

LOG OF MEETING

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SUBJECT: ASTM F08 Committee Meeting

DATE OF MEETING: November 10-12, 2004

DATE OF LOG ENTRY: November 22 2004

PERSON SUBMITTING LOG: George F. Sushinsky

LOCATION: Omni Shoreham Hotel
Washington DC

CPSC ATTENDEES: George Sushinsky, Rick McCallion, John Worthington

NON-CPSC ATTENDEE(S): Members and guests of ASTM F08 Committee on Sports Equipment and Facilities. Attendance lists for most of the meetings were not available at the time of this report.

SUMMARY OF MEETING:

George Sushinsky from the Mechanical Division (LSM) in the Directorate for Laboratory Sciences (LS) of the U.S. Consumer Product Safety Commission (CPSC) attended various task group and subcommittee (s/c) meetings in part or in full during the 4-day meeting. They included:

- ASTM F08.17 on Trampolines - (Task Group and S/c meetings)
- ASTM F08.53 on Headgear and Helmets - (Shirtsleeves and S/C meetings)
- ASTM F08.63 on Playground Surfacing Systems - (S/C meeting)

In addition, Rick McCallion and John Worthington also from LSM attended the ASTM F08.53 on Headgear and Helmets - (Task group on Soccer Headgear, Shirtsleeves, and S/C meetings)

The meetings are reported on in chronological order.


ASTM F08.63 on Playground Surfacing Systems – 11/10/04 morning (S/C meeting, Robert Heath, Chairman)

The meeting was called to order at 8:00AM. Introductions were made, and a timekeeper was appointed. A list of attendees was not available.

The minutes from the May 2004 meeting were approved as written.

Organizational Updates:

Designated subcommittee members gave updates from groups involved with playgrounds





and equipment. The groups represented included:

- International Playground Equipment Manufacturer's Association (IPEMA)
- U. S. Consumer Product Safety Commission (CPSC)
- Canadian Standards Association (CSA)
- ASTM F15 play equipment standards F1487, F1544, F1918, and F1148
- National Program for Playground Safety (NPPS)
- National Playground Safety Institute (NPSI)

IPEMA – Ted Ilges

- IPEMA renewed its agreement with Detroit Test Labs (DTL) to have DTL serve as IPEMA's certifying agency. The renewal is for two years. A few S/C members commented on their dissatisfaction with this arrangement. Those from other test labs voiced objections to having DTL certify their laboratory. Others cited this as a reason that they did not join IPEMA.

CPSC – George Sushinsky

- The draft home playground guide is available. Electronic copies had been sent to all members of ASTM F08.63. Comments were requested by the end of November. Several people addressed concerns with the surfacing sections. One commenter asked that F1292 be included in the bullet point for surfacing materials. Several sources offered to supply test data to update the height recommendation in the surfacing section.
- Handbook for Public Playground Safety is being revised. Revised version to be published in FY 05. Comments are still welcome.
- F1292 type tests on indoor surfaces was delayed. Testing to begin shortly with report finished by January. Meanwhile the F15.44 S/C is going forward with a standard exempting equipment less than 18 in high and in a supervised setting from needing protective surfacing.
- Long-bone injury work - a literature survey – is completed. A draft report started for review at CPSC.
- A newspaper article about an EWF and urethane playground surface was circulated to the S/C. An accompanying research report on the surface from the Forest Products Center was also provided. Both items were copied and distributed to the Meeting attendees.

CSA - Rolf Huber:

- Table 1 (critical heights of materials) was deleted from the CSA standard (CSA Z614). This has resulted in more surfacing being tested and overall improvements in surfacing at Canadian Playgrounds.
- The CSA standard no longer recommends against using grass and dirt.

F15 Activities– Walt Henderson

- F1487 – Standard continues to be fine tuned.
- F15.44 – Concerns over surfacing requirements.



- Other standards had no changes to their surfacing requirements.

