

## Down-hole & Drilling Technology for Maturing Fields

*(Incorporating Technology for Tail-End Gas)*

### ***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 **£30 million** in direct JIP support, with projects linked to a further **£20 million** of equity investment, and over **£20 million** in trials funding.

ITF accesses funds from the 17 the major oil operating and service companies that are ITF members. Proposals submitted under this call will be reviewed for financial sponsorship by ITF members and selected non-member operators. This is an excellent opportunity to gain a wide audience in seeking support for your technology.

In a spirit of open collaboration, our preference is to receive proposals that all ITF members can view and potentially participate. Under special circumstances proposers may be able to request that specific companies are excluded from seeing their proposals. (Note: our members are listed on our website site [www.oil-itf.com](http://www.oil-itf.com))

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

This is an open invitation for all organisations seeking sponsorship for **innovative downhole and drilling technologies for maturing fields** to submit proposals for **research, development, and field trial** of technology in the following areas:

- Reduced Cost Sidetracks
- Water Management / Shut-offs
- Low Cost Monitoring and Surveillance
- Artificial Lift
- Cheap Infill Wells

A list of specific technology challenges that are of interest to ITF members may be found later in this document.

ITF Member companies have assets and operations throughout the world. We are therefore inviting proposals for technologies that may be applicable to the North Sea and any other geographical area.

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

### ***Qualifying Technologies***

To qualify for this call, your technology must:

- Be applicable to upstream oil and/or gas production or associated services
- Fulfil at least one of the items within the expressed needs for technology within this invitation.
- Be novel or innovative
- Demonstrate a clear business case for support
- Have a clear and demonstrable path to commercial realisation

### ***Qualifying Organisations***

Proposals are invited from any national or international organisation (SME, university, large organisation, consortium or alliance); equal opportunities will be extended to all. If your proposal creates sufficient interest you will be required to attend meetings and make presentations in the United Kingdom and in the English language.

### ***Background to this Theme***

ITF uses a thematic approach working in collaborative participation with its members to identify common areas of interest and technology needs. This Call aims to stimulate proposals from the development community, which ITF and its members will assess, and our members will fund those of highest interest.

One key theme for 2007 identified by ITF members is the application of **Downhole & Drilling Technologies for Maturing Fields**. The focus of this theme is to bring forward technologies, with clear benefits to sponsors, which require assistance in **research, development or field trial**.

ITF is also interested in receiving ideas for feasibility studies, which will attract a lower level of funding. Please contact us if you are considering a submission of this type and we will advise you how to proceed.

### ***How the Technology Needs were Defined***

A central part of ITF's work, is to take views from a number of industry sources (such as end users, service providers, and suppliers) to identify key technology challenges that would bring about a substantial increase in production, improve recovery rates, or extend the life of a facility.

This consultation includes taking views from individuals and through ITF run workshops. One such workshop was held which established an interest in collaboration and in seeking proposals with a view to making a commitment to invest. All topics included in this call are therefore attributable to a specific expression of interest by ITF members.

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 been made generic to allow for flexibility in interpreting the most appropriate technical solutions.

### ***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 David Liddle at [d.liddle@oil-itf.com](mailto:d.liddle@oil-itf.com) **NO LATER THAN MONDAY the 17 September 2007.**

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 (The Industry Technology Facilitator) is a not-for-profit organisation owned and supported by 14 major oil & gas operating and 3 service companies (the 'members'). ITF is the vehicle through which these companies 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 basins. For further information about ITF click on [www.oil-itf.com](http://www.oil-itf.com).

To date, ITF has launched 100 Joint Industry Projects representing a direct investment of more than £23.5 million.

### **ITF Contacts & Help**

If you would like to discuss any matters related to this technology call or any other issue related to ITF, please contact the individuals named below. We will be pleased to discuss your proposal and answer any questions about the application process up till the closing date specified.

