ENERGY COUNTRY REVIEW

Falkland Islands

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KEYFACTS Energy

Country Review Falkland Islands

The Falkland Islands comprise some 340 islands, located approximately 480km from the nearest point in South America. The two largest islands are East and West Falkland. Stanley, the capital, lies on the eastern shore of East Falkland. The total land area covers approximately 12,000 sq km.

The islands have no indigenous population and the current population of approximately 3,000 is predominantly of British descent, some 2,000 of whom live in Stanley, the only town.

Government
The Falkland Islands are an oversea territory of the UK and have considerable autonomy including in relation to fiscal matters. Her Majesty Queen Elizabeth II is the Head of State and is represented by the Governor who presides over the Government of the Falkland Islands and is advised in the exercise of his functions by an Executive Council of three of the eight elected Legislative Councillors and two ex-officio members (the Chief Executive and the Financial Secretary).The democratically elected Legislative Council has legislative powers, but responsibility for defence and foreign affairs rests with the British Government.The local administrative point of contact for the oil exploration industry is the Director of Minerals and Agriculture, a Falkland Islands Government official, based in Stanley.

Economy
The Falkland Islands economy has traditionally been based on agriculture but there is a growing offshore fishing industry and the Islands have an annual GDP of about £70 million. FOGL believes that the Falkland Islands has an infrastructure network capable of supporting at least the early phases of oil exploration.

Country Key Facts

Status:	British Overseas Territory
Capital:	Stanley
Population:	2,919 (2017)
Area:	12,200 square kilometers
Language:	English
Currency:	Afghani
Calling code:	+500

Geology

Regional Setting

The Falkland Islands are located on the south eastern margin of the South American tectonic plate which extends as far as Maurice Ewing bank to the east of the islands. It was at this location, on this ancient piece of crust, that several academic research wells were drilled in the 1970s and 1980s. The results from these wells, combined with drilling results from the Argentine Magallanes basin, demonstrated the hydrocarbon potential of the basins that lie to the south and east of the Falkland Islands.

The context for these basins was created by the break up of the Gondwana supercontinent during the Triassic and Jurassic periods. This continental mass comprised of what are now the continents of America, Africa, Antarctica, Australia and part of Asia. One of the earliest parts to fragment from the massive landmass was Antarctica. This created a small ocean basin, called the Weddell Sea, between the Falklands and Antarctica to the south. In the Early Cretaceous (about 130 million years ago) the final phase of the break up of Gondwana was initiated as South America began to separate from West Africa. By 100 million years ago, the separation was complete and an open seaway existed between the Weddell Sea to the south of the Falklands and the South Atlantic to the north. The continued growth of the South Atlantic resulted in increased separation of South America and West Africa until the present day configuration was achieved.

Several basins were formed during this early break of Gondwana and some of these have become prolific oil and gas provinces (for example the Santos basin in Brazil). The South and East Falklands basins are part of a series of basins that extend onto what is now the Argentine mainland. The Magallanes basin in Argentina is a major oil and gas province and its early history shares many similarities with the East Falklands basin. The later geological history of the Falklands diverged from Argentina which was subjected to the influence of the growing Andes mountain chain to the west.

NORTH FALKLAND BASIN (NFB)

The basin is relatively underexplored and continuing exploration drilling is expected to unlock the potential of this emerging oil province.

Drilling in 1998 encountered a world-class oil source rock across the northern part of the basin which analyses showed should be mature at depth for oil generation. The presence of a rich, mature source rock spurred continuing exploration and led to the discovery of the Sea Lion field in 2010. The operator of Sea Lion has stated its intention to develop the field, with first oil targeted in 2017. This will ensure the establishment of infrastructure which will, in turn, facilitate ongoing exploration drilling in the basin.

Resource estimates for Sea Lion are reported to be between 245 – 560 mmbo recoverable. 3D seismic has been key in identifying the Sea Lion prospect and this sizeable discovery has significantly de-risked the surrounding acreage. It is therefore reasonable to anticipate that additional discoveries will be made with the continuing application of 3D seismic.

It is believed that a second, deeper source rock, mature for gas, condensate and possibly light oil, is also present in the basin, adding further to its prospectivity.

FALKLAND PLATEAU BASIN (FPB)

The Falkland Plateau Basin (FPB) to the east of the Islands is a classic passive margin basin with a predominantly marine infill. One well was drilled in the relatively shallow waters of the western part of the Falkland Plateau Basin in 2010 but was dry. Subsequently, two wells were drilled in the deeper water north-eastern parts of the basin during 2012, and both encountered gas that did not flow to the surface.