NPPS – Walt Henderson

- There is a new playground study. Working with the recycled rubber industry, NPPS is conducting a survey of injuries before and after adding rubber surfacing.

NPSI – Walt Henderson

- The playground safety course will add the Playground Surfacing Guide to its course references

Subcommittee Activities

F1292 Update – Martyn Shorten

Mr. Shorten addressed the need to have a revised precision and bias statement for F1292. he discussed the proposed inter-laboratory study and asked for labs to volunteer their time to conduct tests for the ILS. He offered technical assistance to assure equipment compliance with the revised ASTM F1292-04. Walt Henderson is the manager of the inter-laboratory study and Martyn Shorten will be reporting on the results.

Poured-in-Place Guide - Rolf Huber

Several negatives and comments were received on the ballot. The negatives and comments were sent to S/C members via e-mail prior to the meeting. The ballot was withdrawn as at least one negative was found to be persuasive. Continued questions arose as to the purpose of the guide due to its non-specific topics. Mr. Huber explained that the difference in techniques used by the manufacturers prevent the guide from being more specific. It was also intended to prompt the user (owner/operator/manufacturer) to incorporate the costs of post-installation testing and maintenance into consideration while preparing the budget. Several S/C members did not see the usefulness in this guide.

I did not attend the remainder of the meeting after lunch which, according to the agenda included further discussion of the ballot negatives and a review of the draft revisions to F1951 on accessibility..

ASTM F 08.17 on Trampolines (Task group meetings) (11/10/04)

Padding Task Group - Bud Nichols, leader

The following people attended the meeting: Bud Nichols, Lani Loken, John Kuchno, Randy Johnson, Kevin Jung, Phillip Aja, Pam Devore, Joe Burchfield, Laurel Jensen, Tom Plante, David Dick, Ron Gilbert, Wally Moore, Wayne Wilson, Kiki Ji. Arch Adams, Keith Alexander, and Brent Swanick.

The meeting started at 1:30 PM with introductions and approval of the minutes from the May 2004 meeting.



The primary subject concerned the ballot on the proposed padding test revision (Ballot F080304 Item 2). There were two comments received on the ballot item. Both items concerned the presence of a company logo on a drawing in the document. The comments were considered editorial, therefore, the ballot passed at both the S/C and Committee levels.

Bud Nichols thanked all who were involved in getting this final part of the padding requirements through the ASTM process.

New Business: Mr. Swanick is the North American representative for the Spring Free trampoline. He introduced Mr. Alexander, the inventor of the product. Mr. Alexander is a professor of mechanical engineering at the University of ChristChurch in New Zealand. He described the product (a rod trampoline) designed he designed along with some students. The rod trampoline consists of a steel frame and mat connect by angled fiberglass rods. The tension in the rods suspends the mat without the use of springs. The trampoline also comes with an enclosure attached to the frame by long rods. The tension in the enclosure system is enough to keep a jumper from falling from the trampoline. Mr. Alexander claimed that it would "throw" a 250-pound user who fell against the net back into the middle of the trampoline. Details of the product can be found at www.springfreetrampoline.com. Durability tests up to 8 Million cycles have been completed on a prototype trampoline. The product will start selling for about \$799 Canadian in the near future.

Because of its design, there are no springs or metal hardware that require padding. It was suggested that this might be the focus of the padding task group – to amend F381 to allow for this design. Calculations by Mr. Alexander showed that the Severity Index for the trampoline was only about 10 percent of that allowed in the current standard. It was suggested that this be a work item for the task group. Mr. Alexander agreed to mark up the current standard where changes need to be made to accommodate this new design.

The meeting adjourned at 2:20

Enclosure task group – Bud Nichols, leader - (05/18/04)

The meeting started at 2:30 PM with introductions. The same people listed in the padding task group meeting attended. Bud Nichols, Lani Loken, John Kuchno, Randy Johnson, Kevin Jung, Phillip Aja, Pam Devore, Joe Burchfield, Laurel Jensen, Tom Plante, David Dick, Ron Gilbert, Wally Moore, Wayne Wilson, Kiki Ji. Arch Adams, Keith Alexander, and Brent Swanick.

