

## Decommissioning

(Output from Theme Day, Aberdeen, UK)

### Background to the Theme

ITF uses a thematic approach working in collaborative participation with its members and industry to identify common areas of interest and technology needs. This Call for Proposals has resulted from the output of an ITF Theme Day held in Aberdeen on 13th June 2008. The Theme Day was also held in close collaboration with Oil and Gas UK Seminar on Decommissioning held the previous day on the 12 June 2008; the outputs of which were incorporated into the ITF workshop. An intensive facilitated workshop brought together ITF members, supply chain providers, operators, service companies, small and medium-sized enterprises, and research and academia players to discuss the challenges now facing the industry. It is an essential part of ITF's remit to facilitate member engagement with the supply chain to develop a mutual understanding of the challenges being faced. This will enable the industry to better understand the marketplace and help build the capacity and capability to respond to the technological challenges at a definable cost.

This Call aims to stimulate proposals for potential solutions from global development expertise to meet an industry defined need. ITF and its members will assess, and our members will fund those proposals of highest interest. The ITF process seeks to bridge the gap between the large global players of our industry and the development community with the ultimate aim of deploying new technology solutions.

Key drivers for 2008, identified by ITF members, are the desire to produce fields in a more cost effective and efficient manner. The focus of all ITF themes is to bring forward technologies, with clear benefits to sponsors, which require assistance in **research, development, and/or field trial**.

It is not the aim of ITF, or its members, to prescribe specific technology solutions but to stimulate innovative proposals that fit with identified needs. The descriptions for each topic have therefore highlighted top level information in order to allow for innovation and flexibility in interpreting the most appropriate technical solutions.

### A Collaborative Approach to Investment in Technology

ITF has an impressive track record in delivering finance to help develop new initiatives for oil and gas technologies from early stage joint industry projects (JIPs) through to field trials and commercialisation. Since 1999 ITF has raised over **£32 million** in direct JIP support, with projects linked to an estimated **£20 million** of equity investment, and over **£20 million** in trials funding.

ITF accesses funds from the 21 major oil and gas operating and service companies that are ITF members. Proposals submitted under this call will be reviewed for financial sponsorship by **ALL ITF members**. This is an excellent opportunity to gain a wide audience in seeking support for your technology.

ITF has contractual arrangements on confidentiality with ALL its members (operators and service companies) and ITF will enter into a parallel agreement with all developers submitting proposal applications. Proposals will be submitted to our members only for the purpose for which they are provided, i.e. assessment for funding support and implementation.

(Note: our members are listed on our website – [www.oil-itf.com](http://www.oil-itf.com))

## **An Open Invitation for All Technology Developers and Suppliers**

Over the next two decades the industry will begin to decommission many of the installations that have been producing oil and gas on the UK Continental Shelf (UKCS) which include small and large steel platforms, subsea and floating equipment. It is a complex process which will represent a challenge to the industry on many fronts encompassing technological, economic, environmental, and health and safety issues.

Some 470 installations, 10,000 kilometres of pipelines, 15 onshore terminals and around 5,000 wells are part of the infrastructure that will eventually need to be decommissioned. Total costs involved in decommissioning the UKCS are estimated at £15-20 billion over the next 20 years.

This is your opportunity to help solve the technical challenges that face the industry and thus directly help improve these issues.

This is an open invitation for all organisations seeking sponsorship for **innovative technologies** to submit proposals for **research, development, and/or field trial** of technology across a broad spectrum of needs. A list of specific technology challenges that are of interest to ITF members are identified in this document below.

Whilst there are imminent requirements for ITF Members for the UKCS, as assets and production provinces around the world mature they will meet the same challenges in the future. We are therefore inviting proposals for technologies that may be applicable in any geographical area.

Those interested in submitting a proposal should respond registering their interest as early as possible by sending an e-mail to Ryan McPherson, [r.mcpherson@oil-itf.com](mailto:r.mcpherson@oil-itf.com)

### **Qualifying Technologies**

To qualify for this call, your technology must:

- Be applicable to issues identified
- Fulfil at least one of the items within this invitation
- Be novel or innovative
- Demonstrate a clear business case for support
- Have a clear and demonstrable path to commercialisation and implementation

### **Qualifying Organisations**

Proposals are invited from any organisation including SME, academia, research institute, large organisation, consortium, or alliance. Proposals may be submitted by a national or international organisation, and equal opportunities will be extended to all proposers. Please bear in mind however that should your proposal be taken forward, you will be required to partake in meetings and make presentations to interested parties in the United Kingdom in the English language (teleconference and video conference are acceptable).

