Ex'straw'dinary Engineering

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High school only: **Bid document**

BP plc

Call for bids
for the design and construction of the

JACKET STRUCTURE

for the BP plc "Lightning Bull" production platform

BP plc invites suitably qualified and experienced contactors to bid in competition for the design and construction of the **JACKET STRUCTURE** for the "Lightning Bull" production platform.

"Lightning Bull" will be located at a sea depth of 100m. Production, accommodation and storage facilities will have an operating weight of 8,000 tonnes.

The "Lightning Bull" operating platform is designed to operate with a minimum clearance of 50m above sea level. The **JACKET STRUCTURE** must withstand long periods of gale force winds and high seas and ensure the safety of both employees and equipment.

Prospective bidders must submit a detailed design specification, plans and construction costs.

Bidders will be required to build a scale model of their design for independent testing and evaluation. BP plc will provide a scale platform top for use during testing.

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Your challenge

You need to design the support structure for a new oil platform.
The platform will be placed in the sea.

- The sea will be 100m deep.
- The platform must be 50m above sea level.
- The platform will need to support 8,000 tonnes. This will be tested on your scale model, using wooden blocks.

The weather is often bad at this location, with giant waves, strong currents and gale force winds. Your structure needs to be strong and rigid.

Step 1: Design your structure on paper

- Use grid paper to draw some ideas for your design.
- Will you base your design around triangle shapes, squares or a mixture?

Step 2: Work out costs

- Calculate how much your structure will cost (remember: each straw or marshmallow is worth $1 million).

Step 3: Build your design

- When you are happy with your design, start building your scale model with 1cm = 10 m.

Step 4: Watch as your design is tested