

# Department of Mineral Resources



Falkland Islands Government Newsletter  
February 2016



Photo © Sam Dodd—A busy day at Stanley Airport, Bristow helicopters and FIGAS Islanders

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## Activities Update

The Noble Humpback-1 well in the Fitzroy sub-basin of the South Falkland Basin was completed and safely abandoned in November 2015. The 53/02-1 well reached a total depth of 5111m, and found non-commercial amounts of oil and gas.

The Eirik Raude was subsequently handed back to Premier Oil who drilled the 14/20-2 well as a re-drill of the Isobel Deep prospect, 30km south of the Sea Lion field. It was drilled to a total depth of 3014m, and the operator advised that it confirmed the Isobel Deep oil discovery announced in May 2015. On 12th February Premier announced that they had terminated the contract with Ocean Rig due to operational issues. This brought the drilling campaign to an end, following completion of all permanent well abandonment and seabed clearance operations. Director of Mineral Resources Stephen Luxton commented:

“While the last year has not been without some operational challenges, the ultimate goal of the exploratory drilling programme is to prove additional and potentially commercial oil resources, and in this respect it has undoubtedly been a success. The drilling results achieved since March 2015 validate our long standing confidence in the prospectivity of the Falkland Islands offshore area.”

Elsewhere in the news, Rockhopper Exploration recently completed a merger with Falkland Oil and Gas to become the largest licence holder in the Falkland Islands Designated Area.

In January, Premier entered the FEED (Front End Engineering and Design) phase of the Sea Lion Development and awarded contracts to SBM for the FPSO, Subsea 7 for SURF Transport and Installation, and to National Oilwell Varco for Flexibles. Sam Moody, CEO commented “this demonstrates that, despite the low oil price environment, the Sea Lion project continues to move forward”.

## Environmental Policy

In December 2015 FIG invited tenders to provide Offshore Environmental Policy advice for the Falklands. The work schedule was split into two lots, the first to provide drafting advice and policy recommendations and the second to draft the required legislation.

It is anticipated that the legislation will bolster FIG's offshore environmental protection enforcement powers and implement a number of measures included in the European Union's 2015 Offshore Directive. Additionally, the already extensive suite of offshore safety legislation will also be reviewed internally and where necessary, amended to implement relevant changes under the Safety Directive

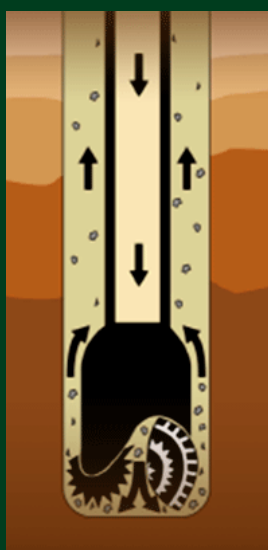
Bids for the tender have been received and the results will be announced in due course.

# Drilling mud—a brief overview

Operational discharges such as drill cuttings and drilling muds are an integral part of drilling for hydrocarbons. We take a look at mud and some of the potential effects.

Drilling mud and associated cuttings (the material physically produced when drilling a well) are the second largest proportion of waste by volume created during drilling.

Drilling muds are used to cool and lubricate the drill bit and to transport rock cuttings from the bottom of the well to the surface. The physical and chemical characteristics of cuttings are dependent on the geology of the area, and naturally contain levels of heavy metals and hydrocarbons depending on their geographic locations. Drilling muds are fundamentally important for controlling down hole formation pressure, overcoming fluid pressure, and preventing damage to the formation.



Drilling mud is pumped down the drill pipe from the rig and into the borehole, flushing the cuttings back to the surface via the gap between the drill pipe and the wall of the well, called the annulus.

As a well is drilled, steel casing is cemented into place within the open hole to provide stability.

These are generally split into water-based mud (WBM) and non-aqueous drilling fluids (NADF) which include oil-based mud (OBM). Oil-based muds have greater thermal stability and can withstand greater heat without breaking down than WBMs. The base fluid in WBMs is water, which may be fresh water, sea water or a combination of water with added salts. Lubricity and viscosity are two of the most important properties considered in mud selection, and new sophisticated WBMs have increased environmental and economic benefits. It has been argued that there is a technical limit to drilling with WBMs.

Falkland Islands licence conditions (PON10) state that only water-based mud may be directly discharged to sea. Under exceptional circumstances NADF may be used but must be cleaned to <1% oil-on-cuttings (OOC) dry weight before discharge.

The Falklands follow the UK in many areas of

legislation and regulation, including implementing an internationally approved list of chemicals. OBMs have significant negative effects on the environment, and their use has been increasingly restricted and regulated in order to minimise environmental degradation around drill sites. Whilst WBM is considered to be more environmentally sustainable than other muds, some of the ingredients and additives used have been shown to have negative effects.

The chemical toxicity of barium, bentonite and ilmenite is considered low, but nonetheless chronic, intermittent exposure can disrupt filter feeding, and influence growth, reproduction and survival of organisms. Barite is a PLONOR (poses little or no risk to the environment) substance, added as a weighting agent to help control formation pressure and well properties, it is one of the main components of drilling mud. Bentonite clay adds viscosity to carry cuttings to the surface.

It has been suggested that the physical presence of WBM cuttings can cause harmful damage through direct smothering of organisms. Better quality modelling programmes are now used to predict cuttings plumes and settlement, and this is an area of research and technology that has advanced significantly over the past ten years.

An overview of environmental effects in the North Sea from produced water and WBM suggests that effects of present discharges are local, usually confined to a maximum of 1-2km and the risk of widespread impact is low

However, there is still uncertainty regarding the long term environmental impacts of WBMs. Robust, scientific monitoring strategies are important to improve our understanding of WBMs and their effects. Suitable regulation and legislation will achieve this through improved research, filling data gaps, and collaboration with industry, government and science.



Drilling mud can be recycled via a cleaning process including passing through machinery known as shale-shakers to remove cuttings

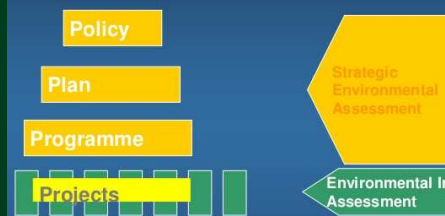


Photo ©

## SEA Workshops

Strategic Environmental Assessment is a process that produces an environmental report summarising likely significant environmental effects of a plan and identifies reasonable alternatives. It aims to achieve sustainable development, by integrating environmental considerations when preparing plans and policies. At the end of January 2016, Rikki Therivel, a leading UK consultant, visited the Falklands to run a workshop on the potential application of SEA.

An introduction to SEA was delivered, with examples from other countries and explaining where SEA sits in EU legislation and where it has been most successful. It is a similar procedure to EIA, but rather than selecting alternatives for an individual project, it differs in that it informs policies based on reasonable alternatives. SEA can assess the cumulative or additional impacts of multiple projects. It can also highlight significant social impacts that may not be considered for EIA.

Workshop participants attempted to develop a high level SEA for a hypothetical round of new hydrocarbons licensing. Options were discussed and scoped to determine alternatives, key impacts, and mitigation measures that could inform political decision making.

Rikki also gave a presentation to the general public to give a flavor of SEA to a wider audience.



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