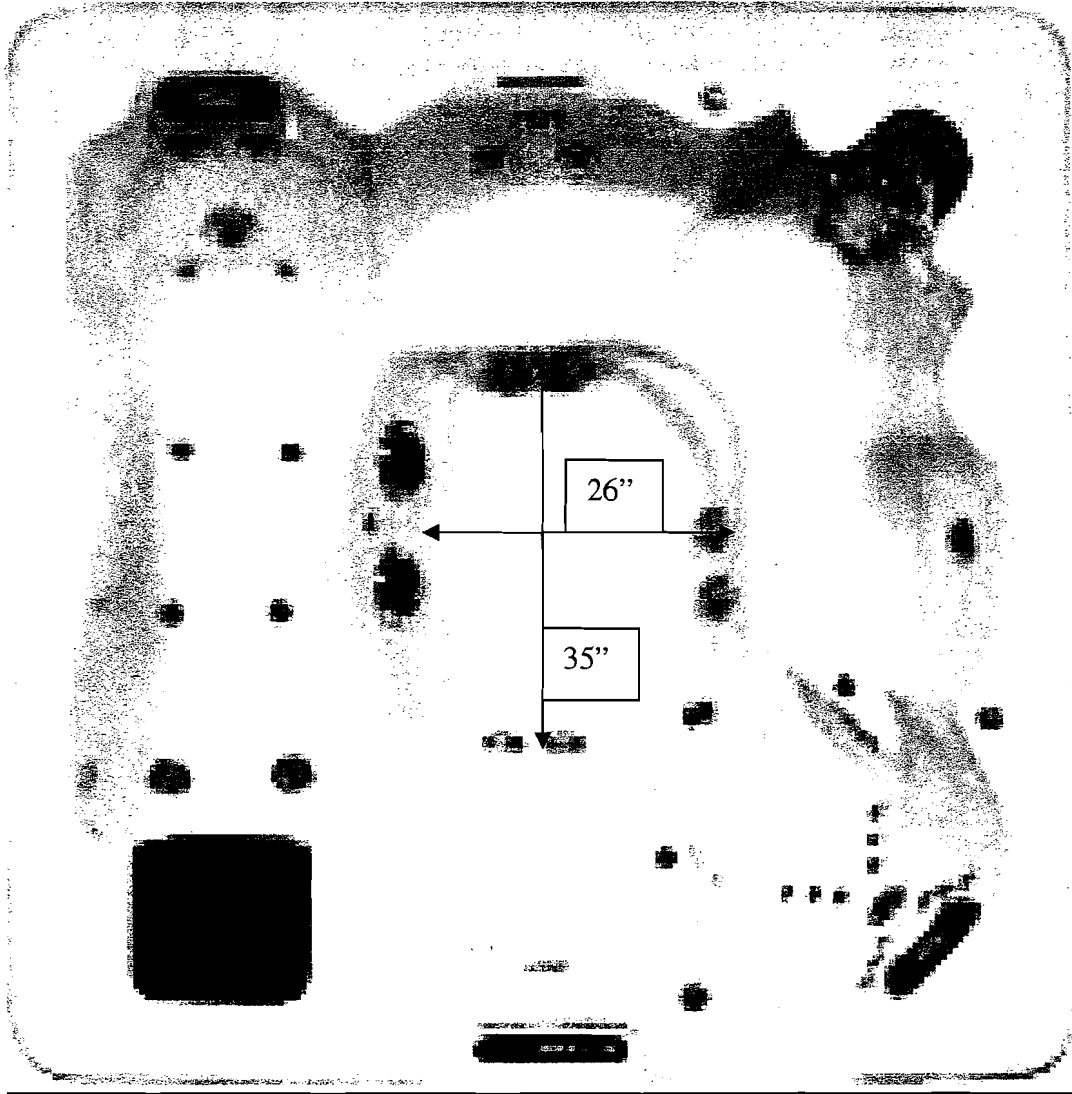




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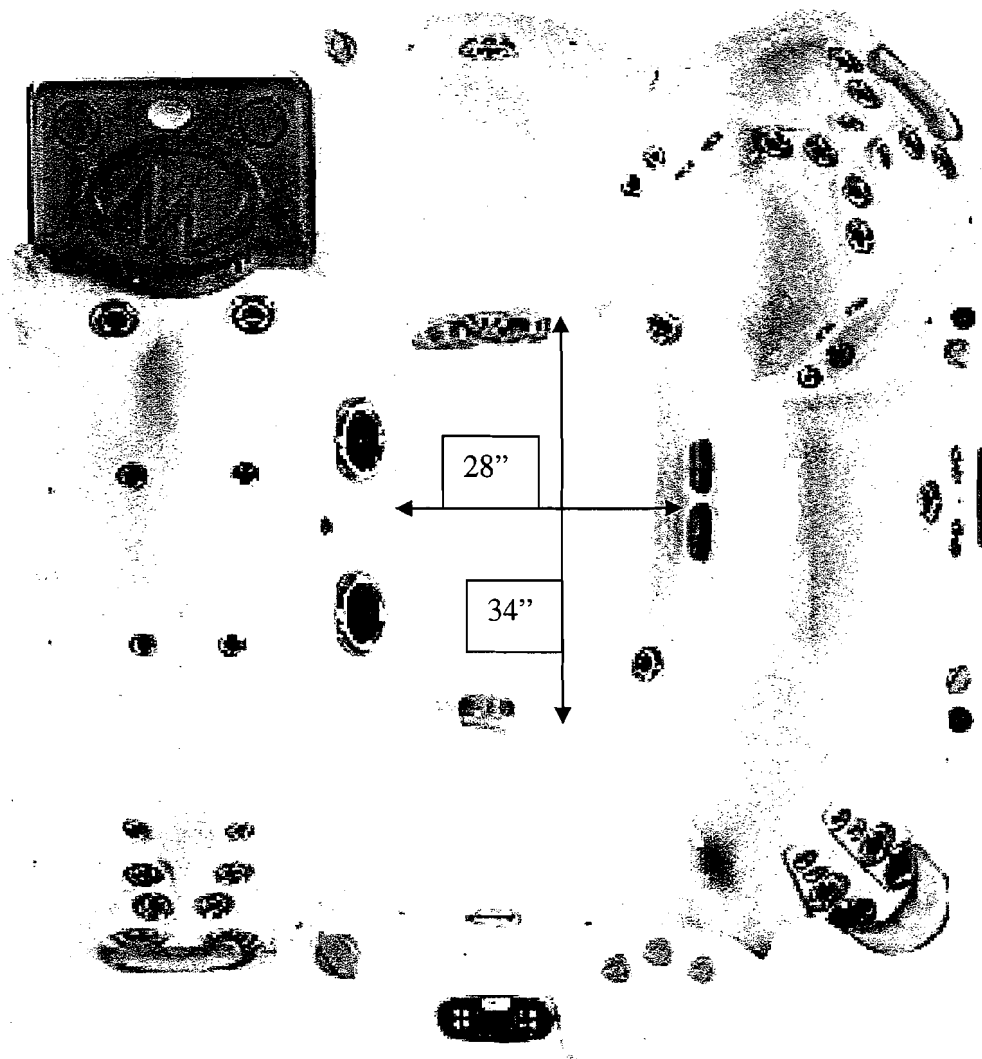
Circumference = 111"  
5 Suctions

