**3/23/2001**

# SAMS-2 Mass_Storage_Tests (121_f06)

The two issues looked at were timing and PSD levels (colorbar)

## 1. Timing

Two events were used for timing comparison (assume time base is GMT for both offline and real-time plots):

(1.) PCS turn off (119.5 Hz signal at about 21-minute mark)
(2.) large transient (at about 35-minute mark).

See Scratch Pad for time captures summarized in Table 1.

**Table 1. Timing Comparison for Two Events**

| Event | GMT | | Off-Line Lag (seconds) |
|---|---|---|---|
| | Off-Line | Real-Time | |
| PCS Turns Off | 12/04/2000,22:21:21 | 12/04/2000,22:21:31 | 10 |
| Large Transient | 12/04/2000,22:35:00 | 12/04/2000,22:35:05 | 5 |

Also, there were 2 sizable gaps in the real-time data that were filled in for the PAD archive.

## 2. PSD levels (colorbar)

Not a good idea to compare colors, but even a rough look suggests. If I set off-line colorbar to the range shown on real-time plot, it would be almost completely in the red. There appears to be a few order of magnitude difference between the two plots. The magnitude histogram of Figure 3 shows that PSD levels spanned between about 10-12 and 10-6 g2/Hz. The real-time plot suggests levels much lower. Best comparison would be of PSDs. I plotted a ~2-minute sum PSD in off-line system and the result is shown in Figure 2. I plotted to the Nyquist frequency to show good example of filtering (see how it “bottoms out” just before the Nyquist).

