TexNet CISR — Bureau of Economic Geology

PROJECT UPDATE — September 2016

Summary — Since Governor Abbott authorized funding for TexNet, project personnel at the Bureau, along with our UT-Austin, SMU, and TAMU research partners, have been working to create the foundation for a successful program. Below we provide updates on network installation and operation, recent seismicity, staffing, research, and outreach.

Network Installation and Operations
- New website summarizing seismometer deployments: http://www.beg.utexas.edu/texnet/operations-status
- Data are now streaming real-time to the TexNet Hub from four portable stations recently installed in the Ft. Worth Basin. Ten additional sites have been identified for upcoming portable station deployments in that area.
- Noise surveys have been conducted for all 22 proposed permanent monitoring sites. We are proceeding with no-fee lease contracts at six of those sites. The majority of contracting will begin in October.
- SMU is maintaining their TexNet-funded seismic network, archiving data to IRIS, and updating their catalog.
- Nanometrics has delivered 99% of the TexNet equipment, with the remainder expected by Oct 31.

Synopsis of Recent Seismicity in Texas
- Sep 6, M3.6 associated with the seismicity SE of Pecos
- Sep 12, M2.6 double event associated with the Venus swarm
- Sep 22, M2.4 associated with the Irving swarm

Staffing
- Johnathon Osmond began at the Bureau as Structural Interpretation Specialist, JP Nicot has assumed the PI role for the Hydrology: Fluid Budget Protocols, Data and Analysis Project, and Jake Walter is leaving the University of Texas to become the State Seismologist of Oklahoma.

Research
- Seismology: SMU completed determination of local magnitude and distance attenuation for the existing Ft. Worth Basin catalog. UTIG has completed preliminary earthquake characterizations for the greater Permian Basin, Panhandle, and east Texas regions.
- Social Science Team: The phase 1 baseline survey is still in the field and the phase 2 project has launched. These surveys will help us better understand the knowledge needs, misperceptions, and gaps regarding induced seismicity by surveying and interviewing oil and gas regulatory agencies' executives and employees.
- Geomechanics and Reservoir Engineering: UT has developed an earthquake rupture propagation model, coupled with subsurface fluid flow, that can be used to assess potential earthquake magnitudes for various injection well conditions and pre-existing fault geometries.
- Seismic Hazard & Risk: Shear wave velocity (Vs) measurements at TexNet monitoring sites are beginning and V_{s30} maps of Texas, derived from seismograms, are being related to surface geology. Researchers performed a reconnaissance of the Pawnee, OK M5.8 event. Minor damage was observed, as well as some soil liquefaction.

Outreach
- Michael Young gave a talk at the Ground Water Protection Council in Orlando, titled "TexNet and CISR: Seismicity Monitoring and Research in Texas."
- Alexandros Savvaidis gave a talk at the workshop Seismicity in Oklahoma, titled "TexNet-Texas Seismological Network: A Contemporary Approach for Monitoring the Earthquake Activity in Texas."