LSX



Circumference = 104"  
6 Suctions

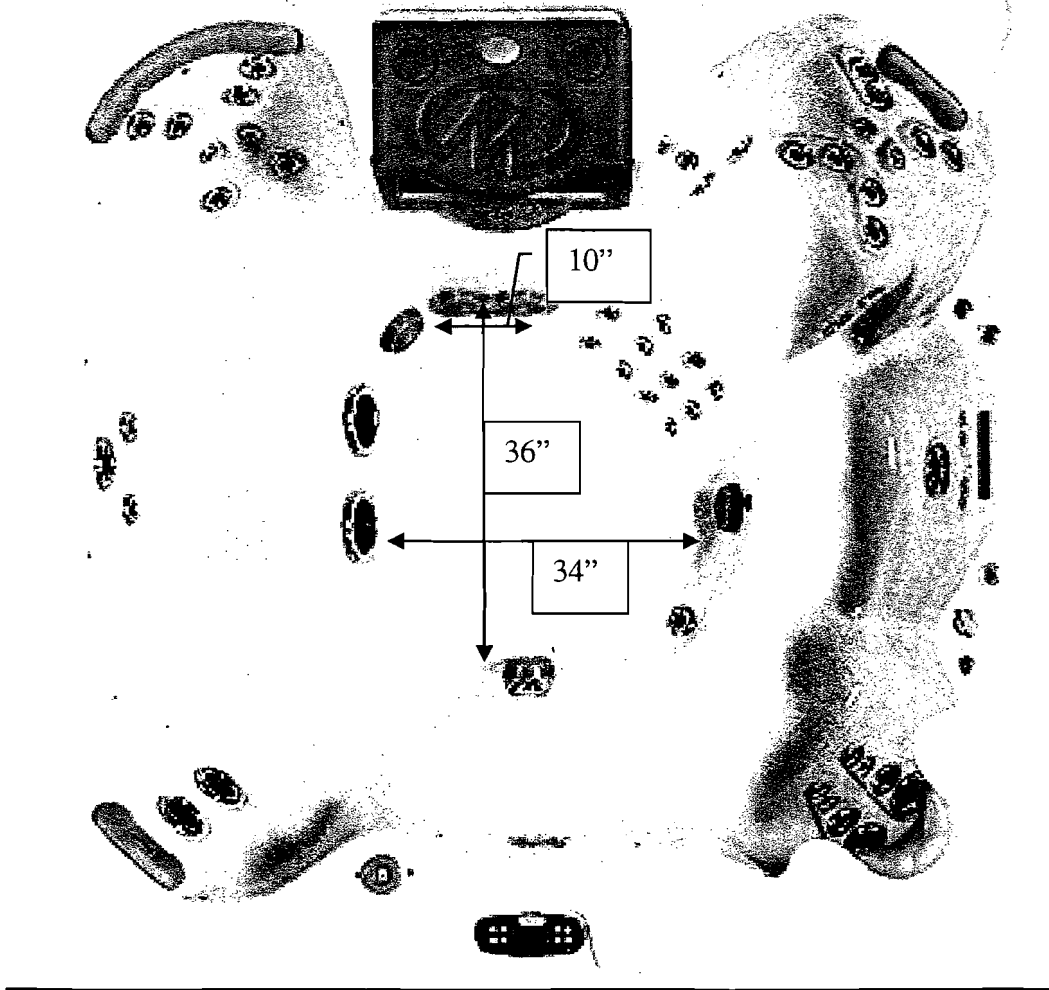
Portsmouth



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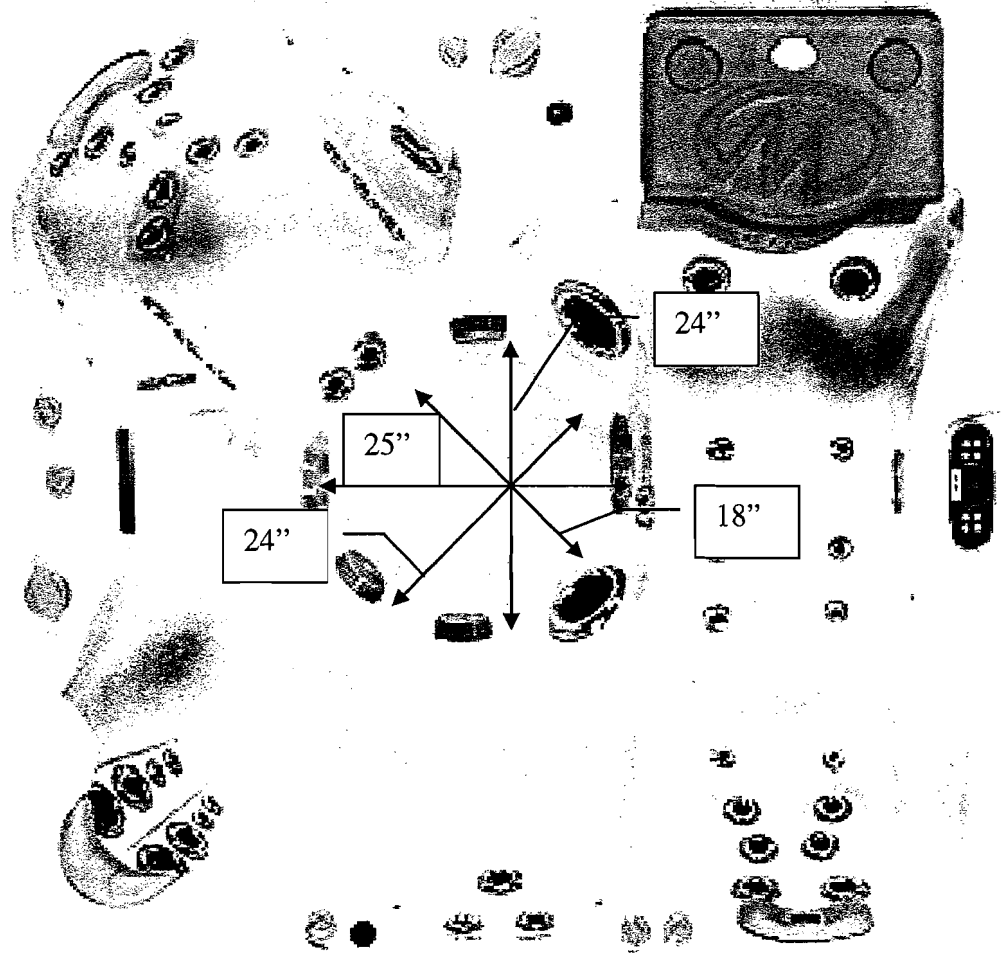
Circumference = 110"  
5 Suctions

LSX800



Circumference = 118"  
5 Suctions

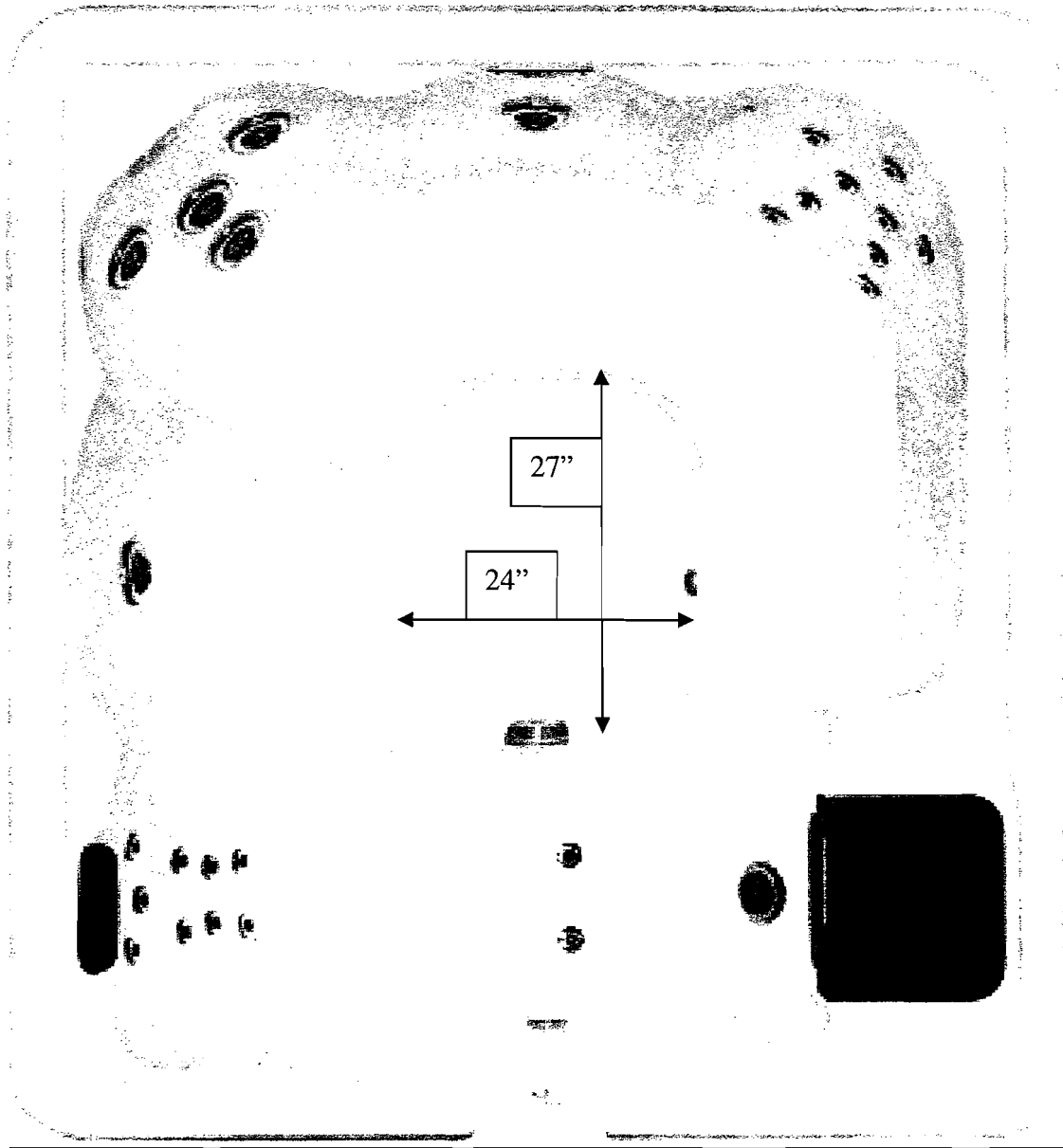
LSX850



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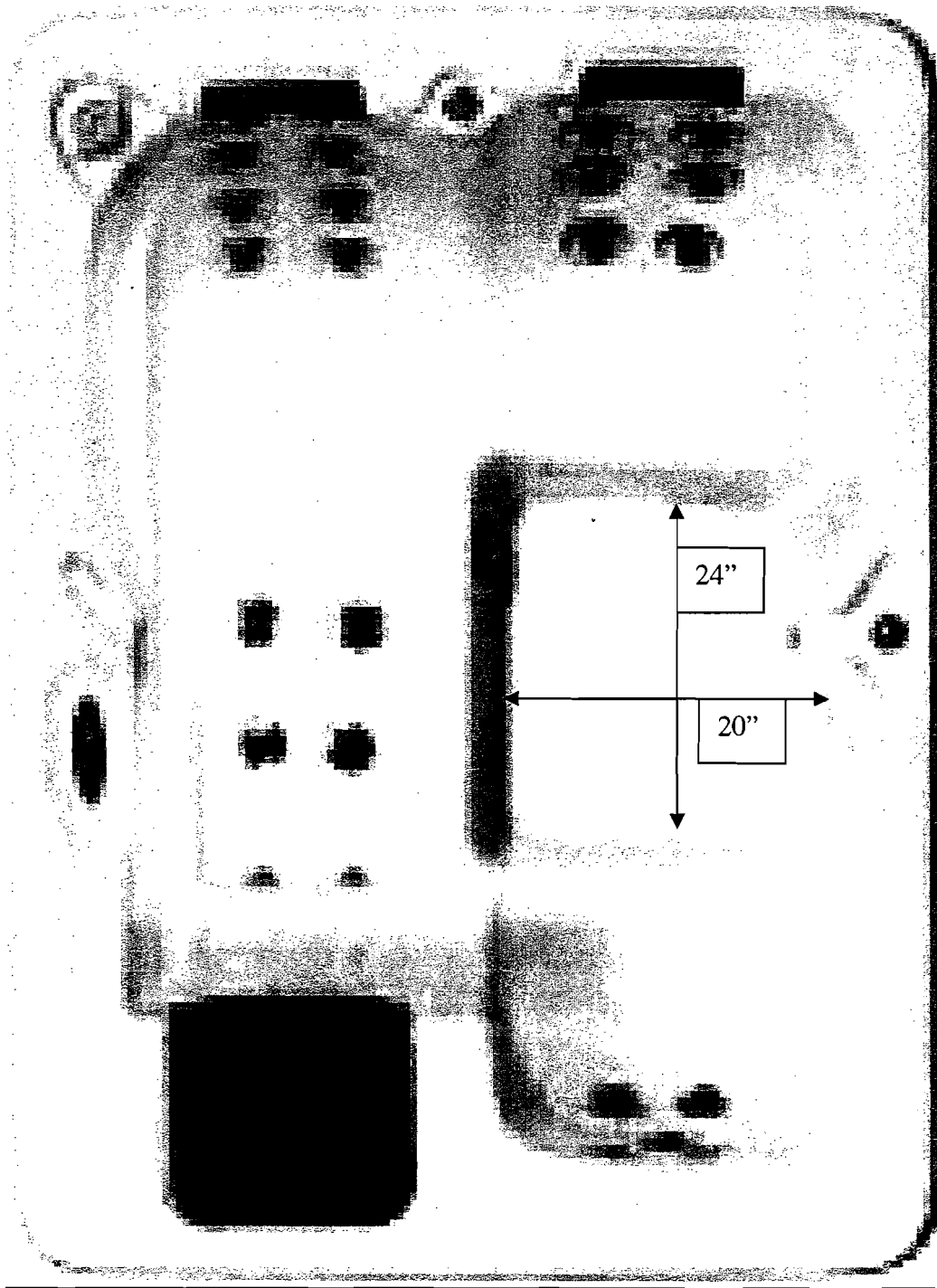
Circumference = 80"  
5 Suctions