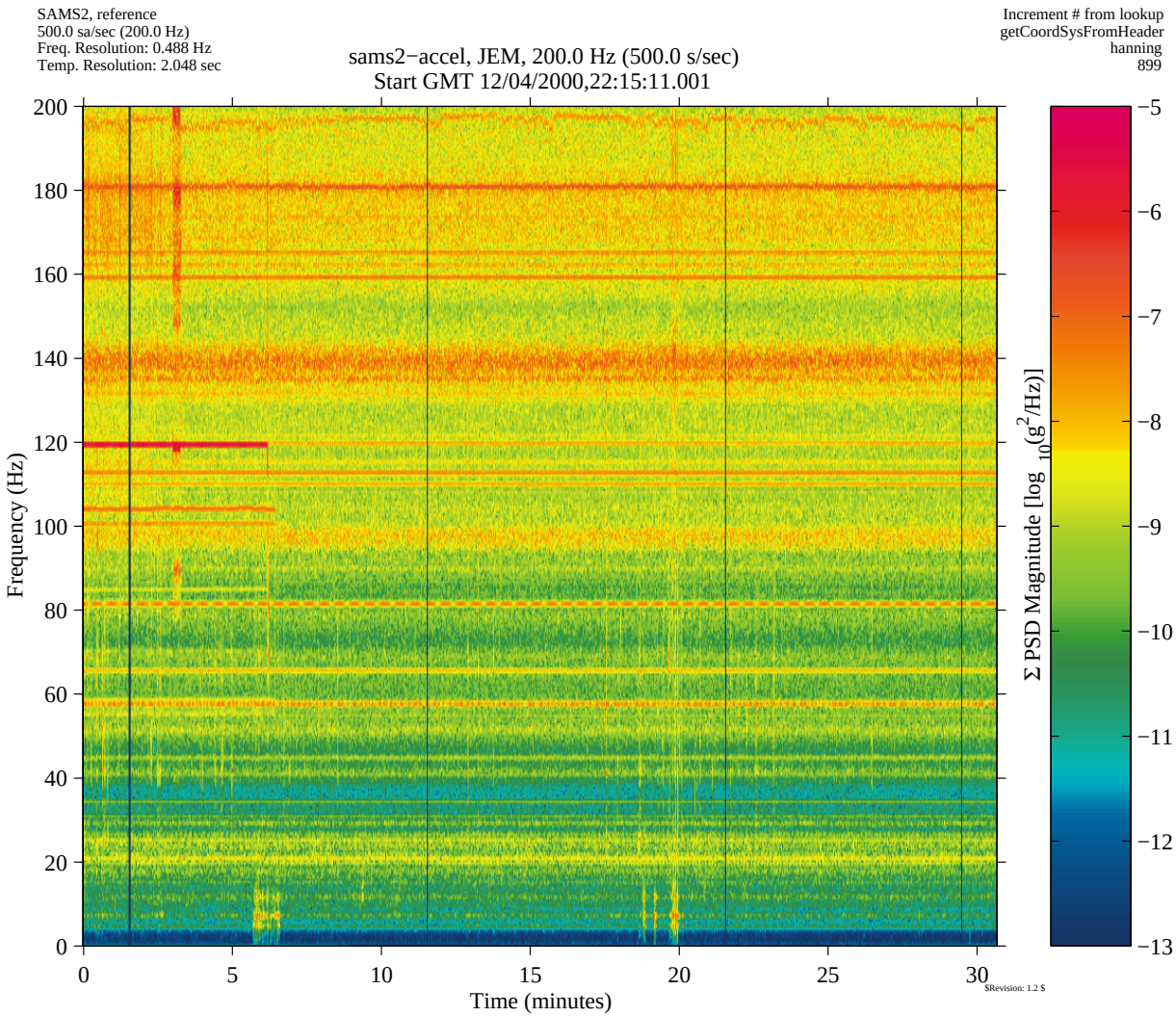


**Figure 1. Spectrogram**

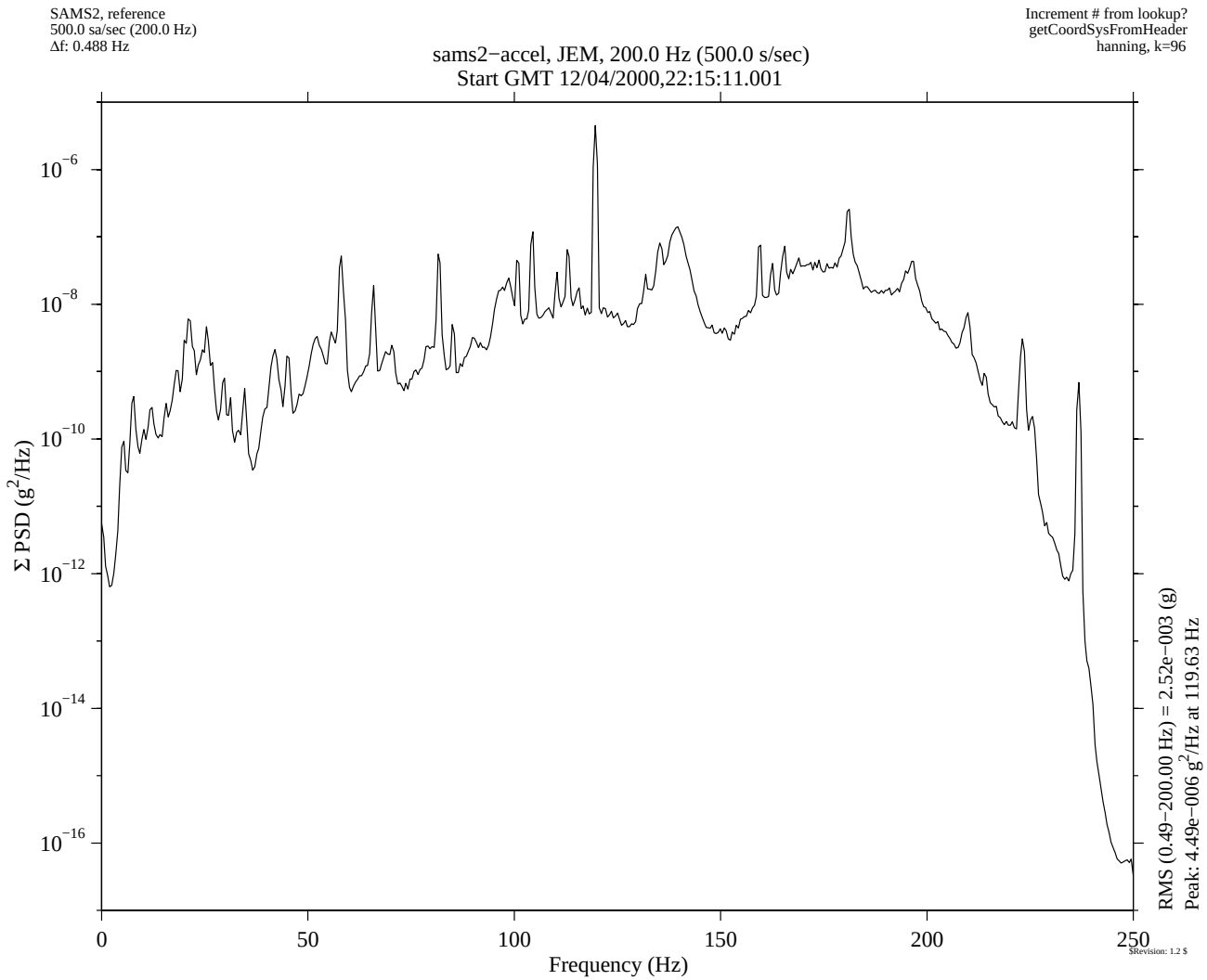


**Figure 2. PSD During PCS Signal**

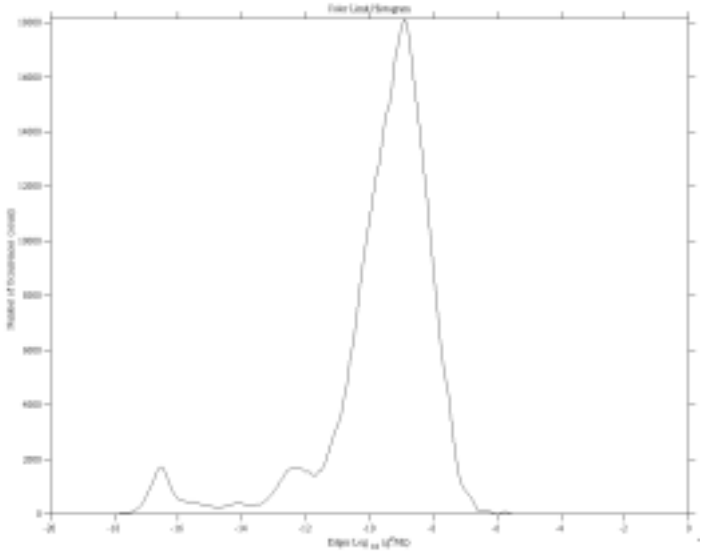

**Figure 3. Histogram of PSD Magnitudes**

# Timing Details

```
Chunk #01

        >FILE #01 of 01:
          prevEnd: 04-Dec-2000,22:15:10.999
        syncStart: 04-Dec-2000,22:15:11.001
        adatStart: 04-Dec-2000,22:15:11.001
         adatSpan:             00:01:34.000  ( 47001 pts )
          adatEnd: 04-Dec-2000,22:16:45.001
        ***********************************

Chunk #02

        >GAP                                 ( 106 pts )
         gapStart: 04-Dec-2000,22:16:45.003
          gapSpan:             00:00:00.210
           gapEnd: 04-Dec-2000,22:16:45.213
        ooooooooooooooooooooooooooooooooooo

Chunk #03

        >FILE #01 of 03:
          prevEnd: 04-Dec-2000,22:16:45.213
        syncStart: 04-Dec-2000,22:16:45.215
        adatStart: 04-Dec-2000,22:16:45.215
         adatSpan:             00:09:59.998  ( 300000 pts )
          adatEnd: 04-Dec-2000,22:26:45.213
        ***********************************


        >GAP                                 ( 4 pts )
         gapStart: 04-Dec-2000,22:26:45.215
          gapSpan:             00:00:00.006
           gapEnd: 04-Dec-2000,22:26:45.221
        ooooooooooooooooooooooooooooooooooo


        >FILE #02 of 03:
          prevEnd: 04-Dec-2000,22:26:45.221
        syncStart: 04-Dec-2000,22:26:45.223
