CPSC Public Meeting on Pool and Spa Drain Covers

April 5, 2011

Written Presentations

Written Comment

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APSP Technical Committee: Chairman

ASME A112.19.8 and APSP/IAPMO 16: Member

ASME A112.19.17 and APSP/IAPMO 17: Member

2007 BODY BLOCK TEST

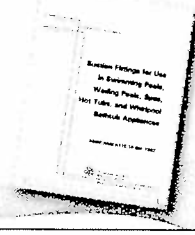
- Adequately evaluates safety regardless of blocking element size
  - Aggressive testing yields very conservative results
  - As long as cover is shadowed, we have a reliable result, anything beyond that artificially effects the results of the test procedure and does not impact safety
  - Flow ratings from the applicable (smaller) blocking element is relevant, anything larger than the shadow artificially effects the results and does not impact safety.

BODY SUCTION ENTRAPMENT

- The root cause:
  - Suction Outlet can be blocked/sealed
  - Suction strong enough to hold and trap
  - Structural failures result in victim getting stuck in sump, no peeling possible
- Solutions for cover/grate design:
  - Strength & integrity over useful life
  - Prevent the seal:
    - Unblockable
    - Complex geometry

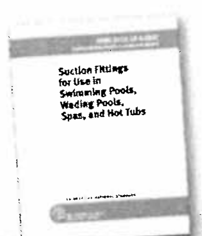
ASME A112.19.8M – 1987

- Reaffirmed 1996
- "*...maximum degree of safety from body and hair entrapment.*"
- Structural tests only
  - **No** UV aging test
  - **No** fastener test
  - **No** body block test
  - **No** "life" expectancy



ASME A112.19.8 – 2007

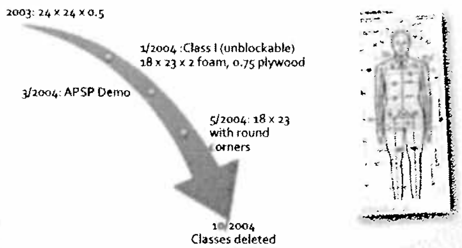
- Body entrapment addressed:
  - UV Aging prior to all structural testing
  - Fastener testing
  - Body block test



BODY BLOCK TEST PROCEDURE

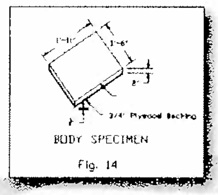
- Several years in development
- Real world testing and evaluation
- Refinement:
  - Size
  - Construction
  - Foam specification
  - Plywood thickness
  - Shape

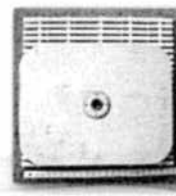
BODY BLOCK TEST EVOLUTION



BODY BLOCK ELEMENT

- ASME A112.19.8 – Draft (Jan 2004)
  - Body block test: *"Large Limited Velocity Covers"*
- APSP Technical Committee – (Mar 2004)
  - Body block element demonstration



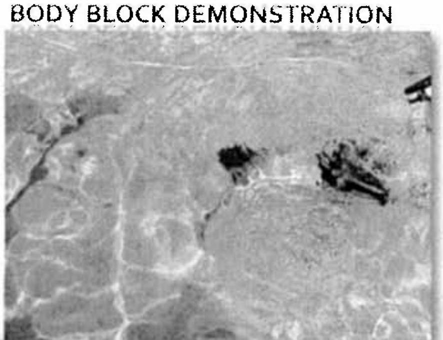


BODY BLOCK DEMONSTRATION

RELEASE FORCE

- 12 x 12 flat grate
  (None VGB Compliant)
- Skin sealed openings
- 20 in. Hg. sustained vacuum
  - 9.8 psi x 97.3 sq. in. open area
- **Swimmer held by 954 pounds force**
  - The 2007 Standard limit the maximum allowed force to 36 pounds
  - The 2007 standard successfully eliminated the blockable flat and flush mount grates

BODY BLOCK DEMONSTRATION



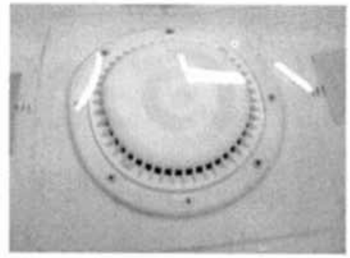
2007 TEST EXTREMELY DEMANDING

- 120 pound of applied force
  - Unrealistic force causes unattainable seal
- Extremely low pull force limit
  - Demo: 36 lbf vs. 954 pounds hold down force
- Foam with plywood backing
  - Foam can seal against floor, people can't
  - Skin peels, foam doesn't

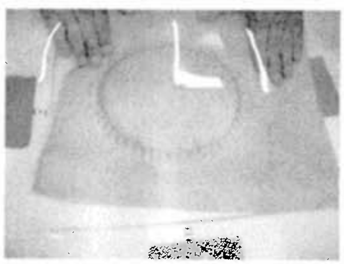
SIMULATED SKIN RESEARCH

September 2007

SIMULATED SKIN RESEARCH



SIMULATED SKIN RESEARCH



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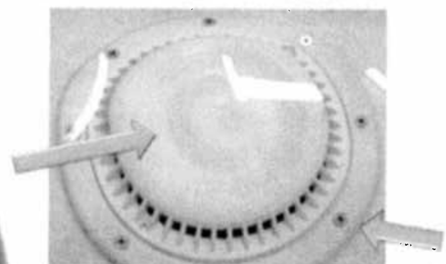
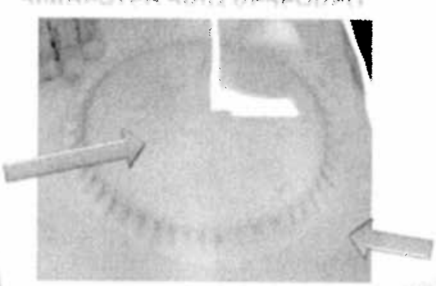


SIMULATED SKIN RESEARCH

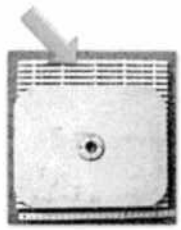


WHAT WE LEARNED

- Both "Applicable" and "18 x 23" must shadow the drain cover, blocking the openings
  - Excess overlap distorts the results
- Real skin and simulated skin seal openings
  - When sealed, flow stops, unlike hair test, where water continues to flow

FLOW RATING?

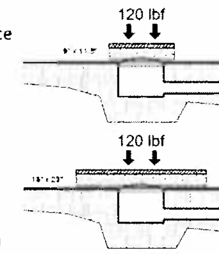
- Why flow "rating"
  - Conceived for "unblockable" flat grates
  - Unblockable flat grates have remaining open area when blocked
  - Release force proportional to flow = flow rating



18 x 23 Blocking Element

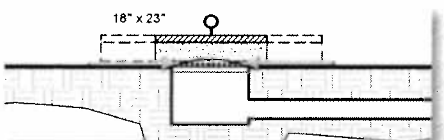
2007 BODY BLOCK TEST

- Test elements
  - **Same** 120 pounds force
  - **Same** foam material
  - **Same** compression of foam
  - **Same** blockage of openings
  - **Same** distance above floor
  - **Different** surface area



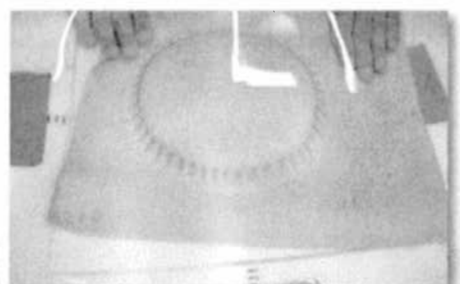
WHY DIFFERENT RESULTS?

- 18 x 23 blocking element has 4 times more surface area than 9 x 11.5
- 4 times larger Area = 4 times larger Force



THIS CAUSES A LOWER FLOW RATING

THE SEAL CAUSES THE ENTRAPMENT



CONCLUSIONS

- Current tests adequately evaluates safety regardless of blocking element size
  - Aggressive testing yields very conservative results
  - As long as cover is shadowed, we have a reliable result, anything beyond that is an artifact of the test procedure and does not impact safety
  - Flow ratings from the applicable (smaller) blocking element are relevant, anything larger than the shadow artificially effects the results of the test and does not impact safety.
  - Force (vacuum) does not equal release "effort"
  - 954 lbs. measured force, yet bathers easily break the seal

Ray Mirzaei, Vice President, Technology & QA
Waterway Plastics, Inc.

- We believe Virginia Graeme Baker Act and ASME A122.19.8 -2007 (as it is written and released right now) have enhanced the safety of bathers.

- Under section 3 of the standard, Drain Covers are subjected to UV, Vacuum, impact and load testing to assure mechanical integrity of the suction covers (broken / missing drain cover have been one of the main contributing causes of suction related incidents in swimming pool). Unfortunately there is at least one confirmed case that a large main drain grate was released to the stream of commerce which failed the Vacuum test way short of the requirements of the section 3 of the standard and resulted in product delisting by the certification lab.

- Under section 5 of the standard, suction outlets should be subjected to body entrapment tests. The result of that requirement was the development of Domed / Convex shaped drain cover that reduces the potential for bather entrapment compare to old flat grates. However some labs did not follow the standard and its intent and have certified some main drain grates with safe suction capacity ratings even higher than what they were certified to prior to VGB. In at least one confirmed case, a lab has rated a large main drain grate without testing and following the standard.

- Under section 4 of the standard, drain cover should be tested using a full head of natural, strait blond hair. This requirement simulated failure modes that could not be simulated by the old pony tail hair sample. As a result, suction outlet 14" and smaller were rated at lower and safer suction capacity. However some labs consistently performed the test different than other labs, intentionally modified the speed of pull of the hair during test,.... Resulted in certification of higher-rated drains compare to the certification awarded by other labs.

- During the investigations of deviated laboratory practice and ASME A112.19.8 and APSP /IAPMO -16 meetings , 3 main opportunities for the enhancement of the standard were discovered. 1- Ensure the pump can generated 26 In-Hg vacuums at the test flow rate while conduction both Body and hair entrapment testing. 2- Use of two different size body block element for a closer simulation of body entrapment. 3- further clarification of the standard for the use a surface plate to simulate the pool floor.

Conclusion:

- The standard as it is written and released right now enhances bather safety provided that labs properly adhere to the intent of the standard and minimize deviations, errors and after the fact delisting of main drains.
- The recent proposed enhancement to standard (Pump that can deliver Min. 26 in-hg vacuum, use of two body block element, simulated surface plate) can take the effectiveness of the standard to the next level when the new version of the standard gets published and released.
- Both hair and Body Entrapment are relatively complex phenomenon that can not be completely simulated at labs and additionally it is hard to duplicate all modes of entrapments. Product safety improvement is a never ending journey and as we learn more we can further enhance the standard.
- Since we are dealing with lot of unknown regarding mechanisms of both hair and Body entrapment, we do need to build ample safety factors in the requirement of the standard to compensate for unknowns, we always need to assign very conservative safe suction capacity rating to drain covers until we would be able to create closer simulation of real world at our labs.
- Addition of new requirement for the Max. average water velocity of 1.5 feet per second could impose temporary safety factors to compensate for unknowns and additionally impose a ceiling on Max. allowable safe suction ratings incase of any errors from labs..

TESTIMONY OF OLAF MJELDE, PRESIDENT OF AQUASTAR POOL PRODUCTS, INC. BEFORE THE U.S. CONSUMER PROTECTION SAFETY AGENCY APRIL 5, 2011

My name is Olaf Mjelde, and I am the President of AquaStar Pool Products, Inc. I want to thank the Commission for the opportunity to testify today and for taking a leadership role in the enforcement and revision of A112.19.8 (the "Standard"), which the Virginia Graeme Baker Pool & Spa Safety Act ("VGB") established as the safety standard for pool suction outlet fittings, or drain covers.

I founded AquaStar in 2003 along with my good friend and partner, Wade Arens, who just passed away in February of this year after a heroic five-year battle with cancer. Wade and I built our company on a few basic principles: safety first, quality always, and never accept what has been done before as the answer. AquaStar has a lot of employees and I am very proud that we build all of our products in the United States, with a factory in California. As a result of AquaStar's basic principles, it now has a significant place in the pool drain cover marketplace.

AquaStar has always emphasized safety. In 2008, when the VGB was passed, in order to accelerate the replacement of non-VGB compliant pool drain covers, AquaStar voluntarily accepted non-compliant drain covers, at substantial cost to us.

In addition, in order to comply with the VGB, AquaStar had its products tested by a third-party testing laboratory recognized by the Commission, IAPMO R&T Laboratories ("IAPMO"). Because IAPMO was and is a facility recognized and identified by the CPSC, AquaStar relied upon the testing results from IAPMO and on the ratings assigned to the covers by IAPMO. AquaStar never sought a particular rating from IAPMO. We relied upon their testing results.

I do not know of any single report of any injury or entrapment in connection with the use of any AquaStar pool suction outlet cover. Nor have we been provided with any such reports by the Commission, which I understand gathers and reviews all reports of entrapment incidents or injuries. I do not believe that any of our suction outlet fittings present a risk to bather safety. While I am not a professional engineer, I place my trust in the independent testing lab we used and in their belief that our products are rated correctly in compliance with the Standard, A112.19.8.

I recognize that like many standards, A112.19.8 may require some revision to resolve some ambiguities and ensure more relevant or more repeatable testing. I am aware that the committee responsible for developing the successor Standard, the ANSI/APSP[1]/IAPMO-16 Writing Committee, has begun revising some of its requirements to address such concerns, including a new body entrapment test method, and we support those efforts. I also understand that the Commission has suggested an interpretation of the existing Standard that is different from the manner in which the three testing labs had interpreted and applied the Standard in their testing. Again, AquaStar applauds the Commission for taking a leading role in preparing a more

[1] Association of Pool & Spa Professionals.

precise Standard. I believe that any changes to the Standard, or the manner in which it has been interpreted, however, must be applied prospectively. I say this not just because I believe that the current drain covers which are already in the marketplace are safe. In fact, I believe they are over-designed for safety. It is important to understand that if all the smaller drain covers on the market were required to be retested, rerated, and perhaps recalled, it would cause a significant disruption to manufacturers, distributors, builders, installers as well as owners and operators of public and even residential pools, and all without enhancing the safety of consumers. A disruption of this magnitude would also work against the Commission's goal and our goal of ensuring that pre-VGB covers are replaced in residential and public pools. I would not take this position if I believed that safety was in any way compromised by the current Standard and the interpretation of the Standard that all three accredited testing labs have consistently followed.

