

Project List - Implemented

Industry Technology Facilitator - Project List (Implemented)



Implemented Yes

Project No. 1001 PWD

ITF Funding (£k): 338

Duration (Months): 9

Title: The Continuous Circulation Coupler Development Project

Description: StatoilHydro used the CCS Mark 2 to achieve Continuous Circulation Drilling on the sensitive sections of 2 wells drilled from the Scarabeo 5 Semi in the Kristin field and 4 wells from the Kvitebjorn Platform, with complete success. To date 1,627 connections have been made with continuous circulation (and therefore steady ECD and cuttings transportation) with an average 'Total Connection time' (stop drilling to start drilling) of 24 minutes, of which the 'Total CCS Operating Time' averaged only 13 minutes. ('waiting on rig time' averaged 11 minutes).

Project No. 1056 PWD CCC

ITF Funding (£k): 1000

Duration (Months): 6

Title: Development of the Continuous Circulation System: Phase 2- Detailed System Design & Component Testing

Description: StatoilHydro used the CCS Mark 2 to achieve Continuous Circulation Drilling on the sensitive sections of 2 wells drilled from the Scarabeo 5 Semi in the Kristin field and 4 wells from the Kvitebjorn Platform, with complete success. To date 1,627 connections have been made with continuous circulation (and therefore steady ECD and cuttings transportation) with an average 'Total Connection time' (stop drilling to start drilling) of 24 minutes, of which the 'Total CCS Operating Time' averaged only 13 minutes. ('waiting on rig time' averaged 11 minutes).

Project No. 1130 PWD CCC

ITF Funding (£k): 300

Duration (Months): 24

Title: Development of the continuous circulation coupler: Phase 4a

Description: StatoilHydro used the CCS Mark 2 to achieve Continuous Circulation Drilling on the sensitive sections of 2 wells drilled from the Scarabeo 5 Semi in the Kristin field and 4 wells from the Kvitebjorn Platform, with complete success. To date 1,627 connections have been made with continuous circulation (and therefore steady ECD and cuttings transportation) with an average 'Total Connection time' (stop drilling to start drilling) of 24 minutes, of which the 'Total CCS Operating Time' averaged only 13 minutes. ('waiting on rig time' averaged 11 minutes).

Project No. 1180 PWD CCC

ITF Funding (£k): 146

Duration (Months): 24

Title: Development of the Continuous Circulation Coupler-Phase 4b (Field Drilling Trial on a Land Rig)

Description: StatoilHydro used the CCS Mark 2 to achieve Continuous Circulation Drilling on the sensitive sections of 2 wells drilled from the Scarabeo 5 Semi in the Kristin field and 4 wells from the Kvitebjorn Platform, with complete success. To date 1,627 connections have been made with continuous circulation (and therefore steady ECD and cuttings transportation) with

an average 'Total Connection time' (stop drilling to start drilling) of 24 minutes, of which the 'Total CCS Operating Time' averaged only 13 minutes. ('waiting on rig time' averaged 11 minutes).

Project No. 1300 PWD HETS **ITF Funding (£k):** 730 **Duration (Months):** 16

Title: External Patch for Casing Repair, Industry Type Standard

Description: ISO Qualified HETS External Casing Patch recently run in the North Sea for 2 major operators solving 2 serious casing problems. A case study is being prepared in collaboration with READ Well Services.

Project No. 1307 PWD **ITF Funding (£k):** 12 **Duration (Months):** 13

Title: Real-Time Well-Intervention and Downhole HPHT Camera For Deployment on Electric-Line and Coiled Tubing

Description: The slickline memory camera is now commercialised and has been run on 2 of our members assets.

Project No. 1311 PWT **ITF Funding (£k):** 51 **Duration (Months):** 5

Title: The Mud Watcher

Description: The Mudwatcher system is still undergoing long term trials with the sponsor; these are 90% complete, with further trials scheduled for autumn 2008, four systems have now been delivered for deployment by Transocean.

Project No. 1342 PWT SlimWELL **ITF Funding (£k):** 526 **Duration (Months):** 13

Title: SlimWell Trial 11.3/4" x 13.3/8" SW

Description: Since 2004 Caledus has developed the slender well construction technique SlimWELL, based on a close clearance flush joint liner hanger system that provides for maximum bore liners beneath another casing or liner. The SlimWELL MaxBORE Liner Hanger System has been developed and tested and trialled in 2 commercial sizes now, 5.1/2" x 7" (trialled by Talisman) and the 4" x 5.1/2" (sponsored by BP) and now the 11.3/4"-11.7/8" x 13.3/8" is nearing field trials (sponsored by Eni). Several commercial systems have been sold to Tullow, and BP and Dubai Petroleum has recently been the first commercial users of a whole system in the UAE. The technical hurdle has been overcome and a system to deploy close clearance casing regimes accounting for swab and surge and ECD is a reality.

