Shut Off Knowledge System

Phase 2

Proposal for Membership

OTM Consulting Ltd

A	Issued for internal review	08/08/02	KAG	
Version	Description	Date	Author	Approved
Notes:	1. The information contained in this document is confidential and must not be transmitted, copied, shown or otherwise disclosed to a third party without the prior written agreement of OTM Consulting Ltd. 2. If information is transmitted to a third party by agreement of OTM Consulting Ltd a copy of condition 1 above must be attached.			

Table of Contents

1. Proposal Summary

OTM Consulting Ltd (OTM) has pleasure in making this proposal for phase 2 of the SOKS (Shut Off Knowledge System) project. A summary of the SOKS objectives, benefits, scope of work and data structure is provided in this section, with full details provided in the subsequent sections of this proposal.

The objectives of SOKS are:

- To develop an up to date databank of WGSO knowledge, to be simply accessed via a dedicated, security protected website
- To provide an improved understanding of the performance/ lessons learnt in applying specific WGSO technologies, leading to the generation of benchmarks, prioritised technology gaps and field trial opportunities

OTM will provide independent and impartial research, analysis and management for this project, ensuring the highest level of objective and accurate information. We will also draw on our proven experience with ICON, (a similar project for intelligent completions), and other multi-client knowledge-base development projects.

There are a number of clear benefits of participating in SOKS:

- International focus on WGSO technology
- Access to a dedicated knowledge base resource on WGSO
- Knowledge sharing (lessons learnt)
- Enable identification of correct shut off mechanisms for particular wells
- Enable identification of installation best practice
- Enable identification of WGSO technology shortfalls
- Opportunity to showcase new/emerging products and technologies
- Confidential feedback for suppliers on their own equipment performance

Phase 2 will build upon the success of phase 1 and will benefit from lessons learnt and input from participants during that time. As well as continuing to gather WGSO data this phase will begin basic analysis of that data with an emphasis on collective lessons learnt and procedural recommendations.

Membership is open to oil companies and engineering contractors/suppliers (who will have restricted access rights).

Phase 2 will be an ongoing programme, participation in which will be annually renewable. The fee for participating in year 1 of phase 2 will be frozen at £6,000 pounds sterling for operators and £3,000 pounds sterling for contractors/ suppliers for phase 1 participants. New joiners will be requested to pay the above participation fee plus a contribution towards phase 1 deliverables (section 8.1). OTM will act as the JIP contracting entity and will be responsible for providing the SOKS services and benefits described in this proposal.

For further discussion regarding this proposal, please contact Kathy Goodrich, Senior Consultant at OTM Consulting Ltd, 44 Quarry Street, Guildford GU1 3XQ (phone: [44] 1483 598000, fax: [44] 1483 598010, e-mail: kathy.goodrich@otmnet.com).

2. Background and Rationale to Project

Operator attendees of the Production Engineering Association (PEA) water and gas shut off (WGSO) technology forum highlighted the need to capture learning from shut off projects. The SOKS concept and approach was developed in response to this need.

The aim of WGSO is to reduce the size and cost of process facilities (by excluding water or unwanted gas at source) and to enhance hydrocarbon recovery. Therefore WGSO can be considered successful whenever unwanted water or gas is reduced. SOKS provides a full resource on WGSO and is unique in its approach, ensuring that all WGSO jobs are reported including repeat jobs.

The nature of WGSO means that it is an imperfect science with all tasks taking place remotely, many thousands of metres underground, (and often at the seabed). Undertaking precise placement of product, estimating volumes required, determining well conditions correctly (including where and how water is being produced) are all very difficult. Learning from experience (within a company and from the industry at large) is therefore a major success factor. SOKS seeks to collate this learning in one place and therefore in time greatly influence the percentage success rate of WGSO projects.

