

# The environmental effects of oil exploration

There are a number of environmental impacts of oil exploration. Below are case studies of the impacts around the world.

## **CASE STUDY: West Shetland Field**

West Shetland Field is located off the coast of Scotland and contains reserves of oil and gas. The oil is pumped onto floating production ships in 400-600 meters of water and is then transferred to a shuttle tanker. However the lack of fixed production platforms and pipelines means that the risk of oil spills is high. In 5 years West Shetland will be the largest producer of the central North Sea, with the drilling creating 800 jobs of which 70 are full time.

### ***Why it is used for oil and gas?***

The amount of oil in West Shetland could provide 90,000 barrels of oil per day. It is also expected to supply 8% of the UK's gas needs, enough to supply 2 million homes. The plant currently has capacity to handle 500ft<sup>3</sup> of gas per day.

### ***How the oil and gas is extracted?***

Seismic imagery is first used in order to understand the amount of oil present. Horizontal drilling then allows the penetration of multiple rocks to access oil and gas rather than using multiple vertically drilled holes.

## **CASE STUDY: The BP Oil Spill 2010**

In April 2010 the Deepwater Horizon Oil spill exploded killing 11 crew and released 134 million gallons of oil into the Gulf of Mexico. It happened because the blow-out preventer failed to seal a breach failed, resulting in a loss of hydrostatic pressure and thus an explosion.

### ***Impacts of the environment:***

- 167,000 turtles of all ages were killed will around 2-7 million fish being affectedly the oil too
- At least 93 bird species of bird have been exposed to the oil resulting in huge changes to the food chain
- Erosion rates along the Louisiana coastline doubled along a 100 mile stretch

### ***Impacts on the economy:***

- The spill could easily exceed \$1 billion in damages. The spill has affected many industry's, especially the shrimp and oyster industry on the Louisiana coastline.

### ***Potential environmental impacts?***

- The huge pressure and temperature (35,000 psi and 450oF +) means that a blow out is possible and therefore an oil spill
- The rough seas and high winds mean that if the oil rig moves slightly when inserting the pipe then an oil spill may occur as the pipe will fracture.
- Oil spills and leaks are extremely damaging to marine and bird life. The Gannet Alpha spill in 2011 showed that an oil spill is possible even in calm waters.

- Visitor and tourist numbers have fallen due to the fact that recreation, fishing, swimming and boating are no longer allowed around the coastline

### ***Response:***

- 48,000 people were involved with the 6,500 vessels deploying approximately 2,500 miles of boom in order to prevent the oil from spreading.
- At the end of 2014 BP had spent a total of \$14 billion on the clean up, with workers devoting 70 million working hours in response and cleaning up.

