



Laing Engineering & Training Services Ltd.

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www.letstrain.co.uk

Releasing the Power of Production Technology

Cameron Laing

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SYNOPSIS

Cameron has more than 34 years experience in the E&P business both in the UK and internationally. This has taken him from the rig floor to corporate committee rooms.

After spending 18 years with Amoco, in both operations and resource development roles, he spent the next 12 years with consulting organisations, primarily working in the area of Production Technology. More recently, he played a significant role in the development and initial delivery of the Petroleum Production Engineering Masters degree course at The Robert Gordon University Energy Centre.

He is the author of several SPE papers and a member of the biennial SPE European Artificial Lift Forum organising committee. As an experienced trainer, he has delivered both public and "in-house" short courses for a variety of major operators and small enterprises.

In August 2010 Cameron received a special award from the SPE Aberdeen for "Contributions to the Industry in the area of Production and Operations".

KEY AREAS OF EXPERTISE

Artificial Lift, especially Gas Lift Design and Troubleshooting
Individual Well & Multi-well Network System Performance Modelling and Optimisation
Innovative Completion Design
Production Operations
Well Integrity
Multi-discipline Teamwork
Technical Training Delivery

PROFESSIONAL EXPERIENCE

LAING ENGINEERING & TRAINING SERVICES LTD

DIRECTOR: MAY 2007 onwards

Recent Contracts have included:-

- **EnQuest:** Dons Area Subsea Gas Lift Operations & New Well Design Support
- **Camcon:** Oil Industry Introduction Training & Gas Lift Product Development Support

- **Read Well Services:** Completions Operations & Equipment Training for Cased Hole Log Analysts and Business Development staff.
- **Petrofac Facilities Management / Centrica:** Greater Kittiwake Area Production Operator Well Integrity Awareness Training
- **Talisman:** PROSPER well modelling plus Artificial Lift refresher course.
- **PetroChina:** Advanced Completions training (through Univation)
- **WellTec:** “Introduction to Completion Operations & Equipment” for Field Service Engineers and Business Development staff
- **Nexen:** Gas Lift Workshop using PROSPER well modelling software.
- **Petrofac Energy Developments:** West Don Gas lift Design review
- **Rushmore Reviews:** Provision of Expert Advice to the “Completion & Well Performance Review” team.
- **RGU/PDVSA:** Delivery of “Production Operations” and “Advanced Completion & Subsea System” module topics to PDVSA employees studying for Masters degrees in Aberdeen. Provision of Distance Learning Support for “Wells” module topics. Also involved in examination marking & continued development of the topics taught.
- **Lundin:** Delivery of multiple 2-day “Well Integrity” Training Courses to OIM’s Production Supervisors and Production Operators working on the Heather & Thistle field platforms (through Petrofac Facilities Management).
- **Shell:** Preparation of materials for the Intensive Training Programme - Nigeria (through Univation).

Recent public Training Courses developed and delivered by LETS have included:-

- **Completion Design (Modular Course):** Equipment & Operations; Production System Modelling; Tubing Stress Analysis. Nov2008/May&Oct2009/April2010
- **Artificial Lift Design & Production Optimisation (Modular Course):** Gas Lift; ESP (with Engineering Insights); Jet Pump (with PTC) etc.May2010
- **SPE/European Artificial Lift Forum 2010:** Gas Lift Design short course 2008&10.
- **SPE/ICOTA:** “Basic Petroleum Engineering & The Drivers for Well Intervention”, 1 day training course delivered at the 2009 Well Intervention Round Table.
- **SPE/ICOTA:** “Well Integrity Challenges & Solutions”, 1 day training course delivered at the 2010 Well Intervention Round Table.

Recent guest speaking engagements:

- **Energy Institute, Aberdeen:** North British Petroleum – a history of Scottish connections to the Oil Industry from pioneering companies of the 19th Century to the forgotten 1st UK offshore oil discovery by Burmah in 1966; 2007
- **Society of Petroleum Engineers, Edinburgh:** Edinburgh’s significance in the oil industry - from medieval oil seeps to Cairn’s pioneering work off Greenland via the 1st wells drilled in Scotland in 1919 and Anglo American & Anglo Iranian development of the Midlothian and Cousland Fields from the 1930s-1960s; June 2010

THE ROBERT GORDON UNIVERSITY ENERGY CENTRE

PROGRAMME DEVELOPMENT LEADER – MSc Petroleum Production Engineering September 2005 – April 2007

Responsibilities included:-

- Programme Development:
 - Radical revision, including re-naming, of MSc course incorporating 8 taught modules plus project (Full Time / Part Time / Distance Learning) culminating in successful “Validation” by academic and administrative panel including external experts (e.g. Alain Gringarten of Imperial College) and accreditation by the Energy Institute (www.rgu.ac.uk/energy)
 - Introduction of wide variety of industry standard technical software from multiple vendors and of “online” access to API E&P standards for all students regardless of location
 - Supervision of MSc projects and moderation of assessments