## LSX700



Circumference = 88"  
1 Suction

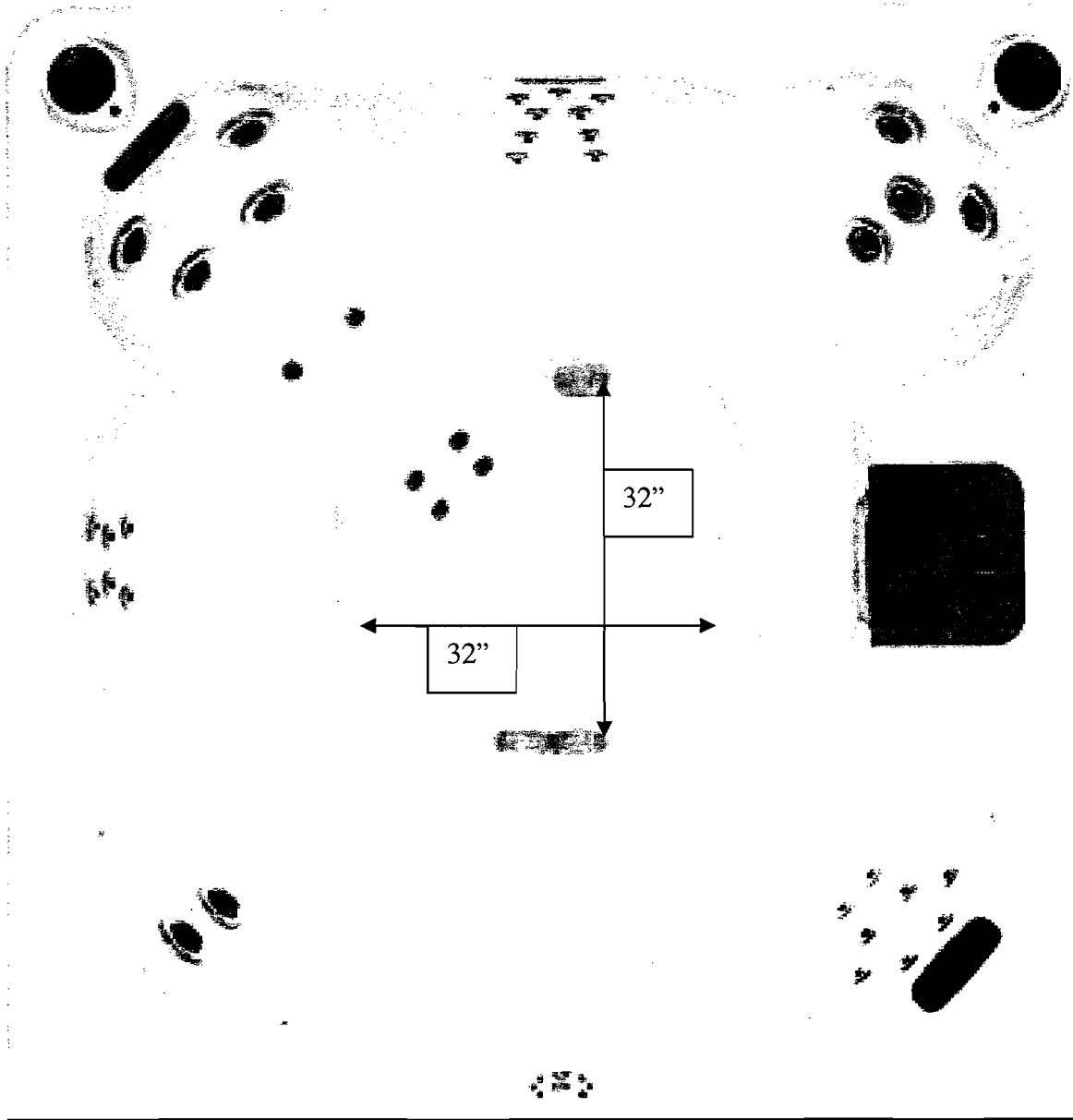
Envision



Circumference = 78"

2 Suctions (Picture does not show two pump configuration.)

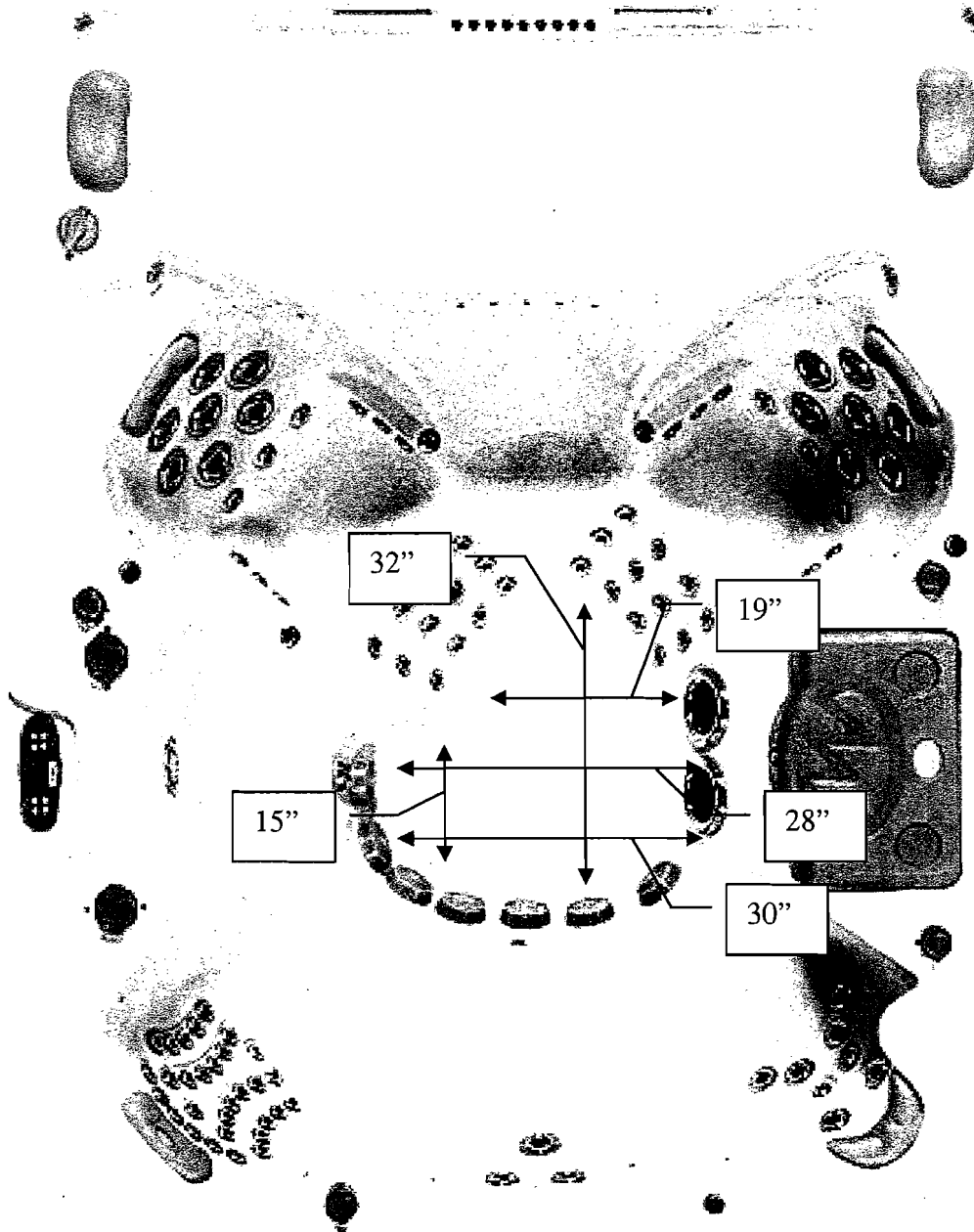
Mystic



Circumference = 106"  
3 Suctions

Intrepid

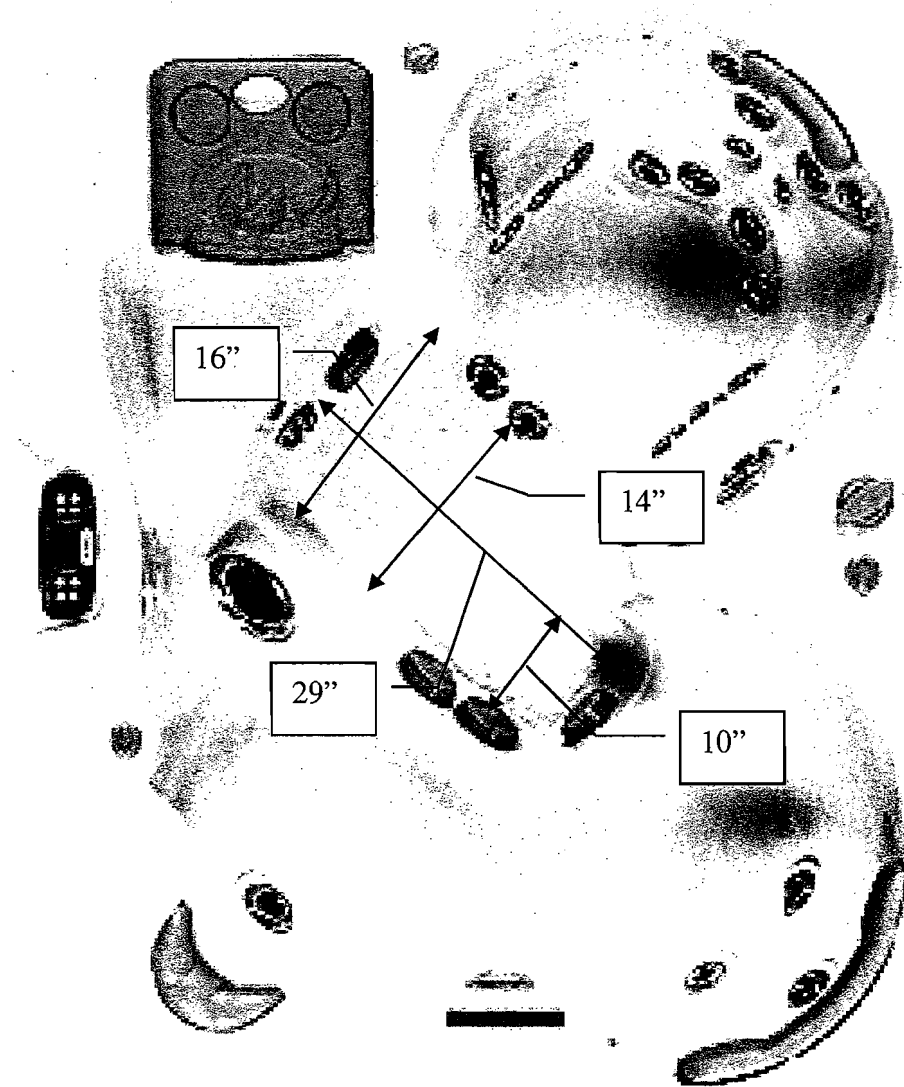




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Circumference = 90"  
7 Suctions