The SOKS website currently consists of:

- WGSO database - Appendix 1 details examples of the parameters in this database
- Products database
- R&D/ JIP database
- Technology gaps
- Document library
- Discussion forum
- Message board

Phase 2 aims to continue the programme of data gathering, normalisation and validation and also begin to conduct basic analysis on the data as required by the participants, for example:

- Collective lessons learnt
  - Method of preparing a particular chemical
  - Placement using CT
- Common themes/ lessons learnt
  - By technology initially
- Statistics
  - Duration of effectiveness of chemical treatments
  - Correlation between problem type, technology type and success

3. Objectives of SOKS

The objectives of SOKS are:

- To develop and maintain a fully operational knowledge resource of WGSO product developments and existing technologies on the web
  - Password protected for different levels of access
  - Accessed by both operators and contractors/ suppliers
- To improved understanding of the performance/ lessons learnt from WGSO field cases
  - Knowledge sharing
  - Benchmarking
- Identify best practice
  - Installation best practice
  - Candidate selection practice
- Market Expansion
  - Create confidence in the technology's performance and payback potentials
  - Extend geographical usage
  - Focus R&D expenditure
  - Identify technology shortfalls
  - Stimulate focussed development and competition
- Provide easy access for users to market information
  - Product availability
  - Components/systems under development

4. Benefits of SOKS

There are a number of clear benefits from participating in this project. Based on the objectives described in section 3, SOKS will:

- Provide an international focus for WGSO lessons learnt and benchmarks
- Provide an opportunity to network with members and other companies who may be invited to the meetings from time to time
- Leveraged funds – for a relatively small outlay, contribute to development of comprehensive global resource
- Leadership within the JIP – determine how and where funds are spent and set priorities for the industry (ensure results meet *your* needs)

Operators will benefit from:

- Access to a dedicated resource
  - Save time and money on installation
  - Identify correct wells for correct technology applications
- Access to best practice/lessons learnt
  - Reduced lead times and development costs
  - More effective design
  - Standardisation
- Improved success resulting from the application of WGSO
- Provide confidential feedback to suppliers on their own equipment performance, thereby ensuring dialogue, analysis of lessons learnt and subsequent performance improvement

Contractors/ Suppliers will benefit from:

- Opportunity to showcase own products/ ideas/ technologies to interested audience
- Direct access to aggregated operator requirements in the WGSO field
  - Technology gaps
- Access to a wide databank of WGSO knowledge resource
- Improved knowledge of the effectiveness of WGSO technologies in different well conditions
- Improved range/ effectiveness of technologies
- Accelerated take up of new technology
  - More field trials stemming from increased confidence amongst operators
  - Increased number of WGSO applications

5. Scope of Work

5.1. Introduction

Phase 2 will be an ongoing and continually improving version of phase 1 (the pilot phase). OTM will proceed with a regular and rolling programme of data gathering, normalisation and validation as well as adding to the product and JIP/R&D databases with additional information on new and updated projects.

There will be half-day workshops held at six-monthly intervals. These workshops will include both project progress discussions such as overall progress reviews and strategy/ way ahead discussions and also structured discussions regarding the data actually gathered and trends/ patterns emerging. Where possible these workshops will be held adjacent to PEA WGSO forums or other related industry events in order to minimise travel costs and time. OTM will continue to provide quarterly project updates electronically.

At the heart of the SOKS website is the WGSO database which has been developed throughout phase 1. These parameters are now set (Appendix 1) and phase 2 will include basic analysis of the gathered data with an emphasis on collective lessons learnt and procedural recommendations.

- Collective lessons learnt
  - Method of preparing a particular chemical
  - Placement using CT
- Common themes/ lessons learnt
  - By technology initially
- Statistics
  - Duration of effectiveness of chemical treatments
  - Correlation between problem type, technology type and success

The database will be downloadable in Excel format by all participants so that they can carry out their own analysis if required.

5.2. Data gathering

This activity is the most important and time consuming activity in the project. SOKS has focused initially on public domain information sourced both from published documents and from participants.

