

Professional Review Report

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15 September 2016

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1 Introduction

The report presents details of the applicants education, training, occupational experience, responsibilities and overall development as a professional engineer from 1991 to 2016.

The report is structured with the following sections:

- Curriculum Vitae

Shows a high level overview including education, training and career progression
- Education and Training

Demonstrates my competency and commitment to professional development throughout my career; Engineering qualifications and a record of relevant additional training is presented.
- Competency Matrix Mapping

Demonstrates my competency against Aker Specialist Engineer (Principal) job role
- Summary of Occupational Experience

Summarises my work history and demonstrates the breadth and depth of engineering experience and also my experience in a number of different technologies.
- Professional Review

Review of the type of work I have undertaken to demonstrate competence, application of knowledge and understanding, and levels of responsibility. This also demonstrates the breadth and depth of engineering experience and my experience in a number of different technologies.
- Professional Affiliations and activities
- Declaration Statement

This section contains the Certification Statement for the Professional Review

2 Curriculum Vitae

Last name	Tuckwell
First name	Adrian
Nationality	British
Employer	Aker Subsea Ltd
Current position	Lead Engineer
Summary	Chartered Engineer Member of the Institution of Engineering and Technology (MIET)
Education	
2010	Design and The Web, The Open University
2008	User Interface Design and Evaluation
2007	PG Certificate Technology Management (partial)
2002	Diploma in Design & Innovation, United Kingdom
1993	BEng (Honours) Electrical & Electronic Engineering
Experience	
2013 - Present	Principal Engineer (Aker Solutions – Topsides Solutions Group)
2011 – 2013	Lead Engineer (Aker Solutions – Topsides Solutions Group)
2008 - 2011	Lead Engineer (Aker Solutions – SEDS)
2007 – 2008	Lead Engineer (Aker Kvaerner)
2001 – 2007	Team Leader (Kvaerner Oil Field Products)
1998 - 2002	Senior Engineer (Kvaerner Oil Field Products)
1996 - 1998	Project Engineer (Kvaerner FSSL)
1994 - 1996	Junior Project Engineer (Kvaerner FSSL)
1993 - 1994	Graduate Engineer (Aquidata Limited)
1991 - 1993	Industrial Placement (Shell UK)
Summer 1991	IT assistant (Highland Council)
Pre 1991	Assistant (Tuckwell Cable Vision)
Courses	
09.04.2009	Understanding and Applying IEC61508
05.12.2008	Control Logix Program Accelerated
01.08.2008	KIP (Competency) End User Training
24.02.2006	SAP - DM 51 Document Management
20.02.2006	SAP - HR10 MySAP for all employees (PSS)
Additional Information	Additional Training: 1. ICONICS Genesis32 and ICONICS Genesis64 2. Wonderware InTouch 3. Alarm Systems Management (Site consulting and EEMUA) 4. Intellectual property awareness training 5. T183 Design and the Web (Open University) 6. Contractual awareness training 7. Appraisal training 8. Team leader course Electronic learning: 1. PEM eLearning course 2 - Using PEM in projects 2. Just Care 3. Stress Management 4. HSE Risk Assessment 5. Corporate Responsibility 6. Office HSE

3 Education and Training

3.1 Education

- 1987 – 1991 BEng (Honours) Electronic and Electrical Engineering

Robert Gordon University
4 year full time degree course, including 1 year of industrial placement prior to final honours year
- 2000 – 2002 Diploma in Design and Innovation

Open University
2 year distance learning, comprising modules; Design: principles and practices, Innovation: Design, environment and strategy
- 2007 Certificate in User Interface Design and Evaluation

Open University
1 year distance learning
- 2010 Certificate in Design and the Web

Open University
1 year distance learning

3.2 Training

- 2016 Back to Basics - Hydraulic Flow Diagrams/P&IDs
- 2015 ICONICS Genesis 64 training
- 2015 Journey to Excellence Training (CI training)
- 2014 Setting Priorities – Keeping Organized
- 2014 Advanced Ethernet Switching
- 2011 Contractual Awareness training
- 2010 Intellectual property awareness training
- 2009 FSC – Introduction to Functional Safety: Understanding and Applying IEC61508
- 2008 Rockwell Automation – Control Logix Programming Accelerated
- 2005 Alarm Systems Management (4 - sight consulting and EEMUA)
- 2005 ICONICS Genesis32 Standard
- 2004 Wonderware InTouch Standard

4 Competency Matrix Mapping

Specialist Engineer (Principal)

4.1 Technical Competence

Statement	Evidence
Regarded by peers as fully competent in your core discipline	<ul style="list-style-type: none"> ✓ 20 years of experience at various levels ✓ Good relations with Clients at all levels ✓ Invited specifically for my knowledge and experience to attend an offsite engineering department review by the Engineering manager
Full practical and theoretical knowledge of a specific field of expertise	<ul style="list-style-type: none"> ✓ Developed over 26 greenfield subsea control systems ✓ Invited specifically for my knowledge and experience to attend an offsite engineering department review by the Engineering manager
Full Working knowledge of wider range of specialist fields within the discipline area	<ul style="list-style-type: none"> ✓ Full platform control System (BP Andrew) ✓ Developed Hydraulic Power Unit and Methanol Injection unit controllers ✓ Siemens S5 and PCS7 ✓ SMACS5 ✓ iConSCU ✓ OPC protocol & products ✓ Modbus ✓ MCS PLC – Rockwell, GE Fanuc and Siemens ✓ 3K-5K SEM configurations ✓ 3K-5K Mascot/ETU ✓ SIL Knowledge ✓ Product and Project testing ✓ Project Execution
Full Awareness of and adherence to applicable standards and regulations within the product area	<ul style="list-style-type: none"> ✓ NORSOK I-005 ✓ IEC 13628 – Subsea ✓ IEC 61508 - SIL ✓ IEC 61131 - PLC
Full working and demonstrable knowledge of the business tools and processes (e.g. SAP, PEM, CTR)	<ul style="list-style-type: none"> ✓ Use SAP daily to approve documents ✓ Work to PEM ✓ Involved in Bids over number of years for following projects: <ul style="list-style-type: none"> ○ Petrobras ○ Kizomba Bid ○ Total Lagan Bid ○ Reliance KG-D6 ○ Impex Ithacus

