AMERICAN FIREWORKS STANDARDS LABORATORY

Issue — April 2005

Volume - 37

AFSL NEWS

NEWS IN BRIEF

RELOADABLE TUBES MUST WITHSTAND SHELL MALFUNCTION. AFSL established a new provision for reloadable shell devices that requires tubes to withstand the explosion of a shell inside the tube without blowing out. The requirement will become effective on August 1, 2005. **Page 1.**

DEFINITION OF BREAK CHARGE FOR AERIAL DEVICES UNDER DISCUSSION. Representatives from AFSL, APA, CPSC, ATFE, and DOT met last month to discuss possible options for standardizing the definition of what is an aerial report and what is a break charge in consumer fireworks devices. The meeting resulted in an agreement to move toward guidelines stating that black powder break charges would not be considered an aerial report by the agencies involved. **Page 1.**

NEW STANDARDS FOR ROMAN CANDLES APPROVED. AFSL approved four modifications to the Standard for Roman Candles: (a) a 20 gram limit on chemical composition; (b) a 5 gram per shot limit; (c) a minimum of 5 and a maximum of 10 shots per device; and (d) an equal number of shots for all devices within a retail pack. Effective date is August 1, 2005. **Page 2.**

HARD DISCS ELIMINATED IN AERIAL DEVICES; NO LINKED FUSES ON FIREWORKS DEVICES. Hard discs that may act as a projectile may no longer be used in aerial devices and all AFSL tested fireworks must have a single fuse and ignition point. **Page 3.**

NOTES FROM BOARD OF DIRECTORS' MEETING. **See page 6.**

RELOADABLE TUBES MUST WITHSTAND SHELL MALFUNCTION

Manufacturers of reloadable tube aerial shell devices are looking at ways to meet a newly established provision that requires tubes to withstand the explosion of one shell inside the tube without rupturing. The provision, set to go into effect August 1, 2005, will require most manufacturers to substantially strengthen the tubes currently being marketed.

Responding to concerns that consumers could be injured if a reloadable shell malfunctions inside the tube and the tube ruptures, AFSL recently amended the reloadable shell standard to include the malfunction safeguard.

The new language states "*The tube, including its base, packed in a reloadable shell kit must be capable of withstanding the explosion of any shell in the kit, without fragmenting, when the shell is inserted in the tube upside down and ignited.*"

The Standards Committee evaluated 14 different models of reloadable shell tubes, including tubes manufactured from paper, plastic, and fiberglass. One shell was placed upside down into the tubes and ignited. The intent was to cause the device to malfunction deliberately in a manner that might simulate what could happen if a consumer misused or mistakenly placed the shell into the tube incorrectly.

(Continued on page 2)

DEFINITION OF BREAK CHARGE FOR AERIAL ITEMS UNDER DISCUSSION WITH FEDERAL AGENCIES

AFSL, APA, and several federal agencies that regulate consumer fireworks met last month to discuss developing a unified definition of what constitutes an aerial report in fireworks device and what is considered to be a break charge.

The distinction between the two classifications is critical since both the Consumer Product Safety Commission (CPSC) and AFSL limit aerial reports to 130 milligrams of pyrotechnic composition. Break charges in aerial devices may range up to 25% of pyrotechnic composition or 10 grams, whichever is less.

The meeting resulted in an agreement among the participants to consider adopting the position that if a mixture consists of the traditional black powder components, it would always be classified as a break charge and not an aerial report. This would represent a departure by CPSC from its position that any chemical composition that produces an audible effect may be considered an aerial report, depending on the loudness and sharpness of the sound. CPSC determines the loudness

(Continued on page 3)

LAUNCHER TUBE INTEGRITY
Continued from Page 1, Col. 3

On six models, the tubes remained intact and did not separate from the base. On the remaining 8 models, the tubes ruptured and/or separated from the base. In several instances the rupture and/or separation was dramatic, allowing fragments or components from the shell or tube to travel up to approximately 180 feet from the point of ignition.

After reviewing the results of testing performed at this and the previous meeting, the Committee recommended to the Board of Directors that the reloadable shell standard be amended to include a test for launcher tube integrity. The Board approved the Standards Committee recommendation at the February 11, 2005 Board meeting.