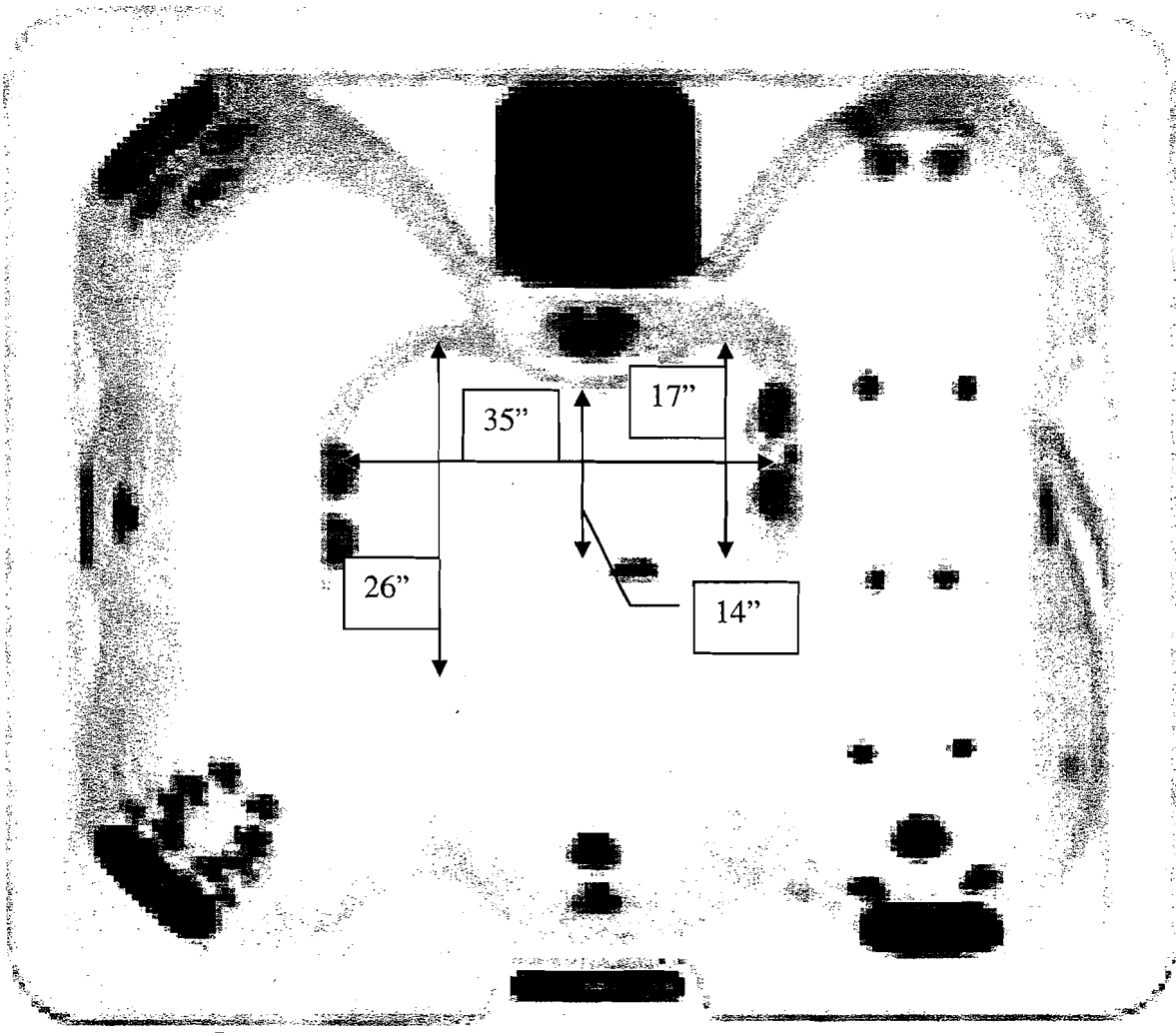
## LSX1000



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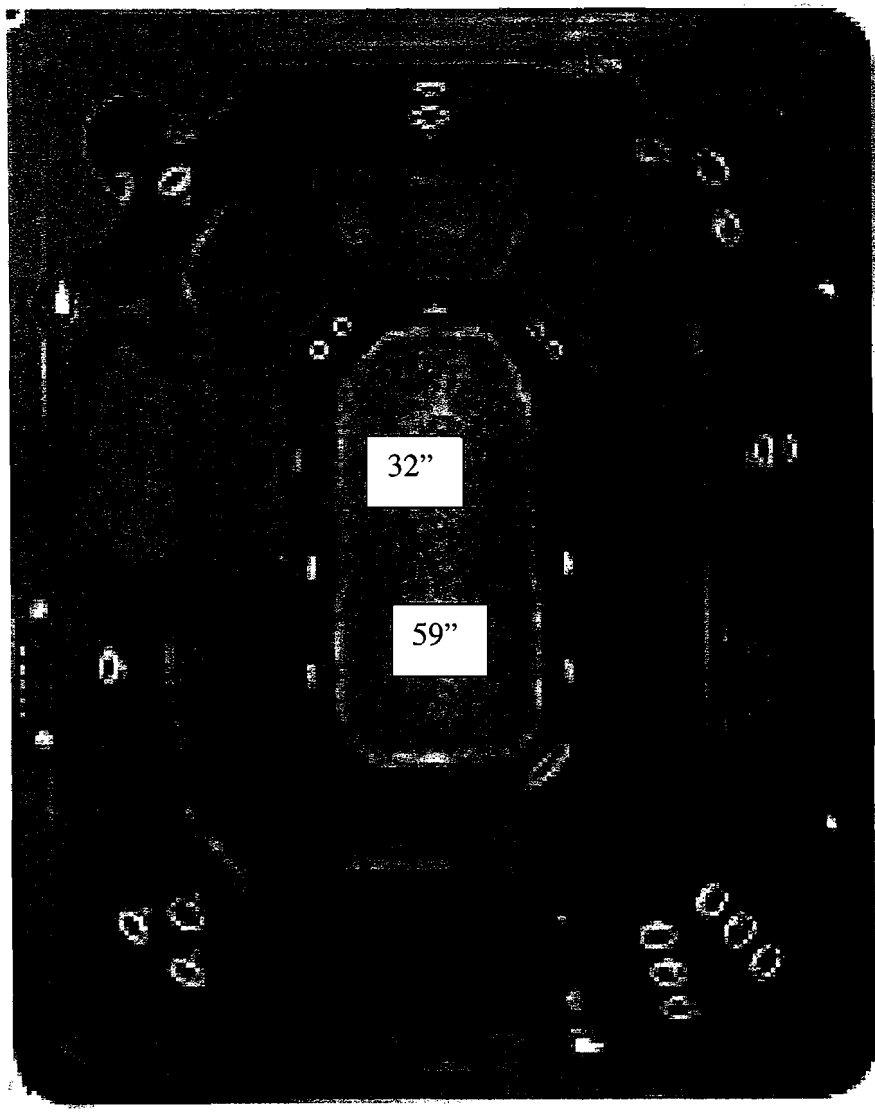
Circumference = 78"  
4 Suctions