## Process and Schedule

The Proposal Application Form is available for downloading on our website at [www.oil-itf.com](http://www.oil-itf.com). Using the Guidance Notes (also to be found on our website), please complete the form and return it electronically in **MS Word** format (**NOT PDF**) to Ryan McPherson at [r.mcpherson@oil-itf.com](mailto:r.mcpherson@oil-itf.com) **NO LATER THAN 22<sup>nd</sup> SEPTEMBER 2008**.

In addition, we request that you complete a two slide PowerPoint presentation as detailed in the Guidance Notes, which backs up your proposal submission in a concise form.

**NB. Please read the Guidance Notes carefully before completing the Proposal Application Form as failure to provide the necessary information in relation to your technology may result in premature disappointment. Proposals received after the deadline may not be processed. Therefore please ensure your submission reaches ITF before the specified deadline.**

## About the Industry Technology Facilitator (ITF)

ITF is a not-for-profit international organisation based in the UK owned and supported by major global oil & gas operating companies and service companies (the 'members'). ITF is the vehicle through which the members fund joint industry projects that meet the technology needs of the upstream oil and gas industry. ITF has the remit to facilitate the **research, development, and application** of new, high impact technologies that will increase overall hydrocarbon recovery from mature and developing basins.

To date, ITF has launched over 115 Joint Industry Projects representing a direct investment of over £32 million. For further information about ITF go to [www.oil-itf.com](http://www.oil-itf.com).

## ITF Contacts

If you would like to discuss any matters related to this call or any other issue related to ITF, please contact any of the following people:

Contact	Role	E-mail	Telephone
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*\* \* \* Denotes that Ryan McPherson is the appointed Theme Manager for this programme and should be your first point of contact.*

ITF, The Enterprise Centre, Exploration Drive, Bridge of Don, Aberdeen, UK, AB23 8GX

**Theme: Decommissioning**

**Call for Proposals**

**Specific Technology Needs**

*(Any proposal submitted to ITF must address one or more of these identified needs.)*

### Mapping Hazardous Materials

**Background:**

Some of the key themes and issues which are consistently raised by stakeholders through dialogue on decommissioning is a concern over the identification and quantification of potentially hazardous waste streams and materials. In all cases, the level of accuracy of the mapping or characterisation technique has to be acceptable to the regulatory authorities and the disposal yards (or end users) accepting the material, or within the tolerance they would accept.

**Requirements:**

- Effective characterisation techniques for the identification and quantification of hazardous materials, including non-intrusive measuring techniques for assessment of volume and type
- Vessel air sampling (e.g. detection of benzene vapour);
- Continuous monitoring techniques for other gaseous releases during operations when disturbing other solids and waste materials
- Identification and measurement of mercury and related compounds
- Simple techniques (remote or otherwise) for access, sampling, and mapping
  - To access all different areas such as: pipelines, pipe work, concrete cells, vessels and storage tanks
  - Particular consideration should be given to gravity based structures

### Well Plug and Abandonment

**Background:**

Well Abandonment is an area where new technology can make a major impact within the industry. This includes the application of rig-less technology and mechanical cutting tools (platform & subsea). We are looking to move toward conducting operations without an expensive drilling rig, rig-less with safe temporary accommodation, temporary cranes, well intervention vessels, supply vessels and novel subsea techniques.

**Requirements:**

- Rig-less methods of recovery
  - Alternatives to use of expensive drill rigs for well abandonment – e.g. use of novel riser system technology to eliminate need for drill rig 'pull'.
  - Consideration of automated techniques
- Cutting technologies
  - Removal of gauge cable and verification techniques to determine where cut and clear for plugging
- Barrier techniques
  - Development of alternative materials
- Well Status
  - Consideration of cost effective well integrity and inspection techniques
- Tubing
  - Eliminate requirement to cut and pull

## Hydrocarbon Free

### **Background:**

One major environmental concern is how best to clean out heavily contaminated storage, settling and ballast tanks (which may be built in concrete and/or steel), pipe work, vessels and pipeline structures so as to reduce the risk of environmental contamination during the dismantling process and increase the safety of the dismantling operatives. Among these considerations are the levels of contamination from crude oil and other free hydrocarbons present, the presence of asphaltenes, oily residues, sludges/oil contaminated solids, and LSA (low specific activity) scale.