The minutes from the May 2004 meeting were adopted and approved.

The need to amend the entrapment requirements for the standard remained as an item of old business. Mark Daniels circulated a draft requirement for an overlap opening during the Summer. Mr. Daniels is no longer associated with trampolines, therefore, the task group was in need of a new volunteer to shepherd this requirement through the balloting process. Steve



Moulton agreed to head up this activity.

The meeting adjourned at 2:45 PM.

Other Task Group Meetings – (05/18/04)

Task group meetings on floating trampolines and fabric were also held. All attendees from the previous task group meetings were present – except for John Kuchno.

Floating trampolines: Bud Nichols resigned as task group Leader and Tom Plante assumed that role. The latest draft (May 2004) of the developing standard was handed out. The general layout of the document was discussed. Much of the discussion concerned the use of these trampolines on land and the ancillary topic of inflatable backyard equipment, such as bounce houses.

Fabrics: A revised draft document was handed out by Randy Johnson and Joe Burchfield. Among other requirements, it specified a list of fabric standards and tests (with minimum test values) that the fabric must meet. The values were selected to ensure a useable fabric for trampoline mats but were below the requirements used by the major suppliers of fabric (90 percent of market) to the trampoline industry. The originators of the draft were questioned about the possibility of increasing the minimum levels performance specified in the draft. There was also discussion of the need for a separate test for “calendarizing” of the fabric. Calendarizing is related to surface smoothness (to help prevent friction burns.)

The task group meetings adjourned about 5:30 PM.

ASTM F08.17 on Trampolines (Subcommittee Meeting) – John Kuchno, Chairman
(05/19/04) 9:00 AM to 12:15 PM)