SOKS has been set up to reduce participant workload to a minimum and there are a number of ways in which member data can be entered into the SOKS website:

- Online by member representatives
- Relevant data sent to OTM in any format – OTM will then enter the data
- OTM can visit member companies and subtract the relevant data from data sources provided to them

Suppliers may not always be able to provide data from projects where the operator is not a participant in SOKS. However, permission will be sought to include data on an individual basis by OTM. There are not thought to be any issues relating to operators providing data on installations where systems/ components are supplied by non-participant suppliers.

5.3. Website design

All the information gathered, normalised and validated within SOKS is displayed on a dedicated website. This site has been carefully constructed to provide full security to protect confidential data. All data is presented in a user-friendly fashion, with a search engine to enable quick retrieval of particular items.

The following diagram provides an overview of the SOKS website:

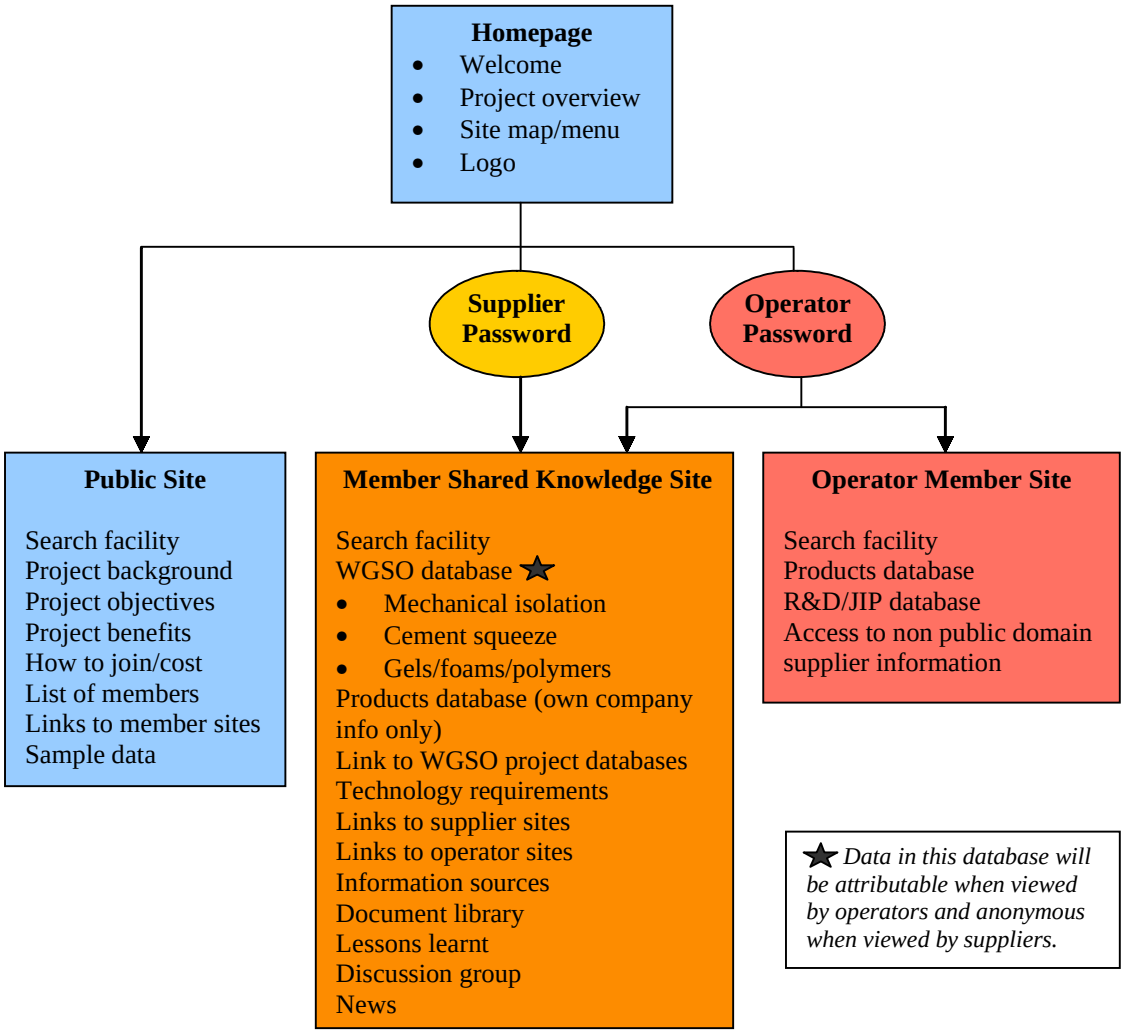

Figure 1: Overview of SOKS website

The members' area consists of two areas, as shown figure 1 – a shared knowledge area, accessed by all participants and an operator member area that can be accessed by operator participants only.