Again, thank you for the opportunity to testify here today and I look forward to working with you on this important issue.

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Pool Safety Council

MEMORANDUM

DATE: MARCH 31, 2011

TO: PAUL PENNINGTON

**RE: ASME A112.19.8-07/APSP-16-2010
TECHNICAL DEFECTS IN THE STANDARD THAT LEAD
TO GROSS OVER-RATING OF SUCTION FITTINGS**

The subject of pool safety has been brought to the forefront lately due to losses of life and media attention. The VBGA is a great step forward in principle; however, the reliance on the ANSI/ASME A112.19.8-07 and later addenda and/or the proposed ANSI/APSP-16-2010 (hereafter standard) is basically and inherently flawed because the referenced standard fails to provide safe consistent ratings for suction fittings used in the industry every day. There is a false sense of security in the reliance on the letter of the standard as opposed to the intent of the standard.

The areas of the referenced standard that are at the center of controversy are the Hair and Body Entrapment Sections. There are identifiable defects that have been a significant contributing factor in the gross over-rating of suction fittings. What is most alarming is that the over-rating of these fittings could lead to loss of life or limb and certainly deserves the utmost urgency.

The CPSP is lauded for finally holding a Public Hearing where the state of the art can be discerned. We are honored to provide this input and hope that it will serve to help clarify and focus or some necessary corrective measures so that these issues can be placed at rest.

Observed Technical Defects

The Pool Safety Council has been participating in the standards development arena for many years. Our Lab Director serves as ASME A112.19.8 Deputy Project Team Leader (V Chairman), A112.19.17 Project Team Leader (Chairman) and several of our supporters participate as project team members of the ASME referenced standard and in many swimming pools safety standards areas nationally such as ASTM. Please find our views below on the efficacy of the ASME A112.19.8/APSP-16 Suction Fitting for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs. (Hereafter referred to as "Standard")

Hair Entrapment Section 4

Generally the technical defects in the test protocols are detailed, as follows:

1. **"Section 4.1.2.1 Type 1"** Requires a "...full head of...hair...". This specification is technically flawed because of the requirement that the skull assembly with hair be, "...properly weighted to achieve neutral buoyancy under the water..." it cannot produce reliable, repeatable and consistent test result.

Reason: Neutrally buoyant objects do not float or sink. They remain relatively stable when placed at a certain depth. The adverse effect of these phenomena is that the test results are inconsistent from one lab to the next. This will be shown in the Data Section of this Report.

2. **"Section 4.1.5 Test Equipment"**

The problems under this section can be summed up generally as a demonstrated failure to detail appropriate instrumentation for the measurements w/reasonable tolerances that are required to be taken and recorded.

Reasons:

1. a. Section 4.1.5.2 fails to detail pump type or stipulate a measure of pump efficiency or performance. In usual practice the maximum sustainable vacuum level at no-flow [total blockage] or partial-flow [partial blockage] conditions would be a standardized measure of performance.
   b. The specification of the flow meter is inadequate for the intended purpose. If the manufacturer recommended flow rates, for example to be 150 gpm, gallons per minute, the test flow rate would be 150 X 1.25 or at 187.50 gpm. The permitted deviation of +/- 3% would mean that at 187.50 the actual permitted meter reading could be 187.50(.03) or at 5.625 gpm less than 187.50 or at 181.875. The problem shows itself when one applies the tolerance number in this section to the requirements of 4.2.8.2.
2. Section 4.1.5.4 fails to detail an appropriate pounds-force (lbf) measuring instrument for the intended purpose. A "fish scale" is not an appropriate instrument for this purpose. The problem shows itself when one applies the tolerance number in this section to the requirements of 4.2.8.2.
3. Section 4.2.4 is technically flawed because the rate-of-removal speed specified is too fast for the intended purpose. The specified speed of 5 in/sec will lead to inconsistencies and false readings of the actual pounds-force (lbf) removal effort.
4. Section 4.2.7 is entirely vague, subjective and ambiguous as far as consistency and repeatability. What does "...the hair shall be slowly moved closer..." mean insofar as rate of speed? What does, "...continually fed into the fitting...in a sweeping motion...magnitude...reduced with each pass..." mean insofar as to the required number of passes or magnitude details?
5. Section 4.2.8.1 describes exactly how the required test measurement is to be taken and/or recorded, however, the method is suspect based on the inadequate instrumentation and rate of removal speed.

6. Section 4.2.8.2 describes what to do when a failure occurs while prescribing a flow tolerance that cannot be properly measured given the instrumentation detailed requirement in 4.1.5.2, because the instrument tolerance exceeds the required 5gpm measurement that is relied upon for determining a safe or unsafe suction fitting.
7. Section 4.2.8.2 describes a force measurement pass-threshold that must be less than 5 pounds force while the standard only requires a scale with an accuracy of .1 pounds at 5 pounds force limit. This means that if the scale reads 5.1 pounds the suction fitting would pass the test.

The adverse effects of the aforementioned technical flaws will be further explained and are documented as follows:

3. "Supporting Documentation/Test Data Report"

The PSC lab conducted an evaluation regarding the effect of varying the rate of speed from the ASME standard specified five inches per second to one inch per second and 7 inches per second on the rated flow calculation, as required. The force/strain is measured in pounds force (lbf) and is plotted using the "A112.19.8 Full Head OF Hair Test" pursuant to the requirements of section 4.1.2.1 TYPE 1. A nominal eight-inch round suction fitting, Aqua Star model LP8AV – XXX, rated at 100GPM for floor application is the suction fitting mounted in the test stand.

The purpose of this evaluation and tests is to assimilate data, then to consider the efficacy of the type 1 test protocols and report the results.

Test Equipment/Instrumentation Used in Test:

Omegadyne LC105-200 Strain Gauge* (NIST 0.03% accuracy over range)
GF Signet 35075 Flow Monitor*
GF Signet P51530PO Paddle Wheel Sensor*(NIST 0.1% accuracy over range)
Test Tank – 24 inches water depth over drain under test
Cable hoist capable of variable pull speeds
FMH #1SC Mannequin with natural blond wig attached
10 HP variable frequency drive pump
***Level of accuracies far exceed the levels called for in the standard**

TEST PROCEDURES USED FOR OBTAINING CONSISTENT TEST OUTCOMES AT PSC LAB

A Professional Wig Display Mannequin, Model No. FMH-#1SC, properly weighted to 8.41 pounds "dry" and 0.80 pounds under the water. This is a noted exception from the ASME A112.19.8 requirement of a neutrally buoyant "skull". The result was that neutral buoyancy proved problematic in achieving a consistent rate of descent. An anchoring point is provided near the "neck" of the "skull" to which the Omega Dyne LC105-200 Load Cell/strain gauge is affixed in lieu of the "fish scale".

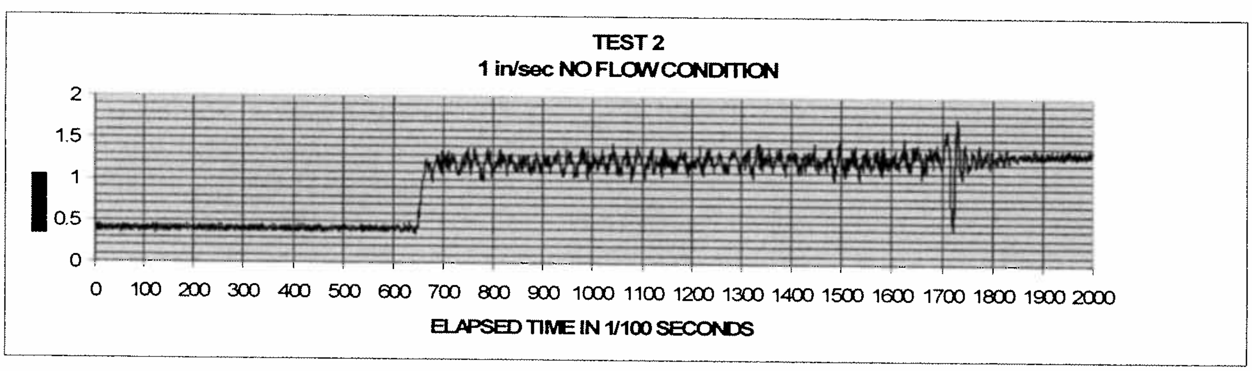
A cable hoist is employed as an actuator to lower and then raise the Type1 skull with "full head of hair" securely attached into the test tank constructed in accordance with A112.19.8, Section 4.1.5.1 and 4.1.6.3, in a consistent manner. The cable is set to plumb on center of the suction outlet with a rigid connection to the strain gauge via shackles and chain so that the skull assembly weighs 0.80 pounds under water. The "skull" is lowered at the specified rate of speed and permitted to rest on the suction fitting for at least twenty seconds before being raised at the specified rate of speed.

In the first series of tests the pump is not in operation (no flow condition) and the Type 1 skull is lowered to rest on the suction fitting and then raised at the specified rate of speed.

In the second series of tests the pump is operating at 125 gallons per minute flow through the suction fitting and the Type 1 skull is lowered to rest as required on the suction fitting and then raised at the specified rate of speed.

No-Flow Corrective Procedure Representative Curve –

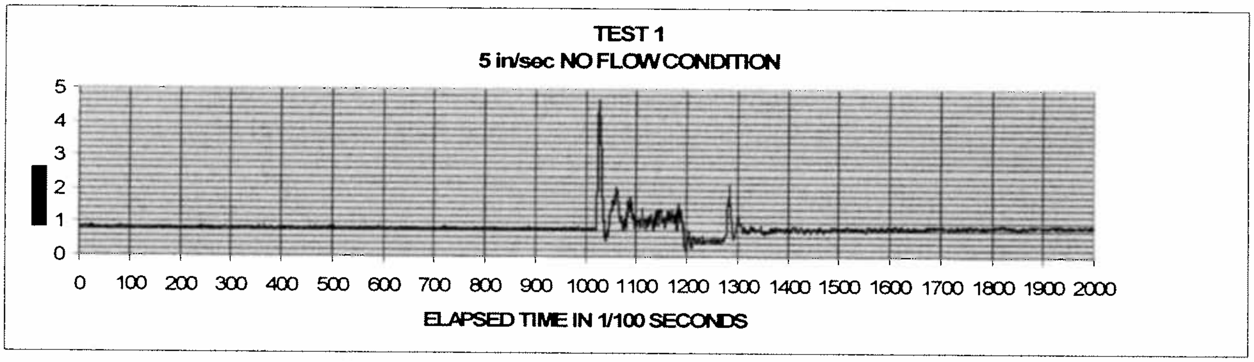
This plot represents the no-flow condition where the skull is simply lifted from full contact with the suction fitting under test at a rate of 1 inch per second vertically to a point approximately 12"-13" above the fitting and represents a measurement of the resultant force over 20 seconds with readings acquired every 1/100 second.



The indicated force present from the skull assembly being hoisted a vertical distance of 12" – 13" at 1 in/sec is approximately 1.25 lbf. This is 0.45 pounds in excess of the saturated-negatively-buoyant skull in the water under a no-flow condition. The relatively steady reading is measured with the skull assembly in vertical motion.

No Flow Standard Procedure Representative Curve –

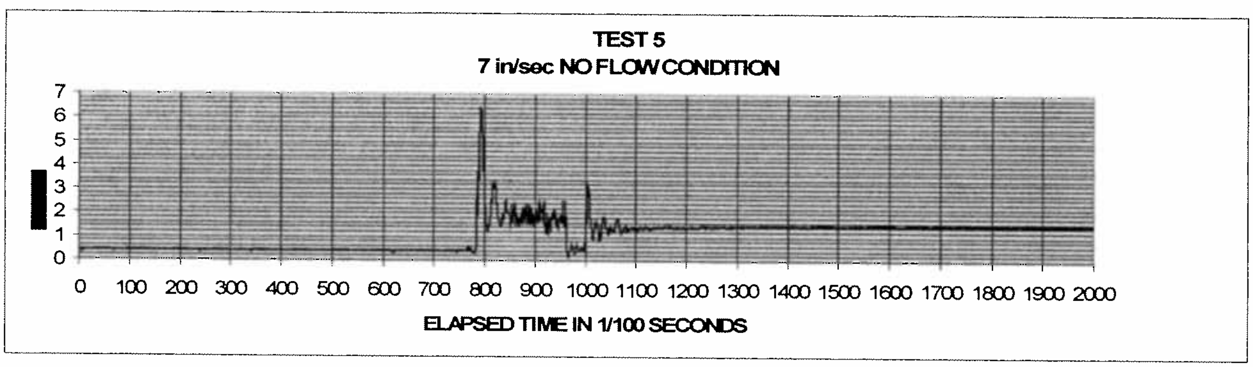
This plot represents the no-flow condition where the skull is simply lifted from full contact with the suction fitting under test at 5 in/sec vertically to a point approximately 12"- 13" above the fitting and is a measurement of the resultant force over 20 seconds with readings acquired every 1/100 second.



The indicated force present from the skull assembly being hoisted a vertical distance of 12"-13" at 5 in/sec approaches 5 pounds in the first micro-seconds and then stabilizes to approximately .80 pounds/force which is the weight of the saturated-negatively- buoyant skull in the water under a no-flow condition. This approaches the failure threshold absent any flow through the suction fitting under test.