SOUTH FALKLAND BASIN (SFB)

The South Falkland Basin (SFB) to the South and South East of the Islands comprises both a thrust belt and an associated foreland basin with marine sedimentary rocks. Two wells were drilled in the SFB during 2012; one was drilled in the thrust belt immediately south of the Islands but encountered technical problems whilst drilling and never reached its planned terminal depth, whilst the other, drilled on a tilted fault block in the foreland basin north of the thrust belt was a gas condensate discovery (Darwin).

Petroleum Geology

Introduction

For oil and gas deposits to form several key elements

must be in place. These are: a source rock (from which the oil is generated), reservoir rock (which stores the oil in the pore spaces between the grains) and a trapping mechanism which must include a sealing formation so that the relatively buoyant oil or gas cannot escape.

Source Rocks
In the Argentine basins, source rocks have generated several billion barrels of oil equivalent, confirming the model that the East Falklands basin is part of a continuous margin with similar geological characteristics, in rocks of the same age.

Reservoirs
The North Falklands Basin was a lake throughout much of its geological history, unlike the South and East Falklands basins which are classified as 'passive margins' that developed in a fully marine setting. Published research (Richards and Hillier 2000) shows that the sediment that filled the North Falklands Basin was derived from the north and west. The South and East Falklands basins seem to have derived much of their fill from the Falkland Plateau, which includes the Falkland Islands. The Falkland Islands (see British Geological Survey) are dominantly composed of hard, old quartz rich rocks which range in age from Precambrian (older than 550 million years) to Permian (older than 260 million years). These ancient rocks erode to provide sands, which in turn will have been shed into the basin to form sandstone reservoirs to store oil and gas. The Falklands today are surrounded by beautiful sandy beaches, which were derived from these rocks. In addition, seismic analysis suggests that sands were shed into the basin during several key periods of the geologic record.

Traps
There are several potential trapping styles in the basins. Large tilted fault blocks are present in the south and north of the FOGL acreage. This is a trapping style common in the early rifted parts of basins worldwide and many of the large oil and gas fields of the North Sea (Brent for example) are in traps of this type. In the southern part of the acreage, folded rocks occur along the margin of the Scotia sea which form simple anticlinal traps. In other parts of the acreage the trap style is dominantly stratigraphic where sand bodies are mapped onlapping the basin margin, in semi isolated channel systems or submarine fans, like the recent discoveries offshore Ghana. In all cases thick, regionally extensive sealing shales form an impermeable blanket across the top of the traps.

The Plays

Geologists tend to group leads, prospects and ultimately oil and gas fields into plays (features linked by common geologic factors, such as reservoir type, structural style etc.) as a convenient classification system. Three main plays are the Springhill Sandstone Play, which is further subdivided into fault blocks and onlap traps, the Mid Cretaceous Basin Floor Fan Play and youngest of all, the Tertiary Channel Play which is subdivided into the Tertiary Channel Play and the Tertiary Fold Belt Play.

The Springhill Play contains about 95% of the oil and gas in the offset Argentine Magallanes basin. The oil or gas is trapped in sands which were deposited near an ancient shoreline. Many of the fields in Argentina are formed by a combination of structural and stratigraphic trapping mechanisms. Example prospects identified by Falkland Oil & Gas acreage are Endeavour, Endurance, Lutra, Inflexible and Thulla.

The Mid Cretaceous Fan Play, is developed in the northern and central portions of the East Falklands basin. Deep marine sands are shed into the basin and become large isolated stratigraphic traps. Example prospects are Scotia, Hero and Diomedea.

The Tertiary Channel Play developed following a period of uplift of the Falklands Plateau. This caused a large amount of sediment to be shed into the basin and discrete sand bodies were created, which later may have become charged with hydrocarbons. These are relatively easy to see on seismic data and form one of the main targets in the basin. The giant Loligo prospect and the potential follow up prospect, the Nimrod Complex and Vinson prospect,are examples of this play.

Source: FOGL

Fiscal Regime

The Falklands fiscal system comprises:

- a variable acreage rental
- 9% royalty on production
- 26% corporation tax on profits, with the usual allowances, etc.

There are no signature bonuses, no production sharing contracts, no back-in rights, no local market discounts, etc.

The system is simple, transparent, extremely competitive, and encourages exploration and production.

The regime is predominantly profit-based.

The total government tax-take compares extremely favourably with other countries offering exploration opportunities.

The Falkland Islands Government is committed to ensuring that the overall tax system remains attractive and conducive to attracting future investment.

Minimum economic thresholds appear to be approximately 60 MM barrels.

Royalties

A royalty of nine per cent (9%) is payable on the market value of any petroleum won.

Provision has been made in the legislation for the royalty to be reduced at the discretion of the Governor if:

1. reduced royalty payments would encourage development of smaller fields which would not otherwise be economic
2. needed to extend the life of a producing field
3. in any extended period of extraordinarily low petroleum prices a 9% royalty would lead to the abandonment of a field.