Continued on page 4, column 3

RELOADABLE SHELL TUBE THAT EXPERIENCED BASE SEPARATION AND FRAGMENTATION WHEN SHELL WAS CAUSED TO MALFUNCTION INSIDE THE LAUNCHER TUBE.

Plastic reloadable tube that experienced severe blowout and warping when shell functioned upside down inside the launcher tube.

NEW PROVISIONS FOR ROMAN CANDLES APPROVED

Roman Candle devices will be required to meet new provisions under the AFSL Standards beginning August 1, 2005. The requirements include (a) a limit of 20 grams of chemical composition per tube; (b) a limit of 5 grams of chemical composition per shot; (c) a minimum of 5 shots per candle in addition to the existing limit of a maximum of 10 shots per Roman Candle tube; and (d) a provision requiring that all Roman Candles in a retail package contain an equal number of shots.

In establishing the new provisions, AFSL is addressing the potential risk of injury associated with Roman Candles that may be hand-held by consumers. The common belief is that consumers sometimes shoot the candles at each other, thereby creating a potential for injuries if the shots from a candle function in or near a consumer's face.

In the recommendation to the Board of Directors, the Standards Committee noted that most other fireworks devices are subject to a specific pyrotechnic composition limit, yet the AFSL Standard for Roman Candles contained no limit. Further, the Committee concluded that a limit of 5 grams per shot was needed to reduce potential for injury in the event that the device functions near a consumer's face or eyes.

The decision to require an equal number of shots per tube avoids confusion to consumers using candles from a single retail package containing different numbers of shots. For example, if one candle from the package contains 4 shots, while a second item contains 8 shots, a consumer could be led to believe the second candle also contains four shots. This increases the likelihood that consumers may not take adequate precautions as

(Continued on page 6)

(Continued from page 1, col. 3)

and sharpness of the sound by listening to the device function, and making a subjective determination regarding the loudness.

While AFSL follows the CPSC procedure, the policy poses a particular challenge in attempting to ensure uniformity among approximately 50 technicians who are trained to test fireworks for AFSL. Because sounds vary depending on weather conditions, it is impossible to assure that all technicians reach the same conclusion as to when a device is too loud. There have been instances where AFSL passed a shipment in China, thinking that the device did not sound too loud, only to have the shipment failed by CPSC because it sounded too loud.

The meeting was organized by the AFSL Standards Committee as part of an ongoing project to define what is an aerial report and what is a break charge. During the past two years, the Standards Committee has looked at possibilities for developing an objective testing criteria to distinguish between an aerial report and a break charge. One possibility under consideration was development of an objective test criteria using sound meters.

All participants in the meeting agreed to consider within their respective organizations whether the exemption of black powder from classification as a aerial report would be acceptable. Assuming a positive response, the fireworks industry, through APA could petition the respective federal agencies for a rulemaking, or advisory opinion, to adopt the black powder exemption.

The meeting was described as the first time that all the federal regulatory agencies had sat down with industry representatives to discuss a topic which has been a source of confusion and disagreement among all the concerned parties for years. Fireworks industry representatives were encouraged that the troubling question of how to distinguish an aerial report from a break charge might be resolved in a manner satisfactory to the industry. Federal agency representatives were equally encouraged that this process would put all agencies on the same page with respect to this issue.

Prior to deciding on the appropriate administrative approach to finalizing a decision, APA requested a technical report from ATF comparing black powder to other chemicals that might be used as a break charge in aerial items. In any event, the process is expected to take more than a year and, if approved, is not likely to be implemented until mid-2006.

Participants in the March 10, 2005 meeting, included AFSL Director and Technical Advisor Dr. John Conkling; APA and AFSL Counsel, David Baker; APA Executive Director Julie Heckman, four representatives from CPSC: Jim Joholske, Neal Gasser, Mark Kumagai, and Andrea Paterson; Two ATFE representatives: Aaron Gerber and Brennan Phillips, Gary McGinnis from the Department of Transportation, and AFSL Executive Director, John Rogers.

The AFSL Standards Committee is obtaining input from industry members as to the impact such a policy would have on the production of fireworks in China. This feedback from the industry will be considered before any final action is taken.