No Flow Excess Procedure Representative Curve –

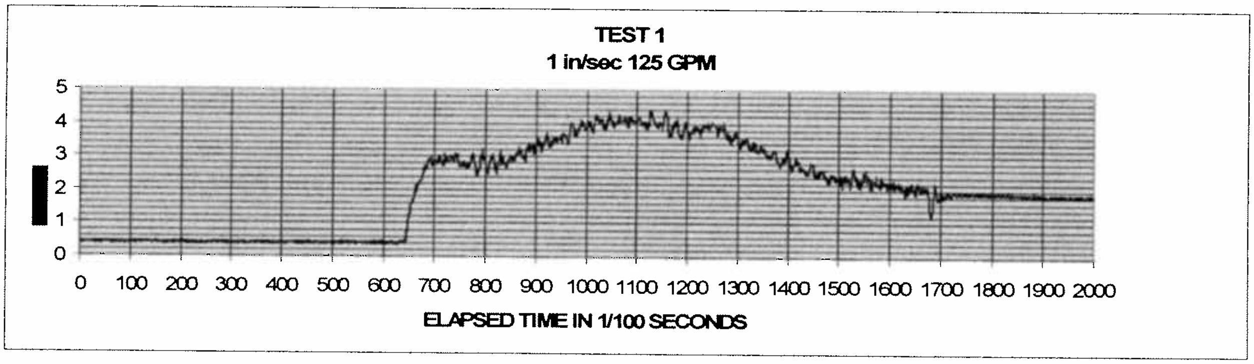
This plot represents the no-flow condition where the skull is just lifted from full contact with the suction fitting under test at 7 in/sec vertically to a point approximately 12"-13" above the fitting and is a measurement of the resultant force over 20 seconds with readings acquired every 1/100 second.



The indicated force present from the skull assembly being hoisted a vertical distance of 12" at 5 in/sec approaches 6.50 pounds in the first micro-seconds and then stabilizes to approximately .80 pounds/force which is the weight of the saturated-negatively-buoyant skull in the water under a no-flow condition. This "false" inertial force reading would constitute a failure under the standard using adequate measurement and recording instrumentation *absent any flow through the suction fitting under test.*

Test Procedure Representative Curve @ 125 GPM -

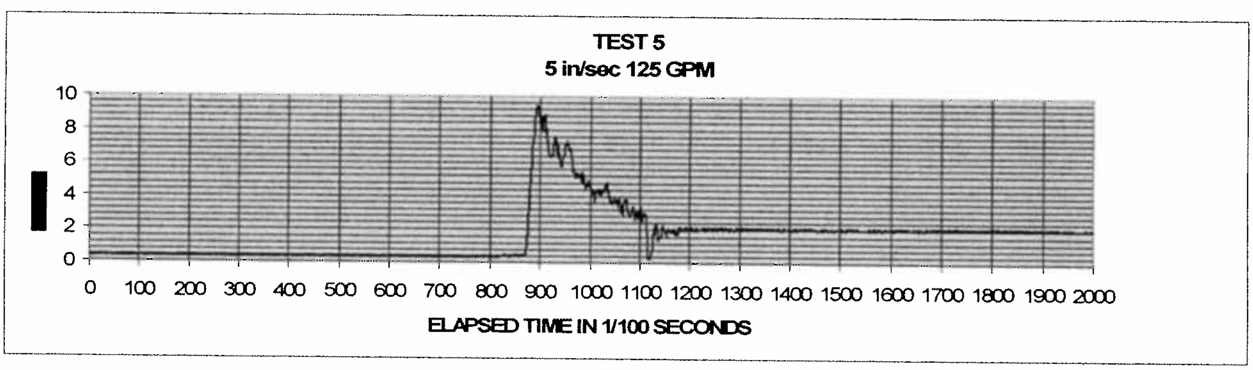
This plot represents the VBG-rated test flow condition where the skull is simply lifted from full contact with the suction fitting under test at rate of 1 in/sec vertically to a point approximately 12"-13" above the fitting and is a measurement of the resultant force over 20 seconds with readings acquired every 1/100 second.



The indicated force present from the skull assembly being hoisted a vertical distance of 12" at 1 in/sec approach 4.25 pounds for 2 seconds between 1000 and 1200 micro-seconds. This result would appear to constitute a "pass" under the standard at the test flow of 125 gpm (using the 0.80 lb negatively buoyant skull at 1 in/second removal rate) even though there are still hidden friction losses that are not accounted for under this test procedure. This will be shown in the corrective test protocol discussed below.

Standard Test Procedure Representative Curve @ 125 GPM –

This plot represents the VBG rated test flow standard condition where the skull is just lifted from full contact with the suction fitting under test at 5 in/sec vertically to a point approximately 12"-13" above the fitting and is a measurement of the resultant force over 20 seconds with readings acquired every 1/100 second.



The indicated force present from the skull assembly being hoisted a vertical distance of 12" at 5 in/sec approaches 10.0 pounds force. This would constitute a failure under the standard at the test flow of 125 gpm.

HAIR TEST - SKULL ASSEMBLY AND RATE OF REMOVAL SPEED - CONCLUSIONS

Using a 0.80 negatively buoyant skull assembly at 1 in/sec produces very consistent test results – numerous plots were made at each speed and consistency was evident absent any notable variation. However, the resulting plots teach us that the reliance on a constant rate of pull is inherently flawed because of the inertial forces spikes seen in the plots.

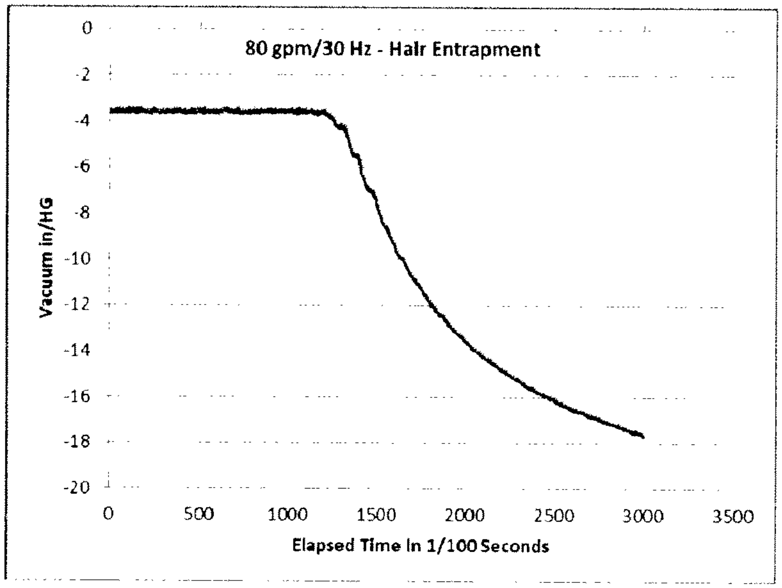
The data above is indicative and representative of the inherent technical flaws that relate to how test labs may arrive at inconsistent Hair Entrapment maximum [safe] flow ratings. This is the result of improper instrumentation and tolerance specifications that lack the necessary detail to perform consistent, repeatable tests and therefore produce reliable test-results. The method of applying and removing the skull assembly to the suction fitting under test is vague and ambiguous. The tests above demonstrate the adverse effects of the removal speed. The current specification does not insure consistency and repeatability with respect to the resultant maximum [safe] flow ratings.

CORRECTIVE HAIR TEST PROTOCOL

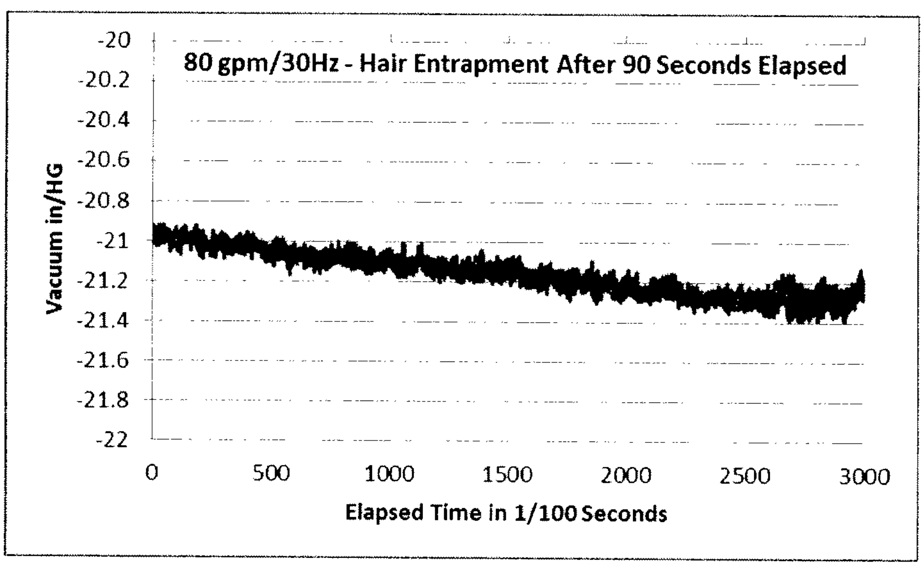
One result of this research is that we developed a revised hair test protocol that removes the inertial forces entirely from the equation and still provides very consistent and repeatable results. The APSP Committee has approved this protocol in principle. The exact test protocol is still, however, in the process of being refined by the standard committee.

The basic idea is to simply rely on a five pound constant force as the removal threshold and use the flow measurement at the skull assembly release point to constitute the safe maximum flow rate for the suction fitting under test. The pump must be pre-tested to insure that when the suction fitting under test is completely blocked at a given flow, the resultant vacuum force in the system will be at least 25 in/HG.

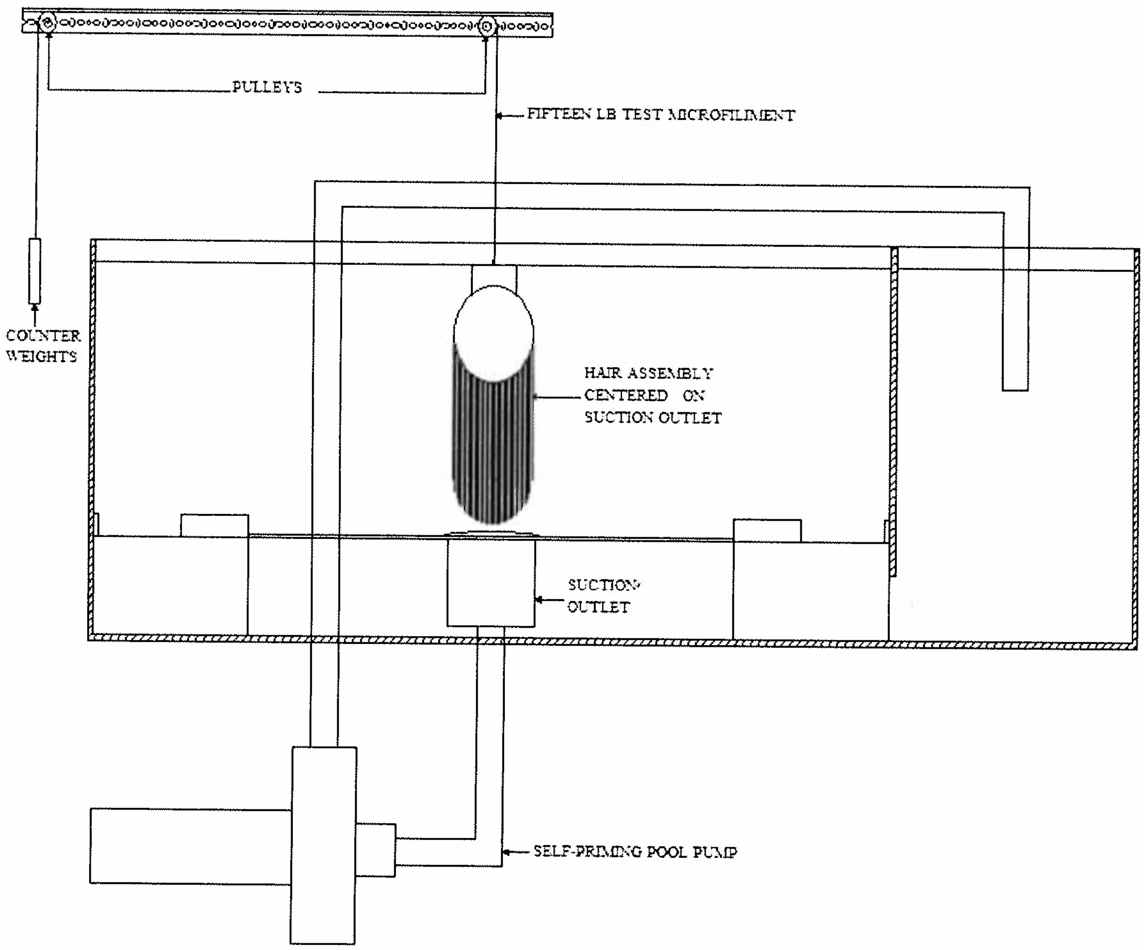
Pressure Drop Curve When Skull Assembly Is Entrapped on Suction Fitting – 30 seconds elapsed time:



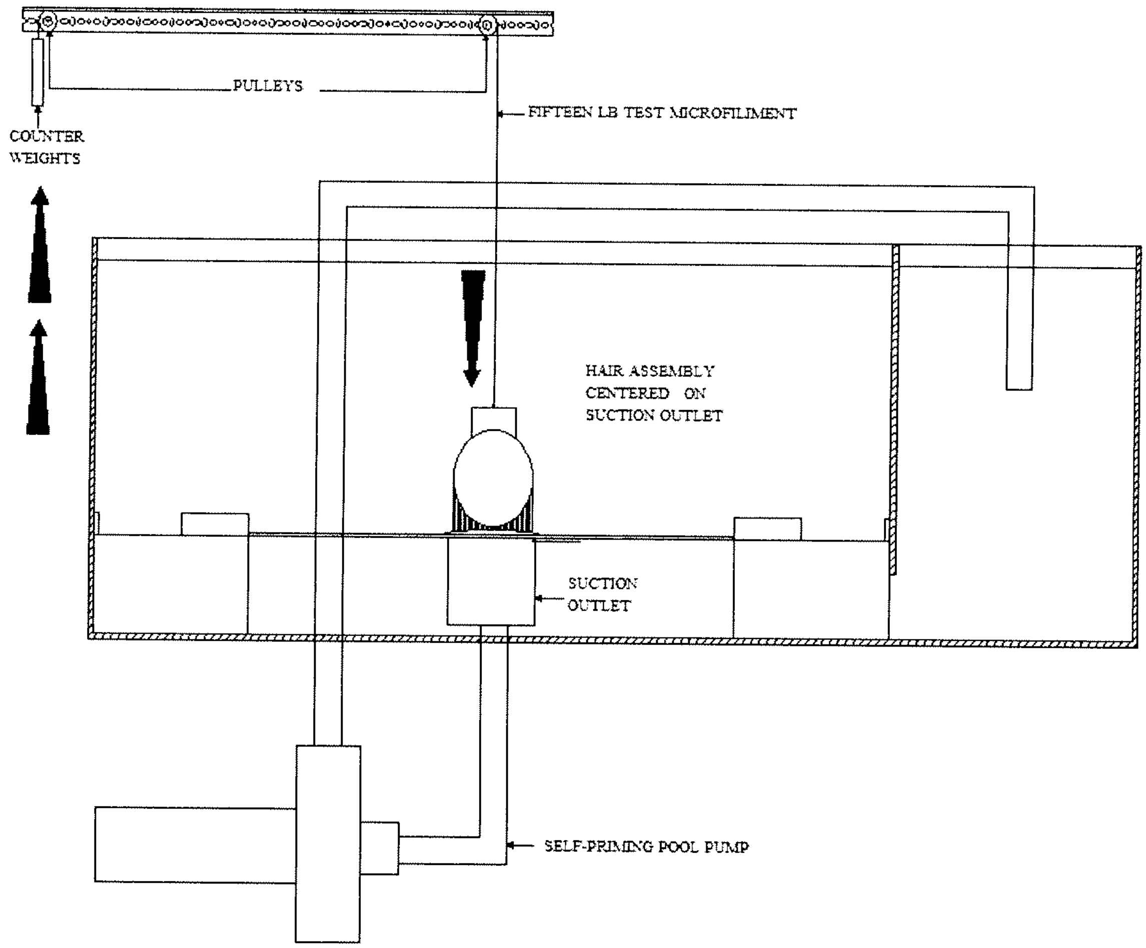
Skull Assembly Entrapped Pressure Drop Curve after 90 seconds elapsed time:



Hair Test Stand Used by PSC – Hair Prior to Lowering



Hair shown in entrapped position

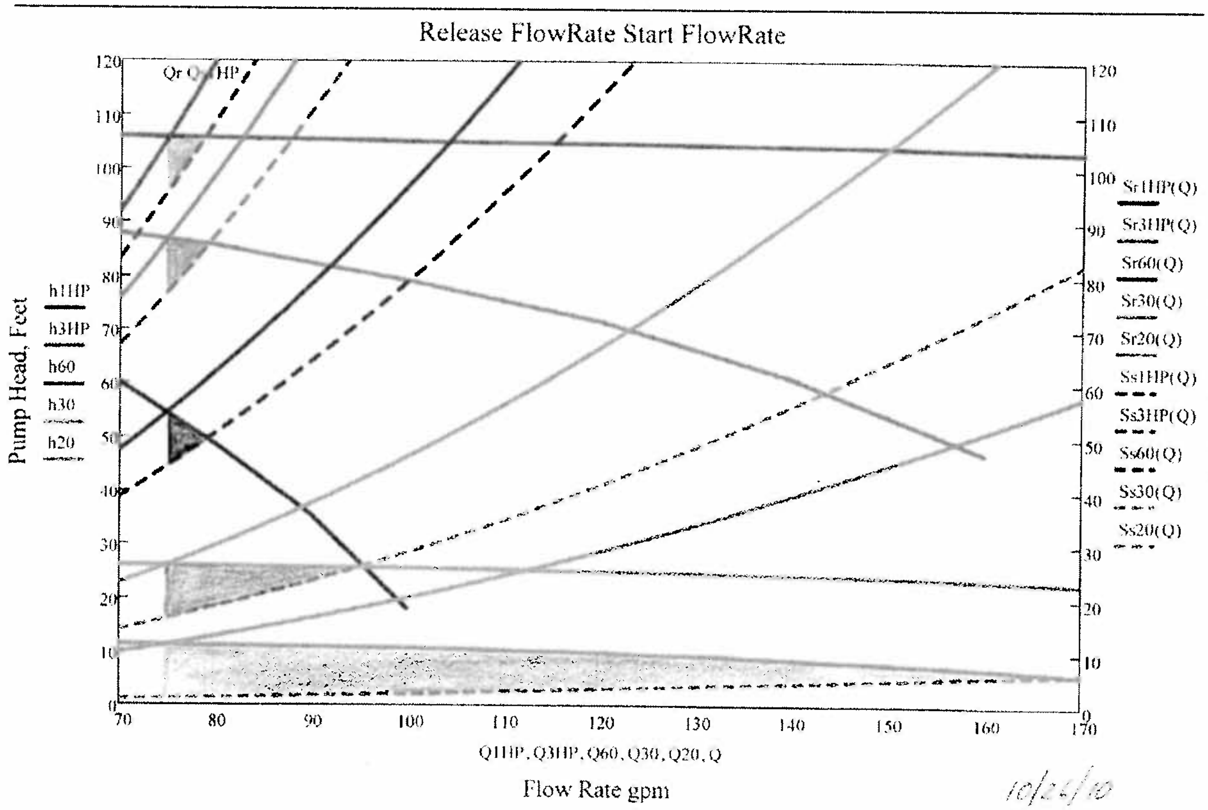


The subject suction fitting was then tested using the stand above. The flow was preset at 70gpm/30 Hz and the sustained vacuum level was verified to be at least 25 in/HG upon complete suction fitting blockage. The skull assembly was the lowered until the skull rested on the suction fitting under test. The skull was permitted to remain in contact without releasing the five pound counter weight for 90 seconds. The counter weights were carefully released so that the full five pounds was acting on the skull assembly. The flow rate at the point the skull assembly released was recorded at between 39 and 41 gpm over numerous trials.

If we were to assign the most conservative maximum flow rating for the subject fitting it would be 45 gpm based upon the test data. This is considerably less than the VGB-rated flow of 100 gpm.

What is not shown above is the additional adverse effect of the lack of a reasonable pump performance specification. As one can readily observe, PSC utilized the vacuum level upon complete blockage as the pump performance criteria in our Corrective Test show above. Absent such a specification, the test lab is free to utilize any pump they choose to achieve the intended flow rate.

NOTE: Graph and Explanations for pump performance provided between borders below provided by Dr. Robert Rung.



A brief explanation follows:

The shaded triangles tell the story. They are constructed as follows:

The blocked condition is taken at 75 gpm, at the intersection of the pump curve, sloping downward, and this defines the blocked (solid) system curve and is the upper left vertex of the triangle.

The head loss from hair, at this flow rate, is taken to be 10 feet of water, and it is independent of the pump or operating speed, since it corresponds to the removal effort of 5 pounds force.

Therefore, the free-flowing system head must be 10 feet lower. This defines the lower left vertex of the triangle.

The free-flowing operating curve must pass through this point, and is shown as a dashed line.

The free-flowing operating point is at the rightmost vertex, the intersection of the pump curve with the dashed, unblocked, system curve.

The real pool pumps of 1HP, 3HP and 10 HP operating at 60 Hz have fairly similar triangles, but this is likely coincidental.

The same 10 HP pump operating at 30 and 20 Hz has a lesser slope of the pump curve.

Further, the total head of the pump is lower at lower speed, so the slope of the system curve is less. These combine to move the free flow operating point much further to the right.

This means that in the 19.8 procedure, the starting point, which defines the rating, is higher for a low-speed pump, and gives an unjustified higher flow rating to a cover/grate.

The effect of the variable frequency drive 10 horsepower pool pump was examined at the PSC lab. We found that the vacuum reading at the sump/pool interface would vary considerably depending on pump/impeller speed. The speed is controlled electronically via the VFD device. If the VDF device is relied upon to control the flow both for hair and body testing then the tests will result in over-ratings because the vacuum level will be proportional to the impeller speed. Whereas if a properly sized flow control valve is used to control the flow then the impeller speed can be set to a constant that the resultant vacuum force reading at the sump/pool interface will always be >25 in/HG.

SECTION 5 BODY ENTRAPMENT

In general, we question the application of the required, "99th percentile man 18" X 23" blocking element size specification. We feel that while it may encompass most people, what about larger people or a reasonable safety factor. We would feel more comfortable with a 24" X 30" minimum blocking element size definition for all required tests that determine a maximum safe flow rating.

Technical flaws observed and detailed under this section also have significant impact on the current over-rating of suction fittings under the Standard.

Observed Flaws:

1. **Section 5.1.3 Test Equipment** – The blocking element specification is problematic.
   a. The requirement is that the element be, "ballasted to neural buoyancy within 0.70 lbf". This specification will not produce consistent and reliable results. This level of buoyancy is inherently unstable under the water at the test depth. (The way the element pops up will never be the same way twice)

b. The basic construction detail of how to achieve and verify the required buoyancy is absent from the standard. How is the buoyancy lbf measurement to be taken?

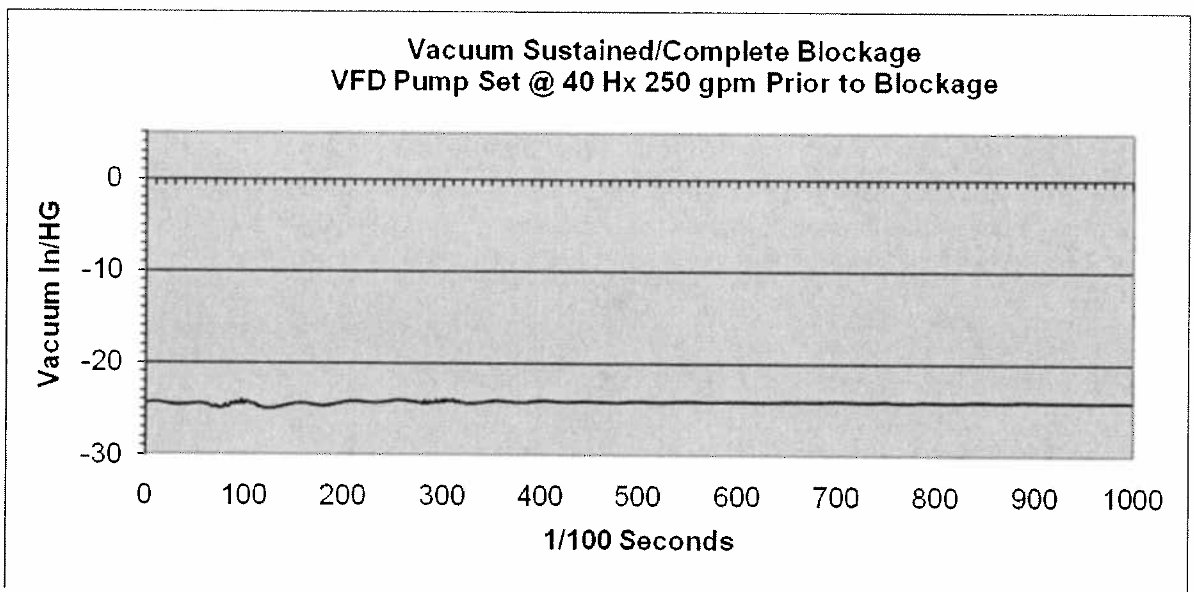
c. The specification does not include any requirement for suction fitting mounting details, as written a suction fitting could be tested without the surrounding pool floor or wall surfaces.

d. There is no detail for the means necessary to perform the force measurement required in the standard. The standard appears to permit a simple calculation in lieu of physical testing in 5.3.1.

e. The standard is vague on exactly which size blocking element is utilized to perform the required tests.

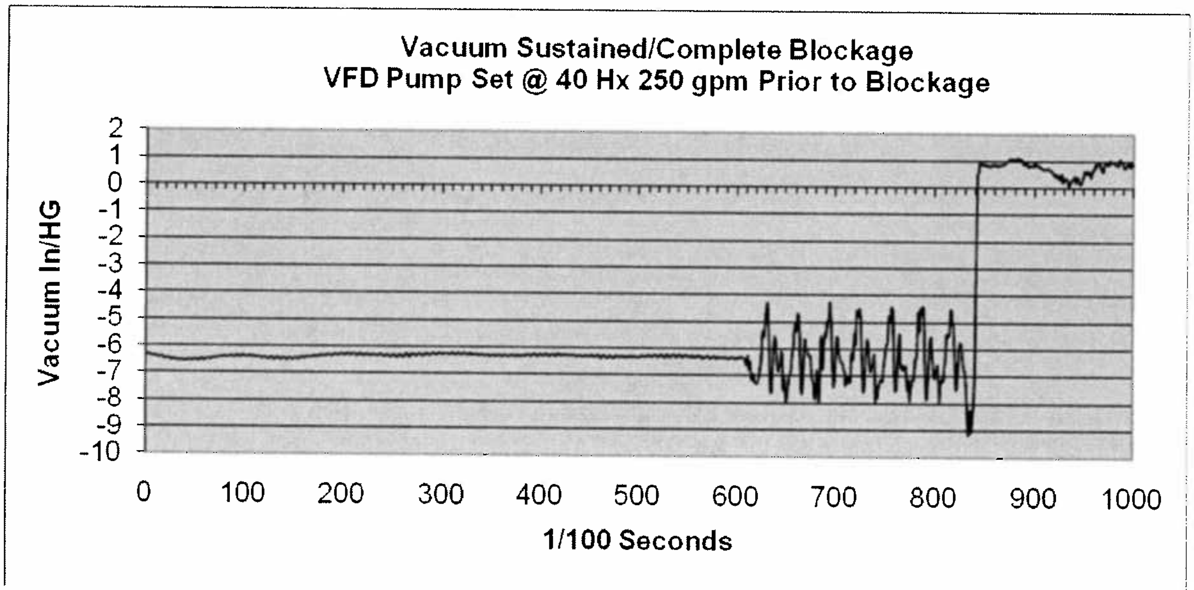
f. There is no performance specification for the pump used during the required body block tests. The effects of pump specification can be observed as follows.

The chart below represents the resultant vacuum force reading when the 10 horsepower VFD pump is preset to flow at 250 gpm/40 Hz through a 2" SCH 40 pipe and then blocked.



