



INTRODUCTION

Hello, dear participants!

Congratulations with reaching the final stage of EBEC Moscow 2015!

Are you ready to apply your knowledge in practice?
Are you ready to turn on your imagination? Do you want to become a superhero? Be
an engineer!

We wish you good luck!

BEST regards,
Organizers team of EBEC Moscow 2015

The engineers have the following task: to design a petroleum refining
fabric, which includes required steps.

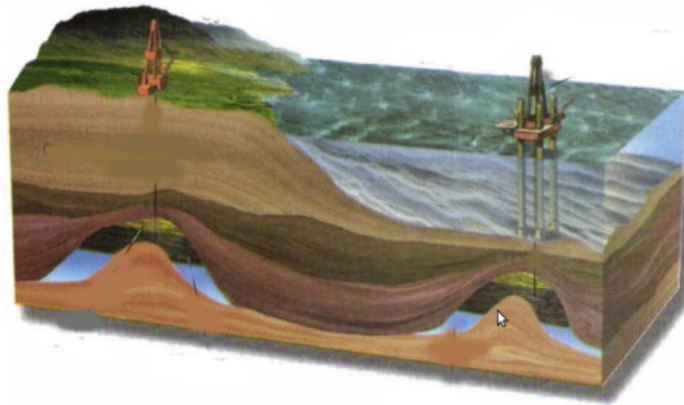
THE TASK

Create a petroleum refining fabric.

Required steps:

1. Formation of an oil field.

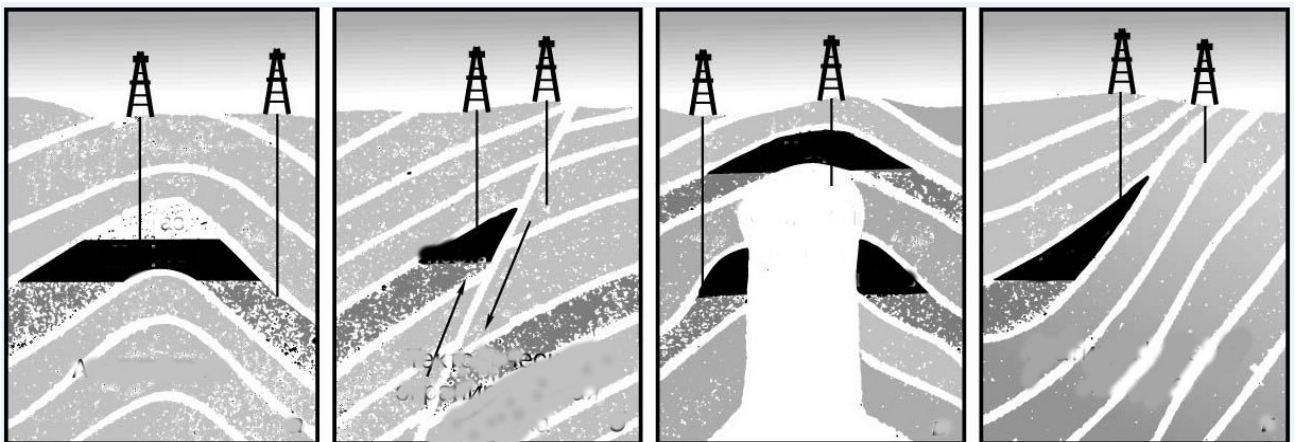
Task: to construct an oil field of one of the following types.



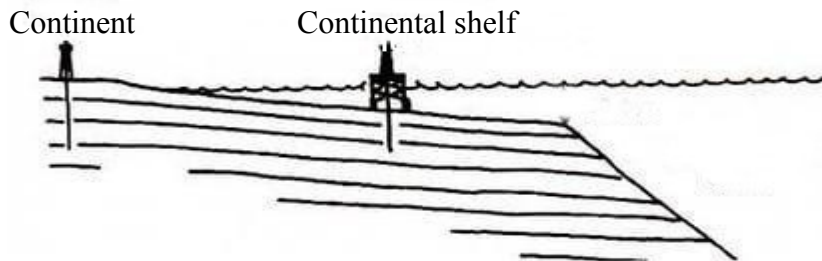
Scheme of an oil field:

- Continental oil field

It is usually a region with a plenty of oil wells extracting crude oil from below ground. In addition, there may be exploratory wells probing the edges, pipelines to transport the oil elsewhere, and support facilities.