- Lecturing & Tutoring (both academic and pastoral)
- Industry liaison and course promotion
- Industrial Consulting:
 - Continued technical expert support for the Rushmore CPR benchmarking study and help initiating the new “Completion Efficiency” Review
 - Completion Design Training Course for ADTI (GlobalSantaFe) with a focus on use of PROSPER™ Production System Modelling software
 - Production Engineering training and young engineer mentoring for Petrofac
 - Asset Acquisition technical field review support for Fairfield Energy
- Industry Organisations:
 - Delivered talk on “Scots Contributions to the Modern Oil Industry” to the Energy Institute, Aberdeen Branch
 - Delivered talk on “A Non-PC History of the North Sea” to SPE ‘Emerging Leaders’ Aberdeen meeting
 - Discussion Leader for SPE Forum on “Low Cost Reservoir Access & Interventions” in Dubrovnik

HELIX RDS LTD

PRINCIPAL PRODUCTION TECHNOLOGIST: 2003 – 2005

Responsibilities included:-

- Network production modelling using PROSPER, GAP & OPENSERVR in order to inform new gas lift compressor FEED studies for Talisman Norway’s Gyda field.
- Retrofit gas lift & insert completion conceptual design for the Gyda field.
- Network Gas Lift Optimisation and “Gassy” ESP evaluation for BP’s Harding field.
- Production Technical Limit support for BP’s Wytch Farm onshore fields.
- Mature Asset well workover opportunity review and recommendations for Paladin UK’s Montrose field.
- Production Surveillance database build and system management process development using Landmark DSS program for Paladin UK’s MonArb Asset network.
- Gypsy Field Subsea Gas Lift Remedial Performance review for Apache Australia.
- Expert advisor to the Rushmore/Sigma worldwide Completion Performance Review.
- Delivering Well Integrity Management & Intervention training courses for Petrofac.

ALLOMAX ENGINEERING

TRAINING BUSINESS DEVELOPMENT: 2000 – 2003

On a part time basis while working at DNO Heather (see below) developed, marketed and delivered over 12 separate sessions of the following training courses for engineers and others from over 20 different companies:

- A 5-day comprehensive Completion Design course
- A 3 day Completion Stress Analysis course
- A 3 day Well Performance course
- A 1 day Production Technology Awareness course

ALLOMAX / DNO HEATHER

PRODUCTION ENGINEER: 2001 – 2003

Responsibilities included:-

- Providing Production Technology support for mature field production and well intervention operations

- Liaising with both Subsurface and Offshore Production Teams a part of a multi-discipline effort to maintain and maximize production
- Monitoring individual well performance to identify production problems and unrealised production potential.
- Applying Artificial Lift engineering skills to troubleshoot individual well gas lift problems and optimise full platform lift performance.
- Performing predictive well performance modelling for the Broom sub-sea satellite field for “life of field” tubing size selection and gas lift optimisation.

ALLOMAX / AMERADA HESS

COMPLETIONS ENGINEER & PRODUCTION TECHNOLOGIST: 1998 – 2000

Responsibilities Included:-

- Conceptual design and studies work related to Fife & Flora subsea developments.
- Contributing innovative ideas to a marginal chalk development involving co-mingling two reservoirs, multi-lateral well architecture and chalk stimulation with enzyme-generated acid.
- Also studied through tubing drilled lateral completion potential for Scott platform. Projects include both hardware selection and production modelling.
- Hess representative on cross industry groups
 - COIN (Completions and Interventions Network)
 - CRINE/LOGIC 'doubling well value' project, participating in the development of 'Well Decision Navigator' - a “fuzzy logic” based decision support tool.
 - Multi-discipline Risk Management support for new well projects.
 - Provided 2 day Production Systems Nodal Analysis course using PROSPER to Hess Completion Engineers.
- Author of SPE paper on Competency and Well Construction presented at Offshore Europe 1999. Delivered talk on New Horizons in Artificial Lift to SPE London section Continuing Education seminar.

ALLOMAX / TALISMAN ENERGY (UK) LTD

ROSS COMPLETIONS TEAM CO-ORDINATOR: 1997 - 1998

Responsibilities Included:-

- Supporting 2 Semi-sub's working concurrently on a 10 well program.
- Completion designs with long horizontal reservoir sections, remote activated downhole isolation tools, downhole chemical injection and subsea horizontal trees,
- Leading a team of operations engineers, operations supervisors and sub-sea engineers and significant interaction with the subsurface and drilling teams and with FPSO and subsea facilities project engineers.

