Norway regional seepage study

NPA's satellite seepage detection project offers extensive coverage across offshore Norway. Seepage detection by SAR (Synthetic Aperture Radar) is a proven technique for mapping surface oil seeps which could provide the first indication of petroleum systems in these basins:

- Over 1500 interpreted SAR scenes over offshore Norway
- Additional 100 scenes over new 24th licensing round blocks

Background

The license blocks offered in the 24th round are in frontier acreage on the Norwegian Shelf where potential for large discoveries is considered greatest by the Norwegian Ministry of Petroleum and Energy.

According to the Norwegian Petroleum Dictatorate (NPD), 56 exploration wells were drilled in 2014 with an impressive 22 new discoveries - eight in the North Sea, five in the Norwegian Sea and nine in the Barents (including Lundin's giant Alta oil discovery in the Loppa High, 20km NE of the existing Gohta oil discovery), and four new fields were also brought into production. Vast areas, particularly in the Norwegian Arctic, remain undrilled or are not yet open to exploration, where satellite seep data could be of considerable value in source de-risking.

NPA seep data will also be combined with a new Geolab surface geochemistry study over the Barents 24th Round Blocks, which will:

- Sample the seabed seeps with shallow coring surveys to capture and analyze gaseous and liquid hydrocarbons
- Confirm or otherwise, a petroleum system and its type, i.e. gas, condensate/light oil or medium/heavy oil-associated
- Assess sourcing and maturity of liquid hydrocarbons, correlation with any local well hydrocarbons

Temporally repeating slicks have been detected offshore Norway and additional sites of repetition could be expected with increasing coverage levels. This key information for offshore Norway is now available from NPA.
NPA offers the Global Offshore Seeps Database (GOSD), as the main component of its Seep Explorer onshore and offshore seeps product suite. Hydrocarbon seep detection from satellite imaging maps the location and repeatability of naturally occurring oil seepage offshore. GOSD is a recognized and valuable tool for New Ventures & Exploration teams and has been adopted by the majority of the major international oil companies.

Global offshore seep database
- ~25,000 satellite radar images interpreted for natural oil seepage, >200,000 slicks recorded
- Optimal satellite SAR data selected from weather screening of the world's SAR archives
- Multiple coverage - up to 10x coverage becoming standard
- Data integrated and interpreted with supporting Robertson geological, geophysical and geochemical data, where available
- New high-resolution data from TerraSAR-X, Radarsat-2 and Cosmo Skymed satellites used for license studies

Deliverables
- Full ArcGIS* deliverables and custom ArcGIS toolbar enhancing results visualization
- Results overlaid and compared to collateral data layers including: bathymetry, gravity, sedimentary thickness, magnetics, shipping lanes and ship wrecks
- Online webserving enables content to be viewed by all approved users

Additional unique features
- Seepage intensity maps - related to basin leakiness parameters
- Seep data accessible via the Robertson Basins & Plays geological database
- Complete CGG validation chain - Seeps - Multibeam - Drop Cores - Geochemistry

*ArcGIS is a registered trademark of Environmental Systems Research Institute, Inc. (ESRI).

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