

Quarterly Report to the Harry Reid Center  
UCCSN-DOE Cooperative Agreement

Task ORD-FY04-006: Seismic Monitoring  
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Report Period: 1/01/2006 – 3/31/2006

**Progress:**

During this reporting period (Jan. 1 – Mar. 31, 2006), we have maintained seismic operations with 29 real-time SGBDSN stations under the QA procedures that have been established with the HRC. Data is managed and archived in an Antelope data management system. Network uptime has been at greater than 99% over the three months. In addition, we have maintained QA data collection from 9 accelerometers in 3 boreholes on the ESF pad and from 3 accelerometer/seismometer installations in the ESF itself.

Installation of instrumentation and stations under the upgrade of the seismic network to an IP communications environment continues. Work this quarter has focused on upgrading the Yucca Mountain node and working off issues of telemetry and radio interference between the 900 MHz and 200 Mhz systems. Radio interference has caused some individual station outages, but not a loss of the network itself. Equipment purchases for the balance of FY2006 activity were being finalized, with funding imminent at the end of the quarter. Purchases will include microwave radios and new dataloggers. One new station was installed this quarter, a RefTek 130 datalogger, Mark Products L-4 3-component seismometer, and RT131 MEMS accelerometer on the surface above Alcove 5 (AL5S). Digitizers have been replaced at stations WLD, RED, CAF, and SPC. At WLD and SPC accelerometers were added. Both were weak-motion stations near older, untelemetered strong-motion recorders, so this change improves functionality and data recovery rates. Three former Terratek accelerographs were also replaced with telemetered RT130 digitizers with MEMs accelerometers, stations LWLS at Lathrop Wells, and TYMS and SYMS on the top and west side of Yucca Mountain, respectively. These changes, and use of 100 sample-per-second recording for continuous channel data has approximately doubled the data load on network, computer, and storage resources at NSL.

**Borehole UZ-16 Multi-channel data collection**

Data from the UZ-16 borehole (64 channels) continues to be received in real-time and managed in an Antelope system at NSL. The system has proven to be reliable thus far. All data is reviewed and event data are extracted and archived. Technical reviews of UCCSN-UNR-064 on the UZ-16 borehole have been completed and comments resolved. A second attempt at system checks also was too large for use in system checks, and input hardware settings are being revisited. Locations for three surface seismometers were registered with the TCO and permitting is in process.

**Kappa Project:**

Documentation review preparatory to submitting the kappaAH SIR is in work. A completed VTR was developed with HRC QA help and technical input from UCSD. The kappaAH SDR Revision 1 has been submitted for review and incorporation into the SIR. Technical and QA reviews of this will be required. Borehole weak motion data are being packaged for submittal to the TDA and being evaluated for whether it can be qualified. Blume strong motion data have been gathered into a database. These data include the Little Skull Mountain mainshock and four substantial aftershocks planned for an unqualified addendum to the kappa report.

**Problems:**

Radio interference has arisen between the Freewave and Monitron radio system on Yucca Mountain. The former connect to new dataloggers, while the latter continue to recover data from analog and RT72A dataloggers. The problems should subside once the network upgrade to IP is completed. Consistent power to the Sun computer at the ESF remains a concern. Downtime affect stations in the ESF, UZ-16 and ESF pad borehole sites. No significant events were missed.

**Status of Funds:**

Funding for the balance of FY 2006 was finalized in the last days of the quarter, and in accounts at UNR around April 4, 2006. The delay in funding has negatively impacted efficiency and planning, but we can proceed with certainty at this point. The delayed hiring of a September 2005 retirement is scheduled for May 1, 2006. The impact of late funding on the schedule of the seismicity report is being evaluated.

**Plans and Notes:**

Seismic data from stations AL5 and RPY were submitted in ASCII format to the TDA and are now available there as qualified data under DID 006GB.002.