Working with us

Oil and Gas

National Oceanography Centre

WORLD CLASS MARINE SCIENCE AND TECHNOLOGY FOR YOUR BUSINESS

National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

noc.ac.uk

NERC SCIENCE OF THE ENVIRONMENT

The National Oceanography Centre is the UK's leading institute for integrated ocean research and technology development from the coast to the deep ocean. Working with our partners we provide large scale, long-term, marine science capability including: major facilities, sustained ocean observing and modelling, mapping and survey, data management and scientific advice.

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Opportunity and value

Offshore oil and gas exploration and production are pushing into deeper frontier waters, often in remote and hostile environments. There are also challenges in the effective recovery of oil and gas from identified reserves. Consequently, the risk and cost of offshore operations are steadily increasing.

Energy prices and supply and demand volatility are squeezing profit margins and company budgets are being compromised by limitations in operational capacity, resulting from aging off-shore assets, incomplete and disparate data sources, and legacy software systems. However, such limitations are also driving opportunities for oil and gas companies, to invest in innovative, cost-reducing technologies to enhance operational efficiency, and for developing novel approaches to operating in offshore environments.

Government regulation has also become increasingly costly at a time when oil and gas companies are preparing for wide-scale decommissioning. Decommissioning requires huge investment but offers little competitive advantages for oil and gas companies. This situation has initiated unique collaboration across oil and gas companies, resulting in shared investment in innovative technologies to reduce decommissioning costs throughout the industry.

With the many challenges facing the industry, companies are recognising the value of novel science and technology to create real business value. By accessing external funding opportunities and joint-industry funding, companies are benefiting from responsive and flexible innovations to drive down operational costs, maximise existing investments, access and share innovation expertise, and respond to government fiscal and environmental regulations.

Solution

The National Oceanography Centre (NOC) is a world-class research institute. We have extensive experience of working with oil and gas companies, bringing innovative science, data modelling and technologies to industry.

We work with oil and gas companies on both an individual and collaborative basis, to develop science and technology to enhance competitive advantage, maximise investment and reduce operational costs during exploration, production and decommissioning.

NOC has unique expertise in marine autonomous and robotic systems and sensors, for operations in challenging, hazardous and deep-sea environments.

Our fleet of Autonomous Underwater Vehicles (AUVs), Remotely Operated Vehicles (ROVs), Unmanned Surface Vehicles (USVs) and submarine gliders have all been developed to operate in extreme conditions and our scientists have had many years of experience in testing and demonstrating the capabilities of our autonomous platforms and sensors, in such hazardous environments.

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NOC Science and Technology capabilities

Marine Environment and Route Characterisation

- Multi-disciplinary surveys across all seafloor environments (Arctic, canyons, hydrothermal vents, carbonate mounds, and ultra-deep water)
- AUV- and ROV-surveys for chemical, physical and ecological characterisation of seafloor systems for environmental impact assessments (e.g. oil & gas; deep-sea mining; fishing)

Monitoring of Infrastructure and Seafloor/Subsurface Mapping

- Development of autonomous and robotic platforms, and new systems for their deployment, for a range of industry applications (e.g. efficient post-lay surveys)
- Development of technical capabilities and novel sensors (e.g. lab-on-chip) for environmental monitoring, detection and data-collection
- High resolution 2D and 3D seismic methods for quantitative assessment of shallow sub-seabed geotechnical properties, and fluid migration pathways
- Rock physics expertise for improved quantitative geophysical characterisation and monitoring of hydrocarbon reservoirs, relevant to joint seismic and controlled source electromagnetic (CSEM) quantitative interpretation
- Inverse geophysical modelling to derive geomeochanical and geotechnical properties from high resolution seismic data to inform well site hazard screening, foundation selection and site-wide geotechnical characterisation

Fluid Flow Detection and Characterisation

- Geophysical and geochemical quantification of Arctic seafloor methane hydrates, including seafloor methane vent detection and monitoring
- Geophysical and geochemical monitoring of CO_2 injection and seafloor leakage, using AUVs and seafloor observatories