        adatStart: 04-Dec-2000,22:26:45.223
         adatSpan:             00:09:59.998  ( 300000 pts )
          adatEnd: 04-Dec-2000,22:36:45.221
        ***********************************


        >GAP                                 ( 5 pts )
         gapStart: 04-Dec-2000,22:36:45.223
          gapSpan:             00:00:00.008
           gapEnd: 04-Dec-2000,22:36:45.231
        ooooooooooooooooooooooooooooooooooo


        >FILE #03 of 03:
          prevEnd: 04-Dec-2000,22:36:45.231
        syncStart: 04-Dec-2000,22:36:45.233
        adatStart: 04-Dec-2000,22:36:45.233
         adatSpan:             00:07:53.498  ( 236750 pts )
          adatEnd: 04-Dec-2000,22:44:38.731
        ***********************************

Chunk #04

        >GAP                                 ( 253 pts )
         gapStart: 04-Dec-2000,22:44:38.733
          gapSpan:             00:00:00.504
           gapEnd: 04-Dec-2000,22:44:39.237
        ooooooooooooooooooooooooooooooooooo

Chunk #05

        >FILE #01 of 01:
          prevEnd: 04-Dec-2000,22:44:39.237
        syncStart: 04-Dec-2000,22:44:39.239
        adatStart: 04-Dec-2000,22:44:39.239
         adatSpan:             00:01:14.760  ( 37381 pts )
          adatEnd: 04-Dec-2000,22:45:53.999
        ***********************************
```

# Scratch Pad

From Figure 1, PCS signal at about 119.5 Hz turns off at about GMT 12/04/2000,22:21:21.

From hardcopy of JPEG image on the SDDS at

T:\www\plots\interesting\Mass_Storage_Tests\csGraph_PCS_OFF_02_15_2001_18_42_16.jpg