LSX557



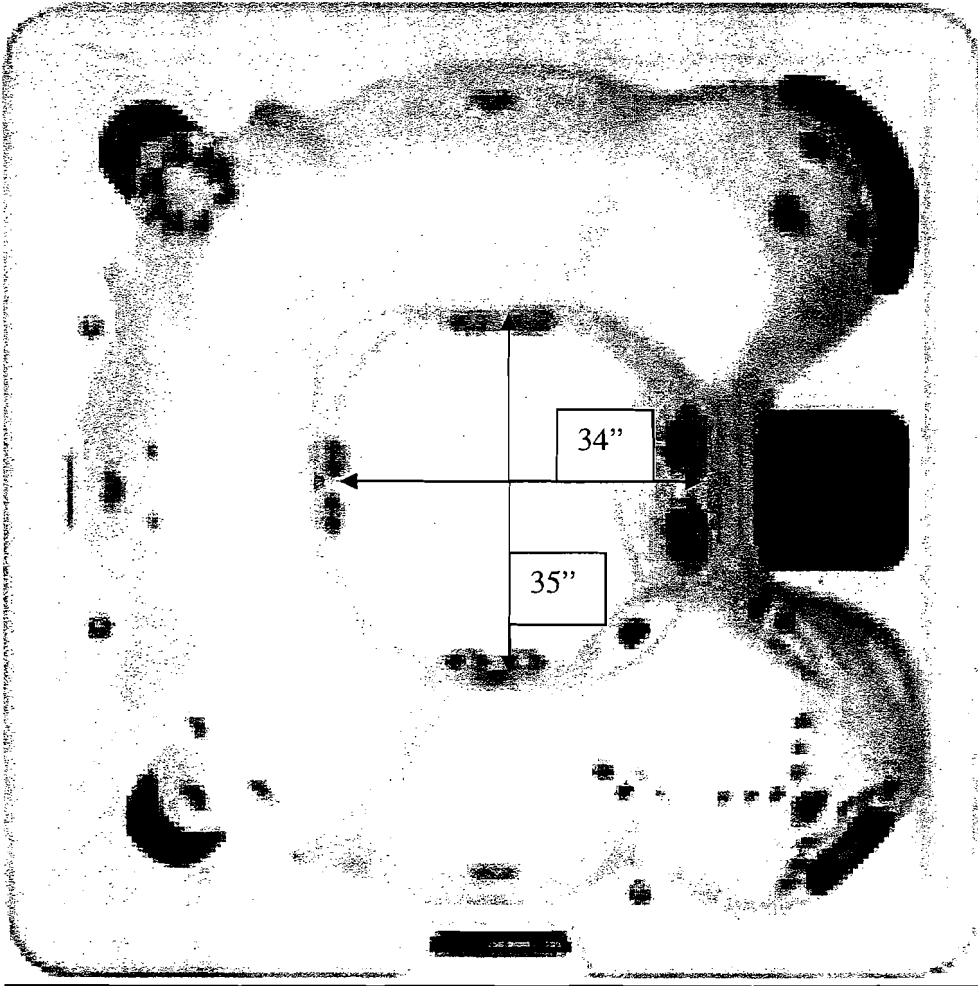
Circumference = 106"  
4 Suctions

## Manchester



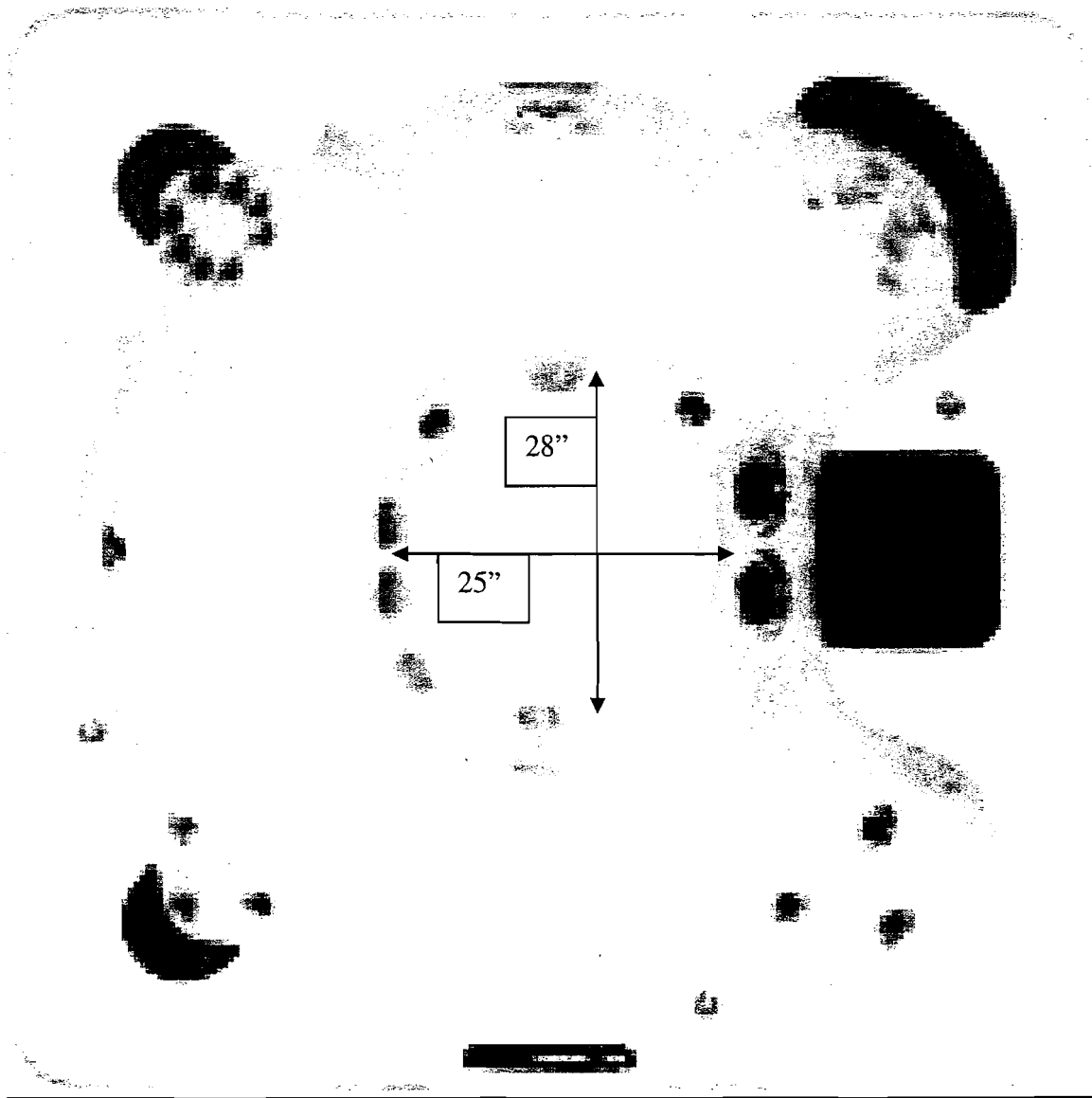
Circumference = 162"  
5 Suctions

East Hampton



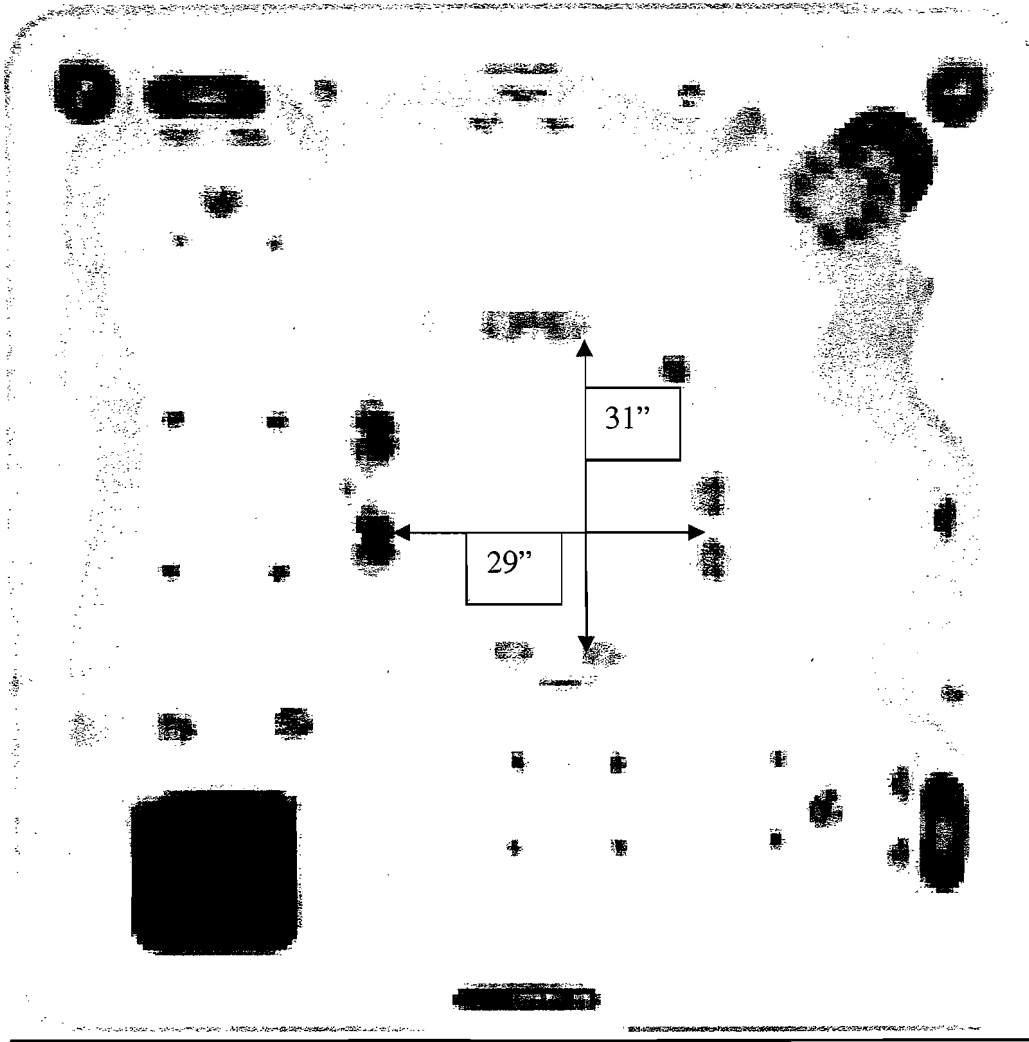
Circumference = 112"  
6 Suctions

Windsor



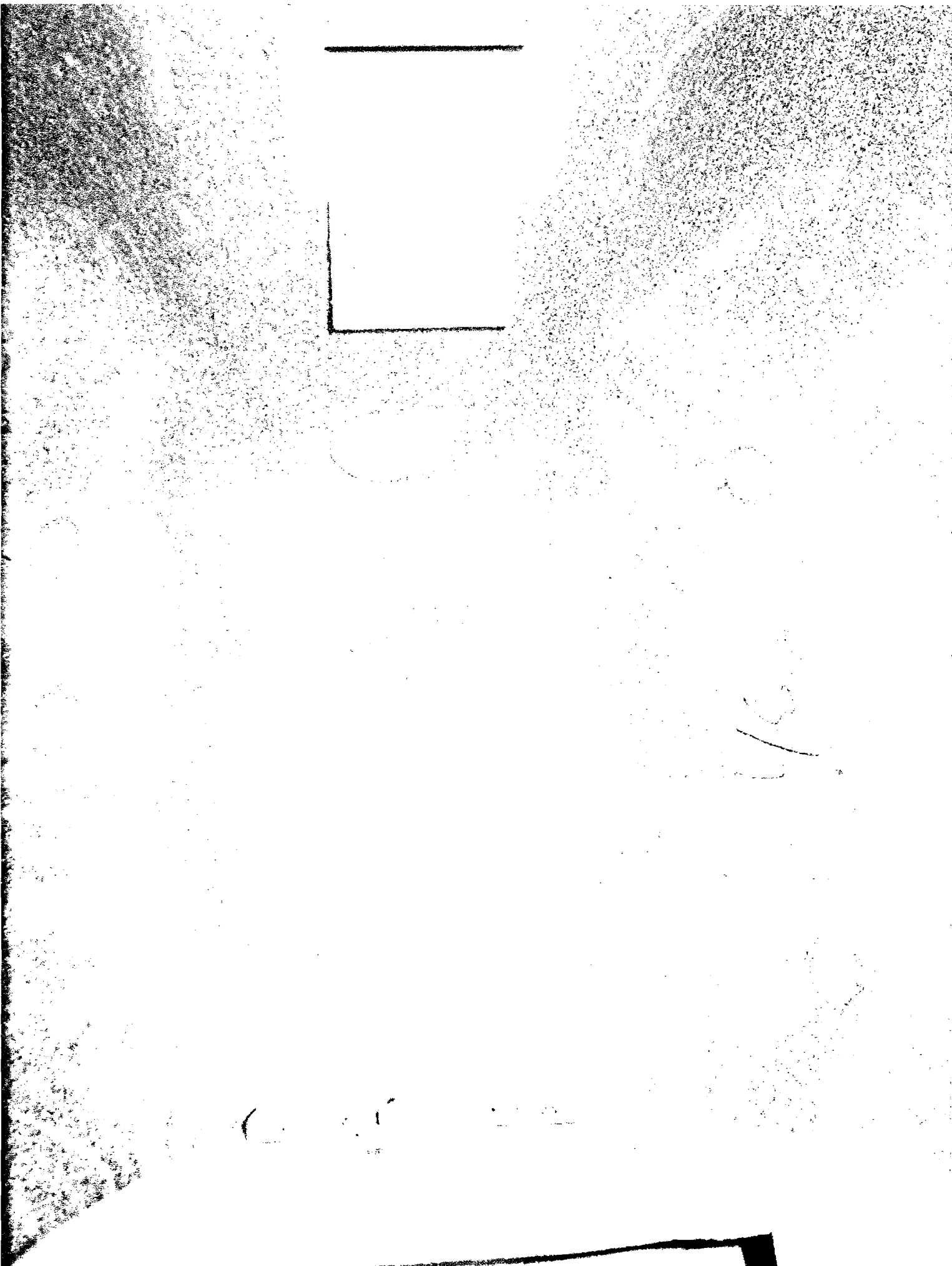
Circumference = 87"  
6 Suctions (Picture does not show four pump configuration.)