HARD DISCS IN AERIAL SHELL DEVICES, MULTIPLE LINKED DEVICES NOT PERMITTED

The Board of Directors approved two new provisions for devices tested by AFSL at the February 2005 meeting. The Standard for Comets, Mines, and Shells is being amended to include the following language: ***"Insert tubes with break charges in mine/shell devices shall not contain pressed clay plugs, or separators, or any other hard internal components capable of acting as a projectile when the insert bursts."*** The modification is designed to eliminate the potential risk of injury associated with clay or other hard plugs that become projectiles when the shell malfunctions at or near ground level or when the discs fall back to the ground after the shell functions normally.

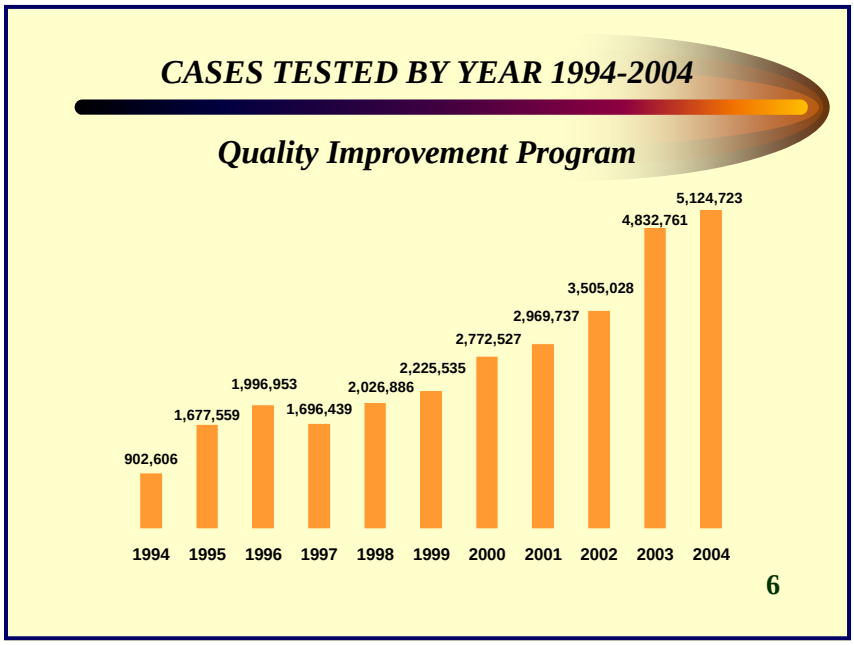
The Board directed the Standards Committee to develop additional guidelines to assist manufacturers in defining the term "hard" in plugs and shell components before the August 1, 2005 effective date of the requirement.

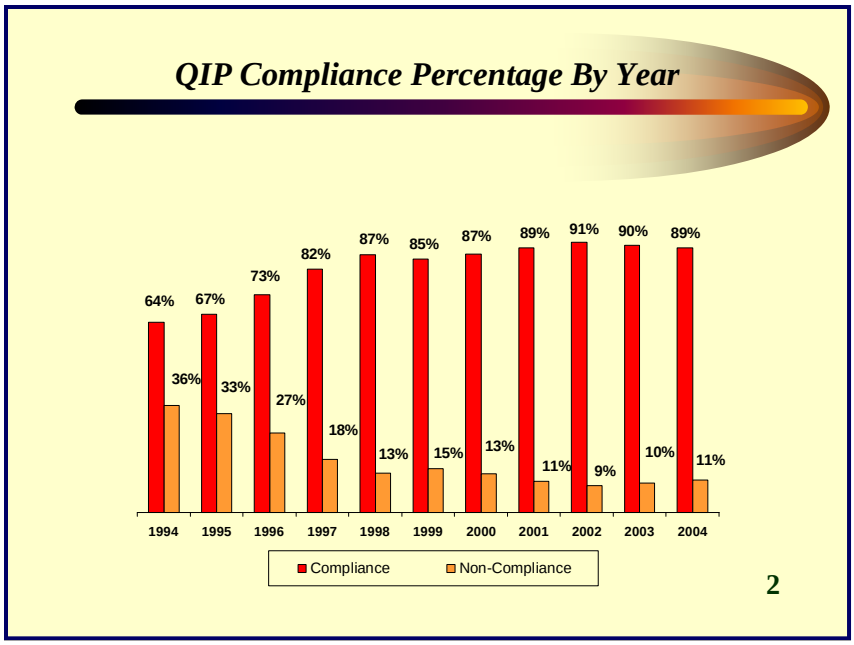
The Board also approved a modification to the standards for Comets, Mines and Shells, Fountains, and Combinations that would eliminate designs containing multiple devices that are designed to be fused together or linked together by connectors, allowing all devices to function in sequence upon ignition of the fuse of the first device. The design is intended to create a finale effect for consumers similar to commercial fireworks displays. The following language has been added to the appropriate standards: **"Devices subject to this Standard must contain one ignition fuse. Additional fuses, points of ignition, openings**