The recorded sustained vacuum level acquired after the blockage has occurred is approximately 25 in/HG. 25 in/HG is a high vacuum reading. 25 in/HG sustained vacuum would produce a hold-down force of 525 on an 8 inch nominal sump having an area of 42.72 in^2.

The chart below represents the resultant vacuum force reading when the 10 horsepower pump is preset to flow at 70gpm/15Hz through a 2" SCH 40 pipe and then blocked.



The recorded sustained vacuum level acquired after the blockage has occurred is approximately 6.5 in/HG. 6.5 in/HG is a relatively low vacuum reading. This level would produce a hold-down force of 136 on an 8 inch nominal sump having an area of 42.72 in^2.

SUMMARY

Under the current leadership the standard has failed to provide a consistent, reliable and repeatable method of testing and rating suction fittings. We have however, provided numerous research papers and documented evidence in support of the defects we have observed in the various hair and body test protocols. The PSA and all of its supporters, including manufacturers, pool builders, Engineers, safety advocates, University Professors, scientists and concerned citizens are standing by and willing to assist the CPSC in these important deliberations.

Pool Safety Council

We are pleased to see this type of forum where input from people like us can make a difference. If the question was asked of us: What outcomes would the Pool Safety Council expect to see as result of this public hearing process? In broad terms, our answers would be:

> For the CPSC to step up its efforts to develop a consensus-based system to develop the necessary course materials to educate the industry regarding the true nature of how to identify and correct potentially fatal flaws in existing pool and spa circulation systems when they see them.
>
> For the CPSC to step down its involvement in promulgating confusing interpretations and definitions and focus more on promulgating true consensus-base guidelines that incorporate all state-of-the-art engineered-solutions, systems, products and procedures to *guaranty* pool and spa circulation system designs cannot harm anyone under reasonable anticipated usage and operation.
>
> For the CPSC to *guaranty* [emphasis added] a level the playing field in the standards development arenas.

Respectfully submitted,

Paul Pennington
Pool Safety Council

Pool Safety Council

MEMORANDUM

March 25, 2011

Paul Pennington

RE: Pool and Spa Drain Covers - Public Meeting

What is the potential impact of over-rating a pool and spa drain cover on public safety? The impact associated with over-rated suction fittings is the potential for loss of life or limb. The inconsistencies and ambiguities contained in the ASME A112.19.8-2007 standard have already produced dangerous product listings, one of which we consider very dangerous, that is low profile, high velocity type covers.

What data supports your conclusion? Test data recorded utilizing two over-rated products including a so called "unblockable" cover have shown that hair and body entrapment will occur at the erroneous flow.

What is an acceptable level of variance in flow ratings that would be in the interest of safety? There is no need for any level of variance - unless it involves inherent variations normally seen in flow measurements using flow meters that have reasonably good accuracies. (Less than 1% over the range) What data supports your conclusion? The paddlewheel flow meters we use at the lab have accuracy within 1% over the range. Note Flow meters normally seen in the field in pool and spa installations do not have this accuracy. Any such variance must be clearly stated in the standard – currently the standard specifies a flow meter accuracy of +/- 3%. This is the maximum variance that CPSC should consider as acceptable.

What data is available to help the CPSC assess the scope of drain covers manufactured since 2008 and stamped as compliant with the P&SS Act that have been installed in public pools and spas versus those installed in residential pools and spas? We have been evaluating suction fittings for some years and have learned a great deal about the technical flaws in the standard. The best example we can provide relates to one suction outlet cover where we found the best possible maximum rating to be only 12 gpm – this cover is a low-profile type cover very similar to covers that have caused more than one death. This cover is rated at 100 gpm and is stamped with a VGBA mark indicating compliance with the act.

CPSC should take a hard look at the test results from NSF when answering this question. Our test results at the PSC Lab are very similar to the NSF study and resultant ANSI complaint against IAPMO.

We are preparing a detailed report of the major technical flaws in the standard. We will identify our solutions and provide a report of the progress or lack thereof in the APSP standards development venue. We will have this report to you by 4/1.

Pool Safety Council Laboratory
2734 Land O'Lakes Boulevard
Land O'Lakes, Florida 34639

What does the proper selection of a pump have to do with over-rating drain covers?
Most pumps used for pools and spas are capable of producing a vacuum of over 26 inches of Hg. It is impossible to pull a vacuum higher than 30 inches of HG. The standard does not include a pump performance specification. Since there is no specification the test lab is free to utilize *any* pump. However, any one skilled in the art of constructing pool and spa circulation systems, in the design of a testing rig for suction fittings, would use a pump that produces vacuum forces common in the industry. The ability of the pump to produce a high vacuum is essential to consistent ratings of suction fittings, especially as it relates to the hair and body entrapment test protocols.

The pump suction vacuum level is directly proportional to the resultant hold-down force. That is, a pump that only produces 14 inches HG of suction vacuum will produce roughly one-half the hold-down force as a pump that produces over 26 in/HG of suction vacuum.

We have test data that clearly demonstrates this proportional relationship between vacuum and hold-down forces. We will provide this test data by 4/1.

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Pool Safety Council

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Pool Safety Council Laboratory
2734 Land O'Lakes Boulevard
Land O'Lakes, Florida 34639

NSF International

April 1, 2011

Office of the Secretary
Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

RE: Pool and Spa Drain Covers - Public Meeting

Dear Sir/Madam,

Enclosed please find the written text for the oral presentation and supporting documentation that NSF International will be presenting at the CPSC Public Meeting on Pool and Spa Drain Covers on Tuesday, April 5, 2011.

This is a copy of the presentation NSF International submitted via email to the cpsc-os@cpsc.gov address on Thursday, March 31st for inclusion into public record.

Like the Consumer Product Safety Commission (CPSC), NSF is deeply concerned about the safety of swimming pools and pool drain covers. We appreciate the opportunity to present to the Commission this information on NSF's pool equipment testing and certification program, which supports drain cover compliance to the Virginia Graeme Baker Pool and Spa Safety Act.

Should you have any questions or concerns regarding the following documentation, please contact me at purkiss@nsf.org or 734.827.6855.

Sincerely,

Dave Purkiss
General Manager
Recreational and Public Drinking Water Programs
NSF International

Attachment

NSF International Presentation

CPSC Public Meeting: Pool and Spa Drain Cover Testing for Compliance to the Virginia Graeme Baker Pool and Spa Safety Act

April 5, 2011 - 9 a.m. EST

Good Morning. I am Dave Purkiss, General Manager of Recreational and Public Drinking Water Programs at NSF International.

Thank you for allowing NSF the opportunity to provide information on its pool equipment testing and certification program, which supports drain cover compliance to the Virginia Graeme Baker Pool and Spa Safety Act (VGBA). NSF strongly supports the important work of the CPSC and we have a shared mission - to protect public health and safety. We fully support CPSC's investigation into drain cover safety testing and certification to the ASME A112.19.8 standard.

A brief summary of NSF International will help you to understand the expertise NSF brings to this issue of pool drain safety.

About NSF

NSF International is an independent, not-for-profit, third-party standards development and product certification organization founded in 1944. Its mission is to help develop national public health standards and to test and certify products for public health, safety and environmental protection. As an example, in 1988, NSF developed the national drinking water product standards at the request of the U.S. EPA. NSF conducts a wide array of independent product testing and certification services in the areas of drinking water quality, food safety, health sciences and consumer products. NSF's expertise is recognized internationally, including being designated a World Health Organization (WHO) Collaborating Centre in food safety, water quality and indoor environment. NSF certification contracts provide legal authority for NSF to continuously inspect production facilities for compliance, and to request a product recall or issue a public notice if products do not meet certification requirements – or in any way pose a threat to public health or safety.

Accreditations

NSF, as a third-party certification and testing organization, is overseen by Accreditation Bodies including the American National Standards Institute (ANSI), the Standards Council of Canada (SCC) and the Occupational Safety and Health Administration (OSHA). The NSF labs are also ISO 17025 accredited and, in total, NSF has more than 50 accreditations, which serve to ensure that NSF follows established procedures and regulations, has qualified experts on staff, and has proper systems in place. NSF undergoes periodic inspections to maintain accreditation. (A full list of NSF's accreditations is in the appendix.)

NSF Experience with Pool Drain Testing

NSF has tested and certified pool and spa products since 1960. NSF has tested suction fittings for over 11 years. For the past ten years, we have been members of the committee that oversees the standard for pool drain suction fittings (ASME/ANSI A112.19.8-2007). We have been testing to the ASME/ANSI {A112.19.8-2007} standard -- and have been actively involved in the ASME's Technical Committee -- for nearly four years, which is when the current version of the standard was introduced.

NSF also has actively campaigned to increase awareness of the need to comply with the VGBA amongst health officials and consumers since it was passed into law. NSF has created public service messages, tips and obtained coverage of this issue on TV, radio, online and in print. (See the appendix for examples.)

NSF is very concerned about this issue of pool drain cover compliance. Our record over the past two years reflects this ongoing concern about whether all testing laboratories' drain cover testing procedures were done in compliance with the ASME standard. We have acted on this concern and a chronology of those actions follows.

Chronology of NSF Formal Complaint Regarding Pool Drains

The pool drain issue came to NSF's attention when others in the industry came to us with concerns about drain covers already tested and certified by another certifier. They were concerned as they did not believe the drain covers met the certified listed flow ratings.

NSF tested those drain covers, at its own expense, and observed what NSF believed to be drastically lower maximum flow rates for several pool drain covers compared to the listed rating for those pool drain covers provided by the other certifier.

NSF performed the testing to the requirements of the ASME standard, and found that flow ratings of less than 6 gallons per minute (gpm) were obtained for two fittings that had been given ratings of 100 gpm or more by the other certifier. One of these fittings was tested in the presence of the Chairman of the ASME Technical Committee, who then submitted the report to the entire ASME Technical Committee, which includes staff from CPSC.

In April, 2010, NSF brought this issue to the attention of that certifier. When NSF was unable to resolve the discrepancies with the other certification organization, we submitted a formal complaint to the American National Standards Institute (ANSI), which accredits third party certification bodies. ANSI is conducting its own investigation to ensure that drain covers are being consistently tested to the requirements of the ASME Standard.

NSF continues to work with ANSI and the ASME standards committee to help ensure that all stakeholders understand the requirements and the intended measure of safety the ASME standard was designed to achieve.

We believe it was NSF's complaint to ANSI that triggered the events that led to the CPSC's investigation into drain cover testing and certification. When CPSC subpoenaed data from all testing labs, NSF fully complied.

After that point, however, NSF received no formal communication from the CPSC, nor did the CPSC visit NSF's test lab to witness the testing process. CPSC staff issued letters to drain cover manufacturers to inform them that -- according to CPSC's interpretation of the ASME standard -- their products may have been tested incorrectly.

Unfortunately, we believe the CPSC has misinterpreted some of the requirements of the ASME {A112.19.8} standard, issues that are fully addressed in our following responses to the CPSC's questions.

CPSC Question 1 (Slide 1)

With regards to Section 4, Hair Entrapment, and Section 5, Body Entrapment, of ASME/ANSI A112.19.8-2007, how have these provisions of the standard been interpreted in the past? How are they currently being interpreted? What is the rationale behind the various interpretations? At what point in time did the interpretation change? What other interpretations have been considered? How were decisions on which interpretation to apply made?

In response to Question #1 regarding interpretations, Standards Development Organizations (SDOs) that are accredited by the American National Standards Institute (ANSI) must establish policies that address official interpretations of any American national standard. The specific rule for accredited SDO's is found in ANSI *Essential Requirement, Section 3.5.*

Section 3.5 mandates that official interpretations of a standard be obtained from the committee that developed the standard, which, for this pool drain standard, would be the ASME Technical Committee. ASME has a formal procedure for issuing interpretations which requires a balloting process and publication of the interpretation. NSF is not aware of the CPSC making any requests for official interpretations to ASME pertaining to Sections 4 and 5 of this standard to date.

The ASME {A112.19.8} standard's Technical Committee includes representatives from three ANSI-accredited drain cover certification organizations, including NSF, as well as product manufacturers and the CPSC. This group has had many discussions regarding the common practices that laboratories follow in testing products to the requirements of the standard, including the hair and body entrapment tests.

The only discussion that NSF is aware of in regards to Section 4, Hair Entrapment, is the one NSF led at the committee's June 2009 meeting pertaining to the degree of sweeping of the hair in the hair entrapment test. This resulted in new language being drafted for the successor standard, APSP-16.

With regard to the body entrapment tests, NSF has been an active member of the ASME Technical Committee -- having never missed a meeting since the standard was introduced in 2007. Through all committee discussions, both in person and in writing, it was always agreed that the smallest applicable body blocking element should be used for the body entrapment testing, as is indicated in the definition in the ASME A112.19.8 -2007 standard and subsequent versions. The definition of applicable body block in the standard specifically states "*...its actual size for test purposes is the smallest size that will completely shadow the suction cover/grate being tested....*" **(Slide 2)**

In addition, ASME Technical Committee Chair, Mr. Leif Zars, visited NSF and witnessed the methods used for testing according to this standard. Throughout all of those instances, neither Mr. Zars, nor the Technical Committee, questioned the use of the smallest applicable body block for this testing.

Following is an explanation as to why the correct interpretation is so important:

(Slide 3) Table 1 of the ASME {A112.19.8} standard correlates the average width of specific-sized individuals with the maximum removal effort they would need to escape entrapment. It gives the 99th percentile man (represented by the large 18" x 23" body blocking element) a maximum removal effort of 120 lbs, or half their body weight. Conversely, Table 1 gives the 3 - year old child (represented by the small 9" x 11.5" element), a maximum removal effort of 15 lbs.

In theory, testing a fitting with both body blocks up to their respective removal efforts, per Table 1, should yield equivalent flow ratings. However, if you test small drain covers with a larger body block and only allow for the release force of the smaller element, you will unnecessarily lower the flow rating for covers that meet the intended requirements of the standard and the safety risk the standard is intended to address. NSF has performed testing that shows that using the larger body block element for this specific test could lower flow ratings by up to 75%, which could have a significant adverse public health consequence, such as increases in recreational water illness (from lowering circulation rates), or unnecessary recall and replacement of drain covers.