Cape Cod

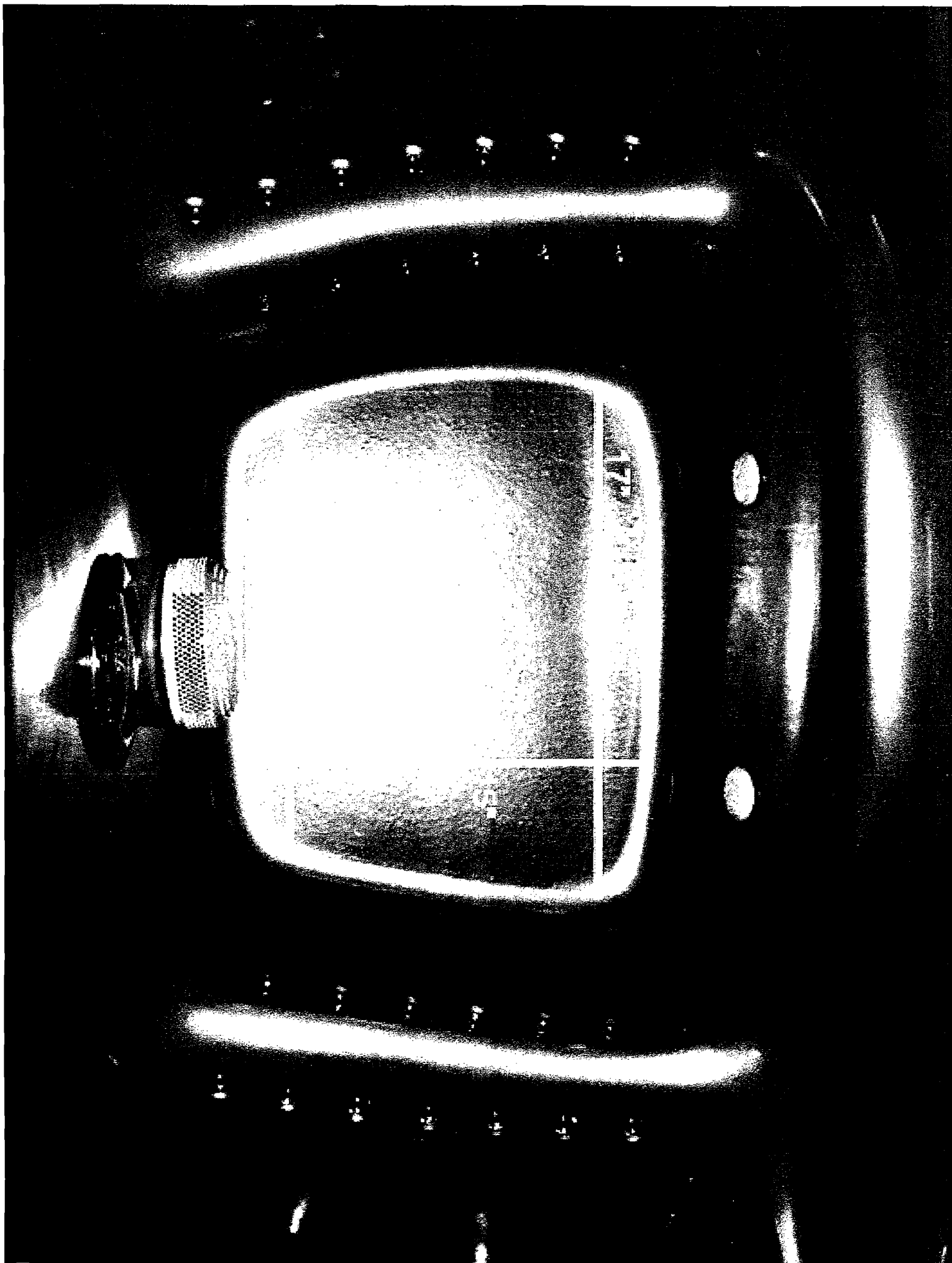


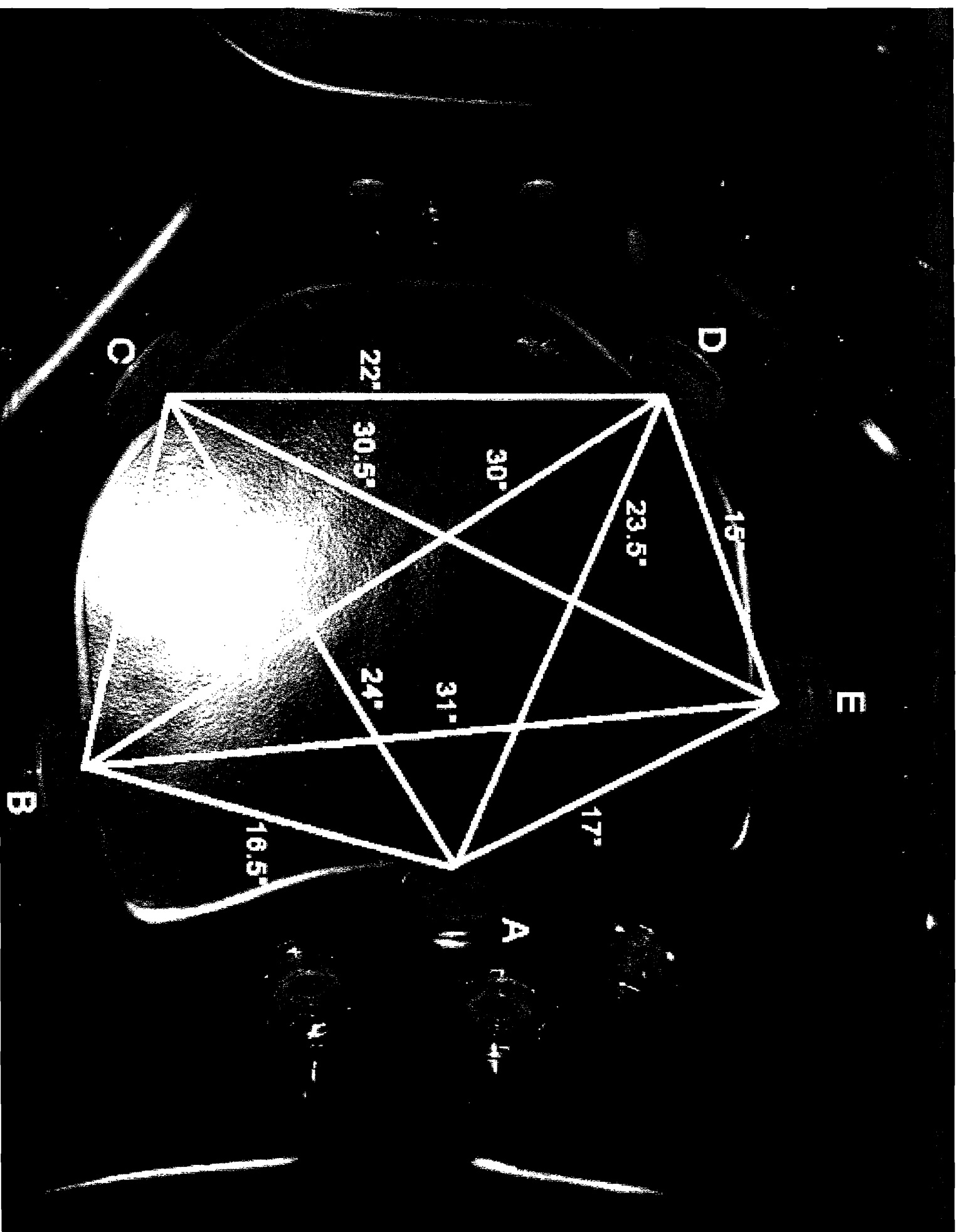
Circumference = 100"  
6 Suctions

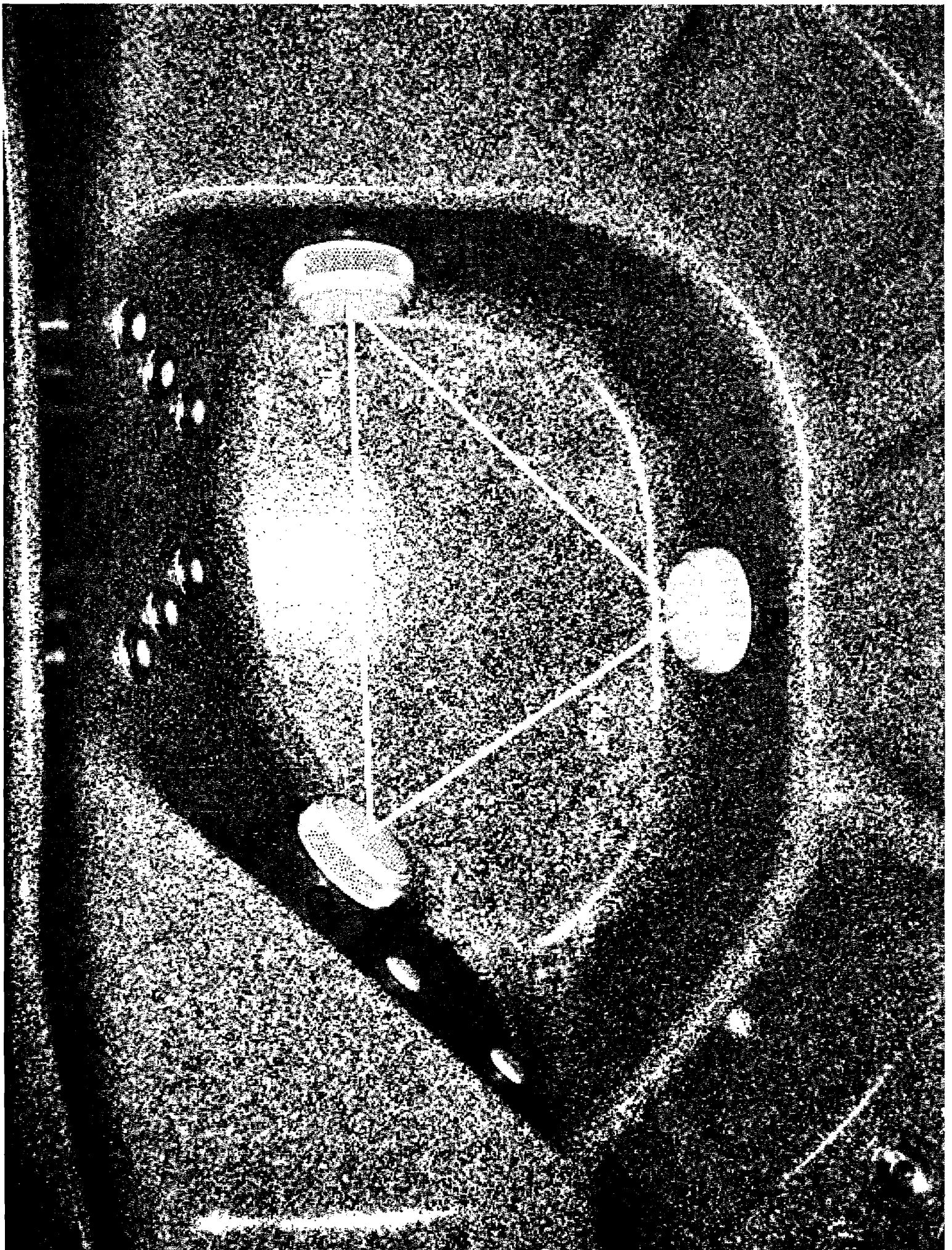
Westbrook

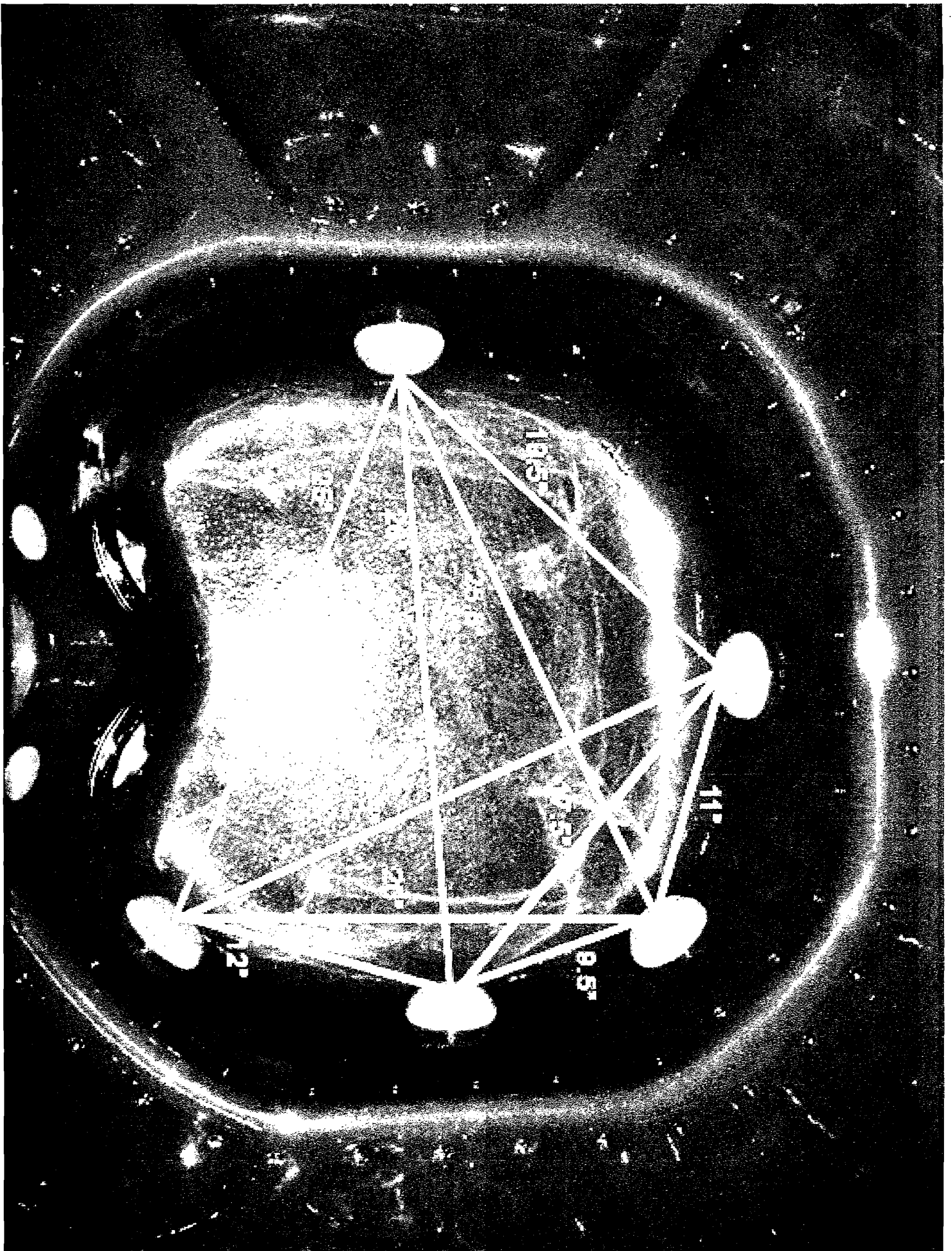


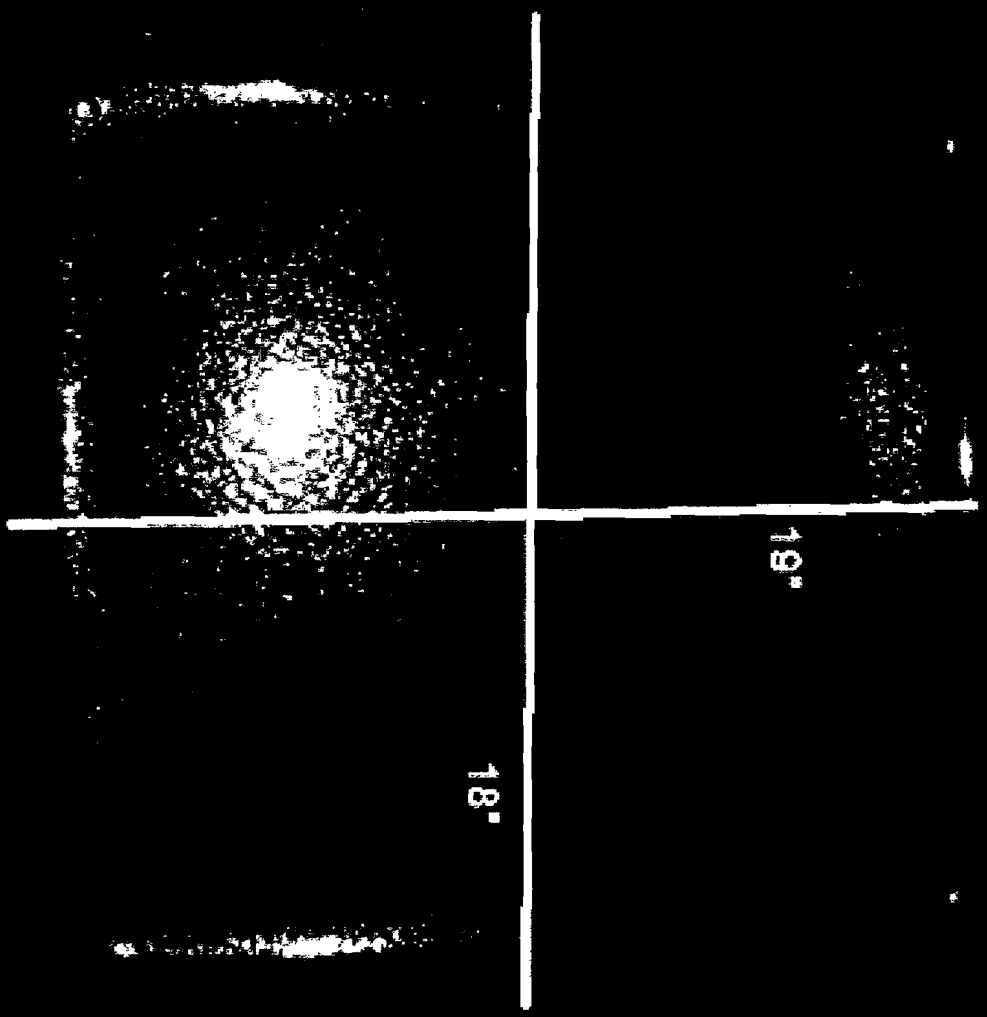


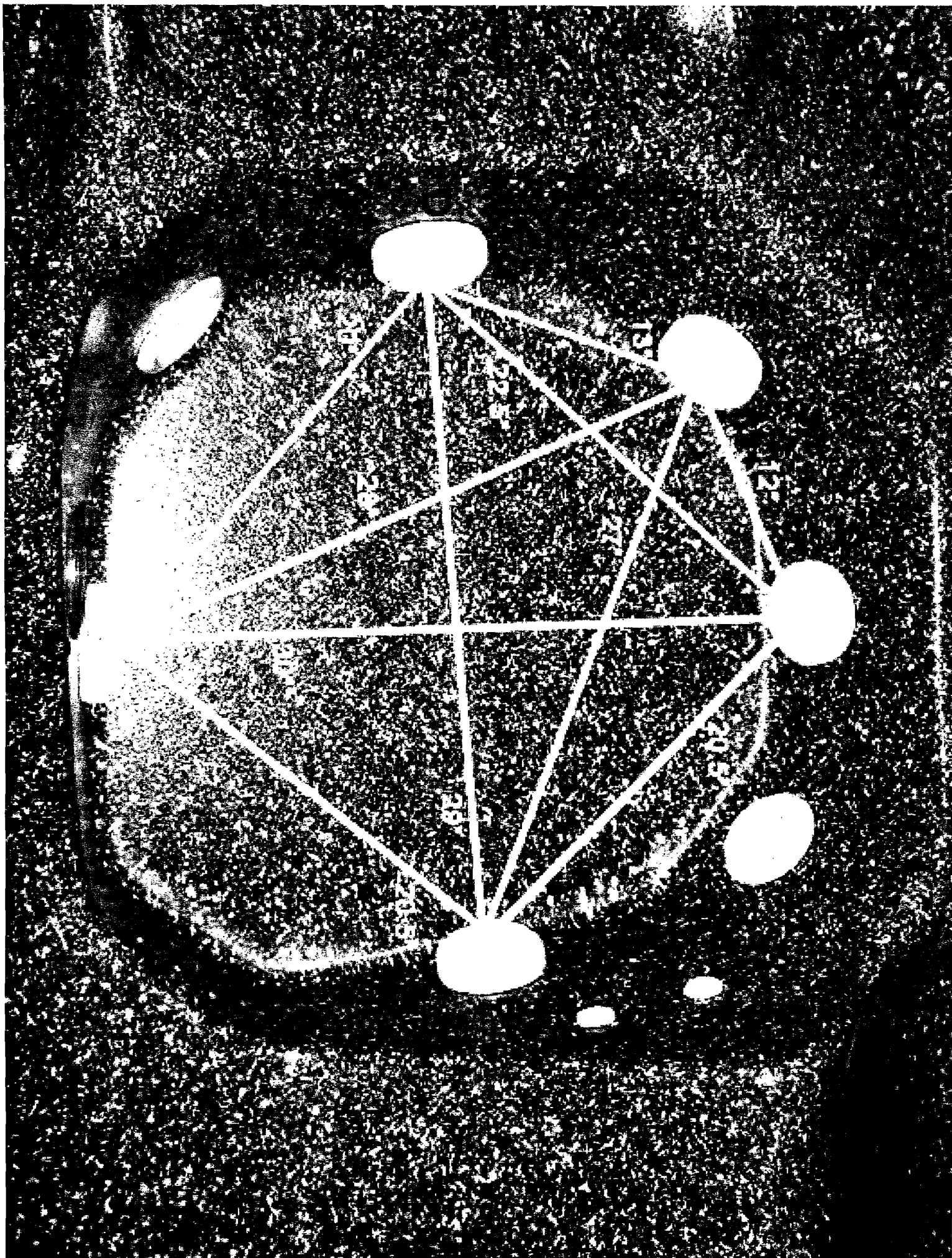












FROM: Steven Getzoff  
LESTER SCHWAB KATZ & DWYER, LLP  
120 Broadway, NY, NY 10271  
212-341-4345  
[Sgetzoff@lskdnylaw.com](mailto:Sgetzoff@lskdnylaw.com)

Re: INTERPRETATION OF SECTION 1406(d)(1) of THE VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT.

Section 1406(d)(1) of the Act provides that in establishing additional minimum state law requirements, the commission shall require, as a minimum, one or more of a series of methods, "except for pools constructed without a single main drain."

In reading this section one must start with the premise that Congress is intending to exempt certain pools or installations. Then one needs to define what is exempted. Here it is clear that Congress intended for this section to exempt pools and spas that have no drains and pools and spas that have multiple drains.

That this is the only correct interpretation of the Act is evident from the use of the word "single" before "main drain."

The U.S. Supreme Court, and several Circuit Courts, have consistently held that when interpreting or construing a statute, each and every word in the statute or relevant section is to be presumed to have meaning and not be superfluous.

In **Duncan v. Walker** 533 U.S. 167, 121 S.Ct. 2120 U.S., 2001. the court held:

