**TRAINING COURSES**

**Five Days through Central & Southern Utah**

*Available to EGI Corporate Associate Members*

**Instructor:**
EGI Research Staff & Affiliate Scientists

**Course Structure**
5 day Field Course

**Participants**
10–15

Course can be customized

**Duration**
5 days

EMAIL: ContactEGI@egi.utah.edu
PHONE: (801) 585-3826
OVERVIEW & COURSE OPTIONS
Day 1: Provo to Moab
The “Wasatch Front”, which includes the city of Provo, is located along the dividing line between two of North America’s great geologic provinces, the Colorado Plateau to the east and the Basin and Range to the west. It also marks the location of the second most active seismic belt in North America, the Intermountain Seismic Belt. This seismic belt runs from approximately Los Angeles to Yellowstone National Park.

As we travel eastward into the Wasatch Plateau we move up section stratigraphically from Pennsylvanian-aged carbonates of the Oquirrh Group to Eocene rocks of the Green River Formation. Upon descending through the Book Cliffs via Price Canyon we then reverse our direction stratigraphically and move from Eocene rocks back down to Late Cretaceous rocks of the Mesaverde Group. The Mesaverde Group represents the shoreline and alluvial systems of the Western Cretaceous Interior Seaway. Overtime this shoreline prograded from east-central Utah well into western Colorado. This progradation has been studied extensively by petroleum geologists world wide. We will study several parasequences in detail within Price Canyon.

We will then travel across the San Rafael Swell, a doubly plunging asymmetrical “Laramide” anticline that represents an ancient, giant oil field. We will stop on the east flank of the swell to consider reservoir partitioning in the Navajo Sandstone. Further east along I-70 we will have an overview of recent research related to reservoir characterization of the Early Triassic Sinbad Limestone Member of the Moenkopi Formation.
Day 2: Moab, Mill Canyon Dinosaur Trail and Arches National Park

As we walk along the Mill Canyon Dinosaur trail you will see numerous fossils in the Late Jurassic age Morrison Formation. They include Allosaurus, Stegosaurus, and Apatosaurus. The trail follows an outcrop of sands and gravels deposited in a river on a floodplain ~150 million years ago. If unavailable, we will examine an example of salt tectonics.

In addition to our visit to the dinosaur trail, we will spend a short few hours in Arches National Park viewing the classic arches, pillars, and fins for which Arches is famous. The ephemeral landscape seen today is a result of a complex geologic history that started approximately 300 My with the accumulation of a thick succession of salt within the Paradox basin. We will view numerous lines of evidence that allow us to unravel the events that led to the present landscape. We will also discuss how this landscape continues to evolve.

Day 3: Icehouse Stratigraphy and Reservoir Facies of the Paradox Basin

The Paradox basin is the second most productive oil-producing basin in Utah. Production comes largely from phylloid algal buildups of middle Pennsylvanian age. The Honaker Trail section, located along the cliffs of deeply incised San Juan River in SE Utah, affords us the opportunity to view carbonate-dominated icehouse depositional sequences and outcrop analogs of oil- and gas-producing strata.

We will examine most of this section via a 1 day raft trip on the San Juan River. The river cuts through two anticlines and affords amazing views of the Permian stratigraphy. In particular the focus will be on: 1) three orders of stratigraphic cyclicity, 2) characteristics of sequence boundaries in an arid shelf setting, 3) the Lower Ismay phylloid algal reservoir facies, and 4) the Chimney Rock shale source horizon.
Day 4: Capitol Reef National Park

Capitol Reef National Park is centered on the Waterpocket Fold, an approximately 50 My “Laramide” structure. This fold is essentially composed of two high angle reverse faults created under compressional stress while North America actively converged with portions of the Pacific Ocean plate during Cretaceous and early Tertiary time. Interestingly, the vergence of the two reverse faults was in opposing directions. The northern fault segment, known as the Miners Mountain Uplift, verges westward (fault plane dips eastward) while the southern segment, (known as the Circle Cliffs uplift), verges eastward (fault plane dips westward).

The Capitol Reef area exposes more than 17 bedrock formations ranging in age from Permian to Cretaceous. With its stratigraphy and structure, this area has a plethora of things to study. We will view slot canyons along the Western Escarpment of the park, overview the incision and landscape evolution of the Fremont River through the Waterpocket Fold, and overview recent research completed on the Entrada Sandstone. The Entrada Sandstone was formerly a small coastal erg system. It has recently developed into a new gas exploration play within the Uinta basin.

In the late afternoon/evening, we will drive from Torrey to Tropic via Highway 12. Highway 12 is one of the “Scenic Byways” of Utah and offers spectacular vistas.

Day 5: Bryce National Park, Covenant Oil Field, Overthrusts

Our visit to Bryce National Park will begin at Inspiration Point. Here one can view the Bryce Amphitheater, one of the most picturesque places on earth. At this viewpoint we will discuss the bedrock history, the stratigraphic succession of the Grand Staircase, and the erosional styles and rates of the amphitheater. We will then take an approximate two hour hike on the Navajo Loop.

As we drive north on our return to Provo you will pass through the Marysvale volcanics, a series of mostly Oligocene and Cenozoic ash flow tuffs and basalts. One of the stops will be at a spectacular outcrop of lahar flows.
The last stop is at the Covenant Oil Field, a 150+ million barrel discovery within the central Utah overthrust belt. Here we will discuss the complex geologic history of this field.