Deep-Water Geohazard Assessment

- Advanced techniques to identify deep-water geohazards, seismic disturbance and sediment flows, and their risks to seafloor infrastructure:
    - AUV seafloor mapping using visual and acoustic systems, from regional geohazard screening, to detailed site selection
    - Instrumented seafloor observatories for baseline monitoring
    - Core sampling using both high-quality conventional techniques and ROV-mounted vibrocorers
    - High resolution seismology using both AUV mounted and surface-towed sub-bottom profiling systems
    - Novel techniques for direct monitoring of geohazards, including Acoustic Doppler Current Profilers (ADCP) and multibeam sonars for measurement of sediment flow velocity and sediment concentration
    - Electrical resistivity sensors for sediment bed-load concentration monitoring

Metocean Modelling for Offshore Installations, Integrity Analysis and Shipping Forecasts

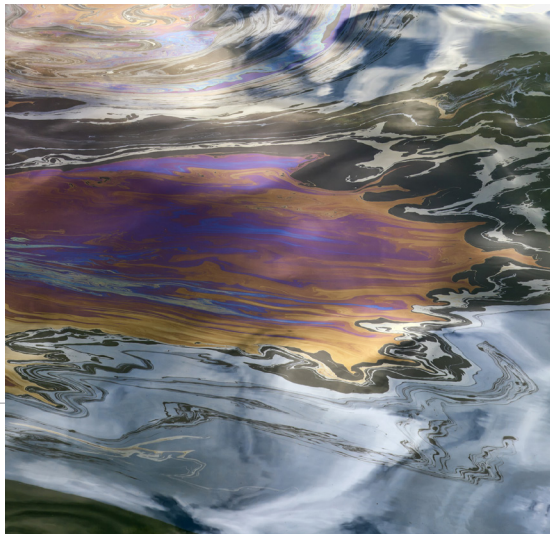
- Predictive MetOcean modelling tools, intervention modelling technologies and high-resolution global datasets, for oil spill risk, response and impact assessment
- 3D modelling of UK coastal waters and bespoke unstructured-grid modelling of hydrodynamics, using Finite Volume Community Ocean Model (FVCOM)
- Provision and interpretation of ocean physics analysis and forecast products, including velocities, temperature, salinity and sea levels
- Harmonic analysis of tides and currents, combined with tidal modelling and prediction software, to compute the ideal timing for a sea passage and preferred navigation routes for sea transportation of decommissioned infrastructure

NOC Oil and Gas Industry Collaboration (NOGIC)

We encourage oil and gas companies to develop long-term relationships with us, using the NOGIC platform. NOGIC enables oil and gas companies to easily access valuable NOC expertise, science and technology services, in return for a cost-effective subscription fee.

NOGIC offers oil and gas companies the opportunity to partner in the development of new science and technologies, in order to reduce industry operational costs and develop unique competitive advantages. NOGIC oil and gas companies will benefit from:

- Access to a comprehensive package of NOC services, administered through a single contract governing IP, licences and financial transactions
- Access to efficient, authoritative and rigorous science research services, responsive to industry needs
- Access to NOC expertise and data ('one-stop-shop')
- Opportunities to work collaboratively with NOC to develop high-value projects, both industry funded and industry-public funded
- Opportunities to work collaboratively with competitor companies, in non-competitive spaces
- Opportunities to test software and data-products, and access free licences
- Access to alerts for public funding, publications, NOC company visits and events, including Marine Robotics Innovation Centre events



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NOGIC Service Package

Your company will have the opportunity to subscribe to our annual service package, offering you value-for-money innovation expertise, science and technology services, enabling your company to better respond to operational challenges.

Your annual NOGIC subscription of only £30k + VAT p/a, will offer you a unique no-hassle 'one-stop-shop' experience, for access to NOC services.