4.2 Products or Systems Experience

Statement	Evidence
Full working knowledge of the theoretical and practical design and operation of the products within your core discipline area	<ul style="list-style-type: none"> ✓ Siemens S5 and PCS ✓ SMACS5, ✓ ICONSCU ✓ MCS PLC – Rockwell, GE Fanuc and Siemens ✓ ASE 3K ✓ iCon 4K ✓ iCon 5K ✓ Modbus 5k

Statement	Evidence
Full understanding and appreciation of the wider SPS products	<ul style="list-style-type: none"> ✓ BP Andrew full platform control system ✓ IWOCS system ✓ DCS interfaces
Developing training to share technical knowledge and expertise in core discipline area	<ul style="list-style-type: none"> ✓ Developed a department SharePoint for knowledge sharing ✓ Hosted several learning seminars on Wonderware, ICONICS, and Rockwell products
Full understanding of the industry needs for solutions within core discipline area	<ul style="list-style-type: none"> ✓ OPC controls ✓ PLC controls ✓ Direct to DCS ✓ Modbus SEM ✓ 3rd party packages ✓ Condition Monitoring ✓ Subsea boosting and pumping ✓ Data Historian

4.3 Strategic Business Impact

Statement	Evidence
Active in keeping up to date with Client, industry and international standards	<ul style="list-style-type: none"> ✓ Member of IET ✓ Attend IET and other seminars ✓ Read industry journals
Proactive control of changes to tendered technical solutions	<ul style="list-style-type: none"> ✓ Petrobras Lula Guara ✓ Petrobras Albacora ✓ Petrobras Tupi
Contributed to and actively promote the groups objectives	<ul style="list-style-type: none"> ✓ Maintained team objectives dashboard ✓ Performed staff appraisals for past 10 years ✓ Organised training for team and wider department ✓ Suggested training for team members
Proactive in implementing improvements in processes, working practices and tools	<ul style="list-style-type: none"> ✓ Creation and upgrade of Project Development Procedure ✓ Developed multiple project document templates ✓ project report dashboard ✓ ICONICS HMI Standard ✓ ICONICS HMI Symbol library ✓ PLC Function Blocks ✓ Webserver ✓ Universal ETU ✓ Department SharePoint ✓ MCS PLC SharePoint ✓ Petrobras SharePoint
Create CTRs/quotes and monthly report	<ul style="list-style-type: none"> ✓ Bids/Quotes ✓ Weekly project reports to PM and Group Leader

4.4 Performance Track Record

Statement	Evidence
Take responsibility for personal development and training relevant to the assigned tasks and role	<ul style="list-style-type: none"> ✓ OU certificate in User Interface and Evaluation ✓ ICONICS training ✓ Wonderware training ✓ Rockwell training ✓ Diploma in Design and Innovation ✓ Studying towards Diploma in Technology management
Manage workload for discipline team, and highlight problems, scope changes and issues at an early stage	<ul style="list-style-type: none"> ✓ Weekly project meeting ✓ Weekly team meeting per project ✓ Report Dashboard, including key milestones, SAP document tracker, issue register, change register, task list and task tracker ✓ Fortnightly Lead Engineers meeting
Recognised as an expert in your product area	<ul style="list-style-type: none"> ✓ Continue to mentor engineers within own team and other teams and secondment from Brazil and Norway ✓ Technical Point of contact between Client and Project Engineer and Project Manager ✓ Point of contact between departments e.g. SEM, HPU and DCS vendors
Consistently delivered own and discipline team's work scopes (from specific MDL's) on time; to expected quality and cost	<ul style="list-style-type: none"> ✓ Guara Lula ✓ Tupi ✓ Sul Capixaba ✓ Tupi Pilot ✓ DNO Broom ✓ Scarab Saffron ✓ BG Juno
Demonstrate and promote a proactive approach to problem solving	<ul style="list-style-type: none"> ✓ Albacora - Brand new system ✓ HMI Standard and Symbol Library on ICONICS rather than Wonderware ✓ DNO Broom SSIV manifold

4.5 Industry Exposure / Peer Recognition

Statement	Evidence
Lead in cross-functional and business improvement initiatives	<ul style="list-style-type: none"> ✓ Instigator of PLC MCS ✓ Rapid solution ✓ Web Server in SEM ✓ Universal ETU
Operate within a network building trusting relationship within peer groups and other business areas at own level and below	<ul style="list-style-type: none"> ✓ Project teams ✓ Core product group ✓ SEM product group ✓ Quality improvement group ✓ LRQA Auditor
Have a full understanding of the overall business drivers and systems	<ul style="list-style-type: none"> ✓ 20 years of experience at various levels ✓ Bids/Quotes ✓ Yearly objectives related to KPI's

Statement	Evidence
	<ul style="list-style-type: none"> ✓ SAP ✓ PEM
Have personal knowledge and exposure to the subsea operations and other products	<ul style="list-style-type: none"> ✓ Offshore Install of BP Andrew ✓ On call support to Petrobras ✓ On call support to department ✓ Support of SIT ✓ Support of Tree test ✓ HPU and MIU
Recognised by engineers as an expert source of information within discipline area	<ul style="list-style-type: none"> ✓ Invited specifically for my knowledge and experience to attend an offsite engineering department review by the Engineering manager
Proactively share industry trends within the core discipline area	<ul style="list-style-type: none"> ✓ Organised open sessions with Rockwell, ICONICS and Wonderware