- Shelf oil field



At present the continental oil fields are well-explored and the possibility of finding the new ones is restricted. That's why the main perspectives of developing the new large oil fields are connected with shelves (underwater landmasses which extend from a continent, resulting in an area of relatively shallow water). Using shelf oil fields is a rather new way of petroleum extraction but now it makes about 30% of the produced oil.

2. Extraction of oil.

Task: to extract oil from the oil field.

3. Filtration/Separation of oil.

Task: to derive as a result: unleavened water, sand and at least two types of petroleum.

4. Creation of petroleum products.

Task: to produce the maximum amount of ultimate petroleum products with your fabric.

The majority of petroleum is converted to petroleum products, which include several classes of fuels. Most of them are used as various grades of fuel oil and gasoline. These fuels include or can be blended to give gasoline, jet fuel, diesel fuel and heavier fuel oils.

5. Transportation.

Task: to proceed the transportation of oil to consumers.
(extra points: creation of light/sound indication system).



RULES OF THE COMPETITIONS

General:

- It is forbidden to use mobile phones and internet
- It is forbidden to exchange any materials or tools with other teams
- The presentation lasts for no more than 3 minutes.
- The team has 3 attempts to start the setting (during the presentation).

Shop:

You can pay in the shop by extracting points. In the beginning you have 500 points.

- Shop opens at 11 a.m. and is opened during the whole event. You can buy materials in the shop while the shop is opened.
- Any member of the team can approach the shop (in order to get familiar with the materials), but only CAPTAIN of the team can buy materials.
- You can buy required materials using points that you have originally
- If you have negative number of points, these points will be extracted in a special way from your resulting points, which you get after presentation.

Tools:

- only CAPTAIN can get the tools
- when CAPTAIN gets a tool, he should tell the person on the issuing point
- only CAPTAIN returns the tool, he should attentively watch the tool to be struck off the team's list!
- team is responsible in case of losing or damaging tools
- it's forbidden to hand the tools over to other teams!

The tools are to be returned immediately after use!



MATERIALS

№	Name	Total amount
1.	Veneer, 75x150 sm ²	1
2.	Hose, 11 mm	1 m
3.	Tube, 20 mm	0.5 m
4.	Plastic box	1
5.	Rope	1 m
6.	Glue	1
7.	Screws, 3.5x35 mm	5
8.	Nails, 2.0x20 mm	5
9.	Wire, 0.9 mm	0.5 m
10.	Emery paper, 230x280 mm	1
11.	Candle	1
12.	Aluminum form	1
13.	Plastic clamp, 3.5x200 mm	3
14.	Cheesecloth, 0.14 m	1 m
15.	Gloves	2 pairs



EVALUATION CRITERIA

№	Name	Points	Comments
1.	Number of steps	0-5	
2.	Type of an oil field	0-5	1-2 - continental oil field, 3-5 – shelf oil field.
3.	Visibility of process	0-1	1 – totally clear process; 0 – unclear/difficult process.
4.	Similarity with the real process	0-2	
5.	The setting is working stable	0-1	1 – installation works correctly two or more times in a row, 0 –works incorrectly.
6.	Number of attempts (3 attempts only)	0-3	
7.	Creative implementation	0-4	How interesting and unusual the idea.
8.	Number of materials used	0-5	5 – if material is used only from initial set; 4 – spent less than 50 points; 3 –spent less than 100 points; 2 – spent less than 200 points; 1 - spent less than 300 points, 0 - spent more than 300 points.
9.	Design (aesthetic model)	0-3	
10.	Presentation skills	0-5	
11.	Extra: light/audible indication of end of process	0-2	0 – no indication, 1 –only light/audible indication, 2 – light & audible indication