

Wytch Farm

FIELD CHARACTERISTICS

Location	Wytch Farm is approx 17 miles from Poole, 6 miles from Wareham
Blocks:	PL089 - main onshore fields
	Pl259 - a very small onshore area under sandbanks
	98/6 and 98/7 Sherwood offshore
	ML5 - Kimmeridge well site
Discovered Kimmeridge	1959
Wareham	1964
Bridport	1974
Sherwood	1978
Consent	Stage 1 approved by Dorset County Council
	(Mineral Planning Authority) in 1976 under British Gas as operator
	British Gas sells its interest to BP who takes over as operator - 1984
Stage II	(main development) - 1987
Stage III	(extended reach drilling) - 1993
Start up	
Stage I	1979 (This stage was completed in 1980)
Stage II	1990
Stage III	1994
Infill drilling program	1998 ongoing
Gravity	
Bridport	37 API
Sherwood	38 API
Development cost	£500million for stage II

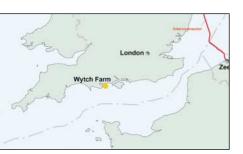
RESERVOIR ROCK

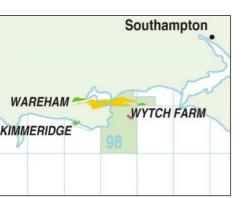
HEDER VOIR HOOK	
Bridport	Jurassic sandstone 924m below surface at 40°C, 100 bar
Sherwood	Triassic sandstone 1585m below surface at 65°C, 165 bar
Frome	Clay rich, shelly limestone formed from ancient oyster beds 750m
	below surface
Reserves	500 million barrels
Peak production	110,000 bpd in 1997
Current production (2002)	50,000 barrels a day of oil / 8 mmscfd of gas / 300 tonnes of LPG
Export pipeline	16-inch, 91km line to Hamble oil terminal
Total number of wells	103 (54 producers and 29 injectors
Well sites	8 mainland sites, plus 2 on Furzey Island
Seawater treatment capacity	85,000 bpd from Cleavel Point pumping station on the mainland
Operations workforce	Operations workforce: Approx 120
Area occupied	
by development sites	105 acres (approx)
Area under land	
management by BP	Over 310 acres including 64 acre conservation area
Trees	100,000 trees and shrubs planted around oilfield and 32,000
	on pipeline route
Distance from Aberdeen	880 kilometres
Participants	BP, Premier, Kerr McGee, ONEPM, Talisman

Asset Portfolio



Wytch Farm





Wytch Farm is located in Dorset approximately 17 miles from Poole, 6 miles from Wareham. Wytch Farm oil field comprises three separate oil reservoirs that lie under Poole Harbour and Poole Bay in Dorset. The Bridport reservoir is 900 metres below the surface and lies above the Sherwood reservoir, which extends eastwards under Poole Bay at a depth of 1600 metres. Further exploration discovered the 7.5 million barrel Frome reservoir in clay/limestone at 750 metres.

Total estimated recoverable reserves have risen to 480 million barrels of which over 90% lie in the Sherwood reservoir making it the sixth largest in the UK.

Wytch Farm has been developed by BP to be Western Europe's largest onshore oil field in one of the most environmentally sensitive areas of the UK. It is in an Area of Outstanding Natural Beauty, featuring:

- · Sites of Special Scientific Interest (SSSI).
- Special Protection Areas.
- World Heritage Coastline.
- Ramsar sites (designated wetlands of international importance, as agreed at Ramsar, Iran 1971).
- National Trust land.
- National Nature Reserves.

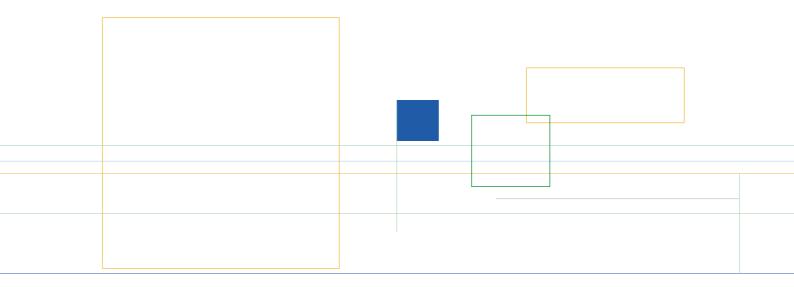
This is achieved through close co-operation and openness with the surrounding communities. Tourism around Poole Harbour and the Isle of Purbeck is a major provider of income to the area and it has been important to ensure no adverse effects on the amenity use of the area during any of the development phases. Local liaison committees were formed to consult fully with all statutory and non-regulatory bodies and local residents are kept informed of relevant activities.