Royalties will be payable in respect of six-month periods ending 1st January and 1st July.

No deductions will be allowed from royalty

Corporation tax

Corporation tax is 26% (from January 2008) on all profits from exploration and extraction activities. A lower rate of 21% may be available, for other activities, on the first £1,000,000 of profits.

The jurisdiction extends to the whole of the Falklands Designated Area.

All petroleum extraction activities are taxable.

Capital gains on licence transfers are taxable.

Contractors are taxed on activities within the Designated Area, and the production licence holder is liable for taxes payable by contractors in default.
A 2-way ring-fence has been created around the designated area which restricts relief of expenditures on ring fence trade to ring fence income and relief of expenditures on non ring fence trade to non ring fence income.

Company revenue for tax purposes shall be calculated based on the market value of all petroleum won and delivered or appropriated as determined by arm's length contracts.

Corporation tax allowances

Corporation tax allowances provide for full recovery of costs for:

1. operating expenses
2. exploration and appraisal
3. intangible drilling and development
4. royalties
5. abandonment costs.

Interest relief is based on:

1. arm's length - 100% allowance;
2. non-arm's length - subject to a) debt/equity restrictions,
b) reasonable commercial rate
3. Depreciation of capital assets is allowed at 25% per year, based on a declining balance method.

There is indefinite carry forward of losses.

Exceptions to no carry back of losses:

1. post-cessation abandonment expenditure
2. balancing allowance

Source: Falkland Islands Department of Mineral Resources

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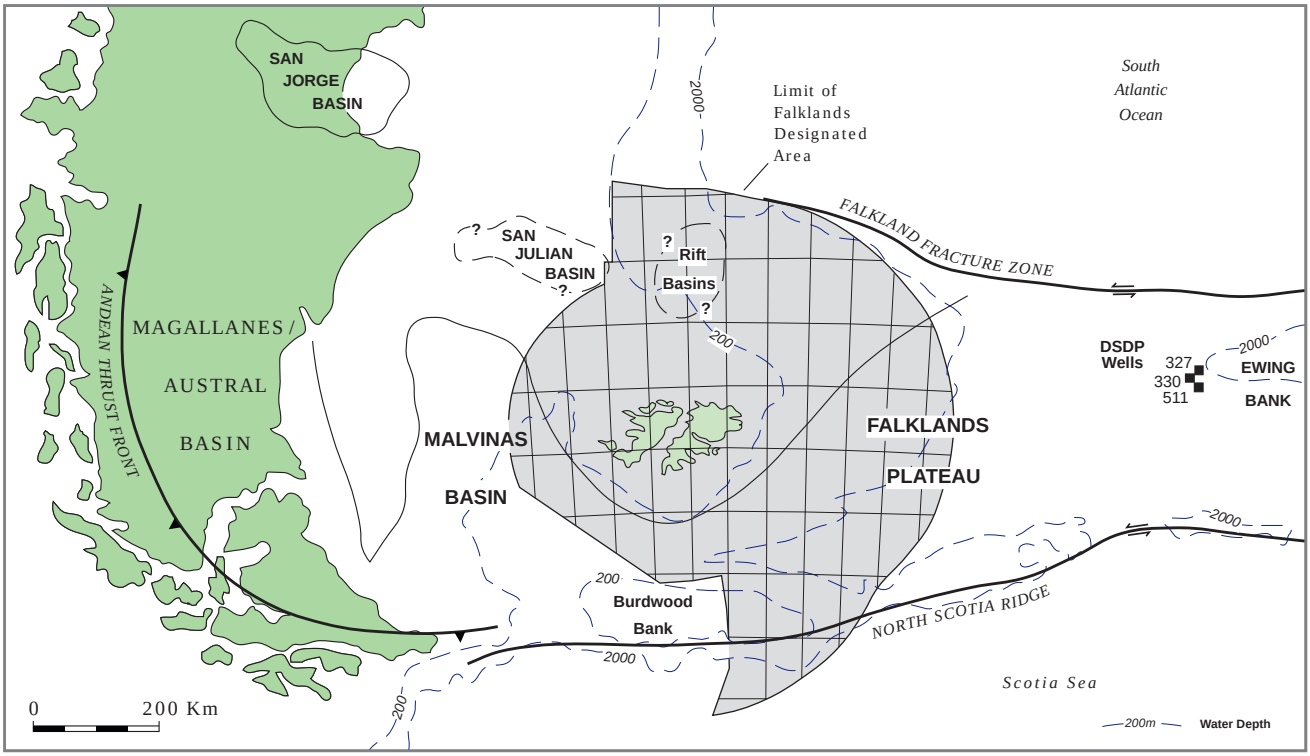

Image: KeyFacts Energy