

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

Task ORD-FY04-006: Seismic Monitoring
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Report Period: 07/01/2005 – 09/30/2005

Progress:

During this reporting period (Jul.-Sep. 2005), we have maintained seismic operations with 29 real-time SGBDSN stations under the QA procedures that have been established with the HRC. Network uptime has been 99.9% 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.

The software qualification of MLCALC, V3.0 was completed. The qualification of Q3302ORB, V4.7, was also completed to ensure the continued Q status of the borehole data. The qualification of RTP2ORB, V4.7, is underway in order to ensure the Q status for the data from the tunnel instruments.

TR-04-001, the report on borehole accelerometers, has been finally submitted and forwarded to DOE.

The report on FY2004 seismicity near YM has been submitted for technical and QA review. The report is somewhat brief due to the low level of activity during FY2004; the largest event was just under M 3.0.

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. 30 minute data records from the University of Texas Austin (Ken Stokoe's group) 'Liquidator' truck mounted vibrator experiment in June '05 was submitted to the TDA. Local, regional, and teleseismic events data is being subset from the continuous data stream. Amplitude system checks of the borehole sensors will be conducted before the end of the year; a mechanism to perform the systems checks has been developed.

We submitted the following data sets to the TDA in the past quarter:

006DV.009	Presumed blasts located within and near the Southern Great Basin Digital Seismic Network in the period 10/1/2003 to 9/30/2004.
006DV.010	Southern Great Basin Seismicity FY2004.
006DV.011	Hypocenters and magnitudes for earthquakes in the vicinity of Yucca Mountain, 10/1/2003 - 09/30/2004.
006DV.012	Focal Mechanisms for Earthquakes in the vicinity of Yucca Mountain, 10/1/2003 - 9/30/2004.

006DV.013	Southern Great Basin Digital Seismic Network (SGBDSN) waveform data for local earthquakes, 2000-2003.
006KS.001	Vibrator Data Collected on the Pad at the Borehole UE-25 UZ #16.

Kappa Project:

Kappa software QA has been delayed by questions about how spectra are normalized and corrected. This question is nearly resolved, with help through our collaboration with UCSD. Data submittal "Yucca Mountain free-field strong motion earthquake recordings" completed technical and QA review this quarter and has been submitted to HRC for entry into the TDA. This submission was completed in support of a Project-side request and also required submission in advance of the kappa report. Another milestone for the kappa project was reached with the submission of 006DV.013.

Problems:

We needed to reconfigure our antennas at the RF15 borehole and the data trailer due to interference by other activities on the ESF pad. Because our visits to the pad are irregular, we need better notification from TCO on conditions that may affect our transmissions from the three instrumented boreholes.

Status of Funds:

As of 09/30/2005, we have expended FY2005 funds on Task 6, out of a total FY2005 allocation of \$1,705K. Beginning-of-year contract and overall DOE-YMP budget issues have delayed NSL receipt of FY2006 funding. The funding gap will require short-term support through UNR in order to meet early FY2006 network personnel and operations needs. If support for network operations continues to come through short-term continuing resolution mechanisms, equipment purchases and the network upgrade could be impacted negatively.

Plans and Notes:

We will deliver the annual seismicity report (TR-05-001) on FY2004 seismicity in the vicinity of Yucca Mountain.

We will install the three stations on the Yucca Mountain crest over the three tunnel stations in the last quarter. We will also start the recorder replacement cycle for the 29-station SGBDSN and the upgrade of a few independent strong-motion sites to telemetered recording. We will perform strong motion site visits for semi-yearly data downloads, submit free-field strong motion data, and perform amplitude system checks on borehole UZ-16 downhole sensors.

We expect to complete software QA for RTP2ORB and kappa.

A manuscript entitled, High Resolution Crustal Tomography of the Yucca Mountain Region, by Leigh Preston, K. Smith and D. von Seggern was submitted to Geology and is in review.

David von Seggern retired as of 9/30/2005 from the position of Yucca Mountain Seismic Network Manager. P.I. James Brune resigned as P.I., leaving co-P.I. John Anderson as the Task management and scientific lead.