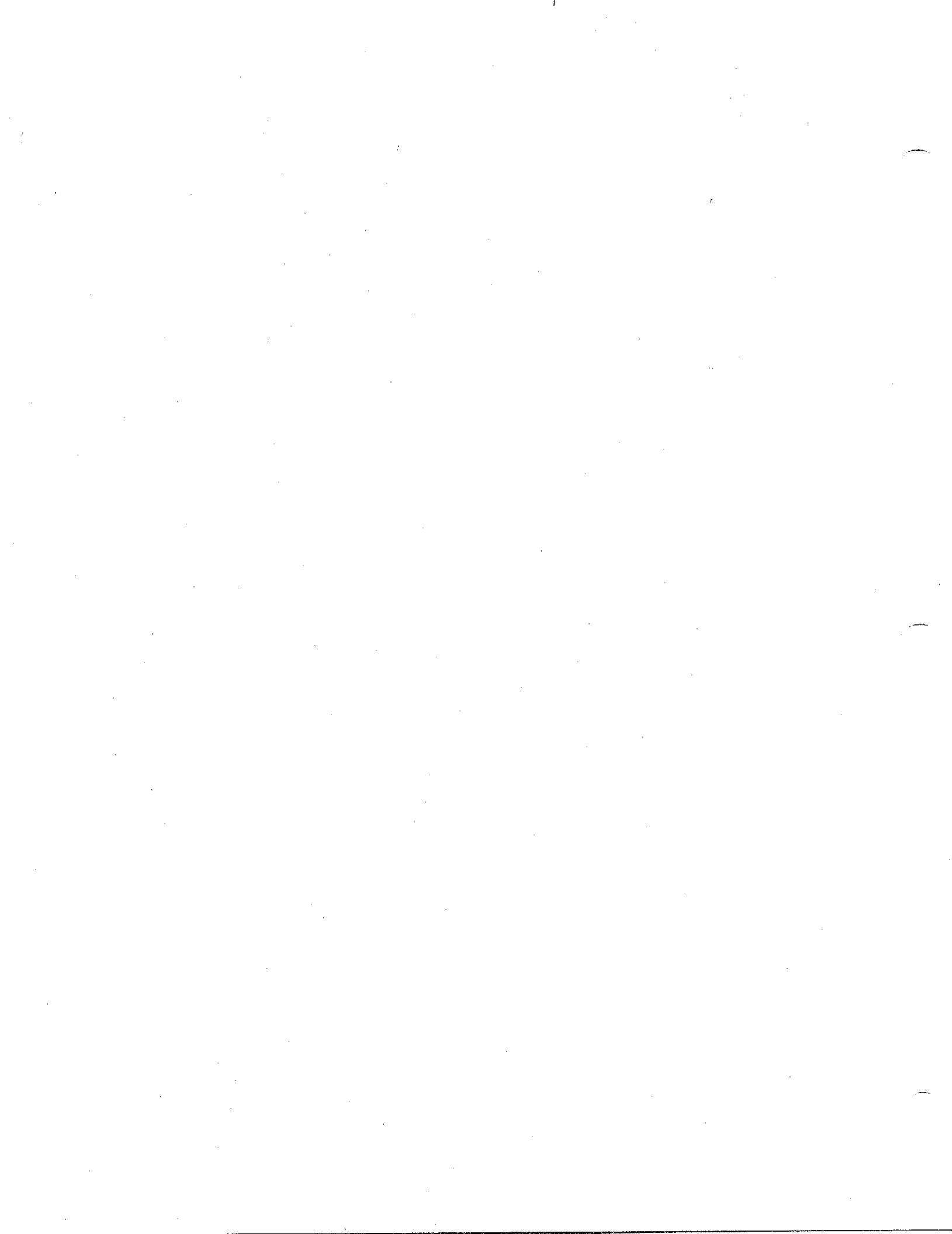
The meeting was called to order at 9:00 AM. Introductions were made and the minutes were approved without change. The meeting was attended by: Bud Nichols, Lani Loken, John Kuchno, Randy Johnson, Kevin Jung, Phillip Aja, Pam Devore, Joe Burchfield, Tom Plante, David Dick, Ron Gilbert, Kiki Ji, Arch Adams, Keith Alexander, and Brent Swanick, Brad Berenson, Way Johnston, Mark Rabinoff and two of his students.

John Kuchno discussed various administrative items such as ballot deadlines. The minute from the May meeting were approved.

Mr. Kuchno noted that the ballot on WK 3471 concerning trampoline padding requirements passed with no negatives and an editorial comment.

Reports from the task group chairmen were given.

Padding task group report – Bud Nichols, leader



Mr. Nichols reported that the ballot concerning padding attachment strength was successful. Barring any new business the task group will disband in May 2005.

Trampoline Enclosures – Bud Nichols, leader

Mr. Nichols summarized the activity of the task group. Steve Moulton was to take over the task headed by Mark Daniels to try to define requirements for entrapment on the enclosure and a performance test for the overlap door of an enclosure.

A general discussion of zippered vs “self-closing” openings was prompted by Keith Alexander after he brought up technical reasons – to allow uniform tension at a given level - to include a zippered opening on his trampoline design. Mr. Alexander agreed to join the task group. The task group was to use the draft by Mark Daniels as a starting point. Mr. Sushinsky suggested that a performance test rather than a design requirement would be a better way to prescribe the test for an overlap opening.

Floating Trampolines – Tom Plante, leader

Tom Plante took over as the task group leader from Bud Nichols. No activity had occurred since the May draft standard was prepared. There is to be a teleconference to address revisions to the draft standard before the next S/C meeting in May 2005.

Fabric Task Group – Joe Burchfield Jr., Leader

Mr. Burchfield discussed the draft standard. Based on comments at the task group meeting, the draft document is to be amended to include higher performance minimums for the fabric to better reflect what is currently used in by the trampoline industry. Once amended the draft will be submitted for ballot at the S/C level.