(Continued on page 5)

VOLUME INCREASES, COMPLIANCE RATE DROPS IN TESTING PROGRAM LAST YEAR

Testing under the China Fireworks Quality Improvement Program for 2004 showed a significant increase over 2003, with 5.1 million cases tested. The compliance rate for all products tested declined by one percentage point to 89%. This decrease is due primarily to the failure of some factories to meet newly implemented provisions for artwork and graphics on individual reloadable shells that took effect in August 2004. The following tables summarize the volume and compliance rate by year.





RELOADABLE SHELLS

CONTINUED FROM PAGE 2

The effective date for the new provision is August 1, 2005. Beginning on that date, all reloadable shell devices submitted to AFSL for testing will be tested for conformance with the new provision. AFSL will perform the test by placing one shell packaged with the reloadable kit inside the tube upside down. If the retail package includes tubes of different pyrotechnic compositions, AFSL will select the heavier shells for testing.

Any rupturing of the tube, separation from the base, or the expulsion of any debris or shrapnel from the device will cause the shipment to fail. Factories and Shippers in China have been notified of the modification to the reloadable shell standard and will be provided training in seminars scheduled prior to August 2005.

The decision to include the tube integrity provision was in response to concerns raised following an incident involving the death of a four year old girl who reportedly was struck by a component of a reloadable launcher tube when a device was being used nearby. The AFSL standard Reloadable Tube Aerial Shell devices already requires launcher tubes to withstand twice the number of intended firings without blowout. The Standard also requires that such devices identify the correct placement of the shell inside the launcher tube by the use of an "UP" arrow on non-spherical devices.

NEW LABELING FOR CYLINDRICAL SHAPED RELOADABLES

The Standard for Reloadable Tube Aerial Shell Devices has been modified to include new language in the cautionary labeling requirement for reloadable shell devices that are cylindrical-shaped. The language is designed to reduce the likelihood that consumers will insert cylindrical-shaped shells upside into the launcher tube.

The reloadable shell standard currently requires cautionary labeling stating for spherical-shaped shells: "Put Ball Into Tube With Flat End Down and With Fuse Extending Out of Tube." However, due to the fact that many of the non-spherical shapes have flat tops as well as flat bottoms, results in confusion as to which end goes into the tube first.

To address this concern, the Board of Directors approved the following language for devices with cylindrical or other non-spherical shapes: ***"Put Shell Into Tube With Arrow Point Up and With Fuse Extending Out of Tube."***

This modification works in conjunction with other provisions requiring that (a) shells must have an orienting loop that is securely attached, or a paper wrap, to maintain the correct orientation of the shell when placed inside the tube; (b) an existing requirement stating that "Individual shells that are cylindrical shaped or other non-spherical shape must bear the statement **"THIS END UP"** along with an arrow indicating the direction in which the shell should be placed inside the tube." See Section 4-3.4 of the Standard for Reloadable Tube Aerial Shell Devices; and (c) a provision also approved by the Board at the February 11, 2005 meeting requiring that launcher tubes must be able to withstand the malfunction of one shell inside the tube without fragmenting. These existing or pending provisions, in conjunction with the labeling revisions discussed above all are intended to reduce the potential risk of injury associated with the malfunction of shells inside the launcher tube.

In an effort to assure uniformity in the industry in meeting the new provision, AFSL contacted the Consumer Product Safety Commission to determine whether CPSC also would adopt the new language for cylindrical shaped reloadable shells. CPSC indicated that it does intend to follow the language "Put Shell Into Tube With Arrow Point Up and With Fuse Extending Out of Tube." CPSC believes this language is necessary to adequately inform consumers of the correct usage of the product under the CPSC regulations.