"Further, were we to adopt respondent's construction of the statute, we would render the word "State" insignificant, if not wholly superfluous. "It is our duty 'to give effect, if possible, to every clause and word of a statute.'" United States v. Menasche, 348 U.S. 528, 538-539, 75 S.Ct. 513, 99 L.Ed. 615 (1955) (quoting Montclair v. Ramsdell, 107 U.S. 147, 152, 2 S.Ct. 391, 27 L.Ed. 431 (1883)); see also Williams v. Taylor, 529 U.S. 362, 404, 120 S.Ct. 1495, 146 L.Ed.2d 389 (2000) (describing this rule as a "cardinal principle of statutory construction"); Market Co. v. Hoffman, 101 U.S. 112, 115, 25 L.Ed. 782 (1879) ("As early as in Bacon's Abridgment, sect. 2, it was said that 'a statute ought, upon the whole, to be so construed that, if it can be prevented, no clause, sentence, or word shall be superfluous, void, or insignificant' "). We are thus "reluctan[t] to treat statutory terms as surplusage" in any setting. Babbitt v. Sweet Home Chapter, Communities for Great Ore., 515 U.S. 687, 698, 115 S.Ct. 2407, 132 L.Ed.2d 597 (1995); see also Ratzlaf v. United States, 510 U.S. 135, 140, 114 S.Ct. 655, 126 L.Ed.2d 615 (1994). We are especially unwilling to do so when the term occupies so pivotal a place in the statutory scheme as does the word "State" in the federal habeas statute. But under respondent's rendition of § 2244(d)(2), Congress' inclusion of the word "State" has no operative effect on the scope of

the provision. If the phrase "State post-conviction or other collateral review" is construed to encompass both state and federal collateral review, then the word "State" places no constraint on the class of applications for review that toll the limitation period. The clause instead would have precisely the same content were it to read "post-conviction or other collateral review."

