

CPSA / RIM Cleared  
*[Signature]*

**LOG OF MEETING**  
**DIRECTORATE FOR LABORATORY SCIENCES**

**SUBJECT:** Visit by Dan Pomerening

**DATE OF MEETING:** January 20, 1995    **PLACE:** CPSC Engineering Lab,  
Gaithersburg, Md.

**LOG ENTRY SOURCE:** Frank Vitaliti *FV*

**DATE OF ENTRY:** February 15, 1995

**COMMISSION ATTENDEES:** Frank Vitaliti, Larry Moskowitz, George Sushinsky (LSEL), and Scott Heh (ESME).

**NON-COMMISSION ATTENDEES:** Dan Pomerening, Southwest Research Institute, San Antonio, Texas

**SUMMARY OF MEETING**

Dan Pomerening visited LSEL's Bicycle Helmet Test Facility, and from his observations and our discussions, the CPSC attendees summarize the following issues:

- check linear bearings every 150 drops, and replace if necessary. Dan uses metal housing bearings (Thompson OPN81420) and LSEL uses plastic housing (Thompson Super 8OPN). Dan attaches them with epoxy; LSEL prefers to use the set screw provided, being careful not to deform the housing.
- Reduce clearance between side roller bearing and flat machined rail surface (0.020 inch on each side should be sufficient). Dan uses Model MRC R3ZZN401 or FAF NIR 33KDD5FS850160.
- check calibration of spare accelerometers at least yearly, and report/change if it is out of specification. SRI follows a MIL standard for calibration of equipment.
- SRI uses an Endevco Model 2262-1000 accelerometer with a Micromeasurements 2100 Series Bridge Amp.
- To calibrate accelerometer, SRI uses a PCB 349A03 system, which includes a Model 301A03 accelerometer and Model 482A03 amplifier.
- consider raising impact test platform approx. 2 feet (with a block of reinforced concrete).

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- roll pins are not designed to be removed and reinstalled more than once.
- LSEL has been using sensitivity numbers derived from rotating headform 180 degrees. SRI uses accelerometer sensitivity measurements supplied from manufacturer.
- perform 3 warm-up hits prior to obtaining calibration readings.
- SRI waits approximately 90 to 120 seconds between calibration impacts.
- Dan assures that the impact velocity is within 92% to 98% of theoretical velocity by calculations, including the distance between sensor beam and impact point.
- Dan calculates the velocity at impact, to adjust for the slight increase in speed after passing through the velocity measurements system.
- To calibrate his velocity measurement system, Dan rotates the flag through the gate beam, and measures the radius to the point that breaks the infrared sensor. The calculated tangential velocity of the flag should equal the velocity displayed by his measurement system.
- SRI calculates dwell time at 152 g and 202 g, 2 gs above requirement, to compensate for lab equipment variability.
- the helmet retention system is to be fastened around the "stirrups" during impact testing.
- SRI anchors their 10 foot beam at the top.
- SRI uses a different "pistol grip" (carriage and ball arm) for each headform. The ball arm is hollowed out to reduce mass. Dan will send drawings of SRI's pistol grip and ball arm assembly. Dan does not remove the press fit pins to remove the ball arm.
- SRI has a new MEP pad #15 from U. S. Testing with a calibration certifying a mean g of 389.74  $\pm$  1.18 g. We will compare test results after Dan performs his tests.
- Dan brought SRI's new MEP pad (Serial #15). Staff performed 3 impacts with "J" headform (LSEL's spherical impactor was unavailable because it was at U. S. Testing for recertification). Results are 430 g, 427 g, and 423 g. See lab notebook for details.

cc: Scott Heh, ESME  
George Sushinsky, LSEL  
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