Petroleum: Saudi Arabia, OPEC and Oil

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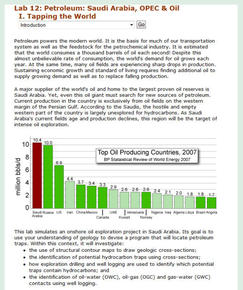
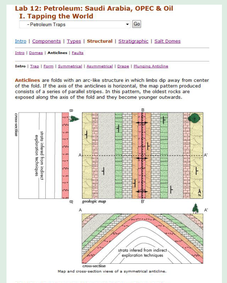
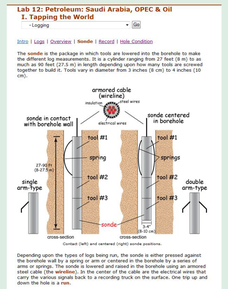
I. Tapping the Largest Oil Fields

In this petroleum case study, students are directed to conduct an exploration program for hydrocarbons. They are required to determine if and what types of hydrocarbons are present beneath a play. Using a drilling program, they must draw the various fluid contacts on the various geologic maps and cross-sections. In addition, they need to determine which strata in the stratigraphic section are cap and reservoir units. Students in groups of 3-4 represent different oil companies. Using the geologic maps and cross-sections, they must design and conduct an exploratory oil and gas drilling program for each prospect.

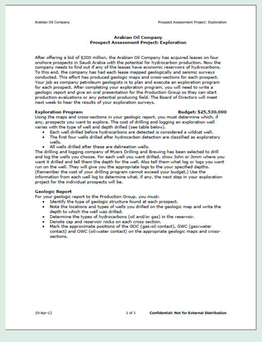
Web lab background material

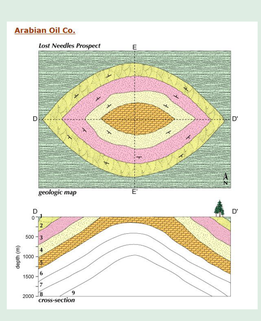


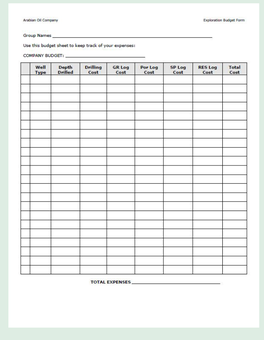




Student Assignment: handouts







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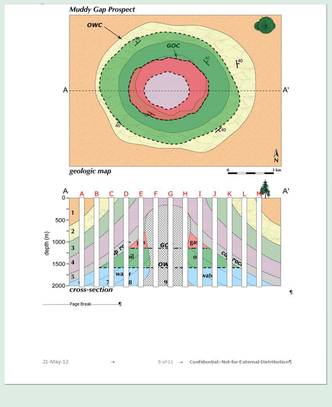
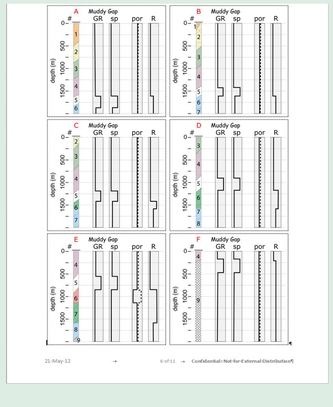
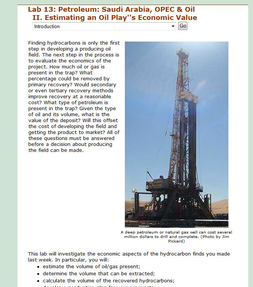


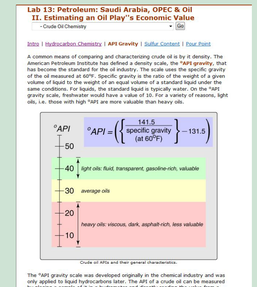


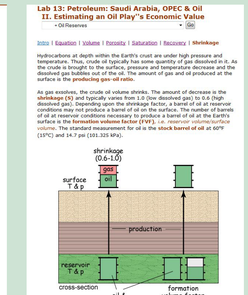
II. Estimating an Oil Play's Economic Value

For the second module in the Nigeria petroleum case study, students must perform an economic assessment of the two hydrocarbon reservoirs they found in the first module. Their first task is to estimate the volume of hydrocarbons in each reservoir and using market prices for the type of petroleum they have, estimate its value. Next they must design an oil production program for the each prospect. This entails converting exploration wells to production wells by casing them and installing production equipment. It also requires them to determine if they need to drill additional production wells and complete them. By comparing the cost of their production plan against the value of the hydrocarbons, they can determine if the deposits are economically viable.