All SOKS participants will have access to a shared knowledge area which will comprise the WGSO database, lessons learnt, operator technology requirements, document library and discussion group. ASP allows the data in the WGSO database to be viewed as anonymous by suppliers and clearly attributable when accessed by operators. This ensures that suppliers are protected from competitors viewing commercially sensitive information about themselves, and will thus encourage openness by all members.

In addition operator members will be able to access the Products and JIP/R&D database which will contain information on existing and emerging WGSO technologies with direct links to contractor/ supplier websites for more detailed information.

Suppliers will have the opportunity to provide non public domain information which will be mounted on individual participant supplier sites within the operator only area.

All participants will be issued with unique corporate passwords which will enable any individual within an organisation to access SOKS. If confidentiality becomes an issue, these can be renewed (changed) on a regular basis. Where contractors/ suppliers sit in operator's offices, operator members are asked to 'police' password usage on site.

5.4. Products and JIP/R&D Database

SOKS includes an evolving database of WGSO JIP/R&D projects together with a synopsis of their scope and deliverables, timescale for development, status and contact details for further information. This will be searchable by the use of key words.

In addition, a product database has been developed to provide an overview of which components/ systems are available from which suppliers. Suppliers' co-operation will be sought to ensure this area is kept up to date.

5.5. Market research

In order to ensure that SOKS is a complete resource on WGSO applications, developments and technologies, desk research and interviews will be carried out by OTM to provide information on the market. This will be searchable (as will the remainder of the site) by the use of key words.

In time, the information in this area can be compared with the analysis from operator interviews, which should lead to a clear view of the technology gaps. Such information will greatly inform the supply sector and stimulate focused development towards operator requirements. This information will be at top level only and will not replace operators' own stringent internal system evaluation procedures.

5.6. Website maintenance

Website maintenance will be an ongoing and vitally important activity during the period of the JIP, which will be undertaken by OTM. This will include mounting new information, updating links, contact details and all areas of the website. The website will be checked at least once per week, even when no new information is being added.

6. OTM role

- Development (in consultation with participants) of the SOKS proposals and definition of required tasks
- Development of the participation agreements (liasing with companies' legal departments, issuing final documents for signature, and expediting of signatures)
- Marketing of JIP including:
  - Liaison with targeted contacts
  - Issuing launch press release
- Provision of focal point for enquiries (from participant and non-participant organisations, suppliers, potential suppliers, press, potential new participants etc)
- Managing JIP so as to maximise networking opportunities for all levels of the supply chain
- Ensuring implementation of security measures on the Website
- Providing confidential feedback loop for participants for data/ documents/ comments which will not be included in the databases or elsewhere on Website
- Management of sub-contractors, responsibility for maintenance of project schedule and expediting project tasks to meet budget, deadline and quality targets
- Progress reporting
- Organisation, facilitation and documentation of meetings/ workshops
- Maintenance of JIP account including invoicing, purchase orders, payment of contractors
- Budgetary control and reporting
- Document control, including
- Maintenance of document register
- Maintenance of participant mailing list
- Distribution of documents
- Ad hoc tasks as required on behalf of the steering group
- Publicity, including production and distribution of regular press releases, preparation of publicity material as required (conference presentations etc)
- Liaison with related initiatives
- Technology transfer

Further information regarding OTM can be found at Appendix 2.