Steel Task Group -

This group did not meet or report on progress. Phillip Aja agreed to take over the leadership of this group.

New Business:

CPSC - George Sushinsky reported on the latest (2003) NEISS statistics. The injury numbers were up from the previous two years. There was no obvious explanation for the increase in injuries. He provided some details with regard to body part injured, age of injured person, and scenario. Falls from the trampoline continue to be a problem. He reminded the S/C that they could search the NEISS data base online and provided access and product code information. Mr. Sushinsky also provided information on reporting requirements to the new S/C members (from Kogee Ind.).



Rod Trampolines – Keith Alexander gave a brief presentation on the rod trampoline marketed as Spring Free trampoline. There was a discussion on the need to set up a task group to address the differences between the rod trampoline and the F381 standard. Mr. Alexander agreed to highlight the areas of differences (mainly padding requirements). It was decided that this activity would be covered by the padding task group.

The rod trampoline discussion initiated a lengthy discussion about the definition of a trampoline, particularly with reference to the inflatable products that are now being sold to the consumer. These products are referred to as bounce houses and bounce mats (such as Air Trak products).

On the suggestion by John Kuchno, a long-range planning task group was established.

The meeting adjourned at 12:00 PM

ASTM F08.53 on Headgear and Helmets – Task group on Soccer Headgear, Denis Piper, leader, 11/11/04 from 10:00 AM to 12:00 Noon)

The following minutes are the ASTM F08.53 task group minutes as reported by Dennis Piper on the ASTM website.

Meeting was called to order by Dennis Piper at 10:10 AM. Introductions were made.

Review:

Soccer is a contact sport. Trainers and medical personnel typically report an annual concussion rate of about 3 – 4% of players, but the players themselves claim that the rate is 15 – 70% of players. It is agreed that nearly all concussions are caused by incidental contact with players or other objects; very few are caused by ball-head impacts. The goal is to reduce the number of head injuries without significantly changing the game, and we should keep that in mind while developing a standard for headgear.

A draft standard was balloted concurrently, and six negatives were received.

1. Chris Withnall, Biokinetics. Chris presented data from Biokinetics' FIFA-funded study of soccer heading issues. They found that currently-available soccer headgear is virtually transparent to ball-head impacts regardless of ball speed, but begins to show significant impact reductions in head-head impacts up to about 3 m/sec. No head-ground or head-goal post impacts were conducted. Ball-head impact measurements were found to be dependent on the characteristics of the ball.

Chris's negative related to the failure limits specified in the draft, which could be satisfied by a bare head. His motion for persuasivity of his negative vote was seconded by Dave Halstead, and was passed by unanimous voice vote.

Terry Smith suggested that since the ball-head test described in the draft standard is so dependent on the characteristics of the ball, and since ball-head impacts are not the culprit in



most concussions, we should eliminate the ball-head impact test from the draft. Dave Halstead agreed, but suggested we include the reason for the elimination of the test in the standard. Agreed by unanimous voice vote.

2. Dan Pomerening, Southwest Research. Dan found that the drop height and impact speed numbers listed in section 7.3.3 were inconsistent, and suggested that we specify only impact speed, allowing labs to figure out what drop height is appropriate with their drop system. Dave Thom moved that we find Dan's negative persuasive, and the motion passed by unanimous voice vote.

3. Ed Becker, Snell. Ed believes it is premature to specify rotational acceleration requirements considering our current level of understanding. He is also concerned that the path of the center of gravity in drop tests is not sufficiently described. Terry Smith volunteered to draft a statement restraining the center of gravity to remain within a certain cone during testing. Terry moved that the rotational acceleration concern in Becker's negative be found persuasive; Dave Thom seconded, and the motion passed by unanimous voice vote.