NOGIC Service Package (annual subscription)

- Associate Membership of the Marine Robotics Innovation Centre
- Valuable Data-Sets & Expert Advice: providing your company with valuable data-sets* and access to 10 days of expert advice (p/a**), for the expert interpretation of data
- Annual Collaboration Workshop: 2 day workshop at the National Oceanography Centre, including networking events***
- Research Reporting and Generic Interpretation: 1 day visit to your UK company offices, from NOC scientist(s) and enterprise colleague(s), to identify key areas relevant to your company, for science, research and technology innovation
- Free Trial Software Licences: free licences for your company to use selected NOC data information-products (POLPRED for modelling off-shore tides and currents, and POLTIPS 3 for predicting coastal tides)****
- Data: Guided access to select metocean, chemical, biological and geological data
- Publications: annual compendium of NOC published papers, datasets, results from NOC projects, scheduled destinations for NOC research vessels and relevant public funding calls.

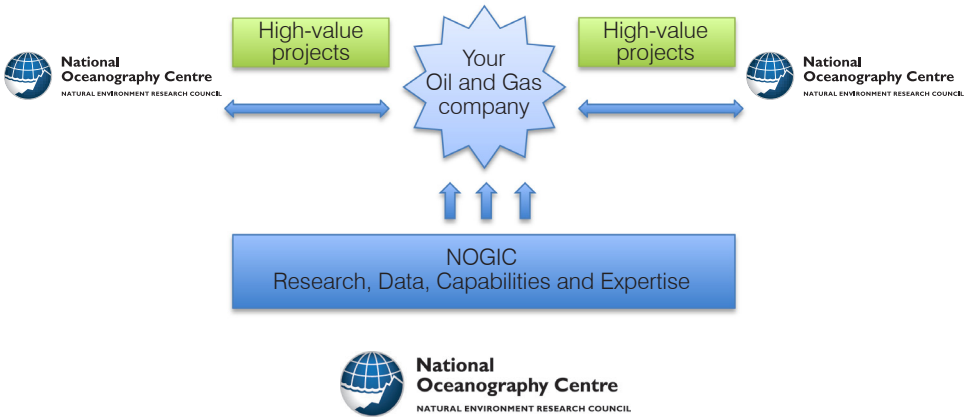
Collaboration High-Value Projects

As an active company in the NOC Oil & Gas Industry Collaboration (NOGIC), you will have the opportunity to participate in a range of high-value projects, responsive and flexible to the priorities of the oil and gas industry.

These may be funded exclusively by your company, or by a small group of our NOGIC oil and gas companies, or collaboratively by matching NOGIC company funding, through NOC, to public sector funding (potentially Innovate UK, the EU or the UK Research Councils).

All companies participating in NOGIC will enjoy a vibrant network for discussion of the key technical and operational challenges facing the oil and gas industry, and will have the opportunity to influence the NOC oil and gas scientific research agenda.

NOGIC structure



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NOGIC Further Information

For more information regarding NOGIC, please contact Emma Heathcote, Collaboration Development Manager at NOC: emma.heathcote@noc.ac.uk

NOGIC service package:

*	*Data held at NOC includes metocean, biological, chemical and geological data from a diverse range of marine sites, worldwide. NOC scientists will provide expert guidance on the interpretation of key datasets, of relevance to your company operations.*
	Where guidance or interpretation of data requires a commercial or in-house software licence, a NOC expert adviser will travel to your UK company office and develop the interpretation of data, using your company in-house workstations.
**	*Nominal 10 days expert advice. Expert advice days may not be 'rolled over' into subsequent years*
***	*Two delegates per company, delegate travel and accommodation costs not included*
****	*Subject to a limited time and specified geographic limits*

NOC Facilities

Marine Robotics Innovation Centre

The National Oceanography Centre's Marine Robotics Innovation Centre provides additional resource and capability for working collaboratively with innovative companies which are developing technology for marine autonomous systems.