7. Deliverables

The main deliverables will include:

- Fully operational, password protected knowledge resource on the web (www.soks-project.com) regarding WGSO product developments and technologies
- Products database
- JIP/R&D database
- Experience databases, e.g. mechanical, gel, cement
- 6-monthly workshops with quarterly progress updates
- WGSO technology requirements
- Document library
- Suppliers/researchers contact details
- Data analysis
- Ongoing service definition

8. Price

8.1. Membership Fees

Participation is offered at the rate of 6,000 pounds sterling for operators and 3,000 pounds sterling for contractors/ suppliers. A minimum of 6 participants are required for the project to continue.

All operator members new to phase 2 will be requested to pay a joining fee of £2,000 pounds sterling to recognise the role of the phase 1 participants in the development of the SOKS database.

All contractor/ supplier members new to phase 2 are required to complete 5 records in the WGSO database prior to being able to view the complete WGSO database. All other areas of the website will be available on receipt of a signed membership agreement.

SOKS phase 2 will be an ongoing programme, participation of which will be annually renewable. An invoice will be issued on receipt of a signed membership agreement and subsequently in April each year. At the end of each membership year individual participants can choose to withdraw from the project.

8.2. Payment

Invoices for the full membership fee will be issued on signature of the membership agreement or in April each year and payment terms will be 30 days net.

Appendix 1:

Examples of WGSO Database Parameters

Job Details	
Date job started	
Shut off	
Type of technology chosen	
Problem overview	
Technologies considered	
Concept rationale	
Diagram	
DEGREE OF OPERATOR INVOLVEMENT	
Well candidate selection	
Technology selection	
Design of treatment / operation	
Execution of treatment / operation	
Quality control	
Treatment / operation evaluation	

Field Details	
Field Name	
Date field started production	
Location	
Block or concession number	
Region	
Country	
Operator	
Top Reservoir Depth	
Age of field	
Number of wells	
Net thickness oil	
Gross thickness oil	
Thickness of hydrocarbon bearing formation	
Structure	
Number of reservoirs	
Water Depth	

Well Characteristics	
Well Name	
Date well started production	
Well spacing	
Installation type	
Well type	
Application	
Completion	
Diagram	
WELLBORE PARAMATERS	
Measured depth	
Total vertical depth	
Average deviation across zone	
Max deviation in well	
Liner ID	
Min ID of well	
ZONAL PARAMETERS	
Target isolation zone	
Top interval depth	
Bottom of interval depth	
Top of target interval	
Bottom of target interval	
Top of reservoir interval	
Bottom of reservoir interval	
RESERVOIR	
Formation	
Reservoir type	
Permeability	
Porosity	
Pressure	
Cross-Flow	
Initial GOR	
CGR	
Oil Density	
Net thickness oil	
BHT	
FORMATION FLUIDS	
Scale tendency	
Gas properties	
PERFORATIONS	
Perforation interval	
Perforation shots per metre	
Perforation depth	
Perforation diameter	

Comments	

Cement Details	Plug
DEPLOYMENT	
Deployment method	
Through tubing method	
Mechanical zone isolation method during fluid placement	
Reactive preflush used?	
SLURRY CHARACTERISTICS	
Type of cement used	
Volume of slurry	
Density of slurry	
Plastic viscosity	
Gel strength	
Leak off	
Compressible strength	
Further Details	
DESIGN PROPERTIES OF SLURRY	
Retarding for gas	
Hydrocarbon carrying fluid	
Latex Cement?	
Foamed	
Ultra low density slurry	
DOWNHOLE PLACEMENT CONDITION	
Injectivity test rate	
Injectivity test pressure	
Treatment injection rate	
Cement placed above or below formation fracture pressure	
Max surface pump pressure	

Mechanical Details	
DEPLOYMENT	
Deployment method	
Through tubing method	
JOB	
Type of isolation chosen	
Details about actual job	
PRODUCT	
Trade name	
Manufacturer	
Size	
Casing rating	
Temperature limit for device	
Differential pressure rating limit for device	
Length of packer	
Number of packers / product used	
Elastomer type	
If patch used, differential pressure limit	
Further details	