4. Bill Rauscher, adidas Salomon. Bill asserted that there are still too many unknowns surrounding rotational acceleration for us to put it into a standard. He further believes that a standard should not be used as a tool to gather information to be used later in modifying the standard. Thom Parks' motion to find Rauscher's negative persuasive passed unanimously.

5. Rick Greenwald, Simbex. Again stressing the unknowns about rotational acceleration, Rick suggested that we define the ballot item as a test method rather than a standard specification. After discussion, it was agreed that linear acceleration (a) may be all we can reliably measure currently, and (b) may be a sufficient indicator of performance, based on data from the NFL study. Terry Smith recommended that even if the only criterion in the standard is linear acceleration, we should still measure and record rotational acceleration so we can determine whether it should be included in standards in the future. Thom Parks moved that we specify only linear acceleration limits in this standard. Greenwald seconded, and the motion passed with two people opposed.

6. Jacques Tholin, Salomon SA. Jacques made several of the points that had been addressed in other negatives about the uncertainty of using rotational acceleration, and he agreed that his concerns had been covered by the motions that had already been passed.

Rick Greenwald pointed out that we still have to redefine the linear acceleration limits before the draft can be rebaloted. A task group consisting of Greenwald, Pomerening, T Smith, Withnall and Piper will work on revisions centering on

- A. Simplifying the draft by removing all rotational acceleration requirements (including removal of GAMBIT calculations);
- B. Removing the ball-head tests;
- C. Specifying Hybrid III headforms only; and
- D. Defining the linear acceleration limits.



We will plan to reballot the draft concurrently in early February 2005.

Meeting was adjourned at 12:00 noon.

Thanks to Thom Parks for being our nimble-fingered scribe while actively participating in the discussions.

ASTM F08.53 on Headgear and Helmets – Shirtsleeves Meeting for Headgear, Randy Swart, leader (11/11/04 from 1:00 to 5:00 PM)

During the meeting, the following topics were discussed.

- Testing elongated helmet designs – These helmets rotate when hit in the rear during a test. Therefore, need to secure it with tape or means other than the retention system. Rick McCallion stated that CPSC staff does not use tape or other methods to secure the helmet. CPSC staff would report a failure with a qualifying statement about the helmet rotating during the impact. CPSC staff would then conduct a retest. There was a discussion about whether the energy management purpose of the test or the possibility that the helmet would rotate in an accident is the controlling factor in the test procedure.
- Finite element modeling of helmet foams to ‘tune’ a helmet – Terry Smith has used modeling to optimize the impact response of a helmet for different foam combinations.
- Labeling Task Force Report – Mark Granger presented some information about a draft labeling standard that the task group has written. It defines what needs to go on the helmet and what can be covered in an owner’s manual. He claimed that the draft is ready for a ballot.
- Linear Acceleration Test Machine – a new horizontal, air driven test machine was described and video was shown of impacts to a helmeted Hybrid III headform. Themachine is capable of speeds up to 11 m/s. It was developed as a repeatable method for NOCSAE testing aimed at reducing mild traumatic brain injury (MTBI). Dave Halsted stated that linear acceleration is a good indicator of injury for impact between two people when one is functionally stationary (e.g. relative speeds before impact are not close to equal). He further stated that while rotational components are what cause MTBI, the amount of rotation can be indicated by the linear acceleration.
- High Impact Telemetry (HIT) System – Rick Greenwald presented some information of the HIT system as it was used to measure helmet accelerations experienced by football players during games. This is a real-time monitoring system for individual players. It is a potential way to see concussive impacts as they occur and to alert sideline medical personnel to evaluate the player.
- Soccer headgear standard – decision was made to limit measurements to linear accelerations using a Hybrid III headform.
- Rearward roll-off criteria – One comment received on the ballot. Also some concern that test labs may be adjusting the straps differently depending on the direction of the test.