Due to concerns about the potential risk of injury associated with incorrectly inserting shells into launcher tubes, the provision was adopted with an immediate effective date. Factories and shippers already have been notified of the new language provisions.

HARD DISCS, LINKED COMPONENTS

(Continued from page 3)

for fuse insertion, or points for ignition transfer are not permitted."

The Committee will look at additional designs of devices containing multiple linked or multiple fused components to determine the applicability of the new provision to such devices prior to the implementation date for the requirement. AFSL does not accept such devices for testing under the testing program at the present time. The new language will go into effect on August 1, 2005.

AFSL WELCOMES THE FOLLOWING NEW MEMBERS:

Importers:

1. **Advanced Technique Fireworks, Inc., Goshen, KY**
2. **B & B Fireworks, Inc., Russellville, KY**
3. **Boomtown Fireworks, Poulsbo, WA**
4. **Coach's Fireworks, Magnolia, TX**
5. **Flash Fireworks, Derby, KS**
6. **Keystone Novelties, LLC, Lancaster, PA**
7. **Marvin's Fireworks, Owensboro, KY**
8. **Pyro Innovation, Brookfield, WI**
9. **Skyworks, Inc., Ferndale, MI**
10. **St. Evans, Inc., Mishawaka, IN**
11. **Wolverine Fireworks Display, Inc., Kawkawlin, MI**

Shippers:

1. **Beihai Fisherman Pyrotechnics, Inc.**
2. **Chang Sha Merry Dragon Trading Co., Ltd.**
3. **Chili Fireworks Co., Ltd.**
4. **Hua Hui Fireworks Manufacturing Co., Ltd.**
5. **Liuyang Asian-Swan Fireworks Co., Ltd.**
6. **Liuyang Garrywa Fireworks Co., Ltd.**
7. **Liuyang Greatwall Fireworks Co., Ltd.**
8. **Liuyang Zoomlion Fireworks Co., Ltd.**
9. **Pyro Formex, Inc.**
10. **Red Eagle Industrial & Trade Co., Ltd. Hebei**
11. **ShiXing Export Fireworks & Firecrackers Factory**
12. **Standard Fireworks China Ltd.**

NOTES FROM BOARD OF DIRECTORS MEETING

The Board of Directors met in Bethesda, Maryland on February 11, 2005. Following is a summary of actions taken by the Board:

2005 Quality Improvement Fee. In approving the 2005 Budget, the Board decided to leave the quality improvement fee at US$0.45 for tested shipments and US$0.25 for untested shipments. The Board also voted to re-visit the fee structure in July 2005 after testing data, shipping information, etc. is available from the 2005 Fourth of July Season.

AFSL Staff Person Approved for China. The Board approved a proposal to hire a staff person to be stationed in the Hunan Province to audit the performance of AFSL's contract testing laboratory and to provide assistance to the factories and Shippers by disseminating information regarding modifications to the AFSL program, EX Number applications, and to serve as the primary liaison between the China industry and AFSL.

AFSL plans to hire a person in China to fill the position in June 2005 and expects to establish a small liaison office in Chang Sha, Hunan at that time.

Modifications to Standards. The Board approved modifications to several of the AFSL Standards that are addressed elsewhere in this publication.

NEW REQUIREMENTS FOR ROMAN CANDLES

(Continued from page 2)

the candle continues to operate.

Finally, the provision establishing a minimum number of shots at 5 per candle is intended to limit the size and amount of pyrotechnic composition contained in each shot from a Roman Candle. In effect, the new provision limits the maximum amount of pyrotechnic composition to 4 grams per shot.

AFSL considered two additional provisions for Roman Candles including a limit of 50 grams per report (the current limit is 130 milligrams; and a prohibition on the use of break charges in individual Roman Candle components.) However, these provisions were not approved because AFSL concluded that new provisions limiting the total pyrotechnic composition per tube and per shot, along with the minimum number of shots per tube, were adequate to reduce the potential risk of injury associated with Roman Candles.

AFSL will begin testing for and rejecting shipments not meeting the new limits on August 1, 2005.

AFSL News is published by

American Fireworks Standards Laboratory

7316 Wisconsin Avenue

Suite 214

Bethesda, MD 20814

Telephone: 301-907-9115

Fax: 301-907-9117

E-mail: afslhq@afsl.org

Website: www.afsl.org

John D. Rogers, Executive Director