**In Bailey v. U.S.** 516 U.S. 137, 116 S. Ct. 501 U.S. Dist. Col., 1995. the court held:

We consider not only the bare meaning of the word but also its placement and purpose in the statutory scheme. "[T]he meaning of statutory language, plain or not, depends on context." Brown v. Gardner, 513 U.S. 115, 118, 115 S.Ct. 552, 555, 130 L.Ed.2d 462 (1994) (citing King v. St. Vincent's Hospital, 502 U.S. 215, 221, 112 S.Ct. 570, 574, 116 L.Ed.2d 578 (1991)). Looking past the word "use" itself, we read § 924(c)(1) with the assumption that Congress intended each of its terms to have meaning. "Judges should hesitate ... to \*\*507 treat [as surplusage] statutory terms in any setting, and resistance should be heightened when the words describe an element of a criminal offense." Ratzlaf v. United States, 510 U.S. 135, 140-141, 114 S.Ct. 655, 659, 126 L.Ed.2d 615 (1994). Here, Congress has specified two types of conduct with a firearm: "uses" or "carries."

**See Walker v. Bain** 257 F.3d 660, 667 C.A. 6 (Mich.),2001.

"Every word in the statute is presumed to have meaning, and we must give effect to all the words to avoid an interpretation which would render words superfluous or redundant. See Astoria Fed. Sav. & Loan Ass'n v. Solimino, 501 U.S. 104, 112, 111 S.Ct. 2166, 115 L.Ed.2d 96 (1991); Menuskin v. Williams, 145 F.3d 755, 768 (6th Cir.1998)"

**U.S. v. DBB, Inc.** 180 F.3d 1277 C.A. 11 (Fla.),1999.

"There are several canons of statutory construction that guide our interpretation of the statute. The starting point for all statutory interpretation is the language of the statute itself. See, e.g., Watt v. Alaska, 451 U.S. 259, 265, 101 S.Ct. 1673, 1677, 68 L.Ed.2d 80 (1981). We assume that Congress used the words in a statute as they are commonly and ordinarily understood, and we read the statute to give full effect to each of its provisions. United States v. McLymont, 45 F.3d 400, 401 (11th Cir.1995) (per curiam). We do not look at one word or term in isolation, but instead we look to the entire statutory context. United States v. McLemore, 28 F.3d 1160, 1162 (11th Cir.1994) (citation omitted). We will only look beyond the plain language of a statute at extrinsic materials to determine the congressional intent if: (1) the statute's language is ambiguous; (2) applying it according to its plain meaning would lead to an absurd result; or (3) there is clear evidence of contrary legislative intent. See Consolidated Bank, N.A. v. Office of Comptroller of Currency, 118 F.3d 1461, 1463-64 (11th Cir.1997) (citations omitted).



A statute should be “interpreted so that no words shall be discarded as meaningless, redundant, or mere surplusage.” See United States v. Canals-Jimenez, 943 F.2d 1284, 1287 (11th Cir.1991).

**U.S. ex rel. Harlan v. Bacon** 21 F.3d 209 C.A. 8 (Iowa),1994.

First, it is a cardinal and long-revered canon of statutory construction that Congress is not to be presumed to have done a vain thing, namely, using superfluous language. A reading which expands the “money or thing of value” clause to include the universe of contracts reduces the “in consideration of services” and “trust property” clauses to nullities. What conceivable contract could fall under either of these clauses without falling first under the “money or thing of value” clause? Such an interpretation also renders other provisions of title 25 dealing with contracts redundant. Section 85, for example, invalidates any contract made with an Indian involving tribal funds or property in the hands of the government, and forbids payment “for services rendered in relation thereto.” Similarly, § 177 forbids agreement effecting conveyances of Indian lands. An expansive reading of § 81, however, would appear completely to occupy such ground already.”

It is clear from these authorities that the word “single” must be read as to have meaning and is there to narrow the types of pools that are NOT exempt. .

The meaning of the word “single” is defined by Webster’s American Dictionary:

- *adj.* 1. only one. 2. unmarried, - *v.* 3. select, *n.* 4. single thing. 5. unmarried person

The Random House College Dictionary reads in relevant part:

“Only one in number; one only, unique, sole.”

Hence, the only reading of 1406(d)(1) that is plausible and consistent with established Supreme Court precedent with regard to the construction of statutes is that pools and spas with more than one drain or with no drains are exempt from this provision, and therefore any additional requirements imposed by the Commission should not impose the requirements for (A) through (E) on such pools and spas.

This result is also consistent with the CPSC Staff Interpretation of Section 1404, which defines single main drain and multiple drain systems.<sup>1</sup>

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<sup>1</sup> The APSP comments address the need to include drains on separate planes within the definition of “multiple main drains” with regard to portable spas.

**Stevenson, Todd**

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**From:** Carvin DiGiovanni [CDiGiovanni@APSP.org]  
**Sent:** Tuesday, October 14, 2008 6:27 PM  
**To:** CPSC-OS  
**Subject:** Pool and Spa Safety Act "1406 Comments"  
**Attachments:** APSP 1406 Cover.pdf; APSP 1406 Comments.pdf; Exhibit A.pdf; Exhibit B.pdf; Exhibit C; Exhibit D.pdf

Dear Secretary,

Attached are the cover letter and comments of the APSP addressing CPSC Draft Technical Guidance on 1406 of the VGB Act.

Thank you,

Carvin DiGiovanni



Carvin DiGiovanni  
Association of Pool & Spa Professionals  
2111 Eisenhower Ave  
Alexandria, VA 22314  
(703) 838-0083, ext. 149  
FAX (703) 549-0493  
e-mail: [cdigiovanni@apsp.org](mailto:cdigiovanni@apsp.org)

Pool & Spa  
22**Stevenson, Todd**

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**From:** Wendy Morse [wmorse@richdalegroup.com]  
**Sent:** Wednesday, October 15, 2008 9:26 PM  
**To:** jdelgado@nmhc.org  
**Cc:** CPSC-OS  
**Subject:** Pool & Spa Safety Act

Attn: CPSC and Ms. Delgado

We understand the importance of pool and spa safety and respectfully offer the following comments in regards to the Virginia Graeme Baker Pool and Spa Safety Act:

In addition to the current fencing requirements outlined under Section 4-006.08, Title 178, Chapter 4 of the Nebraska Health and Human Services Regulation and Licensure, we would like to add that buildings enclosing a pool area where there is no direct pedestrian access to the pool area unless an occupant of an apartment was to jump over a balcony should meet the fencing requirement even if the balcony is not 6' high.

With respect to the requirements of entrapment protection/prevention devices, we would like to add that pools that are currently in operation should not be required to be retrofitted for two drains if they adhere to the antivortex protective measures required under Section 4-006.11H1-3 of Title 178, Chapter 4 of the Nebraska Health & Human Services Regulation and Licensure.

In closing, we would like to comment that in no case should a state or the federal government require that apartment communities be required to have lifeguards on site as this is discriminatory against renters.

Thank you for the opportunity to comment on the importance of pool and spa safety.

Sincerely,  
Wendy Morse

**Wendy Morse**  
*General Counsel*  
**The Richdale Group**  
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[www.richdale.com](http://www.richdale.com)



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10/16/2008

## **Legislative News!**

**This is important as it has been proposed ALL pools have a trained lifeguard on duty...If you have a pool it affects YOU!**

Virginia Graeme Baker Pool and Spa Safety Act: Proposed Guidance on State Requirements

**Background:** The Consumer Product Safety Commission (CPSC) is in the process of developing a staff interpretation of the requirements for the state grant program created by the Virginia Graeme Baker Pool and Spa Safety Act. The primary purpose of the Act is to require that all public pools, including those in apartment communities be equipped with proper anti entrapment drain covers as well as other devices if a pool with a single main drains. Another component of the Act creates an incentive via a grant program for states to enact strong pool safety laws. Through this program assistance will be provided to eligible states for enforcement and educational purposes. To be eligible for a grant under this program, states must enact or amend existing pool safety statutes to meet minimum requirements as stated in Section 1406 of the Act. Such requirements include pool enclosures, entrapment devices, enhanced drain standards for new pools, periodic notification to pool owners about drain cover compliance and any additional State law requirements as established by the CPSC.

**What is Being Requested:** The CPSC staff prepared a draft document (add link) outlining the technical requirements of Section 1406, further defining the minimum requirements to assist states that may be considering enacting or amending a state law. They are seeking public comments in response to this draft guidance. Therefore if you have concerns about the proposed guidance as written and have recommendations to improve or amend any part of it, you are encouraged to submit written comments to the CPSC.

Comments are due to the CPSC by October 14, 2008. Please mark your comments as "Pool & Spa Safety Act" and send them to the Office of the Secretary at [cpsc-os@cpsc.gov](mailto:cpsc-os@cpsc.gov) or if you are unable to submit comments by e-mail, you may submit written comments to:  
Office of the Secretary

U.S. Consumer Product Safety Commission  
4330 East West Highway  
Suite 502  
Bethesda, MD 20814-4408

Send a copy of your comments to Jeanne McGlynn Delgado, at  
[jdeldgado@nmhc.org](mailto:jdeldgado@nmhc.org). If you have any questions please call 202-974-2344.

**Jake Slosburg**  
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*Pool Spa 23*

**Stevenson, Todd**

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**From:** Wolfson, Scott  
**Sent:** Sunday, October 19, 2008 9:45 AM  
**To:** Elder, Jacqueline; Whitfield, Troy; McLaurin, Hugh; Edwards, Erlinda; Stevenson, Todd  
**Subject:** FW: CORRECTION: CPSC Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

Comment on Sec. 106 of the P&SSAct.

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**From:** Mike Corkery [mike@poolguardmfg.com]  
**Sent:** Wednesday, October 15, 2008 6:45 PM  
**To:** Wolfson, Scott  
**Subject:** RE: CORRECTION: CPSC Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

Scott

I have reviewed this document and I believe the intent of the law is to prevent drowning. Therefore, I would like to point out that a majority of pool safety fences are fabric mesh style fence that surround the pool and are installed on the pool deck. The document referencing aluminum style fencing offers little protection from drowning because they only block the perimeter of the yard..not the pool itself. A child can easily gain entry to the pool from the house itself. I think the requirements should focus on pool safety fences, pool safety nets or pool safety covers and not an outdated galvanized yard fence that can easily be breached by most children.

Thanks

Mike Corkery  
Owner/President  
[www.poolsafetyfences.com](http://www.poolsafetyfences.com)  
12087 62nd St N., Ste #8  
Largo, FL 33773  
Ph: 727-535-7888  
Fax: 727-535-7711



**From:** Wolfson, Scott [mailto:SWolfson@cpsc.gov]  
**Sent:** Tuesday, September 16, 2008 12:56 PM  
**Subject:** CORRECTION: CPSC Staff Interpretation of Sec. 1406 of the Pool & Spa Safety Act

It has come to CPSC's attention that some technical inaccuracies were found in the staff draft interpretation of Sec. 1406 of the P&SSAct that was disseminated on August 29.

In turn, CPSC staff have corrected the document and posted a revised version of the staff interpretation. The new cover letter and interpretation can be viewed by logging on to: [www.cpsc.gov/pssa1406.html](http://www.cpsc.gov/pssa1406.html).

Please note that we have also extended the comment period to October 14.

Thank you,  
Scott Wolfson  
US CPSC

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