

Exploration and Production Overview

Three Day Course

Day one

Introduction

Course outline and Rock Cycle

Source Rock

TOC

Gas vs. oil – Kerogen type

Maturity

HC chains (what is oil)

Examples of Source Rock – Shales, Coal (samples passed around)

Resource plays basics (Eagle Ford, Bakken, Barnett, etc.)

Reservoir

Porosity vs. permeability

Storage and flow

Examples – Sandstones, Limestones (samples passed around)

Porosity measurements – logs and core

Seals

Definition of a Seal

Examples – Shale, Salt, Gypsum (samples passed around)

Hydrocarbon migration – buoyancy (exercise)

Traps

Plate tectonics – faults and folds

Trap types – structural, stratigraphic

Land Acquisition

Leasing, bid rounds, royalties, working interest, ORI, etc.

Paleontology

Day two

Mapping

Geologic – structural, isopach, net sand, geologic

Exercise – hand contour a map

Seismic data

What is seismic?

Acquisition and processing

Time maps vs. depth maps (well ties)

Volumetrics

Volume, porosity, water saturation

Pitfalls

Calculation exercise

Recovery estimates

Recovery factors – water drive, depletion, gravity, etc.

Reserves – Proven/unproven, developed/undeveloped, probable/possible

Economics – decision time

Economics exercise (putting it all together)

Day Three

Drilling

Rigs – components, terminology

Casing, cementing, evaluating (logs/cores/tests), and completing

Horizontal drilling

Facilities

Equipment – christmas trees, pumps, storage, pipelines

Production

Monitoring, reporting, sales

Energy Hall Tour

Houston Museum of Natural Science (afternoon)