

OFI Hammer Test LLO HAM5 5/22/13 Stuart Aston

HAM5 OFI (OFIS) Results of B&K hammering - VA are functional

Following acknowledgement that the OFI (OFIS) was freely suspended (courtesy of Mike V.) B&K hammer testing could commence.

The OFI had been installed, aligned and dog-clamped down in the HAM5 chamber, without Vibration Absorbers fitted, so that we can more easily verify the functionality of the VA.

A tri-axial accelerometer was attached (via interface plates) to a horizontal strut near the top of the HSTS structure, as shown in Image #478. For convenience the axes of the accelerometer were aligned with the axes of the suspension (i.e. X = longitudinal, Y = transverse, Z = vertical). The hammer was used in two places to excite the structure, the first being +Y at the back of the structure, and the second being +X on the side of the structure.

Measurements were taken using the "Simple Hammer Display 3.pls" template available in [T1000697](#). A hammer trigger threshold of approximately 20N was found to work best in all cases. HAM5 ISI remained locked throughout the duration of the following B&K measurements:-

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SimpleHammerDisplay3-OFI-Test1a-SUSunlocked-ISIlocked-VANotfitted-Yimpact.pls
- 10 of 12 dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test1b-SUSunlocked-ISIlocked-VANotfitted-Ximpact.pls
- 10 of 12 dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test2a-SUSunlocked-ISIlocked-VAfitted-Yimpact.pls -
10 of 12 dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test2b-SUSunlocked-ISIlocked-VAfitted-Ximpact.pls -
10 of 12 dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test3a-SUSunlocked-ISIlocked-VANotfitted-Yimpact.pls
- All dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test3b-SUSunlocked-ISIlocked-VANotfitted-Ximpact.pls
- All dog-clamps fitted.
SimpleHammerDisplay3-OFI-Test4a-SUSunlocked-ISIlocked-VAfitted-Yimpact.pls -
All dog-clamps fitted. Vibration Absorbers location rotated around structure
i.e. *final* configuration
SimpleHammerDisplay3-OFI-Test4b-SUSunlocked-ISIlocked-VAfitted-Ximpact.pls -
All dog-clamps fitted. Vibration Absorbers location rotated around structure
i.e. *final* configuration
```

ASCII data has been exported from the B&K Pulse analysis software directly into text files (*.txt) so that it can be compared with other measurements using the "BandK_plot.m" script. A merged pdf plot showing the OFI with and without VA is available below (see 2013-05-22_Phase3a_L1OFI.pdf). n.b. the vertical dashed black line denotes the 150 Hz requirement, below which no undamped, high Q, resonances are permitted.

All data and plotting scripts have been committed to the SUS svn, and raw B&K pulse files + ASCII data files can be located via the WebSVN link:-

[\\${SusSVN}/trunk/OFIS/L1/OFI/BandK/](#)

These results are convincing, with the VA damping the Q's of the first mode peak around 130 Hz, and second mode peak around 175 Hz, clearly visible. It

also appears that having the full compliment of dog-clamps, and rotating the location of the vibration absorbers on the structure has had little/no effect upon damping performance.