The Development

The development has been in three phases; it has a total of 103 wells, currently 54 producers and 29 injectors operating from 10 sites. Production peaked at 110,000 bpd in 1997 and is currently (2002) averaging 50,000 bpd.

Facilities include:

- A gathering station.
- A sea water-pumping station.
- Infield pipelines for transporting the product from the wellsites to the gathering station.
- A rail terminal for export of liquid petroleum gas.
- · An export pipeline for the crude oil.
- A crude oil storage and loading facility at Hamble on Southampton Water.







Export

The heart of the project is to be found at Wytch Heath. This is the site of the gathering station where the crude oil and liquid petroleum gases (LPGs) from the reservoirs are separated.

LPG is stored in 12 large steel vessels and is then piped to BP's Furzebrook rail terminal where it is loaded into tanker wagons and transported 130 kilometres to Avonmouth. It is stored in two 20 metre high spheres, each containing 2,000 tonnes and one 500 tonne sphere.

A 16-inch diameter pipeline exports up to a maximum of 110,000 barrels of crude oil a day, 91 kilometres via the Fawley refinery across Southampton Water to Hamble oil terminal. Here it is stored in five tanks before being exported by tankers of up to 110,000 tonnes dwt.

At the gathering station there is a parallel 48 kilometre, 8-inch diameter pipeline that was laid by BP on behalf of British Gas. It exports 16 million cubic feet a day of methane produced by the oilfield to Sopley, north of Christchurch, for feeding into the main domestic gas trunkline system.

Environmental considerations

As a result of the area's ecological importance, BP vigorously applied its environmental protection policy. It instituted a monitoring programme covering 23 studies from archaeology and seabed ecology to surveys of the wintering bird population, reptile communities and the red squirrel colony on Furzey Island and the distribution

and health of heathland, reed beds and saltmarshes. The results of these surveys were vital in determining both how to develop the oilfield, and in providing baseline data against which BP could monitor its performance.

Extended reach drilling

Initial development plans proposed an artificial island in the bay to access the furthest parts of the Sherwood reservoir. However, by pursuing advances in drilling technology coupled with considerable environmental and economic benefits, BP were able to drill the wells from an onshore site in the Goathorn peninsula.

In recent years, BP have been foremost in significant advances in extended reach drilling techniques, such as:

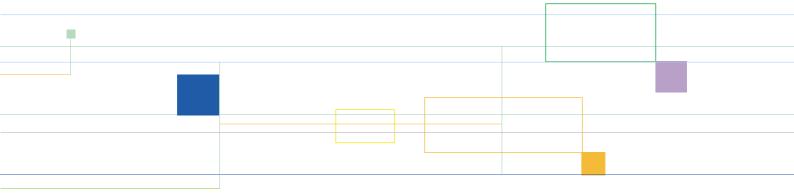
- The development of rotary steerable tools to control the wellbore trajectory at distances of over 10 kilometres.
- Active management of drilling torque and drag.

Since embarking in April 1993 on the third phase of development from the onshore site at Goathorn Penninsula, Wytch Farm has established a number of drilling world records including:

- The horizontal displacement distance of the extended reach wells.
- Well M16 set a new world record when it broke the 10 kilometre barrier in June
 1999 reaching a horizontal displacement distance of 10728m, a total length of
 11278m and a depth of 1638m.
- M16 is still the world's longest producing oil well today.

Asset Portfolio







The choice of Wellsite M

As part of the planning requirements for the wellsite M on Goathorn Peninsula an Environmental Statement and non-technical summary were produced. Throughout the process of selecting and designing the site, the proposals were discussed with a working party of statutory consultees set up by Dorset County Council to advise BP on environmental issues

Four sites were investigated for their ecological value, archaeological potential and noise issues. Wellsite M (as it became known), situated to the north of wellsite F, was chosen. Although this site is within a Site of Special Scientific Interest (SSSI) and a potential Special Protection Area (SPA) designated to satisfy the EC Directive on the conservation of wild birds. It was demonstrated through scientific studies that the actual area of the proposed wellsite was not of unique ecological value.

Once wellsite M was established as the preferred location, more detailed environmental studies were instigated and the Environmental Statement written to reflect the potential environmental effects of such a development.

The Queen's Award '95

The Wytch Farm Development won
The Queen's Award for Environmental
Achievement 1995 in acknowledgement of
the innovative, technologically challenging
and environmentally beneficial manner in
which the offshore section of the Sherwood
reservoir is being developed.