- Durable Labeling – Australian standard uses wood alcohol. Dave Halsted gave his thinking on what constitutes a durable label – it needs chemicals or abrasives to obscure, peels off in little pieces, or leaves a residue to indicate that it used to be there.
- Rotational and Oblique testing – three Swedish papers sent to the Shirtsleeves group prior to the meeting were briefly discussed.
- Roll-off and Retention system – Committee Ballot did not have the revised language, but the new ballot has the revision to use the coronal plane for defining failure
- Strap creep (Crawl) – The tri-glides often move during use so that a properly fitted helmet becomes loose over time. The problem seems to be related to the tension on the tri-glide. Several labs volunteered to look at developing a test to address this issue
- Light-weight motorcycle helmets – The issue is to develop a lightweight and stylish motorcycle helmet to encourage those who wear no helmets or the fake helmets to wear something that will provide more impact protection.
- Rodeo helmets – ballot had four negatives and several comments.
- Ice hockey helmets – all 6 ballot items passed. The revised standard will be published in mid-June.
- Triglide failure during retention system tests – if plastic pieces of the retention system fail, does this fail the helmet? Different opinions on this issue including: 91) if it passes the retention system at 30 mm and a subsequent roll-off test, then it is a pass, (2) Some standards require the retention system to “remain intact”, therefore, a broken triglide is a failure or the language in the standard will need to be amended, (3) Other helmet tests consume the helmet, the tri-glide failure should be allowed, (4) On some helmet, the tri-glides can be adjusted within proper limits and the helmet will fail or pass depending on the adjustment. A task group may need to be established to add language to standard concerning this situation.

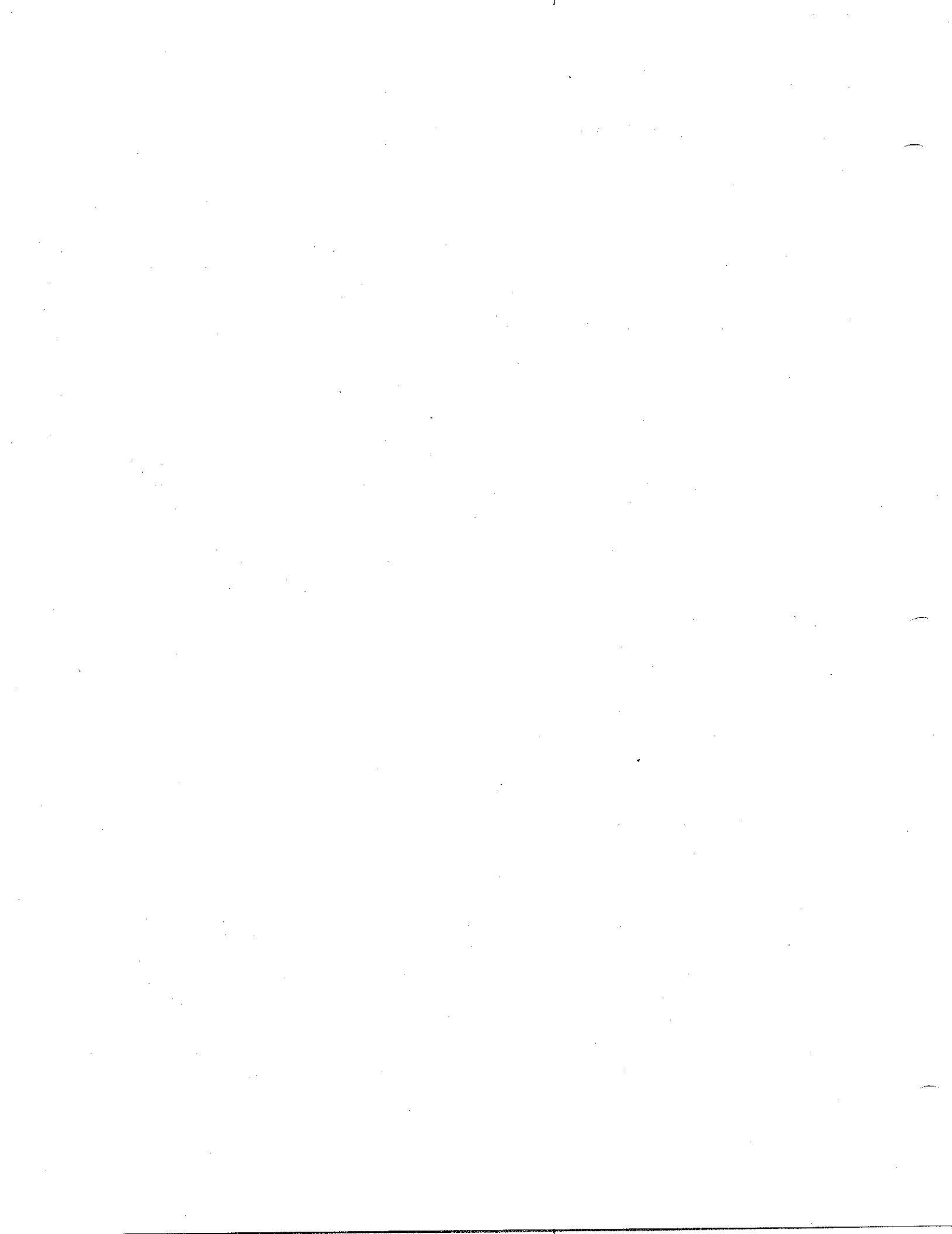
Shirtsleeve meeting adjourned at 5:00 PM.