4.6 Alignment with Aker Solutions values

Statement	Evidence
Promote and work towards a 'right first time' approach across core discipline	<ul style="list-style-type: none"> ✓ Developed full set of Project document templates for use in project execution ✓ Independent testing ✓ Ensure only tested software is released ✓ Promote unit test
Demonstrate full alignment / performance - ref: T3 performance standard	<ul style="list-style-type: none"> ✓ As demonstrated in this competency matrix ✓ Team Leader/Lead Engineer for the past 12 years
Demonstrate an open and honest dialog within discussions relevant to core discipline	<ul style="list-style-type: none"> ✓ Key instigator in Developing PLC based MCS ✓ Britannia Satellites upgrade concerns ✓ Q204 upgrade concerns
Drive a full understanding of the use of HSE design within product lifecycle	<ul style="list-style-type: none"> ✓ Proactive inviting HSE representative to design reviews ✓ Added HSE items to design review checklist ✓ Instigated HSE related design changes to MCS/EPU
Drive a commitment to team working and mentoring within core discipline	<ul style="list-style-type: none"> ✓ Pro team ✓ Advocate of working as team rather than 1 man 1 job approach ✓ Weekly report dashboard ✓ Fortnightly team meetings ✓ Encourage and organise nights out with team

5 Professional review 1991 to present

A career spanning more than twenty years in the application of industrial control and monitoring systems for the offshore industry.

5.1 Pre 1991 – Assistant (Tuckwell Cable Vision)

I grew up working in my Fathers audio/visual equipment business. I assisted in the installation of:

- Terrestrial television systems
- Satellite television systems
- Background music
- Intercom systems

This gave me good hands on experience of designing, implementing and testing the systems. This was my primary reason for choosing to study Electronic and Electrical Engineering at university.

5.2 Summer 1991 - IT assistant (Highland Council)

In summer 1991, I worked shifts within the Highland Council IT department. I was responsible for scheduling network backups and running print processes for the council network. I also became an expert at repairing the council tax collating machine.

5.3 1991 to 1993 – Industrial Placement (Shell UK)

In my third year of university I applied and was successful in receiving a year's industrial placement with Shell UK Exploration and Production. I was placed in the role of junior technology advisor within a small technology department. We identified and evaluated technologies for use within Shell. The area where I became expert in was using Apple Macintosh multimedia equipment for producing training videos for use offshore. I was asked to continue my work after returning to university and was awarded a contract to produce further training videos while in my final year. Shell also sponsored my honours project where I evaluated the use of using digital cameras offshore for transferring pictures onshore for fault diagnosis of equipment.

5.4 1993 to 1994 - Graduate Engineer (Aquidata Limited)

Upon graduating in 1993 I joined Aquidata Limited in the role of graduate Software Engineer. Aquidata was a small software company based in Aberdeen. I was responsible for modifying user interface displays on an animal Feed mill SCADA system and a Visual Basic offshore permit system.

5.5 1994 to 1996 - Junior Project Engineer (Kvaerner FSSL)

I joined Kvaerner FSSL as a Junior Engineer within the computer systems minor projects group. My first project was to develop a permit to work system for British Gas in Barrow in Furness. I was responsible for the design, implementation, test and delivery to site.

----- 1995 ----

I then moved into a Project development team and became responsible for developing the Human Machine Interface displays for the BP Andrew Platform Control System. In my role I had to work closely with PLC engineers and Client to design, implement and test the system of with over 130 HMI displays across Production, Emergency shutdown and Fire and Gas Systems. The HMI display screens were created from key drawings such as P&ID's, Cause and Effect Matrix and Platform emergency layout plans. The SCADA system used for this interface was a Siemens Tistar control system.

I was responsible for the project through to installation on the topside in dry dock in Middleburgh. At which point I handed over to commissioning team.

On successful completion of the BP Andrew project I was promoted to Project Engineer.

5.6 1996 to 1998 - Project Engineer (Kvaerner FSSL)

I joined a new project team and was assigned the role of sole PLC developer for the Norsk Hydro Njord project. This project controlled and monitored 8 subsea production wells and a Hydraulic Power Unit.

I designed and implemented the PLC logic using a Siemens S5 PLC.

On completion of the Njord project I began the development of the next Norsk Hydro project. Visund was larger than Njord at 16 wells.

Part way through the Visund project I was seconded back to the BP Andrew Project team to assist in a high profile fast track upgrade.

A number of issues post commissioning resulted in a decision by management to upgrade the Siemens Tistar System to the newer Siemens PCS 7.

I was tasked with re implementation of the 130 HMI display screens in the new system. I lead a team of two Junior Engineers that assisted me in the implementation of the screens.

I was responsible for updates to the production system PLC logic:

- closed loop PID controllers for the production system
- analysed and developed a solution to intermittent network failure with the PLC communications cards
- added PLC time synchronisation logic
- added an interface to PI historian

I underwent offshore survival training and went out to BP Andrew platform as a part of small team to remove the old Siemens system and install the upgrade system. This included both the installation of the Hardware and Software.

After the upgrade I performed the role of onshore Support Engineer.

Following my work on the BP Andrew upgrade I was promoted to Senior Software Engineer.

5.7 1998 to 2001 - Senior Engineer (Kvaerner Oil Field Products)

I was reassigned back to the Norsk Hydro projects to work on the Troll C Subsea Control Unit. Troll C was a large distributed system controlling up to 100 wells. I integrated into a large team of Kvaerner and Siemens programmers. The system consisted of multiple Subsea control Unit clusters and was developed on Siemens S5 PLC's.