Project No. 2168 PF SPI-NAV **ITF Funding (£k):** 224 **Duration (Months):** 12

Title: Subsea Planned INSpection with an Autonomous Vehicle

Description: Project completed September 2004

Project No. 2311 PF Bubbletherm

ITF Funding (£k): 200

Duration (Months): 12

Title: High performance Non Pipe-in-Pipe Thermal Insulation System

Description: Technology is planned to be used commercially in North America and West Africa

Project No. 3001 PSD AUTO-ED

ITF Funding (£k): 93

Duration (Months): 12

Title: Automated Boundaries, Edges, Depths and Surfaces from Gravity and Magnetic Data

Description: This is a historic ITF project; however ITF has not previously recorded it as an implementation. The results of the project were incorporated into ARKFIELD software which is in everyday use by geophysicists within industry. 'ARKFIELD software enables the interpretation geophysicist to visualise, model and interpret potential field data in conjunction with 2D/3D seismic data in a totally integrated system'.

Project No. 3090 PSD COFFERS

ITF Funding (£k): 493

Duration (Months): 36

Title: Calibration Of Faults and Fractures Extracted by Rate Statistics

Description: This project developed a statistical reservoir model to look at correlations between injectors and producers across fields and from that, calibrate faults and fractures impacting on production. The University of Edinburgh has now commercialised the software and has undertaken its first North Sea contract.

Project No. 3098 PSD ArKex

ITF Funding (£k): 384

Duration (Months): 6

Title: Superconducting Gravity Gradiometry Build Plan

Description: This is a historic ITF project that has not previously been recorded as an implementation. However it has featured as one of the ITF 'Case Studies'. The results have contributed to the development of the commercially available BlueQube service which is a high resolution airborne and marine gravity gradiometry imaging tool that can provide an improved picture of subsurface geology. The ITF project was concerned with developing the next generation of device (i.e. more advanced than BlueQube), called the Exploration Gravity Gradiometer (EGG) which has been designed and built by ARKeX. The EGG is undergoing final testing in ARKeX's Cambridge laboratory ahead of full trial deployment and commercial release. EGG has taken a long time to develop due to the considerable technical challenges: 'the EGG utilizes the concept of Super Conductivity and operates at 4 degrees above absolute zero (-269°C), which allows greater sensitivity and stability'.

Project No. 3105 PSD MLP

ITF Funding (£k): 197

Duration (Months): 24

Title: Magnetics as a rapid new tool for characterising high resolution permeability variations in low permeability reservoirs

Description: Sponsors are now using the methodology developed under phase 1 to analyse core samples to determine the inter-relationship between illite content and reservoir permeability.

Project No. 3126 PSD SWOP

ITF Funding (£k): 116

Duration (Months): 9

Title: Project to develop and test 'Shallow Water' active EM sounding in the UKCS

Description: This project was to develop the underpinning science to allow CSEM, originally seen as a deep water tool, to undertake surveys in shallow waters such as the UKCS. This work allowed minimum depths to go from ~1000m to ~300m. A trial was carried out over Total's Nuggets field demonstrating the capability. Technology has been further improved and the depth limitations are currently ~50m

Project No. 3128 PSD SINBAD

ITF Funding (£k): 850

Duration (Months): 54

Title: Seismic Imaging by Next-generation BAis-function Decomposition

Description: This project successfully leveraged recently developed techniques in modern computational and applied harmonic analysis to seismic imaging. A lot of interest has been generated in application of these developments both within sponsors and the contracting community. This project was awarded matched funding by the Canadian Government. Some of the knowledge generated by the project is being applied by sponsors to address issues such as primary multiple separation and seismic data regularisation. SINBAD II has been established as a consortium with support from BG, BP, Schlumberger and Petrobras.

Project No. 3182 PSD COMPFRACT

ITF Funding (£k): 182

Duration (Months): 36

Title: A Computational Framework for Prediction of the Initiation and Evolution of Fractures and Faults

Description: New applications for the geomechanics software developed under this project continue to be implemented by the sponsoring companies.

Project No. 3189 PSD IPEGG

ITF Funding (£k): 590

Duration (Months): 36

Title: Integrated Petroleum Engineering - Geomechanics – Geophysics – Next Generation Technology for the Petroleum Industry

Description: This project completed in March 09 and has successfully developed codes / methodologies to couple Rockfield's FE-based geomechanical modelling software (ELFEN) to industry standard production simulation models (ECLIPSE, TEMPEST & VIP). The output is then incorporated into rock physics models to allow production-related changes in seismic properties of the reservoir and surrounding strata to be estimated. Some of the project sponsors have incorporated the coupled modelling approaches into their workflows.

