

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

Task ORD-FY04-006: Seismic Monitoring
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Report Period: 10/01/2005 – 12/31/2005

Progress:

During this reporting period (Oct.-Dec. 2005), 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. All earthquake event data for FY04, October 1, 2004 through September 30, 2005, has been reviewed. Data from the network has been submitted to the project.

Qualification of software RTP2ORB, V4.7, has been completed. This is essential for Q status for the data from RefTek instrumentation running in the ESF and instrumentation to be installed at corresponding sites above the ESF.

Installation of instrumentation and stations under the upgrade of the seismic network to an IP communications environment continues with completion of the Skull Mountain link. Equipment has been purchased for other digital microwave links. RefTek 130 dataloggers have been installed at sites above corresponding stations in the ESF; SMES (above strain meter) and NI5S (above Niche 5). Hardware at these locations matches instrumentation at corresponding ESF sites; RefTek 130 6-channel digitizers, Mark Products 3-component 1 Hz L-4 seismometers, and RefTek MEMS 3-channel accelerometers. The Fran Ridge digital node, to service upgraded data acquisition systems in the repository area, has been completed with increased solar power and 6 Freewave radios. Additional solar power has been installed at the Yucca Mountain Node.

We moved out of staging facility Building 4314 in the old FOC area in late December. Our new locations will be the Gas Station building in Mercury and a planned trailer on the ESF pad. Coordinating equipment moves is still underway.

The semi-annual free-field strong motion station site visit was conducted in October. Strong motion stations are slated for upgrade and integration to the real-time telemetry network.

Borehole UZ-16 Multi-channel data collection

Data from the UZ-16 borehole (64 channels) is being received in real-time and managed in an Antelope system at NSL. System reliability has been excellent. 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. The QA review of Scientific Notebook has been

completed and in 'comment resolution' stage. System check input voltages developed for testing units for UZ-16 were too high and system checks performed in October will be redone in the beginning of the year.

Kappa Project:

Progress was made in kappa software QA. The final technical question of normalizing spectra was resolved and the subroutine at issue was modified. The affected portion of the Validation Test was repeated successfully by an independent reviewer. We have requested procedural clarification from the QA office on how to modify the SDR so Control Point 2 documentation can be completed.

Problems:

A communications problem was experienced in the link between the UNR Skull Mountain microwave and the State of Nevada Microwave facility on Skull Mountain. Data communications from the Sun computer at the ESF was interrupted from December 16, through December 28, 2005. A router problem was suspected and equipment was retrieved and tested; data communications was reestablished. This downtime affected only stations in the ESF, UZ-16 and ESF pad borehole sites. No significant events were missed during this equipment downtime period and there was no impact to other regional and YMP area monitoring stations.

Status of Funds:

Beginning-of-year contract and overall DOE-YMP budget issues have delayed NSL receipt of FY2006 funding. The funding gap has required require short-term support through UNR in order to meet early FY2006 network personnel and operations needs; DOE has supplied funding for 2 months at 80% of projected FY2006 expectations. If support for network operations continues to come through short-term mechanisms, equipment purchases and the network upgrade, and upgrade installation will be impacted negatively and some delays should be expected. Funding uncertainties have also forced us to delay filling a professional-level vacancy opened in September 2005 by a retirement. If prolonged, this could affect our ability to complete the seismicity report in a timely manner.

Plans and Notes:

We will submit FY05 earthquake locations and begin to develop the FY2005 seismicity report. Seismic data from stations AL5 and RPY were submitted in ASCII format to the TDA. This data was requested by Project personnel to support seismic design work. These stations in particular are suited for estimation of spectral ratios from the ESF tunnel to the surface. QA reviews were concluded successfully. Data (DID 006GB.002) will be available in January pending completion at HRC of final metadata forms.

Strong-motion data from the non-telemetered Yucca Mountain area stations was compiled, reformatted, and submitted to the TDA (006GB.001). QA reviews were completed, so this data is now the Q data resource for strong-motion recordings around Yucca Mountain.

Close out systems checks will be performed on free-field strong motion stations scheduled for upgrade and hardware replacement.

UZ-16 system checks will be performed.

A number of stations in the Yucca Mountain area designated for transmission to the Skull Mountain, Fran Ridge and Yucca Mountain Nodes will be installed in the next quarter.