ALLOMAX ENGINEERING

PRODUCTION TECHNOLOGY CONSULTANT: 1995 - 1997

Involved in various projects including:-

- New field development concepts
- Risk based technical and economic evaluation of alternate satellite field development options.
- FPSO based well intervention system design.
- Horizontal well performance analysis.
- Mature asset valuation (data room work).

- Completion equipment specification and supply contract tender preparation.
- “Expert Witness” report (Clyde & Co)
- New service development planning.

AMOCO (UK) EXPLORATION COMPANY

CONTINUOUS IMPROVEMENT TEAM LEADER (ABERDEEN): 1993 - 1994

Working with Aberdeen based production engineers and focusing primarily on:

- Montrose/Arbroath Asset Team production operations support.
- Twin-field network gas lift production modelling and optimisation.
- Co-author of SPE Paper on Completion Design Innovations, at Offshore Europe '93

AMOCO (UK) EXPLORATION COMPANY

RESOURCE DEVELOPMENT & OPERATIONS ENGINEERING (LONDON): 1989 - 1993

Operations engineering co-ordination for the Everest and Lomond Gas Condensate Field Development. This involved liaison with government agencies, co-venturers, construction, commercial, drilling and other project teams. Worked on this project, as part of a multi-discipline geo-science / engineering Resource Development Group, from sanction until rig departure following the conclusion of additional development drilling several months after production start up.

Responsibilities included:-

- Team Leader for Innovative Completion Design
- Development of innovative nipple-free ‘true monobore’ completion design. This permitted quick, low cost ‘wireline-free’ installation from the pre-drilling semi. It also permitted enhanced well serviceability with the option of later through tubing insertion of a smaller bore production string as required by reservoir performance.
- Development and rigorous testing of ‘fit for purpose’ wireline retrievable bridge plugs to take the place of conventional wireline plugs. Culminated in HSE acceptance of ‘nipple-free’ design.
- Development of a production start-up strategy involving the innovative use of long Coiled Tubing conveyed TCP guns in a combined underbalance perforate and unload operation.
- Hydraulic Workover Project Management: First time use of a Hydraulic Workover Unit on the North West Hutton Field. Cleaned fill and scale through tubing in order to improve production from 3 oil wells. Responsible for managing this project from its inception.

AMOCO (UK) EXPLORATION COMPANY

ARTIFICIAL LIFT PERFORMANCE OPTIMISATION (ABERDEEN): 1985 - 1988

Responsibilities included:-

- Gas Lift, ESP, Jet Pump operations engineering.
- Contract management and technical input for Amoco supported development of Edinburgh Petroleum Services ‘FLOSYSTEM’ network production optimisation software.
- Author of SPE paper, published in JPT, on Gas Lift Performance Analysis at Offshore Europe '89.

AMOCO (UK) EXPLORATION COMPANY

PRODUCTION & OPERATIONS ENGINEERING (TRINIDAD): 1982 - 1985

Responsibilities included:-

- Participated in project that saw over 6,000 bopd extra production gained from 3 offshore gas lifted fields as a result of well performance analysis, replacement of metering and distribution systems and downhole design innovations.
- Author of SPE paper, published in SPEPE, on Gas Lift design and production optimisation at SPE Annual Technical Conference, New Orleans, '86.

AMOCO (UK) EXPLORATION COMPANY

DEVELOPMENT PLANNING AND BUDGET TRACKING (HOUSTON): 1980 - 1982

Responsibilities included:-

- Head office support role with Central & South America and Far East Region of Amoco Production Co (International). Co-ordination of Construction, G&G, Engineering and Economic input for Management Committee presentations to gain sanction for new development wells and new field developments.

AMOCO (UK) EXPLORATION COMPANY

OPERATIONS ENGINEERING AND SUPPORT (ABERDEEN): 1979 - 1980

Responsibilities included:-

- ESP installations.
- Subsea Tree pre-installation trials.
- Underwater inspection.

AMOCO (UK) EXPLORATION COMPANY

PROJECT MANAGEMENT, PROCESS ENGINEERING (BACTON): 1978 - 1979

Responsibilities included:-

- Project Manager for a major structural painting program covering several Southern North Sea gas platforms.
- New platform gas dehydration process module acceptance testing.

AMOCO (UK) EXPLORATION COMPANY

OPERATIONS ENGINEERING (GREAT YARMOUTH): 1976 - 1978

Responsibilities included:-

- Production casing and cementing design and supervision
- Open hole logging & cased hole perforating.
- Running gas well completions, well testing and wireline well intervention operations.

EDUCATION

BSc (HONS) 1976 Chemical and Process Engineering Heriot-Watt University

Numerous Corporate & Industry training courses.

SPE "Applied Technology Workshops": Artificial Lift / Well Integrity / Stimulation