Asset Integrity 2007

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 through to field trials and implementation. Since 1999, ITF has raised over **£30 million** in direct joint industry project support, with a further **£20 million** of equity investment, and over **£20 million** in trials funding.

ITF accesses funds from the major oil operating and service companies that are ITF members. Proposals submitted under this call will be reviewed by ALL ITF members and selected non-member operators. 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 and implementation. (Note: our members are listed on our website www.oil-itf.com)

An Open Invitation for All Technology Developers and Suppliers

With the recovery of existing and future reserves in maturing provinces increasingly becoming dependent on ageing infrastructure it is important that our industry assures the integrity of these assets. This is not only for the assurance of production but also for the enhanced safety of personnel working these assets.

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

- Asset Integrity Management
- Flexible Pipes and Riser Integrity
- Leakage Detection
- Multi-Phase Flow Measurement
- Inspection and Monitoring (Instrumentation and Sensors)
- Corrosion Control, Mechanics & Materials, and Surface Protection

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

ITF Member companies are international organisations with assets and operations throughout the world. We are therefore inviting proposals for technologies that may be applicable to any geographical oil and gas operating province.

Those interested in submitting a proposal should respond registering their interest as early as possible by sending an e-mail to ITF, info@oil-itf.com.

Qualifying Technologies

To qualify for this call for proposals, 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 SME, university, 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 attend meetings and make presentations to interested parties in the United Kingdom and in the English language.

Background to the Asset Integrity 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 support those of highest interest.

One key theme for 2007 identified by ITF members was the assurance and management of **Asset Integrity**. The focus of this theme is therefore to bring forward technologies, with a clear benefit to sponsors, which require assistance in **research, development or field trial.**

In addition, ITF is 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. This Call is a combination of topics held from earlier work undertaken in collaboration with Subsea UK and a theme day held jointly with Aberdeen University as part of a major study on instrumentation and sensors in the oil and gas industry. All topics included in this Call are attributable to an expression of interest by ITF members and the wider industry.

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 from our website at www.oil-itf.com. Using the Guidance Notes (also to be found on our website), please complete the form and return it electronically in Word format (NOT PDF) to Adele L'Etang at ITF at a.letang@oil-itf.com **NO LATER THAN MONDAY the 17th December 2007.**

In addition, we request that you complete a two slide PowerPoint presentation as detailed in the Guidance Notes, which back 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.

About the Industry Technology Facilitator (ITF)

ITF (The Industry Technology Facilitator) is a not-for-profit organisation owned and supported by major 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 basins.

For further information about ITF click on 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
David Liddle	Technology Manager	d.liddle@oil-itf.com	+44(0)1224 853403
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ITF 2007 Asset Integrity

Call for Proposals

Specific Technology Needs

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

Asset Integrity Management

Background:
As oilfield equipment ages, so the need to manage asset integrity intensifies and becomes more onerous. The objectives will be to:

- *Maintain economic production*
- *Maximise asset life*
- *Better understand and therefore mitigate against risk*
- *Plan for decommissioning*

The Members of ITF are therefore seeking technologies or procedures to assist with:

- The evaluation of design life versus actual life
- Management of obsolescence and its impact on critical spares strategy
- Life extension
- Asset changeover – availability of documentation
- Technical integrity to maintain equipment reliability and availability
- Enhanced safety of personnel, asset value, and protection of the environment

Flexible Pipes and Riser Integrity

Background:
Flexible pipe has been in use for a number of years, particularly in flexible risers. Many of these systems are aging and failures happen from time to time. Flooding of the flexible pipe annulus can cause corrosion fatigue of the steel wire armouring while the polymer layers of the flexible pipe can degrade due to high water cut and temperature, can be notch sensitive, or may be susceptible to fatigue damage due to thermal cycling. A proportion of flexible risers were manufactured from a polymer which has been found to degrade under conditions of high water cut and temperature, whilst annulus flooding can cause corrosion fatigue. There is therefore a need identified for the following:

- Flexible pipe inspection, specifically for fatigue
  - Internal inspection techniques for existing flexible pipes
  - New concepts for flexible pipe, designed to facilitate inspection and/or monitoring
- Pigging systems for flexible pipes
- Repair systems for flexible pipes
- Condition and structural response monitoring of existing top-tensioned, steel catenary, flexible, and hybrid risers and connection integrity

Leakage Detection

***Background**:*
Leaks are never welcome, with increasingly heavy penalties being imposed – not only in financial terms, but also in loss of reputation and potential impacts on safety. While there are many leak detection systems available in the market, there are still improvements possible, particularly in terms of:

- The detection of very small leaks
- The capability to identify the exact location of leaks
- Needed down casing in HP/HT wells
- Neural nets
- Other novel techniques. For example: Mass spectrometer, Satellite methods, Oil on sea surface

Multi Phase Flow Measurement

Background
At present multi-phase flow measurement technology (MPFM) exists, but it has limitations. In particular, the current generation of MPFM meters tend to be very expensive and too large to be used one per well, which would be the ideal scenario. In addition, their accuracy can be drastically reduced once they begin to operate outside their design envelope, which frequently happens in mature wells due to changes in water cut. There is a pressing need for accurate, low cost and small MPFMs driven by legislation and the increasing use pipelines shared between operators. By this call, oil operating companies are seeking new technologies for MPFMs, ideally incorporating:

- Compact design
- Low cost
- Fit and forget reliability and accuracy
- Ability to retrofit to existing installations
- Measurements taken independently on PVT
- Non-intrusive
- Sand and other solids detection and monitoring

Inspection and Monitoring (Instrumentation and Sensors)

Background
As the infrastructures age the oil industry has a need for more accurate, reliable, cost effective, and user friendly monitoring and inspection techniques to ensure maximum integrity under safe and environmentally protective conditions. In particular the industry is looking for developments in the following areas:

- In-line, on-line, and retro-fit systems
- Systems for recording more data with lower power
- Wide area coverage for wall thickness and crack detection; including very small crack detection
- Inspection techniques for non-visible structural elements, e.g. through concrete, under insulation, and buried pipes
- Novel inspection techniques offering greater accuracy and resolution. For example: tomography, phased array ultrasonics, etc.

Corrosion Control, Mechanics & Materials, and Surface Protection

Background

Whilst inspection and monitoring assets allows assessment of integrity but yet corrosion still remains a common cause of failure. Corrosion is a constant problem and as we move into deeper and harsher environments other issues emerge; corrosion and its control need to be given regular attention. In particular the industry is seeking new ideas in the following areas:

- Methods that reduce corrosion by assuring that the internal wall in a pipeline is surface oil wet
- Microbiological (MIC) elimination
- Prevention of stress (corrosion) cracking
- New inhibitor and nano-technology coating applications on pipelines and structures to prevent corrosion