

## DSG – EIC DIRC Meeting

**Date: March 18, 2024**

**Time: 1:30 PM – 2:00 PM**

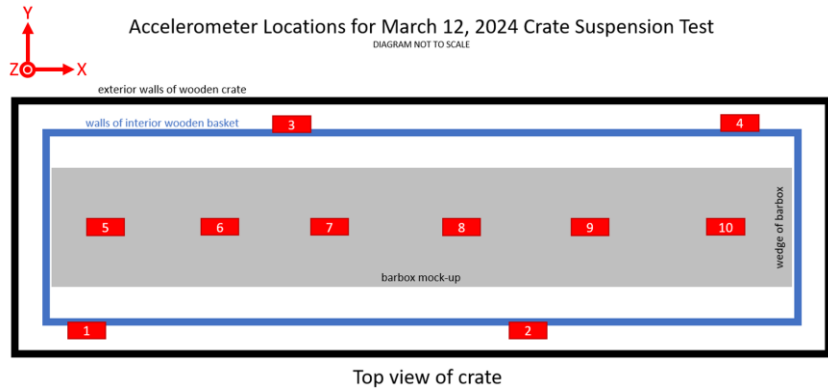
*Attendees: Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Greg Kalicy, Tyler Lemon, Andrew Lumanog*

### **1. Accelerometer system for shipment to and from SLAC**

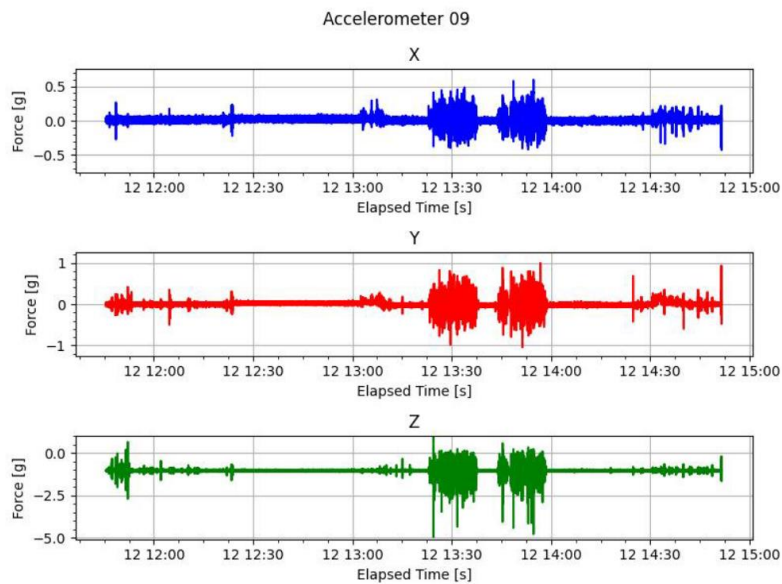
1. New accelerometer system under development for each truck:
  - One Arduino controller with SD card peripheral
    - Accelerometer data will be logged to SD card
  - Ten accelerometers
  - One I<sup>2</sup>C multiplexer
  - 3D-printed boxes designed to hold accelerometers and controller
2. Status:
  - Basic program developed with a test set up
    - Arduino, SD card peripheral, multiplexer, and one sensor wired to all multiplexer channels
    - Program initializes SD card, sensors, and multiplexer, reads data every ~2 ms (~500 Hz DAQ rate) from 10 sensors, and stores data on SD card
  - Boxes to hold sensors and controller designed in NX
  - Waiting on delivery of:
    - 3D printer filament for making boxes
    - Two 256 GB SD cards
    - Power distribution terminal strips

### **2. Test of barbox shipping crate suspension**

1. 10 USB accelerometer locations:
  - Four on interior basket of crate
  - Six on barbox mock-up
2. Tests will be repeated on April 1, 2024 with actual truck to be used to ship barboxes
  - Changes:
    - Relocate some sensors to exterior crate walls to quantify shocks without interior basket's suspension system
    - Use new accelerometer system



Accelerometer locations during tests. In DAQ processing, coordinate system for all sensors adjusted so all sensors axes point the same way.



Data logged by Accelerometer #9. Table below has time log of notable events.

Approximate Time	Event
11:45	DAQ start, setting pressure of bottom air springs to 25 psi
11:50	Installing inner basket cover
12:00	Installing outer crate lid
12:15	Setting side air spring pressure to 25 psi
12:20	Staging crate to load on to flatbed truck
13:00	Loading crate on to flatbed truck with forklift
13:21	Truck turned on
13:23	Truck starts driving
13:40	Truck returns to JLab, set pressures of all air springs to 30 psi
13:45	Truck leaves for second test
14:00	Truck returns to JLab
14:30	Removing crate from truck with forklift
14:50	Crate opened, DAQ stopped

Table of notable events during test of suspension system.