Initially I was responsible for development of new logic within the PLC:

- Valve control logic
- Choke control logic
- Distributed alarm logic

Towards the end of the development phase of the project I was tasked with working with Client Engineers to developed test procedures.

My role changed to Test Team coordinator and I lead a team of 6 test Engineers working over several months to test and verify the Troll C system.

----- 1999 -----

Upon completion of Troll C project I moved into the Subsea Projects group and was tasked with configuring a new project using the company's Master Control Station product SMACS5.

The Conoco West Natuna project gave me an opportunity to learn a new control system and the group's standard using Dual Industrial PC's. I was the sole Software Engineer on the project and working with a Hardware Engineer and Client representative.

----- 2000 -----

My next project was to return to PLC development. I was tasked with writing the control logic for a Hydraulic Power Unit (HPU) for the Project Echo Yodel. The PLC used for this was a GE Fanuc 90-30. This gave me an opportunity to learn a new PLC type. The HPU consisted of 5 motors and two reservoirs and a number of Level and pressure transmitters. I was able to reuse my knowledge gained on Norsk Hydro Njord HPU.

The Echo Yodel HPU control was located within the Master Control Station PLC. At the end of this project it was decided for future projects to install a PLC with control in the HPU enclosure. The software development would then fall to the HPU vendor. I was tasked with transferring my knowledge and PLC logic to our current HPU vendor (Hitech in Norway). I travelled to Norway and worked with Hitech Engineers to empower them with the skills to program a PLC autonomously.

During this year I also worked to assist other engineers on projects:

- Echo Yodel Main MCS project
- Strathspey SMACS4 to SMACS5 upgrade
- Schiehallion upgrade

5.8 2001 to 2007 - Team Leader (Kvaerner Oil Field Products – Data Systems and Software)

In 2001 the department was restructured and the focus changed to teams rather than individual engineers performing projects.

At this time I was promoted to Team Leader.

I was assigned 2 Software Engineers and 2 junior Engineers. I was responsible for my team member's performance and appraisals.

In the restructure a separate test team was formed which would provide independent testing of project deliverables.

My team was responsible for the requirements capture, design and implementation of Master Control Station (MCS) systems.

I was tasked with improving delivery in terms of efficiency, speed and quality. I co-wrote a department project development procedure based on a 4 phase software model. I also wrote a number of reusable document templates used by my team and wider department.

Projects I was responsible for at this time were:

- Burullus Scarab Saffron SMACS5 MCS
- British Gas Juno SMACS5 MCS

During the development of both these projects I identified considerable variations to scope. Juno required an additional 14 weeks effort funded by Client.

----- 2002 -----

My team grew in 2002 to 8 engineers, with a mixture of staff and contract.

- I was assigned workscope for DNO Broom which was a new project with a number of challenges. One particular challenge was having the MCS responsible for the control and monitoring of an SSIV manifold. This included several closure tests. The Client had no clear requirements on how the manifold should be controlled. I wrote a straw man proposal for how I would control the manifold and perform the closure tests. The Client accepted the proposal with minimal changes and work proceeded.
- I was assigned workscope for NLGP project which was an upgrade to an old electro hydraulic control system. Given the nature of the control I proposed a PLC solution. A key requirement of the upgrade was it had to fit the same dimensions of the old system which was basically the size of large drawer. The solution included PLC with front mounted flat panel touch screen display. These were programmed in GE Fanuc Machine Edition.
- The Hang Tuah upgrade project added a new field to the existing West Natuna project I had worked on in 1999.

-----2004 -----

In 2004 the main MCS product was upgraded from the SMACS5 dual IPC system to an OPC server based Subsea Data Acquisition system running on Stratus Fault

tolerant servers. This gave me an excellent opportunity to learn and develop on a new product and range of technologies. The development of the new product was executed by the core product group for the Total Dalia project.

I was responsible for team of 6 engineers

- I was assigned the first of the new projects to use the new product after Total Dalia: Conoco Phillips Britannia Satellites
- I realised that the HMI application chosen for the new SCU product by the core product group was not the best fit (Wonderware InTouch did not manage OPC server data efficiently) and could not meet all Client requirements. E.g. InTouch could not do runtime scalable displays. A chance seminar by a company ICONICS UK introduced me to their product Genesis 32 which would meet the requirements for the project and future SCU projects. I persuaded the department manager to let me change the HMI product part way through development.
- I identified an issue with the Client requirements where the MCS was to form a safety function. The MCS typically would not form any part of a safety system. I raised the issue with Client and Engineering Manager. Modifications were made to the system to reduce the level safety function required and dispensation given
- I was also tasked with the A Fields (Upgrade from SMACS4 to SMACS5) project and latterly the addition of the Annabel field. Working with my team I had to split the project into two parts. A Fields was already well defined being an upgrade but Annabel, being new had to follow the company procedures of 4 phase model for requirement capture, design and implementation. The two parts of the project merged back into one MCS for the test phase

-----2005-----

My team and number of projects grew in 2005 and I was responsible for a team of 12 engineers executing projects for 7 separate Clients.

- I was assigned workscopes for two new projects of similar scale and function; Murphy Kikeh Subsea Control Unit and Maersk Dumbarton Subsea Control Unit
- I was assigned a workscope for BP King Subsea Control Unit which was the first subsea pumping system assigned to projects. The development of this project was a cross between OPC server products with an ICONICS HMI, but also included a Rockwell PLC as found in the later MCS PLC product.
- I provided continued support of extended testing for Conoco Phillips Britannia satellites
- I developed a new the Intervention Work over Control System (IWOCS). An oversight in the bid for Murphy Kikeh project omitted the requirement for the Intervention Work over Control System (IWOCS). Working with the Workover group in Norway I developed a new solution using the OPC Server and ICONICS HMI. Many new functions and interlocks were added to suit the need for this control system
- At this time when the department manager was out of the office I was designated as their deputy

---- 2006 ----

In 2006 I had become team leader for all projects within the department and was responsible for 12 people. At this time I found myself spread too thin across the projects and people. In discussion with the department manager we promoted my Senior Engineer to Team Lead and split my team into two.