Landscape and Visual Assessment

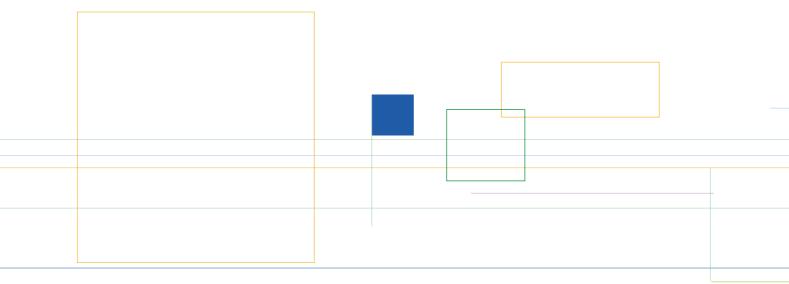
Sensitive treatment of the development, the majority of which lies on the southern shores of Poole Harbour, was vital. Photomontages and computer-generated perspectives from six pre-determined viewpoints were considered in detail to assess the likely visual impact of the development.

Careful consideration was given to the levels, shape and general arrangement of the developed area and the siting of the operating equipment. The various above ground permanent components were designed to blend into the existing landscape.

- · Electrical sub-station.
- Firewater tank.
- Accommodation and laydown.
- Access roads.
- Security and screen fencing.

During the temporary drilling phase of the development, certain components of the drilling rig and associated equipment are visible above the tree line but these will be removed at the end of the drilling programme.

BP manages an area of land around the site in order to integrate the site into the Purbeck countryside and to ensure that due consideration is given to the ecology of the area for the life of the oilfield. A Land Management Plan, approved by the Mineral Planning Authority, details the ongoing management of all the developed sites at Wytch Farm.





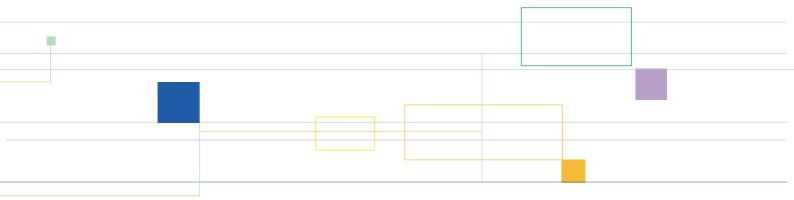
Ecology

Detailed studies on the ecology of the proposed development area looked at the plants, reptiles, birds, insects and badger population in detail. From this information a detailed picture of the ecology of the peninsula was gained. The Goathorn Peninsula, on which are situated two important well sites, contains areas of remnant heathland which support a rare and interesting flora and fauna, including sand lizards, nightjar and the heather; Dorset Heath.

The area has management potential for conversion back to prime heathland habitat. Agreement was reached between BP, the Dorset County Council, the landowner and English Nature for BP to manage approximately 64 acres of Goathorn for nature conservation over the life of the oilfield.

Asset Portfolio







Noise

The drilling rig and ancillary equipment had a comprehensive noise-control package installed to meet the strict noise criteria imposed by Dorset County Council.

Other environmental considerations

Regular atmospheric monitoring around the existing oilfield facilities, together with the observations of lichens on nearby trees, indicate that the air quality around existing wellsites and the gathering station generally suffers no adverse impacts from BP's activities in the area.

Groundwater around the sites is protected from pollution by good engineering and design with rigorous implementation of pollution control measures during construction and drilling. Regular monitoring of groundwater in the area by the use of a borehole (installed in advance of any construction) provides an accurate record of ground water quality.

Contingency planning for pollution risks has been of paramount importance in this sensitive location.

Kimmeridge: Small quantities of oil (about 65 barrels a day) are still being produced from a well site on the cliffs at Kimmeridge a few miles west of Swanage. This accumulation is located in a licence granted solely to BP many years before Wytch Farm was discovered and production began in 1960. The oil is taken by road tanker to the gathering station at Wytch Farm.

Wareham oilfield: This underlies the town of Wareham. Two producing wellsites (WC and WD) are located to the west of the town at Worgret. WC has 5 producing wells and 2 injection wells; WD has 2 producers and 2 injectors.

Wareham is a separate oilfield from Wytch Farm. It was discovered in 1964 but was not brought into production until 1991. It currently produces about 300-400 barrels of oil a day which is taken by small diameter pipeline to the main gathering station about 10 kilometres away and processed with oil from the Wytch Farm well sites.

The Bridport sandstone from which the Wareham oil is produced, contains reserves of about six million barrels but is not physically connected to the Wytch Farm oilfield's Bridport reservoir. In terms of onshore oilfields in the UK, Wareham is quite big but the scale of its larger neighbour has overshadowed its significance.

Wytch Farm

Wytch Farm oilfield comprises three separate oilfields that lie under Poole Harbour and Poole Bay in Dorset. Total estimated recoverable reserves are 480 million barrels, of which over 90% lie in the Sherwood reservoir making it the sixth largest in the UK. Wytch Farm is Western Europe's largest onshore oilfield.