### **Requirements:**

- Hydrocarbon identification (see 'Mapping Hazardous Materials' above)
- Improved techniques for hydrocarbon flushing
  - Consideration should be given to cost, effectiveness, and environmentally friendly techniques
- Waste management logistics
  - Reception, storage, and separation facilities
- Flushing
  - Development of cross industry acceptable level of cleanliness for topsides process pipework and subsea pipelines

## Facilities and Pipeline Cleaning

### **Background:**

As the North Sea reaches maturity the issue of decommissioning facilities is becoming a more visible matter to be addressed. There are numerous areas that influence the cleaning strategy in determining how to clean, mapping what is currently in place and the level of cleanliness to be achieved. Areas of interest include the possible effectiveness of GELS and less aggressive pigging or flushing techniques. The onshore petrochemical industry has used technologies such as vapour cleaning onshore; opportunities may exist for this to be taken to an offshore environment.

### **Requirements:**

- Special waste management
  - Removal of mercury, asbestos, and other hazardous materials from contaminated surfaces
  - NORM stabilisation, treatment, and handling techniques
- Topsides and subsea waste remediation techniques, e.g. volumetric reduction and/or treatment
- Development of both chemical and non chemical techniques
- Qualification and verification of cleaning standards
- Improved access techniques

## Removal

### **Background:**

A great deal of good work has already been done on removal techniques. Lifting and handling of large structures has seen various options proposed to the industry and some have already been used, particularly in the Gulf of Mexico where many smaller installations have been removed. Technologies for cutting have developed (some through the ITF route) and have been used and others are ready and waiting for deployment to prove their effectiveness. The ITF process offers a route for the practical demonstration of technologies that have not yet proven themselves in a realistic environment. Technology transfer from other industry sectors may have an application to the oil and gas industry and would be welcome.

### **Requirements:**

- More efficient and cost effective methods for topside and jacket removal.
- Alternative removal; techniques for pipelines.
- Safe removal of concrete mats due to their lack of structural integrity.
- Cutting
  - Tools designed for a wider application other than bespoke for each application.
  - Techniques for confirming that cutting operations have been successful.
  - Explosive cutting: consideration of techniques that are more efficient, effective, and environmentally friendly (to marine life and local environment).
  - Development of cutting technologies that allow pre-cutting of jacket members (possibly more than a year ahead of removal), maintaining the full stiffness of the member and allow quick release of the cut member (possibly remotely activated) on the day of the removal.
- Work cataloguing the various removal systems/concepts, be they already in the market place, to address their viability, capability, limitations and status. Assessment and comment on the Marine Operability of such systems.
- Jacket dismantling - Feasibility study of the development of a near shore reception facility for jackets, where single lift jackets can be temporarily stored and efficiently dismantled, either in situ or after some form of transfer across the quayside.
- Removal of concrete mattresses - in situ remediation techniques

## Legacy and Monitoring

### **Background:**

The final stage of decommissioning will require the Operator to implement arrangements for monitoring, maintenance and management of the decommissioned site and any remains of installations or pipelines that may exist. Pipelines decommissioned in-situ will be subject to a suitable monitoring programme agreed with BERR; details of which are to be specified in the decommissioning programme.

### **Requirements:**

- Remote Monitoring of assets left on the seabed such as buried pipelines, drill cuttings piles to ascertain status and any change in condition.
- Drill cuttings piles are of particular concern in determining leach rates over long periods. Cost effective techniques are being sought.
- Bio/chemical methods to accelerate the natural degradation process for cuttings pile.
- Methods for accelerating the natural degradation of footings and insitu pipelines, to shorten the overall time over which these structures remain a hazard to other users of the sea.

## Miscellaneous

### **Background:**

The previous sections represent the major areas under this call; however, we are willing to accept proposals of any nature in the area of decommissioning provided they offer significant benefits in terms of cost reduction, increased efficiency, enhanced safety, and benefit to the environment.

In particular we would like to see proposals that can be transferred from other industry sectors that will benefit decommissioning operations in the offshore/onshore oil and gas sector.

Some other areas for consideration are:

- Better engagement with explosive techniques
- Fishing trawl boards that are offshore friendly
- Cross-fertilisation of ideas from other industries
- Environmental assessment – regional/generic
- Waste management strategies – standard/generic
- Fluid recycling, not disposal
- Landing items onshore
- Alternative strategies to heavy lift
- Onshore and offshore deconstruction
- Recovery of bundles