- I continued to support Britannia Satellites project and add a number of variations.
- I was assigned worksopes for two new projects of similar scale and function; Chestnut Subsea Control Unit and Affleck Subsea Control Unit
- I saw the need for a reusable HMI Standard and Symbol library. Given the go ahead I developed with assistance from ICONICS UK a configurable interface and templates that could be used on projects. This gave a common look and feel to projects that were now using the off the shelf software application. This was used on projects Affleck, Chestnut, Reliance KG-D6 and on to the current generation of MCS PLC projects Montenazo and Kanowit.
- I established a basic team knowledge area on the network "tips and tricks". Here was a collection of formatted help files that people could use and add too.
- I developed the "Applications disc" for project installations. This brought together all the disparate software applications and revisions including third party application software into a controlled part number with a revision.
- I developed Project software discs for MCS and ETU. All software per system (MCS & ETU) would have a single SAP part number and be controlled as an image in SAP. I built on the concept of Major and Minor release formats. Only a Major release would be issued in SAP and hence only tested software should be used offsite. Software release became "1 system, 1 disc, 1 part number"
- The company was awarded a larger scale project Reliance KG-D6 which was distributed across a number of Stratus Servers. Having been involved with the bid I was tasked with performing the initial Requirements capture and design. Due to the scale of the project a separate team was formed and as soon as this was available I handed over my work to them. I stayed involved with the project having to develop further enhancements to the HMI Standard and Symbol Library to suit the project.

5.9 2007 to 2008 - Lead Engineer (Aker Kvaerner)

During 2008 Aker Kvaerner restructured and adopted a new name of Aker Solutions. The company performed the same function under a new banner. As part of the restructure in company and department I was promoted to role of Lead Engineer.

I was responsible for a team of 6 Engineers.

- Having won the Albacora bid the technology manager was considering out sourcing the project development to a third party company. After persuading the manager that I had previous PLC and Wonderware

experience I received the go-ahead to execute this new project within my team.

- I developed with my team a new MCS PLC control system. I designed the structure of the function blocks and applying where possible the same methodology and structure of the NORSOK I-005 and IEC61131 standards. A dedicated PLC developer was brought in to assist in the PLC coding.
- I developed new HMI standard for Petrobras projects using Wonderware InTouch. The user interface had to match existing Petrobras interface requirements. I had to design the internal tagging structure and interface to PLC.
- I continued to develop the HMI Standard and Symbol library in conjunction with ICONICS UK for use on all SCU projects; Reliance KG-D6 and MA-D6, Affleck, Chestnut.
- I was the department key interface to the Lloyds auditor (LRQA) during a quality review. I had previously worked with Aker Quality department during an internal audit.

5.10 2008 to 2011 - Lead Engineer (Aker Solutions – Subsea Engineering and Data systems)

I was responsible for a team of 6 Engineers. I also received 2 graduates on a mentoring program.

- I wrote a number of bid functional specifications for Petrobras PLC control systems
- I continued to develop and test the MCS PLC solution for Petrobras Albacora. I initiated a 3rd party review of the PLC logic with Rockwell and also a 3rd party review of the HMI configuration with Wonderware UK.
- I was tasked with a second MCS PLC configuration for Petrobras Sul Capixaba
- I studied for and gained new qualification in User Interface Design and Evaluation. The aim in this was to improve the development and implementation of HMI product design in the MCS.
- I Lead the product group to develop web server in the SEM
- I initiated a change in the way testing is performed. By re writing the Factory Acceptance Test document template so it tied section by section to the Functional Specification
- I wrote a report including a gap analysis on HMI products for use with the MCS PLC product. This included comparison and suitability for the product on Wonderware InTouch, ICONICS Genesis 32 and Trihedral VTS.
- I was the department key interface to the Lloyds auditor (LRQA) during a quality review. I had previously worked with Aker Quality department during an internal audit.

-----2009 -----

I was responsible for a team of 6 Engineers. I also received 2 colleagues on secondment from Brazil.

- I completed and delivered the first of new generation PLC Master Control Stations for Petrobras; Albacora and Sul Capixaba
- I expanded the Department SharePoint site (MCS Ecosystem) to include a knowledge base. This disseminated the MCS PLC knowledge gained on the Albacora and Sul Capixaba to other teams to assist in the next PLC projects
- I provided assistance and consultancy in the development of Aker Aberdeen Share point knowledge base. I was able to reuse my knowledge and experience from my share point site and also tie into what I had learnt during my Open University qualification in user interface design.
- I specified the design of a Condition Monitoring system for the Dong Trym project. I was involved in selecting a third party company that had previous experience in Condition Monitoring Systems. I worked with the company to take the design and develop it using ICONICS HMI and Historian products.
- I identified a need for better project focus and reporting. To address this I developed a weekly project report dashboard. I scheduled weekly meetings per project with my team to review project status and milestones. This project report dashboard included:
 - Key milestone dates
 - Document delivery dates pulled from SAP via Macro
 - Issues
 - Weighted project progress indicator
 - Task list
- I was the department key interface to the Lloyds auditor (LRQA) during a quality review. I had previously worked with Aker Quality department during an internal audit.

-----2010-----

My team and number of projects grew in 2010 and I was responsible for a team of 11 Engineers executing projects for 4 separate Clients and reporting to 4 separate project managers. In addition further secondment Engineers from Brazil.