I used (18 minutes/118 mm)

PCS_off_from_realtime=popdatestr(popdatenum('12/04/2000,22:18:00.000')+double(convert((23*(18/118))*units('minutes'),'days')),-1);

to get turn off at about GMT 12/04/2000,22:21:31. For this event, the offline data is lagging by approximately 10 seconds.

For the second timing mark (large transient):

hack2_from_offline = GMT 12/04/2000,22:35:00

hack2_from_realtime = GMT 12/04/2000,22:35:05.

**header:**

```
                        FileType: 'xml version="1.0" encoding="UTF-8"'
                        DataType: 'sams2-accel'
                        SensorID: '121_f06'
                            Gain: '1.0'
                      SampleRate: 500
                      CutoffFreq: 200
                     GDataFormat: 'binary 32 bit IEEE float little endian'
                      BiasCoeffX: '1.2'
                      BiasCoeffY: '0.13'
                      BiasCoeffZ: '9.99'
    SensorCoordinateSystemName: '121_f06'
SensorCoordinateSystemComment: 'JEM'
    SensorCoordinateSystemXYZ: [1092.3 1.34 373.2]
    SensorCoordinateSystemRPY: [90 0 180]
     DataCoordinateSystemName: 'reference'
  DataCoordinateSystemComment: 'US-LAB'
      DataCoordinateSystemXYZ: [1.2 0.13 1.5]
      DataCoordinateSystemRPY: [90 0 180]
           DataQualityMeasure: [1x79 char]
             ISSConfiguration: 'tsc testing'
                 ScaleFactorX: '111.0'
                 ScaleFactorY: '222.0'
                 ScaleFactorZ: '333.0'
```