The draft version of APSP-16 contains revised language requiring testing with the smallest applicable body block at the appropriate removal effort in Table 1 (as required in the existing standard) as well as a new requirement that the large 18" x 23" body block be used at the 120 lb. removal effort listed in Table 1. These two tests should yield similar maximum flow rates for most fittings, although it is possible for certain types of covers to attain a lower flow rating with the smaller body block.

In contrast, the CPSC appeared to make its own interpretation of this standard -- that the Body Entrapment test should use only the *largest* body blocking element (representing an adult) but at the removal effort set for the *smallest* applicable fitting (i.e. a 3-year-old child).

The CPSC interpretation of testing the larger 18" x 23" body block at the release value (removal effort) of the smaller sized body block defeats the rationale upon which Table 1 of the standard is predicated.

As stated before, the intent of the ASME committee, and the practice NSF has followed since the adoption of the 2007 standard, is in accordance with the Standard's definition of the applicable body blocking element which specifies *"... actual size for test purposes is the smallest size that will completely shadow the suction cover/grate being tested...."*

All certification organizations, including NSF, are required by statute to test drain covers against the existing VGBA referenced standard.

CPSC Question 2 (Slide 4)

What is the potential impact of over-rating a pool and spa drain cover on public safety? What data supports our conclusion?

In response to Question #2, pool and spa drain cover listings include the certified flow ratings for each product. Used by pool designers and professional engineers, this information is a critical component of pool design, pool circulation and system flow.

In regards to over-rating drain covers, NSF compiled our body block test data to date and plotted the data for both blockable and unblockable drain covers (see charts in appendix). **(Slides 5 and 6)**

What resulted from this is a very clear conclusion that, as flow rates increase beyond their established safe flow rates, the removal effort required for blockable drains, and therefore risk of entrapment, increases exponentially. In tests, NSF found that a 25% increase beyond the safe flow rating requires an 85% increase in removal effort. The relationship between flow rate and removal effort is more linear for the unblockable drains where a 25% increase in the flow rate will increase the removal effort by 36%.

NSF saw first-hand an issue with a drain cover that was rated by the manufacturer at 100 gpm and had a total vacuum lockup at only 6 gpm. It was this specific fitting that prompted NSF to file the complaint with ANSI for further investigation. NSF is concerned that this remains a public safety issue.

CPSC Question 3 (Slide 7)

What is an acceptable level of variance in flow ratings that would be in the interest of safety? What data supports your conclusion?

In response to Question #3, in NSF's experience, the variance in the required removal effort for repeated tests on the same fitting is +/- 8 percent. **(Slide 8)**

NSF believes the biggest sources of variance in testing relates to how the drain cover and sump are mounted on the simulated pool floor.

It is important to understand that the ASME {A112.19.8-2009} standard and associated testing is based on the *complete suction fitting system*, which includes both the drain cover AND sump. Different sumps can yield vastly different flow ratings of the same drain cover.

(Slide 9) When NSF tested a small 8-inch drain cover with two different sumps that had a variance of 0.1 inch height from the surface of the pool, the cover that was 0.1 inch higher obtained a maximum flow rate of 48 gpm. The cover that was 0.1 inch lower failed to meet the requirements of the standard at 6 gpm.

NSF is the only certifier that currently includes in its public, online listings the details regarding the sump approved for use with a particular drain cover. NSF also includes in its reports, the actual sump used when the cover was tested. **(Slide 10)** NSF strongly believes that this information should be included in the product listings data from all certifiers.

Thus, the use of the manufacturer's recommended sump and the installation of the sump and cover are absolutely crucial to obtaining valid results in the laboratory and, more importantly, safety in the field.

CPSC Question 4 (Slide 11)

What actions have been taken or are currently underway to resolve the issue of significant variance in pool and spa drain cover ratings and ensure this problem is resolved and does not occur again?

In response to Question #4, this question goes to the very heart of why we are here today. As mentioned earlier, in 2010, NSF saw a wide variance in flow rates on a drain cover that had been tested and certified by another laboratory. NSF brought this issue to that certifier, and then to ANSI, the third-party Accreditation Body, which is still continuing that investigation.

The ASME committee also has drafted language that clarifies testing requirements for the proposed successor standard, APSP-16.

CPSC Question 5

What is the status of ANSI/APSP/IAPMO-16-2011 and what is APSP's intention regarding any successor standard?

This question is best answered by APSP.

Summary: Proposed Solutions/Next Steps

NSF appreciates the opportunity to bring these concerns to the Commission's attention. In light of the issues presented, NSF respectfully suggests the following as next steps: **(Slide 12)**

1. We encourage the CPSC to clarify its concerns, and seek requests for official interpretations, through the Standard's Technical Committee in accordance with ANSI *Essential Requirements*, Section 3.5.

2. We encourage CPSC to support the third-party consensus, standards development process, and in particular the timely adoption of APSP-16, which is the successor standard to ASME A112.19.8-2009.

3. We suggest that CPSC and the Standard's Technical Committee require details about the specific sump for which a drain is approved, and was tested with, be included in the listings for each drain cover certification.

4. Additionally, we recommend the CPSC consider linking to the certifiers' online drain cover listings from the CPSC's Poolsafety.gov website.

5. As noted in CPSC's press release of March 18, 2011, "unblockable drain covers are not part of this investigation..." yet no such statement was made in letters sent to companies that only manufacture unblockable drains. A letter making this clarification to the relevant pool drain cover manufacturers will help prevent uncertainty regarding the safety of unblockable drain covers.

6. We believe it would be beneficial for the CPSC to visit all of the accredited laboratories to witness testing on a periodic basis. If the Commission were to do that, and take a leadership role on the APSP-16 Technical Committee, it would help ensure that everyone understands and implements the testing requirements in the same way.

Thank you for your time and attention to this vitally important consumer safety issue. We look forward to continuing to work cooperatively with the CPSC on this matter.

APPENDIX

Supporting Information for NSF Presentation

A. Slides

Slide 1: CPSC Question 1

Slide 2: Definition of Applicable Body Block Element

Slide 3: Table 1 of ASME A112.19.8 – 2007 "Applicable Body Block Element – Calculation of Removal Force/Effort"

Slide 4: CPSC Question 2

Slide 5: NSF Chart: Effect of Changes in Flow Rate – Blockable Fittings

Slide 6: NSF Chart: Effect of Changes in Flow Rate – Unblockable Fittings

Slide 7: CPSC Question 3

Slide 8: Variances in Body Block Entrapment Testing

Slide 9: Major Sources of Variation Body Block Test

Slide 10: Example of NSF certified product listing for a suction fitting with sump detail

Slide 11: CPSC Question 4

Slide 12: CPSC Question 5

Slide 13: NSF Suggestions

B. Other Attachments

1. Table 1 of ASME A112.19.8 "Applicable Body Block Element – Calculation of Removal Force/Effort" (Source: ASME)
2. List of NSF Accreditations
3. Bibliography of NSF Pool Drain Safety Consumer Education Campaign Coverage

Questions

1. **How have the Section 4 Hair Entrapment, and Section 5 Body Entrapment provisions been interpreted?**
   - In the past?
   - Currently?
   - Rationale?
   - How are interpretations made?

Applicable Body Block Element

Section 1.5 Definition

"…its actual size for test purposes is the smallest size that will completely shadow the suction cover/grate being tested…."

Table 1 of ASME/ANSI A112.19.8

Table 1 Applicable Body Block Element — Calculation of Removal Force

Bather	Min. Width Blocking Element to Shadow Tested Cover	Blocking Element Length — 1.2777 × Width	Basis Is Child Width	Ratio of Element Width to Child Width	Ratio Cubed	Times Child Weight = 30 lb	One-Half Weight	Maximum Removal Effort No.
99th percentile male	18	23.0	9	2.00	8.00	240	120	120
	17.5	22.4	9	1.94	7.35	221	110	110
	17	21.7	9	1.89	6.74	202	101	101
	16.5	21.1	9	1.83	6.16	185	92	92
	16	20.4	9	1.78	5.62	169	84	84
	15.5	19.8	9	1.72	5.11	153	77	77
	15	19.2	9	1.67	4.63	139	69	69
	14.5	18.5	9	1.61	4.18	125	63	63
	14	17.9	9	1.56	3.76	113	56	56
	13.5	17.2	9	1.50	3.38	101	51	51
	13	16.6	9	1.44	3.01	90	45	45
	12.5	16.0	9	1.39	2.68	80	40	40
	12	15.3	9	1.33	2.37	71	36	36
	11.5	14.7	9	1.28	2.09	63	31	31
	11	14.1	9	1.22	1.83	55	27	27
	10.5	13.4	9	1.17	1.59	48	24	24
	10	12.8	9	1.11	1.37	41	21	21
	9.5	12.1	9	1.06	1.19	35	18	18
3 year old child	9	11.5	9	1.00	1.00	30	15	15

GENERAL NOTES:

(a) All dimensions in inches (1 in. = 25.4 mm).

(b) This Table calculates the maximum removal effort that shall be required to remove the body blocking element from the cover/grate being tested as based on the width of the applicable body blocking element. Intermediate values may be calculated using the formula $(width/9)^3 \times 15$