- I provided continued support and maintenance for Petrobras Albacora, Sul Capixaba and Tupi Pilot
- I completed the delivery of the Petrobras Tupi Pilot project, the 3rd of the new MCS PLC projects for Petrobras.
- I was tasked with the workscope for the next Petrobras project; MCS Guara Lula. This project was a significant increase in scale and technical challenge than the previous Petrobras projects. Consisting of 7 MCS with Operator workstations, ETU's and topside simulators along with move to OPC communications to multiple Platform Control System vendors. During the

autumn of 2010 I began the requirements capture and functional design for this project.

- I was given the work scope for the Repsol Montanazo MCS and pumping system. This project was similar to the BP King project that I had worked on previously. I was given two new Engineers to execute this project within my team. This project had many new challenges:
 - First Rockwell PLC with ICONICS HMI within my team
 - Interface to Siemens Variable speed drive to control the Subsea Pump
 - Pump start-up/shutdown sequences
- I inherited the Petronas Kanwoit MCS project partway through the design phase. One of the first projects to be sold out of the Malaysian office and built in Aberdeen provided many issues which I had to overcome. The sole Engineer working on the project transferred into my team.
- I provided contact and interface to SIL consultant who was used to assist on Kanwoit
- I was given the work scope for the Shell Sweep Subsea Production and Control Unit (East Carrack) Having been involved with the bid of this project I was keen to be involved. I was given two new Engineers to execute this project within my team.
- I provided technical assistance to the product group for the development of the MCS product and the SEM auto test facility
- Montanazo and Petrobras project both had requirements for Language switching which meant that they had to be in Spanish/Portuguese and English. I instigated the hire of a translator to improve the implementation of this. In addition to translations the new hire also filled role of technical author within my team.
- I continued to provide the department interface to Wonderware, ICONICS and Rockwell during 2010
- I worked with Technical Author to formalise all project document templates into SAP.
- I setup a 24hr on call service and rota for Petrobras projects. This provided our colleges in Brazil vital support in maintaining the Petrobras projects.
- I continued to maintain the department SharePoint site and knowledge base
- I performed appraisals for 9 staff Engineers within my team

5.11 2011 to 2013 - Lead Engineer (Aker Solutions – Topsides solutions group)

I moved departments in 2011 reporting to a new manager within the Topsides Solutions Group which was a sub group from the Center of Excellence Engineering

Group. I and my team's roles changed to include both new projects and also provide support of existing projects.

The reorganisation involved a number of key changes where more teams were created and new Lead Engineer positions created. My team was reduced in size specifically to let me concentrate on the key Petrobras Guara Lula project.

At this time I was responsible for a team of 6 Engineers executing projects for Petrobras and Petronas. In addition I received further secondment Engineers from Brazil.

- I continued support for Petrobras projects and Petronas Kanowit FIT and SIT in Malaysia during 2011 and also Support of a number of generic project issues out with my team as part of the department support service
- I continued to develop and implement the Petrobras Guara Lula MCS. My team included 2 dedicated PLC programmers, 1 dedicated HMI developer and a test Engineer
- I continued to improve and develop the interface with Brazil by training and mentoring Engineers from the Brazil office
- I was the department point of contact for a Lloyds register Quality Audit. (LRQA). Having performed this with the quality inspector a number of times over the years I was able to demonstrating our process and procedures used on the Petrobras Guara Lula project during. I was pleased to be informed that the auditor was impressed by the system employed by team for true independent testing
- I changed the role of my team's team test Engineer to expand the role to include configuration management of all software and formal release in the team
- I instigated the use of clone utilities on Petrobras Guara Lula MCS. Having 21 identical PC's that had been designed to run a common project configuration it made sense to reduce the install and testing time of each PC.
- I continued to provide the department interface to Wonderware, ICONICS and Rockwell during 2011
- I provided technical assistance to a number of bids including Petrobras Global 2011 which is another step change in size of project up to 17 MCS.

-----2012-----

Moving into 2012 my responsibility expanded to include the support and development of legacy projects for Statoil Troll C and Njord. I gained two new team members who worked on these projects.

- I continued support for Petrobras projects, Petronas Kanowit and routine well upgrades for Troll C during 2012
- I completed the delivery of the Petrobras Guara Lula MCS configuration through Factory Acceptance Test, Factory Integration test and on to delivery to Site Integration Test in Brazil. This included the delivery of 7 Master Control Stations, 7 Operator workstations, 7 Electronic Test units and 10 Topside simulators.

- Petrobras Guara Lula was the first project to use the Universal ETU developed in the core product group. I worked closely with the group to add a Modbus interface so we could add Wonderware Intouch and the Well display to allow the ETU to be used better during Xtree test offshore.
- I inherited a work scope on Troll C to upgrade of the old Windows 95 ETU. Statoil had requested an upgrade to modern PC and software. When became involved it was already 1 year late due to lack of resource and skills. I quickly realised that the work scope was flawed and it would be better for Aker and Statoil to use the new Universal ETU being developed in the Core product group. After demonstrating the product and discussion with Statoil the work scope was renegotiated expand the development of the Universal ETU for use on Troll C. In the time to develop this I instigated the use of VMware workstation which allows the old Windows 95 ETU to run on modern hardware.
- I lead a high profile action team involved in upgrading Petrobras Tupi Pilot. Petrobras had a number of key changes required to the Tupi Pilot MCS. I worked closely with colleagues in Brazil to have the changes and issues resolved.
- I was chosen as a part of a small group of valued and experienced Engineers taken offsite to review the engineering procedures and processes with a view to improve quality and efficiencies in the group.
- I mentored a further 3 Engineers from our Brazil office over on secondment to learn the Petrobras Lula Guara project.

