PROJECT UPDATES — May 2017

Summary — Project personnel at the Bureau, along with our UT-Austin, SMU, and TAMU research partners, continue to make progress on this highly successful program, as highlighted below.

Network Installation and Operations:
- *TexNet Seismic Monitoring* team has developed a website with continuous seismic data feed. This website is in testing and has not yet been released to the public.
- 24h noise surveys were conducted in West and South Texas. Data have been analyzed and final sites are assessed for permanent TexNet station deployments. Additional sites for portable station deployments have been scouted in West Texas.
- Field plans are being finalized for deploying the remaining eight permanent seismometers later this summer. Deployment will occur when all remaining land lease agreements are signed.

Synopsis of May 2017 Seismicity in Texas:
- *TexNet* cataloged 113 events in Texas, most occurring in West Texas. Four events were recorded at M≥2.5. These events have been determined to be "real" and not quarry blasts or other surface human activities.
- *SMU* cataloged 30 events in the DFW area including a M2.4 event in Ft. Worth on May 1, and two small aftershocks (*M*<2). The remaining 27 events (*M*<1.77) were associated with the Venus sequence in Johnson Co.

Partnerships:
- *UT Seismic Hazard and Risk* team is collaborating with *TexNet Seismic Monitoring* team to select shear-wave velocity testing sites for testing during July and August 2017 in West Texas near Snyder and Pecos.

Recruitment:
- *S*eismologist Dr. Dino Huang was hired into TexNet to verify earthquake locations and magnitudes.

Research:
- *Bureau Faults and Geomodels* has received subsurface fault information for 2 areas in the Fort Worth basin from petroleum operators and is incorporating that and detailed outcrop data into the 3D fault model. Group is nearing completion of a 3D geomodel for the Fort Worth Basin which includes faults, stratigraphy, injection data, wells, reservoir properties, and seismicity. Model will be used for simulating pore pressure evolution, fault reactivation potential, and advanced computational simulation.
- *Bureau Fault Reactivation, Geomechanics* team conducted numerical simulations of injection-induced excess pore pressure and stress perturbations for the Azle area. The simulations use a fully coupled poroelastic finite element model that incorporates faults using in-situ stress constraints provided by Stanford and SMU.
- *UT-PGE Pore Pressure Analysis of Fort Worth Basin* finished sensitivity analysis of reservoir and fault hydraulic properties on induced earthquakes and are investigating physical parameters that control event timing and magnitude.
- *UT Seismic Hazard and Risk* team has finished developing V_s shear-wave velocity profiles and V_s30 values for all Dallas-Fort Worth sites for which the team collected surface wave data in December 2016.
- *TAMU Fluid Flow, Geomechanics* team is verifying published injection and production rates in Azle via equivalent reservoir withdrawal rate computations. History matching of bottom hole pressure and seismic events is complete.

Outreach:
- KEYE-TV produced and aired a feature story on TexNet on May 23 which included shots of the new permanent station near Hondo and a supportive interview from the landowner.
- Hennings presented TexNet-CISR activities at the East Texas Energy Symposium in Kilgore, TX.