Example: $10.7/9 = 1.188$; $1.188^3 = 1.68$; 1.68 multiplied by 15 = 25.2 lbf

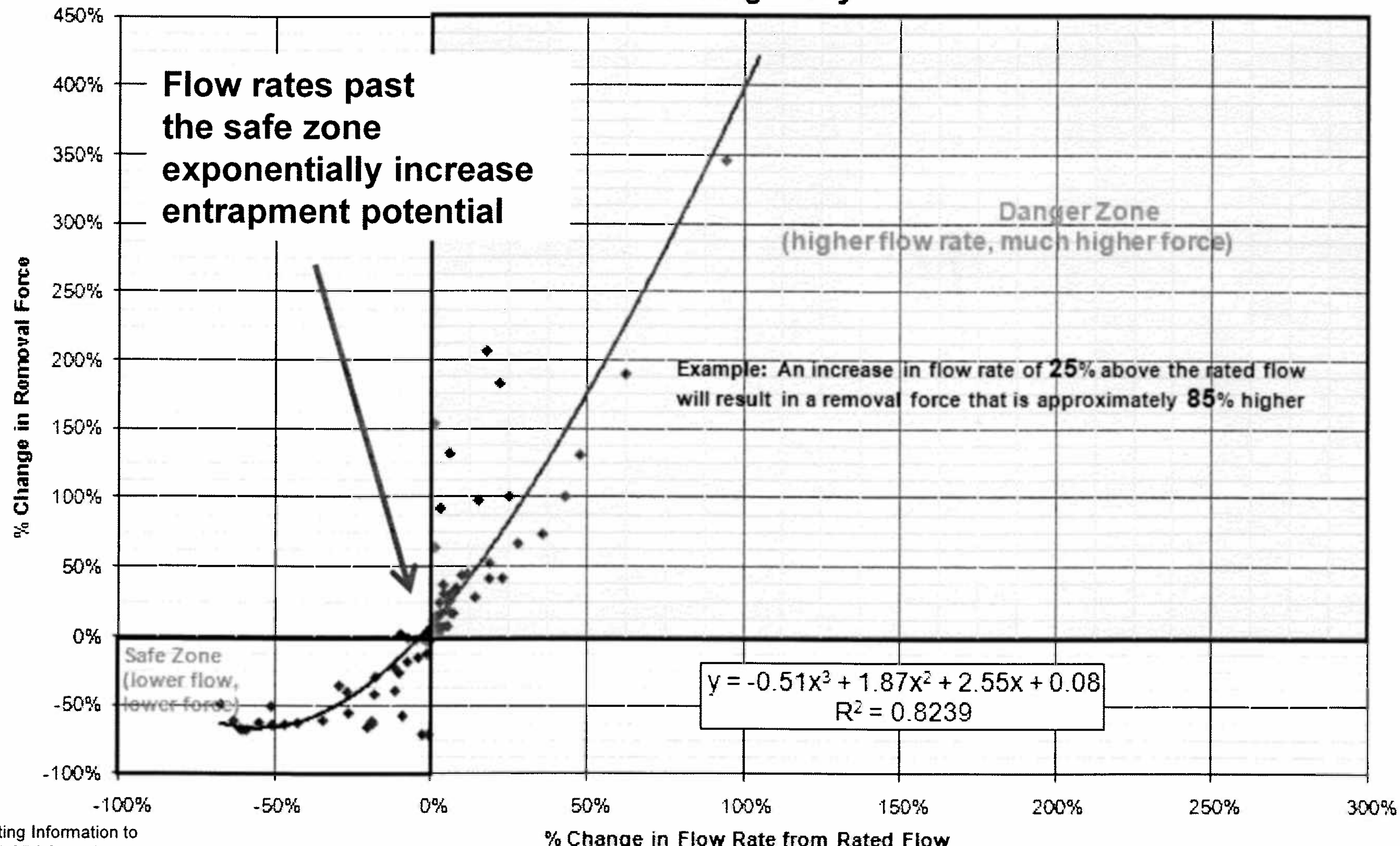
Source: ASME A112.19.8 – 2007 page 14

Questions

2. What is the potential impact of over-rating a pool and spa drain cover on public safety?

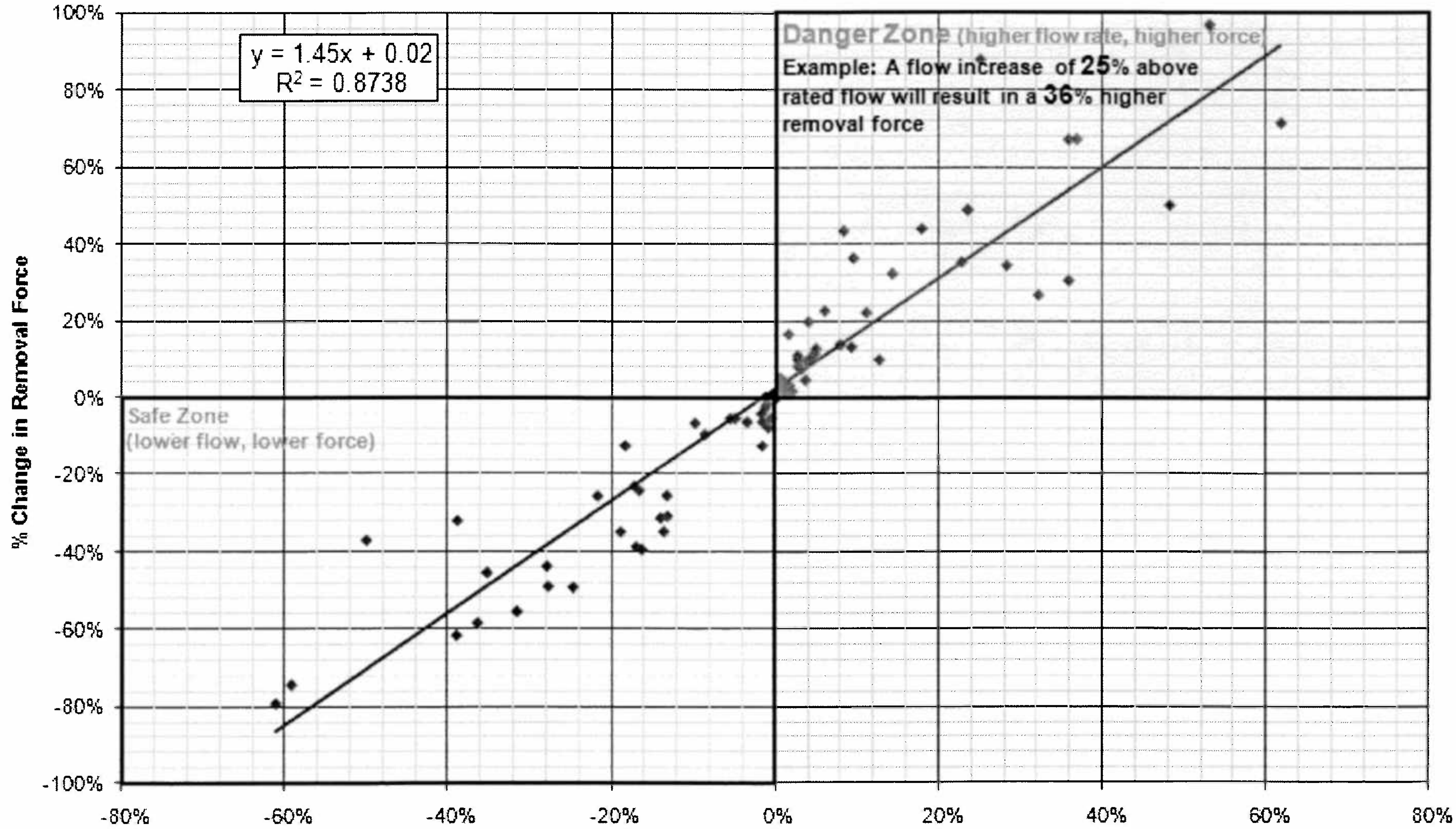
Flow rates past the safe zone increase entrapment potential exponentially

Effect of Changes in Flow Rate on Maximum Body Block Removal Force
Blockable Fittings Only



As flow rates increase – the removal force increases exponentially

Effect of Changes in Flow Rate on Body Block Removal Force
Unblockable Fittings Only



Questions

3. **What is an acceptable level of variance in flow ratings that would be in the interest of safety?**

Variances in Body Entrapment Testing

- **Variances in repeated tests of the same suction fitting at the same flow rate**
  - removal force variance of +/- 8%

- **Variances in testing same drain cover on different sumps**
  - can result in significant differences

Major Sources of Variation Body Block Test

1 - Use of a simulated pool floor
2 - Sump used

Body Block Test on an 8" cover using 2 different sumps

Passing Flow Rate	Sump Used
48 Gallons per minute	1
<6 Gallons Per Minute	2

The main difference between the sumps is that sump 2 lowers the cover elevation by ~ 0.1 inches

NSF Certified Product Listing Example

Address http://www.nsf.org/Certified/Pools/Listings.asp?TradeName=&ProductType=ASME1908&PlantState=&PlantCountry=&PlantRegion=&su Go Links » Convert

Facility : Ann Arbor, MI

Suction Fitting Model	Test Sump Model or Field Type	Orientation (Wall and/or Floor)	Design Flow Rate (GPM)
30" x 30" Suction Outlet Cover[1] [4] [5]			
ABC-123 Model	Field Fabricated-FG2	Floor	1432
XYZ-123 Model	Field Fabricated-FG2	Wall	1120
B-1000 Model	242424SSMD-AE-8	Floor	1432
A-1000 Model	242424SSMD-AE-8	Wall	1120
K-1000 Model	Reference Footnote [7]	Floor	1504

[1] Certified to ASME A112.19.8a-2008.
[2] Per ASME A112.19.8a-2008, the use of the suction fitting with a field fabricated sump built in accordance with Figure 2 of that standard shall be permitted when specified and designed by a Registered Design Professional. Installers should also ensure that the drain cover is installed, fastened and secured according to the drain cover and the sump manufacturer's instructions.
[3] This cover is approved for use over a field fabricated main drain sump that meets the requirements of the figure 2 in the ASME A112.19.8a-2008 Standard for Sunction Fittings, providing the sump is qualified by a Registered Design professional and installed per the manufacturer's instructions.
[4] NSF Listed units have a white cover.
[5] For single and multiple drain use.
[6] The sumps are stainless steel.
[7] Drain cover tested with a centrally located in floor 12 inch diameter pipe (No Sump). Testing qualifies use with 12 inch diameter pipe or smaller.

Questions

4. What actions have been taken or are currently underway to resolve the issue of significant variance in pool and spa drain cover ratings and ensure this problem is resolved and does not occur again?

NSF Suggestions

1. Encourage CPSC to clarify concerns and request interpretation from the Standard Technical Committee
2. Support third party consensus standard development process and timely adoption of successor standard APSP-16
3. Require all certifiers to include sump detail in their Certification Listings
4. Consider linking PoolSafely.gov to Certifier's website listings of drain covers
5. Encourage CPSC staff periodically visit test labs to help ensure consistency
6. Clarify to certifier customers that unblockable drains are not part of this investigation

1. **Table 1 of ASME A112.19.8 "Applicable Body Block Element – Calculation of Removal Force/Effort" (Source: ASME)**

Table 1 Applicable Body Block Element — Calculation of Removal Force

Bather	Min. Width Blocking Element to Shadow Tested Cover	Blocking Element Length = 1.2777 × Width	Basis is Child Width	Ratio of Element Width to Child Width	Ratio Cubed	Times Child Weight = 30 lb	One-Half Weight	Maximum Removal Effort No.
99th percentile male	18	23.0	9	2.00	8.00	240	120	120
	17.5	22.4	9	1.94	7.35	221	110	110
	17	21.7	9	1.89	6.74	202	101	101
	16.5	21.1	9	1.83	6.16	185	92	92
	16	20.4	9	1.78	5.62	169	84	84
	15.5	19.8	9	1.72	5.11	153	77	77
	15	19.2	9	1.67	4.63	139	69	69
	14.5	18.5	9	1.61	4.18	125	63	63
	14	17.9	9	1.56	3.76	113	56	56
	13.5	17.2	9	1.50	3.38	101	51	51
	13	16.6	9	1.44	3.01	90	45	45
	12.5	16.0	9	1.39	2.68	80	40	40
	12	15.3	9	1.33	2.37	71	36	36
	11.5	14.7	9	1.28	2.09	63	31	31
	11	14.1	9	1.22	1.83	55	27	27
	10.5	13.4	9	1.17	1.59	48	24	24
	10	12.8	9	1.11	1.37	41	21	21
	9.5	12.1	9	1.06	1.19	35	18	18
3 year old child	9	11.5	9	1.00	1.00	30	15	15

GENERAL NOTES:

(a) All dimensions in inches (1 in. = 25.4 mm).

(b) This Table calculates the maximum removal effort that shall be required to remove the body blocking element from the cover/grate being tested as based on the width of the applicable body blocking element. Intermediate values may be calculated using the formula

$(\text{width}/9)^3 \times 15$

Example: $10.7/9 = 1.188$; $1.188^3 = 1.68$; 1.68 multiplied by 15 = 25.2 lbf

2. List of NSF Accreditations

NSF International Accreditations

Product Certification Accreditation (ISO Guide 65):
- American National Standards Institute (ANSI)
- Standards Council of Canada (SCC)

Laboratory Accreditation (ISO 17025):
- American Society of Sanitary Engineering
- International Accreditation Service
- Occupational Safety and Health Administration (OSHA) (National Recognized Testing Lab - Electrical Safety)
- Standards Council of Canada (SCC)

Environmental Management System registered (ISO 14001):
- KEMA

Bottled Water State Recognition:
- AZ, CA (includes DWTU program), CT, FL, HI, IN, LA, MA, MI, NV, NJ, NY, PA, SC, VA.

Electrical Safety Recognition:
- All Canadian Provinces
- City of Los Angeles (application submitted)
- State of Oregon
- State of Washington

Plumbing Recognition:
- City of Los Angeles
- Recreational Vehicle Industry Association
- State of Oregon

Registered Facility for Testing per:
- Drug Enforcement Agency
- Food and Drug Administration
- Michigan Liquor Control Commission
- United States Department of Agriculture (organisms)

Safe Quality Food:
- American National Standards Institute (ANSI)
- PDV (Dutch Feed Board)

Seafood
- Marine Stewardship Council (MSC)

NSF International Strategic Registrations accreditations:
- American National Standards Institute (ANSI)-(Sustainable Forestry Initiative only)
- ANSI-ASQ National Accreditation Board (ANAB)
- Certification and Accreditation Administration of P.R. China
- International Automotive Oversight Bureau
- ISO 22000 (food safety)

QAI (organics certification):
- Conseil des appellations agroalimentaires du Québec
- International Organic Accreditation Service
- Ministry of Agriculture, Fisheries and Food
- United States Department of Agriculture

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Underwriters Laboratories Inc.

Statement of Underwriters Laboratories Inc.

Consumer Product Safety Commission

Public Meeting On:

Testing of Pool and Spa Drain Covers

under ASME/ANSI A112.19.8-2007

April 5, 2011

Statement of

Gary Siggins

Principal Engineer, Water Pumps,

Swimming Pool, Spa, and Whirlpool Bath Equipment

Thank you for this opportunity to appear before you, to offer Underwriters Laboratories perspective on the testing of pool and spa drain covers and the existing standard for these products.

Enactment and implementation of the Virginia Graeme Baker (VGB) Act was a critical milestone in the advancement of pool and spa safety and UL applauds the Commission's efforts to ensure the intention of that legislation is realized. As a not-for-profit organization with a mission of testing for public safety, UL shares with the Commission a commitment to advancing sound safety science, leveraging consensus-based standards and conformity assessment, to promote consumer safety. It was with this mission that we were founded 117 years ago. In the words of our founder, William Henry Merrill, "Know by Test and State the Facts" and we remain committed to that mission today. We have earned a reputation as a leader in product safety standards development along with product testing and certification. We test tens of thousands of products, components, materials, and systems for compliance to specific requirements. Each year, an estimated 20 billion UL Marks are put on products entering the global marketplace.

In the pool and spa drain cover market, UL currently has Listed 42 products to ASME Standard A112.19.8-2007.

Our testimony here today will outline our experience with testing to the 2007 Edition of ASME A112.19.8 and recommendations UL has advocated to enhance the standard and promote consistent conformity assessment practices across all labs engaged in certifications to this standard.

A Little Background on the Drain Cover Requirements

The 2007 Edition of ASME A112.19.8 is the second edition. The first edition was issued in 1987. The scope of the standard covers swimming pool fittings, the Standard was originally developed to address entrapment incidents in the first generation of hot tubs and spas. In drafting the first version, there had been some body entrapment incidences with hot tubs, but the focus of the standards activities at that time was possible hair entrapment in young children, which were seen as a greater risk. The standard did not have body entrapment resistance requirements at all.

The safety requirements for factory produced (portable) spas were published in 1981 in UL 1563, the Standard for Electric Spas, Equipment Assemblies and Associated Equipment. As there were no body entrapment resistance requirements in the A112.19.8 standard, and the risk was known, such requirements were written into the spa standard that UL developed. In UL 1563, two fittings were required or one fitting and a skimmer, arranged in such a manner that if one were to become blocked, the other could safely handle the entire flow of the system. After these requirements were implemented reports of entrapment injuries, both hair and body, in portable spas vanished.

It was subsequently decided the scope of the A112.19.8 standard should change. The requirements for small fittings used in whirlpool baths would be moved to the ASME standard for hydromassage bathtubs, A112.19.7. The primary target of the next edition of A112.19.8 would be swimming pool and in-ground spa fittings. Among other changes, the two most critical changes in the new edition were:

(1) An additional hair entrapment test was added using significantly more hair, and

(2) Incorporation of a test to establish a resistance to body entrapment.

The Root Causes of the Present Concerns

So moving forward to the current, 2007 Edition of the standard, concerns exist about the detail provided in the standards' requirements. A112.19.8 contains construction/materials requirements, performance tests, markings, installation instructions as do many product standards. From a testing and certification viewpoint it is primarily a test driven standard. The hair and body entrapment tests are by far the two most critical aspects of the standard. However, the root cause for the present concerns with these covers is that the large hair wand hair entrapment test and, in particular, the body entrapment test methods, were not adequately validated prior to publishing the standard. Some of the requirements are vague and require interpretation by the testing organization to perform the necessary testing. Other critical variables for consistent test results are not presently controlled at all and our testimony will address improvements we suggest to address these.

UL's Process for Interpreting Standards

There is a precise process within UL for the interpretation of standards. Any staff member might suggest needed interpretations or improvements in text, but it is all processed through a designated engineer, reviewed and then published for staff and our clients use as what we call a Certification Requirement Decision. This process is intended to ensure that when a standard requires interpretation, such interpretation is applied consistently across all of UL for repeatable testing, and provides detail to all involved parties as to how the test should be executed. Consistency in testing method and interpretation is key to UL.