5.12 2013 to Present – Principal Engineer (Aker Solutions – Topsides solutions group)

In 2013 having gained my Chartered Engineer Status I was promoted to Principal Engineer.

I manage a team of 8 Engineers on various worksopes

6 Professional Affiliations and Activities

Member of the Institution of Engineering and Technology (MIET)

Secretary of the Hill of Fiddes Wind Turbine fund

Foveran Community Councillor (2010 - 2012)

7 Appendix A - Projects

7.1 Petrobras Roncador MCS

Role:	Lead Engineer
Type:	Rockwell PLC with Wonderware HMI
Scale:	2 Manifolds & 8 Wells
Notes:	<p>The next in line of Petrobras MCS. A follow on to previous Petrobras MCS.</p> <p>Key challenge here was to develop and test the software configuration without having deliverable MCS. The MCS was manufactured in Brazil.</p>

7.2 Petrobras Guara Lula North East MCS

Role:	Lead Engineer
Type:	Rockwell PLC with Wonderware HMI
Scale:	35 Wells, Distributed across 7 Master Control Stations
Notes:	<p>The Largest Petrobras Project execution I was responsible for the development and test of:</p> <ul style="list-style-type: none"> • 7 x MCS (14 cabinets) • 21 x Industrial PC's • 7 x ETU notebook PC's • 10 x DCS Simulator notebook PC's • 3 down hole gauge vendors (Baker, Schlumberger Halliburton) • Addition of OPC interface to DCS and 3rd party controllers • Smart well interface and control <p>The challenge of this project is to ensure that all MCS are installed and tested efficiently.</p>

7.3 Petrobras Tupi Pilot MCS

Role:	Lead Engineer
Type:	Rockwell PLC with Wonderware HMI
Scale:	16 wells on separate umbilical's
Notes:	<p>I was responsible for the development and test of:</p> <ul style="list-style-type: none"> • 1 x MCS (split across 6 cabinets) • 16 EPU channels • Smart well valve control

7.4 Petrobras Sul Capixaba MCS

Role:	Lead Engineer
Type:	Rockwell PLC with Wonderware HMI
Scale:	1 manifold
Notes:	<p>I was responsible for the development and test of:</p> <ul style="list-style-type: none"> • 1 x MCS (split across 2 cabinets) <p>Monitoring only system for Pipeline End Manifold</p>

7.5 Petrobras Albacora MCS

Role:	Lead Engineer
Type:	Rockwell PLC with Wonderware HMI
Scale:	2 Manifolds and 8 Wells
Notes:	<p>First of new generation PLC MCS</p> <p>Petrobras Brazil had a requirement for a new subsea control system controlled by Programmable Logic Controllers (PLC) with a Wonderware InTouch Human Machine Interface (HMI).</p> <p>At this time Aker Solutions did not have a PLC or Intouch solution to offer Petrobras. A new development team was created. Leading the team we developed from scratch a new project solution for Petrobras.</p> <p>My team of 5 consisted of; PLC programmer brought in specifically for the project, HMI Software Engineer and two test Engineers.</p> <p>This project expanded my knowledge in a number of areas;</p> <p>I had to manage both the normal project requirements of a Client but also product requirements to make the control system function.</p> <p>Albacora was the first project to use Modbus protocol to communicate to the Subsea Control Modules.</p>

7.6 Repsol Montanazo & Lubina MCS

Role:	Lead Engineer
Type:	Allen Bradley PLC with ICONICS HMI
Scale:	1 Manifold and 2 Wells
Notes:	Included control of subsea pump manifold. The pump was controlled from MCS via Siemens VSD cabinet

7.7 Petronas Kanwoit MCS

Role:	Lead Engineer
Type:	Allen Bradley PLC with ICONICS HMI
Scale:	1 Manifold and 2 Wells
Notes:	<p>I inherited the Kanowit project part way through the design phase. It was not a large project but had several challenges:</p> <ul style="list-style-type: none"> - First project since Petrobras PLC design to include an ICONICS HMI. The HMI standard I previously developed was redesigned to suit interface to PLC - Included inputs to SIL loop. I designed the solution that was eventually agreed and implemented

7.8 Shell Sweep East Carrack SPCU

Role:	Lead Engineer
Type:	Allen Bradley PLC with ICONICS HMI
Scale:	6 Wells
Notes:	<p>New design of MCS for Shell.</p> <p>I was heavily involved in the bid phase of this project and then went on to Lead during the project phase</p>

Role:	Lead Engineer
	Designed to be low cost and simple Single PLC (Not dual) for controls Single IPC for HMI

7.9 Dong Trym Condition Monitoring System CMS

Role:	Lead Engineer
Type:	ICONICS Genesis 64 and Hyper Historian
Scale:	6 Wells
Notes:	New development of a condition monitoring system that was sold alongside the MCS. I was involved in selecting a 3 rd party company with previous experience in CMS systems. I worked with the company to design the system before handing it over for implementation and test

7.10 Venture Chestnut SCU

Role:	Team Leader
Type:	OPC server and ICONICS HMI
Scale:	1 Manifold and 2 Wells
Notes:	Again reuse of previous SCU product design incorporating the HMI Standard. Siemens DCS Modbus interface

7.11 Maersk Affleck SCU

Role:	Team Leader
Type:	OPC server and ICONICS HMI
Scale:	1 Manifold and 2 Wells
Notes:	First to use the ICONICS HMI standard

7.12 BP King MCS

Role:	Team Leader
Type:	Rockwell PLC, OPC server and ICONICS HMI
Scale:	1 Manifolds and 2 Wells
Notes:	Included control of a Subsea pumps Developed as a crossover between SCU and MCS PLC. Where the Aker OPC server was used for subsea interface and control of SCM and PLC to control the subsea pumps.

