

PROJECT UPDATES — June 2016

Summary — Since Governor Abbott signed legislation on June 22, 2015, authorizing funding for TexNet, project personnel at the Bureau, along with our University of Texas at Austin (UT), SMU, and Texas A&M University (TAMU) research partners, have been working to create the foundation for a successful program. Along with network installation and operation, our focus thus far has been on several main areas—acquisition, recruitment, partnerships, research, and outreach—described below in greater detail.

Acquisition:

- Equipment for all 22 permanent seismic stations has been received from Nanometrics and is being tested.
- Nanometrics has delivered approximately 25% of equipment for 36 portable stations, with the remainder expected by the end of August 2016.
- Scouting and initial site evaluation of proposed permanent station sites is in progress, with 15 of the 22 sites identified. Most proposed station sites have at least one back-up site.
- Proposed station sites will be considered permanent after they pass a 24-hour noise survey, to be conducted by Nanometrics, and after no-fee lease contracts with landowners are executed.
- Identifying landowners willing to host stations under a no-fee contract has been a significant challenge.

Recruitment:

- The position of Fault Interpretation Specialist at the Bureau has been publicly posted, and applicant screening has begun. The candidate filling this position will principally work on the Bureau's *Faults and Geomodels* project.

Partnerships:

- Pending the execution of final agreements, Anadarko Petroleum Company and Occidental Petroleum Company will join the CISR Industrial Associates program, bringing the total membership to 10.
- Representatives from CISR and the Stanford Center for Induced and Triggered Seismicity conducted a meeting with six energy companies operating in the Fort Worth Basin to collaboratively request access to subsurface data for use in characterizing faults, stress, and reservoir properties and conditions. The meeting was hosted by Pioneer Natural Resources.

Research:

- A new TexNet–CISR research subproject on fault characterization of the Fort Worth Basin subsurface and Llano Uplift outcrops has been initiated within the *Faults and Geomodels* project.
- For the UT project *Theoretical Analysis of Controls on the Size of Earthquakes Induced by Fluid Injection*, a 3D coupled fluid-flow and geomechanics simulator has been developed that will include treatment of rate and state friction. The simulator will be used to investigate the effect of fluid injection on earthquake triggering and can calculate rupture size and induced moment magnitude for slip events.

Outreach:

- The [TexNet](#) and [CISR](#) websites are operational, and their development continues.
- CISR geomechanics researchers from the Bureau presented “Geomechanical Analysis of Fluid Injection and Seismic Fault Slip for the M4.8 Timpson, Texas, Earthquake” at the AAPG Annual Convention in Calgary.
- CISR seismology researchers from SMU and the UT Institute for Geophysics presented research on the Fort Worth Basin and Permian Basin region at the IRIS workshop on Emerging Fields and Technologies in Seismology in Vancouver, Washington.
- CISR reservoir-engineering researchers presented training on induced seismicity to California oil and gas regulators.