

# GSN Calibration Policy

## Revised April 22, 2010

Starting immediately, the GSN operators will undertake a program to improve calibration and orientation metadata at all GSN stations. Calibration techniques are dependent on the type of data acquisition system deployed. A summary of the current calibration techniques used is provided in the “GSN Calibration” document put together by the GSN Network operations (Jan 25, 2010),

### **Relative Calibrations: Analyses of instrument response to signals injected through the calibration coils of the seismometer**

A relative calibration shall be conducted at least once annually at all stations equipped with the Next Generation Q330HR data acquisition system and at any stations with legacy dataloggers capable of running a similar test remotely.

A relative calibration shall be conducted during maintenance visits to stations with legacy data systems incapable of running a remote calibration.

### **“Absolute” Calibrations: Comparison of installed instrument signals to known reference sensor**

As opportunity allows, network operators will measure the absolute calibration and orientation of deployed sensors by installing a temporary sensor whose absolute orientation and sensitivity is known, and comparing that seismometer’s output with that from the permanent GSN seismometers. The temporary instrument will then be returned to the network operations center and its response verified after each use.

### **Metadata Update:**

When there is confidence that a calibration has provided an accurate estimate of the instrument response at a GSN station, the appropriate Data Collection Center will then update the station’s metadata.

### **Special Circumstances:**

If a calibration provides an anomalous result, the calibration will be repeated, as necessary, to confirm the anomaly.

Stations with chronic or deteriorating sensor response problems may be calibrated more frequently (with modified procedures, as necessary) to properly characterize the problem until a solution can be found and implemented.

If a major, data-sensitive component is to be installed, replaced, or moved, a calibration will be performed both before and after the procedure to properly establish the baseline shift in system response. Obviously, this can only be accomplished if the system is functional before the procedure.