7.13 Murphy Kikeh IWOCS

Role:	Team Leader
Type:	OPC server and ICONICS HMI
Scale:	Single well Intervention Work over and Control System
Notes:	I was the sole Software Engineer on this project. It was required in a short time frame. I worked on the design and development with Aker Work over group in Norway

7.14 ConocoPhillips Britannia Satellites SCU

Role:	Team Leader
Type:	OPC server and ICONICS HMI
Scale:	2 Manifolds and 7 Wells
Notes:	New development Subsea Control Unit using Fault Tolerant server and OPC technology. SCU controlled 2 fields of 3 and 4 wells. Included over 600 Client specified interlocks. The first project to use ICONICS Genesis 32 HMI.

7.15 BP Northern Leg Gas Pipeline (NLGP)

Role:	Team Leader
Type:	GE Fanuc PLC with GE Fanuc HMI
Scale:	Single well
Notes:	BP had a requirement to replace an Electro Hydraulic control system with an updated PLC based control system. I used my PLC knowledge to develop a GE Fanuc PLC and touch screen display. Challenges on this project were to make a replacement system to control existing (old) equipment with little and out of date specifications.

7.16 Lundin Broom MCS

Role:	Team Leader
Type:	Dual IPC with Trihedral Web SCADA (Aker SMACS5)
Scale:	2 manifolds and 8 wells
Notes:	Master Control Station, controlling 8 wells and 2 manifolds. Hydraulic Power Unit and MCS included direct control and partial closure tests of Subsea Safety Isolation Valves

7.17 ConocoPhillips Hang Tuah MCS

Role:	Team Leader
Type:	Dual IPC with Trihedral Web SCADA (Aker SMACS5)
Scale:	2 new Fields
Notes:	Upgrade to the Conoco Natuna MCS. The project added an additional 2 fields

7.18 British Gas Juno MCS

Role:	Team Leader
Type:	Dual IPC with Trihedral Web SCADA (Aker SMACS5)
Scale:	10 wells
Notes:	Juno was a new development split between a manned and an unmanned North Sea platform. I was responsible for the delivery of the master control station software configuration. The challenges on this project included control of a multiplexed communication channel from the unmanned platform, interface to a High Pressure Pipeline protection system, and remote power control of the Electrical Power unit. The project controlled 10 wells

7.19 Burullus Scarab Saffron MCS

Role:	Team Leader
Type:	Dual IPC with Trihedral Web SCADA (Aker SMACS5)
Scale:	10 wells, 2 MCS and 2 Portable MCS
Notes:	I was responsible for the software of a new control system for an Egyptian gas company. This involved 2 master control stations and 2 portable test master control stations. I lead a team of 4.

7.20 Woodside Echo Yodel HPU

Role:	Senior Engineer
Type:	GE Fanuc PLC
Scale:	Hydraulic Power Unit
Notes:	Opportunity to expand my PLC knowledge into the GE Fanuc range of controllers and provide one for a Hydraulic Power Unit. The PLC controlled and monitored hydraulic motors, pressure and level transmitters and filters. The PLC allowed for the HPU to run autonomously, maintaining pressure supplies to subsea equipment. The development of this PLC was subsequently outsourced to a HPU supplier in Norway using the configuration and logic I had had developed.

7.21 ConocoPhillips West Natuna

Role:	Senior Engineer
Type:	Dual IPC with Trihedral Web SCADA (Aker SMACS5)
Scale:	2 manifolds and 8 wells
Notes:	Natuna was new project and new type of Master control station (windows based). West Natuna consisted of 8 subsea wells with two manifolds. I was assigned as the sole Software Engineer responsible for capturing requirements, design, implementation and test with Client.

7.22 Norsk Hydro Troll

Role:	Senior Engineer
Type:	Siemens Step 5 PLC with Trihedral Web SCADA (Aker SMACS5)
Scale:	100 wells
Notes:	I joined a large team responsible for implementing Siemens PLC logic for the Troll C platform system. It was a follow on to Njord but much larger at over 100 wells. The team included Siemens contractors whom I worked alongside designing and building function blocks. I became responsible for writing the test procedure with Client and forming a test team of 6 Engineers for which I assumed the role of lead

7.23 BP Andrew (Upgrade)

Role:	Project Engineer
Type:	Siemens PCS 7 Platform Control System HMI
Scale:	132 operator displays
Notes:	I was seconded back to the BP Andrew project to join a small team responsible for an upgrade to the control system. My responsibilities

Role:	Project Engineer
	were to convert and re-implement the 132 mimics into a new Siemens PCS 7 SCADA system. I subsequently assumed role as part of the service support team for installation of the upgrade offshore

7.24 Norsk Hydro Njord

Role:	Project Engineer
Type:	Siemens Step 5 PLC with Trihedral Web SCADA (Aker SMACS5)
Scale:	8 wells with HPU control
Notes:	I was responsible for the development of a new PLC based control system for Norsk Hydro. The system controlled and monitored 8 subsea production wells, provided autonomous control over a Hydraulic Power Unit, and monitored an Electrical Power Unit. I was responsible for logic prototyping and implementing within a Siemens PLC

7.25 BP Andrew

Role:	Junior Project Engineer
Type:	Siemens Tistar SCADA
Scale:	132 operator displays
Notes:	I was responsible for the design and implementation of ESD/F&G/SCADA mimics (132 in total). for an Integrated Control, Monitoring and Safety system for an offshore oil and gas production platform in the North Sea

7.26 British Gas Permit System

Role:	Junior Project Engineer
Type:	Database
Scale:	132 operator displays
Notes:	I was responsible for creating a permit database system for use in Gas processing plant in Barrow in Furness. The system consisted an industrial PC and printer installed within a control room. I had to deliver, install and commission the system

8 Appendix B

8.1 Certificates