<b>Contact</b>	<b>Role</b>	<b>E-mail</b>	<b>Telephone</b>
David Liddle	Technology Manager	<a href="mailto:d.liddle@oil-itf.com">d.liddle@oil-itf.com</a>	44(0)1224 853403
Lynette Carroll	Technology Analyst	<a href="mailto:l.carroll@oil-itf.com">l.carroll@oil-itf.com</a>	44(0)1224 853410
David Hedges	Technology Analyst	<a href="mailto:d.hedges@oil-itf.com">d.hedges@oil-itf.com</a>	44(0)1224 853409

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## ITF 2007 Down-hole & Drilling Technologies for Maturing Fields

# Call for Proposals

## Specific Technology Needs

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

### Reduced Cost Sidetracks

#### **Background**

*Drilling of sidetracks is normally performed on wells that are approaching the end of their production plateau or have just started their production decline period, and have additional identified reserves in the vicinity of the existing well. While the development of TTRD technology provides a more cost-effective method to increase the production from subsea wells, there is scope for new initiatives to make side tracks more economic and enable reserves to be exploited more efficiently. Suggestions for development include:*

- Alternative drilling techniques, for example:
  - Micro drilling system
  - Laser
  - Sonic technology
  - Water jetting
  - Metal cutting...plus any other non-conventional coiled tube drilling techniques
- E-line drilling methods?
- Unconventional approaches are invited to enable rigs to drill sidetracks faster or without a rig altogether
- Increasing power for longer reach
- Barefoot completions (design for 18 months life)
- Liners with reduced integrity designed in – to enable easier sidetracks

### Water Management / Shut-offs

#### **Background**

*Water production occurs at some stage in the oil production process, particularly towards the end of field life, often exacerbated by secondary recovery techniques, including water re-injection. In the North Sea more water is now being produced than oil. For any well there comes a point where the cost of dealing with the water cut exceeds the value of oil produced and the well is abandoned.*

*There are a wide range of techniques available to manage the water produced, including:*

- *Relative permeability modifiers*
- *Plugs in the wellbore*
- *Cement squeeze / chemical blockers*
- *Screens / preferential oil selectors*
- *Surface Treatment*
- *Downhole water separation*
- *Seabed separation*
- *Annular production strings*
- *Foam*

*Despite the existence of these techniques, produced water is still a major problem and the costs are high.*

*In addition, the need has been identified for improved technologies for locating the source of the water ingress. The technology needs are therefore suggested as:*

- Retrofit flow control with wireless ability
  - control water production or injection, chemical treatments, stimulations & selective production from multi laterals
  - Emphasis on easy deployment, eg through slickline or e-line
- Improved techniques for locating the point of water ingress
- Low cost production logging techniques
- Alternative or enhanced techniques for managing produced water

### **Low Cost Monitoring and Surveillance**

#### **Background**

*It is argued that marginal fields need even more careful monitoring than would normally be required. There is considerable activity around smart wells, but cost and reliability remain issues.*

- The main measurements are of pressure, temperature and flowrate: how can these be measured zonally?
- Intelligent completions
  - How to monitor and manage production from multiple layers?
- Through Tubing Down-hole completions – completion in a gravel pack without requiring a work-over
- Sensors built into subsea completions
- Retro-fit permanent monitoring to platform wells?
- Reduced costs for subsea well access
- Sensors within gas lift mandrel?
- Multi-function “mobiles meters” to measure flow rates
- New real-time data acquisition techniques

### **Artificial Lift**

#### **Background**

*There are currently many technologies in use for artificial lift, ranging from the traditional plunger pumps, electro-submersible pumps, surface jet pumps (or eductors) through to soap injection. However there remains scope for improvement, particularly in reliability, ease of deployment and effectiveness.*

This call seeks proposals from technology developers to develop or field trial truly innovative new approaches to artificial lift. Some suggestions include:

- Retrofit gas lift
  - Emphasis on better retrievability and reliability
- The application of pumping technologies previously developed for use in other sectors, such as the medical arena
- Wire-line deployed Electro-submersible pumps
- Combined deep-set safety valve and pump
- New technologies aimed at providing artificial lift in gas wells
- Improved well data aimed at selecting the most appropriate artificial lift system

*Cheap Infill Wells*

**Background**

*Infill wells are frequently required to maximise field recovery. Despite the fact that these wells only have a required lifespan of perhaps two years, it still costs £20M - £30M to drill a 9,000ft well. Are there techniques which would reduce this cost by 60% or even 75%?*

- How could current techniques be scaled down?
- Disposable wells?
- Scaled down version of well bore (using Extended Reach Drilling?)
- Scope for a completely automated system?
- New wells with no rigs – existing rigs are 90% busy
- There may be scope for a niche provider to provide an alternative approach – as an example a modular rig concept exists in Norway