The centre also provides information about regulation and legislation, risk and reliability, communication, and control relating to marine autonomous systems

Rock Physics Laboratory

The Rock Physics Laboratory measures seismic and electrical properties of rock or sediment samples, saturated with different pore fluids, under simulated *in situ* conditions of pressure and temperature. Our measuring capabilities include seismic velocities, attenuations and electrical resistivities, which can then be related to other rock and sediment properties such as mineralogy, porosity, permeability, oil-gas-water saturation and hydrate content.

British Ocean Sediment Core Research Facility (BOSCORF)

BOSCORF provides specialist non-destructive logging facilities, measuring physical property and high-resolution geo-chemical data from cores. BOSCORF is the national ocean sediment core repository offering access to the most comprehensive suite of scanning, logging, data management and visualisation facilities in the UK.

British Oceanographic Data Centre (BODC)

The British Oceanographic Data Centre (BODC) is a UK national facility for storing data concerning the marine environment. BODC maintains an extensive database of chemical, physical and geophysical data, containing measurements of more than 25,000 variables. BODC has unique experience of managing marine data collections and through the development of information technology, ensures that data are documented, stored and accessible to both public organisations and commercial companies.

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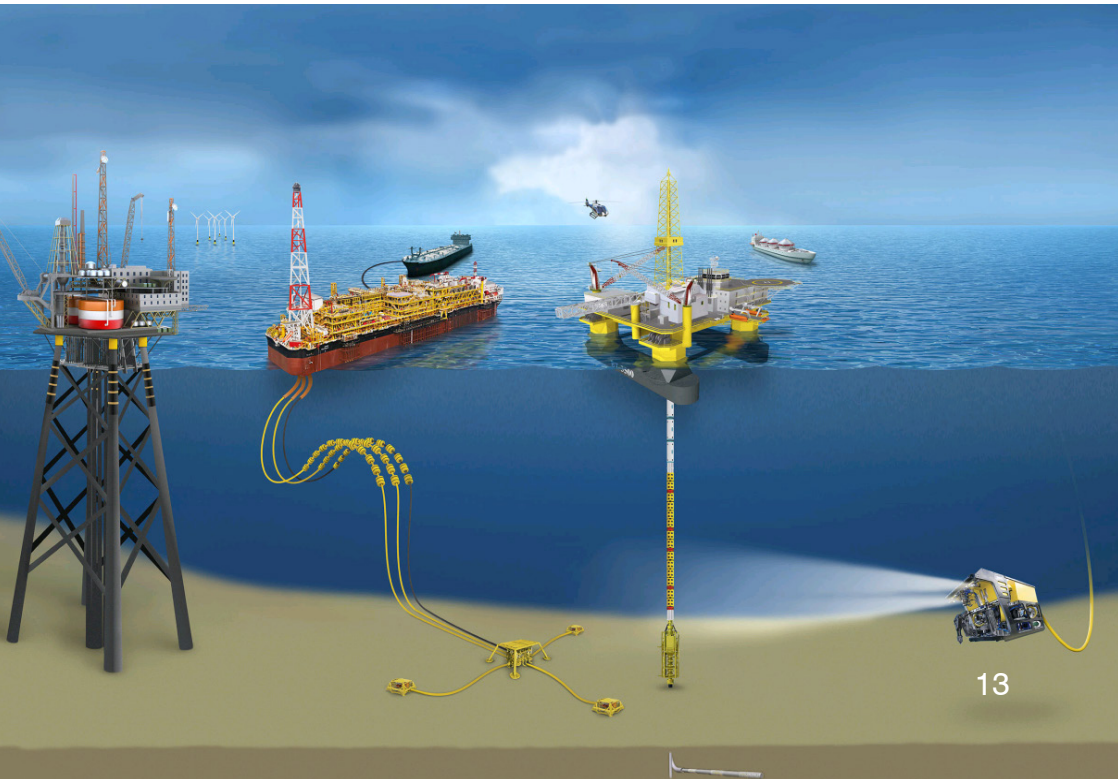
If you are interested to discuss this opportunity,
please email us at: business@noc.ac.uk or call: 023 8059 6159

We look forward to hearing from you



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