The first question that must be asked in this process is whether the standard's text can be interpreted in the first place. In the case of A112.19.8, the test method for the Hair Entrapment Test, as drafted, was identified as vague in some places. UL determined, in its commitment to protecting human life and property from product risks and hazards, that formal interpretation was necessary to improve the consistency of results for these products and to qualify product that conformed to the intentions of the test. Accordingly, UL detailed a Certification Requirement Decision for the hair entrapment test that defined the feeding of the hair into the fitting during testing.

In the case of the Body Entrapment Test, the text in the standard was determined to be clear enough for the scope of products being addressed at that time. UL believes there are areas of this test specification that can be improved and has been advocating these changes through the standards making process. I will provide more details of our recommendations later in this presentation.

Standard Recommendations

It would be beyond the time constraints of this meeting to provide recommendations for fixes needed to the entire standard. I wish to focus on the key areas that could improve the consistency of the ratings given and help to better assure the installed fittings meet the public health and safety contemplated by the Virginia Graeme Baker Pool and Spa Safety Act.

Pump Specifications

Unfortunately, the specifications for the lab test pumps is unchanged from the 1987 Edition. The flow rates of fittings contemplated at that time were a fraction of that needed for residential and commercial swimming pools.

The body entrapment risk stems from the vacuum the pump can develop. The difference in pressure spread over the area of the fitting can generate a lot of force. A minimum available pump vacuum must be specified. It is my understanding that 26 inches of mercury vacuum is typical of the present generation of swimming pools and spa pumps.

The second part of a pump specification has to reflect differences in pump efficiencies and where along their performance curve they are operating during testing. This is of particular interest with smaller spa fittings using the large, full-head-of-hair test wand. The introduction of the hair could cause the flow of the pump to be reduced. This could result, in some cases as an artificially inflated flow rating. I believe you can compensate for these variances in pump performance curves by indicating the flow be evaluated after the hair is introduced into the fitting and not before.

The Body Blocking Element Design

The basic design is a plywood base covered with foam, weighted at the center of the top. I believe the use of foam reasonable until more research can be done on the use of some sort of artificial skin. The biggest concern is that although these units are close to neutrally buoyant, they are not stable. The flotation of the foam will result in the element trying to pull itself off and flip itself over. This tendency will contribute to inconsistent results. This element specification needs to be redesigned, likely with a metal backing of the foam so the element is not providing its own release force from the fitting.

What Element to Use?

The present text utilizes the largest "adult male" body blocking element but the release force is determined from the smallest element that will just cover the fitting. Although this is a conservative requirement from a safety view, it does not represent actual field incidents and might inadvertently restrict certain designs.

Table 1 in the current standard details a range of body blocking elements, representing a range of children, young and mature adults. I believe to best represent the range of people that might encounter the installed fitting, three tests should be run:

1. The first with the smallest element in the Table

2. The second with the largest element in the Table, and

3. The third with the smallest element that can cover the fitting with some overlap, 2 inches should compensate for the use of foam.

Testing with this sampling of body blocking elements should adequately represent the others.

Time Before You Attempt to Remove the Test Body Blocking Element

At present, the element is applied to the fitting and it is seated with 120 lbs. The release force is to be recorded "immediately after the 120 lbf is released". This is too broad. Some sort of time limit needs to be specified. I also believe we need to be careful here as some designs might exhibit their greatest release forces immediately, others after a few seconds. We need to capture the worst case.

Mounting Surface

The present requirements mandate the use of an uneven pool surface simulation only "where portions of the flow passage is the pool surface and is not controlled by the suction outlet manufacturer." This text is open to interpretation. As it is reasonable to encounter uneven swimming pool surfaces in the field, the text should likely mandate its simulation in all cases.

HAIR ENTRAPMENT TESTING

There are two main issues needing updating. The large hair wand specification, aside from being very expensive, calls for the use of a natural hair wig, secured to a mannequin head. A number of slightly different wigs could all meet the present specification. If the use of a wig is to be continued the specification needs to be clarified in language that the wig/hair replacement industry can clearly understand. I believe consideration/comparison testing should be done with a mannequin head/wig test wand versus other simpler to replicate designs such as a larger 5.5 oz. version of the Type 2 "ponytail" wand. We may be able to obtain similar results with a wand that is much easier to consistently construct.

FEEDING THE HAIR INTO THE FITTING

The present text and associated diagrams are from the first edition. If followed as written, you may not obtain the maximum amount of hair possibly being entrapped or entangled during testing. The text should clearly indicate some preliminary testing is needed to first determine the direction and motion of feeding the hair that results in the worst case.

PACKAGING AND INSTALLTION INSTRUCTIONS

I believe the key area here needing improvement is the Installation Instructions. Present text requires "detailed field sump design specifications when applicable." Installation specifications with diagrams of the pool surface, should be required for all fittings whether they are intended for factory sumps, field built sumps or both. The exact relationship between the cover and the surface of the pool must be controlled. Small differences in clearances will affect the performance of the fitting.

What should also be of concern to the Commission are "universal retrofit designs", such as "will work with all 8 inch round sumps." Some installation instructions for these require far too much to be done in the field, holes being drilled etc. I also believe one set of instructions indicated something to the affect "if you encounter other fastening means than these, call this number..." All the lab testing will go for nothing if the fitting securement later fails. Retrofits are certainly possible but each possible installation has to be evaluated separately in light of the tools available and experience of the person likely to be doing the installation. You have to assume entry level staff doing the installation.

Conclusion

I would like to again thank the Commission for giving UL this opportunity to share our perspectives and standards development experience on this important issue. In support of our mission to promote sound safety science, we remain committed to promoting adequate requirements for pool and spa drain covers that provide for consistent application of these critical safety protections. We would be happy to serve as a resource to you and your Committee as you consider ways to strengthen the test protocols within the cited standard and the overall implementation of the Virginia Graeme Baker Act.

Consumer Product Safety Commission,

Thank you for this opportunity to address this serious situation. I've been concerned about the advent of low profile, high velocity covers since I first witnessed testing in a lab in Ft. Pierce, FL in 2007. I drove to the CPSC offices in Bethesda, MD in order to express my concerns over the issue of Dual Drain Dynamic Differential Hold Down Forces exacerbated by the use of drain covers with low open surface area (*less than 20 square inches*).

Dangerous hold down forces can result when a child covers one drain, and all flow is then conveyed through a second drain in a dual drain system. This real safety hazard is the result of prevailing industry practice of constructing dual drains with improperly sized connector piping, the use of small connector size sumps, multiple connector pipe fittings and low open area drain covers. I was told at the conclusion of that meeting "we are looking into this issue".

When the CPSC started to post "VGB certified covers" on the internet, I called the CPSC and voiced my concerns hoping to stop the CPSC from listing low profile, high velocity covers on their website. I've even gone so far as to pay for full page ads in trade magazines to help educate the industry on how to properly and safely build dual drain systems.

Unfortunately, now there are hundreds of thousands of these improperly rated low profile, high velocity covers installed on single suction outlets and dual drain systems across our country.

I've been working with the ASME/ANSI A112.19.8 suction outlet fittings committee for some 10 years and I've seen this safety project team conflicted by product concerns and industry influences. This Standards writing committee should not be dominated by manufacturers and representatives of the pool industry. A more balanced membership would enable the committee to focus on safety, child safety to be exact. Standards writing should be directed by those who can focus on bather and child safety without any personal conflict of interest.

In summation, Improper plumbing in a single or multiple suction outlet design can create a hazardous condition on its own. Should low profile, high velocity covers be installed in this situation, the dangers are greatly increased.

I trust this commission to do the right thing by suggesting a reconstitution of the Standards writing committee to include a majority of impartial, safety conscious members and to direct the pool industry to prioritize the education of pool builders on the best practices for safe dual drain construction.

Thank you,
Ron Schroader
Aquatic Safety Consultant

STATEMENT OF KEN WIJAYA TO CONSUMER PRODUCT SAFETY COMMISSION; 4/5/11; BETHESDA, MD

Mr. Chairman, members of the Commission, good morning. My name is Ken Wijaya. I am the Senior Director of IAPMO R&T Lab and have held this position since 1999. IAPMO R&T Lab is part of the IAPMO Group which was founded in 1926 and has been protecting the public's health and safety for more than 80 years by working in concert with government and industry to implement plumbing and mechanical systems around the world.

Whether it be code development or product testing, IAPMO's top priority and mission is to protect the health and safety of the public. It is my hope the meeting today and subsequent clarification of the test protocols will continue to put safety first.

I am here today to clarify the test procedures which were used by the Lab since passage of the VGB Act to test drain covers to ASME/ANSI A112.19.8-2007. Since we have already provided you with several thousand pages of documentation related to our testing protocol, I will focus my brief remarks today on the area of the standard which has created much of the current controversy.

Given the varying test results provided by the 3 national labs testing to this standard, we believe that section 5.2.1.2 of the standard is ambiguous with regard to the size of the body blocking element which should be used for purposes of calculating the maximum allowable release force. The standard refers to this as the applicable body blocking element. This section describes applicable body blocking elements with calculated maximum removal force from 120 lbs. for an 18" x 23" body blocking element all the way to 15 lbs. for a 9" x 11.5" body blocking element. In this case, when a small drain cover such as the typical 8" round cover is tested using a large body block element (representing an adult torso), the maximum removable force was 15 lbs. This does not make sense when considering an adult will definitely be able to push more than 15 lbs. On the other hand, a larger drain cover has 120 lbs. of removable force. If a young child is exposed to a larger drain cover, this child is required to have 120 lbs. to release himself/herself from the cover. Again, this does not make sense. The failure of the standard to represent real-world scenarios, and the resulting ambiguity led us to seek further guidance from the standard committee.

Shortly after passage of the Virginia Graham Baker Act, IAPMO R&T Lab sought guidance from the Standard Committee because the written standard is ambiguous and permits the use of different sized body blocking elements ranging in size from 18" x 23" to 9" x 11.5". Further guidance from the Standard Committee on this portion of the standard was necessary so that all test laboratories could adhere to the same test protocol and thus obtain consistent test results.

In February 2008, we were advised by the standard committee that it was not appropriate to use the 18" x 23" body blocking element in all cases and that this section of the standard also contemplated use of the 9" x 11.5" body blocking element in some instances as the applicable body blocking element.

The lab relied upon guidance provided by the standard committee to clarify the ambiguity in the written standard and harmonize testing protocols. Based on the reply we received from the committee, we utilized the 9" x 11.5" sized body blocking element to test certain products and the ratings we provided reflect the use of that test protocol. It is our understanding from conversations we have had with others in the industry as well as from our review of the test reports from other laboratories, that other test laboratories were also using the 9" x 11.5" sized body blocking element when they were conducting similar tests.

We are very sensitive to the ongoing controversy which has been created by this ambiguity in the standard and thus we have recently revised our test procedures in this area to reflect the current thinking of the standards committee which is working on the revisions to this standard. Since you will be hearing from committee representatives today, I will not address the details of the Committee's new approach to the test protocol in this area. However, even though the committee's new approach has not yet been formally adopted as an official revision to the ASME standard, in an effort to provide some consistency in this area, we have revised our test protocol to follow the guidance offered by the committee since August, 2010. We understand that the other test laboratories have also revised their test protocols in a similar manner so that all of the test laboratories going forward will be utilizing identical test protocol.

I would also like to briefly address any questions which may have arisen about the adequacy of the pump used by the lab in the testing of these products between 2008 and 2010. The pump previously used by the lab was in accordance with Section 4.1.5.2 of the standard. However, the standard lacks any specific requirements regarding the methodology of flow rate control and resulting vacuum creation. Much like the applicable body blocking element size situation, the flow rate test results can vary widely depending on whether the flow rate is controlled by a variable speed controller or throttling down by a valve. Thankfully, the current committee has also addressed this issue and I am pleased to advise that the pump which the lab has been using since September 2010, does comply with the proposed new requirements of the standard.

Finally, I would like to thank the committee for convening this meeting. From the outset of this controversy, we have always believed that it was critical for the test laboratories and industry to come together in a forum which would enable the development of specific test protocols so that there is no room for interpretation. We believe this meeting will go a long way to accomplishing that goal and we look forward to implementing any additional guidance which is provided in the future.

Written Comment

THE ZAC FOUNDATION

April 1, 2011

The Honorable Inez Tenenbaum
Chairman
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Dear Chairman Tenenbaum,

I am writing again to express my deep concern regarding the pace and manner by which the Consumer Product Safety Commission (CPSC or Commission) is conducting its review of the non-compliant pool drain covers subject of a study by the American National Standards Institute (ANSI) – reported by *ABC News* on August 24, 2010, and again by the *Chicago Tribune* on February 7, 2011.

While I appreciated your February 3 letter explaining your investigative process and expressing your urgency with respect to the current review, unfortunately, as a lay observer who possesses an intense desire to ensure that what happened to my son Zachary never happens to any child again, I am extremely disappointed by what appears to be a lack of seriousness with respect to this important issue – both with respect to speed and communication to the public.

In your letter you indicate that your staff is actively involved in investigating the matter, and has been since July of last year. It has been more than 212 days since the aforementioned *ABC News* story was published within which a Commission spokesperson was quoted as stating, "The CPSC is actively investigating this matter." The report cited an ANSI report that noted the drain covers could result in "extreme disfigurement" or "serious injury or death." The same news report indicates that the maker of one of the drain covers sent a letter to retailers telling them that the model is "NOT to be sold until further notice" and that the company would "no longer be manufacturing [the] model," and that all unsold units should be returned. Yet no warning was issued by the Commission to the public.

I hope that you will understand that I sincerely support your and any effort to improve pool and spa safety, and appreciate the Commission's actions in flagging and investigating the problem. However, my principal concerns are with the lack of public messaging to warn pool and spa owners of the potential danger, and the lack of haste in reaching a conclusion. To my knowledge, the Commission's March 18, 2011, release announcing a Commission hearing on the subject was the first expression to consumers that a risk of danger may exist, and even that release was issued on a Friday when it would get little to no attention.

As you know, my son Zachary died tragically in 2007 in part as a result of a faulty pool drain cover, and I, along with my husband Brian, founded The ZAC Foundation in Zachary's honor to ensure that no other family would have to endure a child's death of this kind. I urge the Commission to move swiftly to ensure the safety of children across the country.

I would be more than happy to discuss this matter with you further.

Sincerely,

Karen Cohn
Founder
The ZAC Foundation