Project No. 3222 PSD ISF2 **ITF Funding (£k):** 450 **Duration (Months):** 36

Title: Improved Simulation of Fractured & Faulted Reservoirs

Description: The development work from the upscaling of three phase fluid flow in complex reservoirs is being applied to a number of sponsors' reservoirs, in particular the Clair and Hanze fields.

Project No. 3228 PSD **ITF Funding (£k):** 65 **Duration (Months):** 12

Title: Conceptual Study on Microbially Enhanced Oil Recovery: Potential Mechanisms for Successful Applications

Description: This study considered which potential mechanisms of microbially enhanced oil recovery (MEOR) could feasibly enhance crude oil recovery from a representative North Sea reservoir. The base case for the detailed analysis was a typical sandstone reservoir containing light crude oil. The second case considered was a carbonate reservoir, and the third case was heavy oil in a sandstone. For each MEOR mechanism that offered some potential for increased recovery, the input requirements for nutrients and inoculum were calculated in relation to the incremental oil yield. In each case a material balance was calculated for the incremental crude oil produced per unit of material added. These calculations assumed the most optimistic case for transport of key components for each mechanism; whether for bacteria, nutrients, or bacterial products we assumed uniform distribution in the swept zone of the reservoir. Results of the study were presented in SPE Paper 114676 at the 2008 SPE Annual Technical Conference & Exhibition in Denver. This project has not been previously recorded as an implementation.

Project No. 3236 PSD WISE (Well Integration with Seismic a **ITF Funding (£k):** 1025 **Duration (Months):** 36

Title: Wells Integrated with Seismic and Electromagnetics

Description: The project was completed in June 2011 and developed strategies and workflows for the integrated interpretation of seismic, Controlled Source EM and well log data. The project delivered software tools to sponsors which includes iMOSS-EM which is a unified platform to perform analysis of seismic, CSEM and well-log data. The workflows and methodologies developed during the project were tested on datasets provided by sponsors.

Project No. 3241 PSD Full Wave III **ITF Funding (£k):** 1280 **Duration (Months):** 36

Title: Joint 3D inversion of full-wavefield P, S and CSEM data

Description: The 3D Full-waveform Inversion (FWI) code has been developed and made available to sponsors. The code and the methodology developed during the project offers improved seismic imaging including zones of interest located below heterogeneous overburden. A number of the sponsors have run the code in-house on their own datasets with positive outcomes. CGG Veritas, a geophysical service provider, has been actively involved in the project and can now offer full-waveform inversion as a commercial service to clients.

Project No. 4035 PPD SPINAV2 **ITF Funding (£k):** 300 **Duration (Months):** 12

Title: Subsea Pilotless Inspection with an Autonomous Vehicle (Phase II)

Description: The technology has been demonstrated offshore on board ROVs and the prototype has been commercialised by SeeByte as SeeTrack Offshore, a retro-fit Dynamic Positioning system for ROVs.

Following completion of both phases, BP, one of the original SPINAV funding partners, was able to benefit from the investment soon after the system was commercialised. SeeTrack Offshore was first used by the BP downed platform project. This project was devised to fully remediate platforms on the Gulf of Mexico Shelf – its shallow-water area that was destroyed or damaged by the hurricanes of 2005. SeeTrack Offshore is now used by a growing number of customers as the Dynamic Positioning system of choice for new build ROVs and it is also available for rental to fit onto existing ROVs.

Project No. 4069 PPD **ITF Funding (£k):** 150 **Duration (Months):** 9

Title: Improved Downhole Seal (Metal-to-Metal, non elastomeric)

Description: The MTM seal has been field tested in various applications over the past two years, including installation on a liner hanger during a cementing job in a North Sea well, a retrievable packer installation for a steam flood application in Kazakhstan, and installation on various downhole tools for Canadian heavy oil steam floods. In each case, the MTM seals held, without any loss of well integrity and without the need to use special installation equipment or to change operational protocols. Caledyne has been named the improved oil recovery (IOR) category winner of Hart's E&P Magazine's Meritorious Award for Engineering Excellence. This award was presented at OTC, May 09.

Project No. 4090 PPD Torus™ **ITF Funding (£k):** 320 **Duration (Months):** 9

Title: Torus Insert Safety Valve

Description: New products in the Torus range as a result of the JIP are now commercially available

Project No. 4305 PPD Acoustek™ **ITF Funding (£k):** 50 **Duration (Months):** 12

Title: Acoustek™ - Remote Pipeline Inspection

Description: This technology has been deployed 'in anger' offshore to locate a trapped pig and succeeded where other techniques failed.

Project No. 4311 PPD **ITF Funding (£k):** 45 **Duration (Months):** 12

Title: Energy recovery - boosting production/enhancing field life using existing energy

Description: The output of this project by CTES Solutions (now part of National Oilwell Varco) has been used to develop the 'Cerberus for Slickline Fatigue Software' now commercially available from NOV. The software optimizes useful slickline life by preventing failures and costly line replacement
