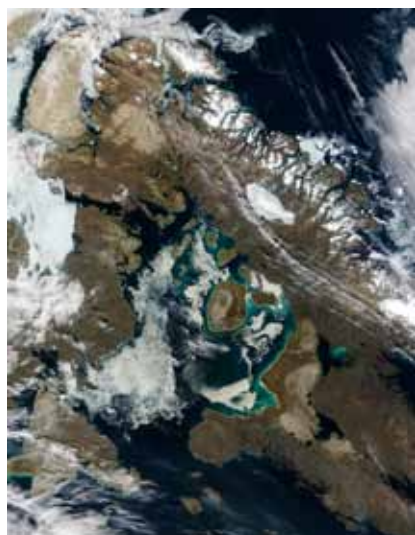


Finding oil & gas

Where do geologists first look for new supplies of the oil & gas lurking deep within the Earth's surface? Hundreds of kilometers up.



That's because high resolution satellite photography can provide a vital clue in identifying those areas of the Earth's crust most likely to conceal the type of rock formations that can trap oil & gas deposits. These formations are known as sedimentary basins, since they consist of areas of prehistoric sediment deposited by ancient rivers and seas.

Once identified, sedimentary basins can be explored using seismic techniques. These are based on sound waves and provide the most efficient way to find the underground rock formations that are most likely to be oil & gas reservoirs.

Similar in principle to sub-sea sonar navigation tools, seismic reflection works

when specially equipped vehicles, known as seismic trains, emit sound waves directed below the ground. Different rock structures refract these sound waves in different ways. Sensitive receptors called geophones pick up these special echoes and record the sound wave patterns. At sea, specially-equipped ships tow strings of floating sonic sources and hydrophones that pick up the reflected sound waves from beneath the sea bed's surface.

Geologists examine the data from geophones and hydrophones, looking for certain distinctive wave patterns that are deflected by the porous rock formations likely to contain oil & gas and those of the solid rock that could trap these hydrocarbons in an oil reservoir. They map these rock layers and highlight the most promising structures. Recent innovations enable the creation and computer

imaging of highly detailed 3D seismic maps that show the localisation and characteristics of potential reservoirs.

These maps help explorationists determine the likeliest spots to drill for oil & gas. Yet even after accumulating all of this data, there is no guarantee that likely formations actually contain oil & gas. In general, for every three wells drilled only one yields commercially viable quantities of oil or gas. However, technology has much improved: a few decades ago, the ratio was 10 exploratory wells for one discovery.

During the production phase of oil & gas, 4-dimensional seismic interpretation (3 dimensions + time) can help to map the progression of oil and gas flows in the reservoir over time and to take decisions on additional investment in the drilling of more wells to enhance the recovery of the hydrocarbons.



About OGP

OGP represents the upstream oil & gas industry before international organisations including the International Maritime Organisation, the United Nations Environment Programme (UNEP), Regional Seas Conventions and other groups under the UN umbrella. At the regional level, OGP is the industry representative to the European Commission and Parliament and the OSPAR Commission for the North East Atlantic. Equally important is OGP's role in promulgating best practices, particularly in the areas of health, safety, the environment and social responsibility.

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