ASTM F08.53 on Headgear and Helmets – s/c meeting, Dave Halstead (11/12/04 08:30 to 11:30 AM)

Introductions were made and the agenda adopted with minor changes. The following topics were discussed. Harv Voris asked the S/C members if they were selling to Korea. In his industry- fitness equipment – the Korean government adopted the EN standards and are requiring importers to meet the standard. Compliance to the standards are assessed at one of two Korean test labs. The testing requirements are on the complete product line and must be certified annually. His industry has appealed to the US Trade representatives to help them amend the requirements which they see as a technical barrier to trade.

F1446 Base Standard:

- Anvil Finish Spec (Halsted). – This is an issue for helmets on the edge of compliance



with the 300 peak G impact standard. The ballot item is in limbo. Most S/C members did not see need to pursue this issue. CPSC will conduct a small study to look at difference between machined and chrome-plated anvils.

- Roll-off testing in rearward direction – Main and S/C ballot. Negatives were received because language was not revised. A new ballot will be sent out. A discussion on triglides and the meaning of the words ‘remain intact’ wording in some standards continued from the SS meeting. A motion was made on the interpretation of the wording as it appears in F1163. The motion to define that ‘intact’ means that the triglide cannot separate into two pieces and the strap separates passed
- Penetration test – do we measure velocity or drop height? Negatives on the issue because drop height did not account for friction. S/C members felt that drop height was a sufficient measure. Two of the negatives were withdrawn and the third was found non-persuasive.
- Sample selection – Ballot item to move words from 4.4 to 7.2 had a negative. The negative addressed issue that were not related to the move. It was found “not related.” The S/C will take the issue brought up in the negative – headform sizes that fit on the same size helmet – under consideration.
- Chin bar test – A negative was withdrawn. A task group was formed to review and suggest changes to the language of the test.
- Measuring HPI – Confusion exists about the basic and reference planes. A suggestion was made to change F1446 to measure the HPI from the reference plane. A task group will suggest an amendment to the standard.
- Labeling – A draft labeling guide for headgear will be balloted in the December timeframe.

F1163-01 Equestrian Helmets:

- No negatives on ballot
- Liner separation from hard shell after a gentle impact – a task group was established to look at issue and propose test if necessary.

Rodeo Helmets:

- 3 negatives on ballot
- negatives found persuasive
- standard has two protection areas head and face. Face shields based on ice hockey standard.
- Changes made to address negatives.