Web lab background material







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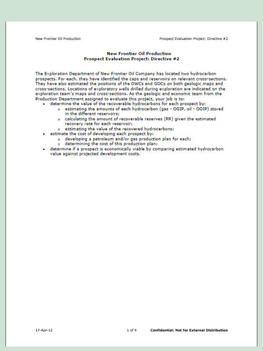

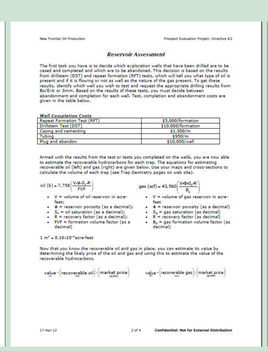

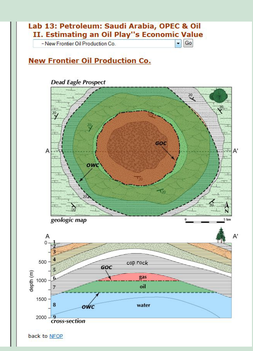

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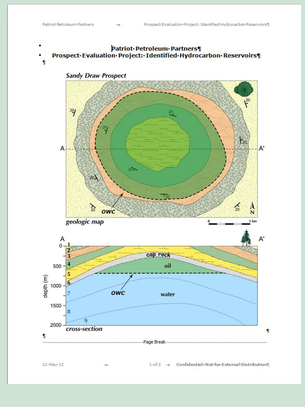
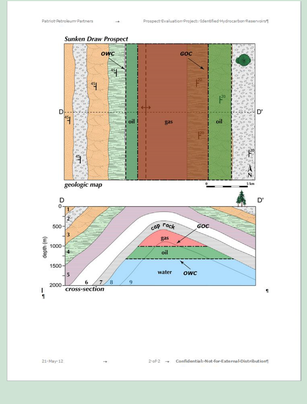
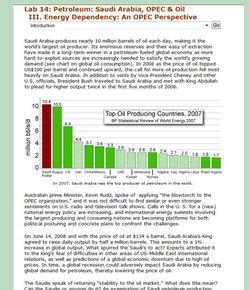


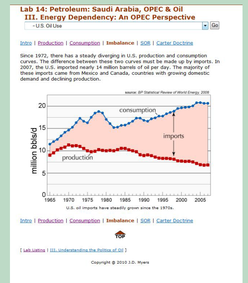


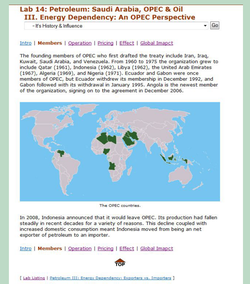
III. Energy Dependence: An OPEC Perspective

To provide a different perspective on the term "energy depencey", students simulate a meeting of OPEC in which they are to consider a cut in production quotas. Each group is assigned a different OPEC nation they will represent. To start the activity, they complete a country brief worksheet, which they read to the entire class. Each group research oil production with their country by completing a worksheet listing crude streams produced, their API gravity, sulfur content and pour point. With this information and the reported resevres of the nation, student calculated the size of the cut in production they would have to sustain in the reduction is adopted. Using this information and the economic impact, they decided how to vote.

Web lab background material







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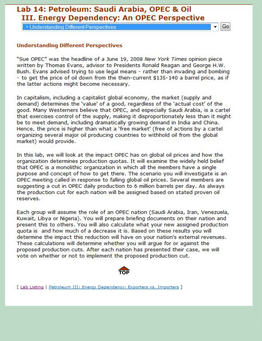

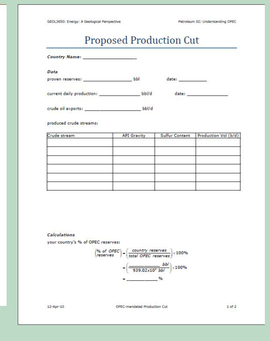

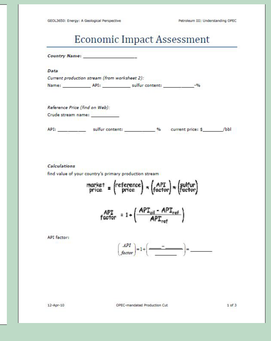

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Note. This is an open-ended exercise, with multiple outcomes and interpretations. The instructor must feel confident guiding the discussion based on his/her background knowledge of the subject.