Chemical Details	Chemical System: Gel
DEPLOYMENT	
Deployment Method	
Through tubing method	
Mechanical zone isolation method during fluid placement	
Reactive preflush used?	
JOB DETAILS	
Gel application	
Water source	
Trade name	
Temperature limitation	
Supplier	
Specifications	
Gel details	
Crosslinker	
Retarder	
Accelerator	
Stabilizer	
Solids addition	
Volume (Design)	
Volume (Actual)	
Shut in after placement	
Further technical details	

Results			
	Before	After	3 Month Average
Oil rate Sm^3/d			
Gas rate Sm^3/d			
GOR Sm^3/m^3			
CGR			
Water rate Sm^3/d			
WC %			
PI / II			
Definition of success			
Technical success			
Economic success			
Comments			
Causes of failure			
Life of job			
Problems faced during job			
Lessons learnt			
Recommendations			

Costs / Schedule	
COSTS	
Planned overall costs	
Total overall costs	
Incremental cost / barrel due to treatment	
Cost Comments	
SCHEDULE	
Job start date	
Duration of treatment	
Schedule Comments	

Contact Information	
Company	
Main Contact	
Contact Telephone	
Contact Email	

Appendix 2: Background Information on OTM

OTM is an independent firm of technology management consultants specialising in the upstream oil & gas sector. We use our expertise to bring technology users & providers together to ensure the continuing development & application of novel technologies that promote the profitability of our clients & the industry. We pride ourselves on providing the highest quality service & delivering innovative solutions in response to our clients' changing needs. Formed in 1993, we operate globally & have offices in both the US & the UK.

OTM helps technology users source & implement the best technologies for their businesses & helps technology providers take their winning technology ideas to market. We also work with government & industry bodies to help build a stronger supply base for the future:

technology users, let OTM help:	**technology providers**, let OTM help:	**govt. & industry bodies,** let OTM help:
• identify your technology needs • research & evaluate both established & cutting-edge technologies to find the ones best-suited to your operations • establish & manage jointly-funded R&D projects • review & audit your R&D programme • facilitate full utilisation of newly developed technologies by your individual business units • optimise your technology strategy & technology management processes • manage in-house & external sharing of technology information effectively by providing networks, web-based data-banks & internal newsletters	• identify your 'star' technologies • evaluate market potential & entry opportunities • develop business & marketing plans • set up collaborative partnerships • source R&D funding • establish user-funded R&D projects • promote your technologies with end users • identify field trial opportunities	• strengthen supply chain relationships • catalyse supplier collaborations • develop business & economic models • carry out market research & analysis • develop data banks of market information • forecast trends in technology • strengthen regional clusters

OTM offers a unique combination of specialist knowledge of the offshore oil & gas market & related technologies, knowledge of technology management, strategic marketing & project management techniques, & an extensive range (>8,000) of senior-level national & international contacts. Our clients include more than 30 international oil companies as well as 80-plus suppliers, contractors, & government & industry bodies, including:

oil companies	**technology providers**	**suppliers**
Addax Petroleum Amerada Hess Anadarko BG BHP Billiton BP Burlington Resources ChevronTexaco CNR International Conoco DONG ENI Agip Enterprise Oil ExxonMobil Hibernia INA Naftaplin Kerr-McGee Maersk Oil Marathon Norsk Hydro OMV Petrobras Petro-Canada UK Phillips Repsol YPF Saudi Aramco Shell Statoil Talisman	2H Offshore Engineering ABB Offshore Systems Aker Kvaerner Alstom Automation Atofina Baker Oil Tools BMT British Geological Survey Coflexip Stena Offshore Ensign Geophysics Europipe FMC Garrad Hassan GeTech Glynwed Pipe Systems Halliburton Heriot-Watt University J&S Marine Marine Acoustics MSE Consultants PetroData Roxar Schlumberger Stolt Offshore Subterra The Expro Group Triangle Engineering Weatherford WellDynamics Wood Group Production Technology	DTI IACMST Marine Technology Directorate NERC Society for Underwater Technology Southampton Oceanography Centre

TotalFinaElf	Zeta Dynamics	