

Oil and Gas Exploration Activity

Background

Abundant oil and natural gas form only where conditions in the Earth are just right.

Doing this investigation will help you understand how geoscientists identify and explore petroleum-rich reserves.

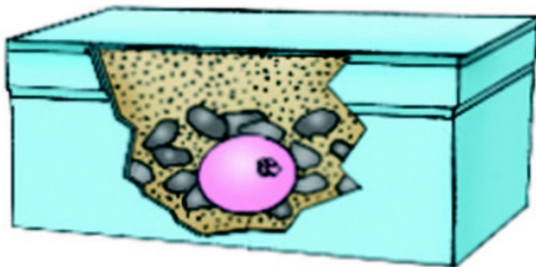
Read all instructions before starting so that you do not miss any steps.

Materials

- A cardboard box or other opaque container with cardboard lid
- Sand
- Graph paper
- Small rock samples
- Balloon with water (small)
- Masking tape
- Bamboo kebab skewer
- A helper

Procedure

1. In a small box or container (not clear), set up the model similar to the one shown in the illustration.
2. Have your home facilitator "hide" a small balloon containing water (to represent oil) into the layers. Ask your home facilitator to cover the area so that it is not obvious where the "oil reserves" can be found. Putting it in the middle might be too obvious, or placing it right against the side of the box might be too confusing! Place a lid securely on the box and fasten it with masking tape.
3. Also ask your home facilitator to take a picture of you doing this experiment to hand in.
4. Once your home facilitator has prepared the box, you will model the method used by exploration geologists in the field. **You may not** move the box, and you may not look inside it. **You may** tap on the box and listen for an area that "sounds different."
5. Mark the sides of the box "North," "South," "East," and "West."



6. Make a map of your model on graph paper so that you can record "where" you drilled and "where" you eventually found the oil reserve.

7. Place a circle (or circles) on the graph paper to record the locations of areas that sound different and seem like likely candidates for oil exploration.
8. Mark off divisions of one centimeter on a bamboo skewer, beginning at the bottom. Use the bamboo skewer to penetrate the box lid at the location where you think the oil may be located.
9. Probe the box from the top with the skewer to search for "oil" (the water balloon) in the places you identified. Probe gently through the sand. Look at the skewer for evidence of "oil." This models the drilling process.

Remember: Every centimeter of depth that you drill costs \$150 000. In addition, each time you move to a new spot to drill costs \$75 000.



Keep a record on your graph paper of how many centimeters you drill and how many times you move the skewer to a new spot, so you can calculate the total cost of your exploration. Continue drilling until you find "oil."

Conclusion:

What was the total cost of your exploration?

Was the oil deposit where you thought it should be?

If you were to start over, how would you change your exploration procedure to save money?

Hand in: You can put #1 -4 all on one document and submit them in the online dropbox.

1. A picture or scan of your "map" with all of the drilling activity on it.
2. A picture of you "doing" the activity
3. Your math calculations and cost of exploration.
4. Answers to the conclusion questions.