

# Curriculum Vitae;

# Ken Watson

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## Profile - summary

I am currently the 3D Design Analyst for the Expandable Sand Screen (ESS) engineering group within the **Well Completion Technologies** business unit at **Weatherford International**.

I joined Weatherford in 2000 as a 3D Modeller and CAD draughtsman and have since embraced other 3D design tools such as FEA and CFD.

Various FEA related technical papers have been written and subsequently presented. I have also produced many rendered 3D graphics (from CAD) for papers, presentations, brochures and magazines.

I have been involved in many aspects of oil industry draughting and design since 1985.

Out with work, I am the scorecard secretary (and web-master) for the **Aberdeen and District Badminton League**, where I also continue to play in the highest division, locally.

Keenly involved in local environment issues, I am the web-master and photographer for the **Portlethen Moss Conservation Group**.

Some of the websites that I voluntarily look after are;

<a href="http://www.aberdeenbadminton.co.uk">www.aberdeenbadminton.co.uk</a>	(local badminton league)
<a href="http://www.portlethen-moss.org.uk">www.portlethen-moss.org.uk</a>	(local environmental group)
<a href="http://www.cas-architects.com">www.cas-architects.com</a>	(brother's architecture business)

In June 2000 I got married and since then my family has expanded to include two young boys. I have a full, clean, driving license. Other interests and activities I enjoy include photography, hill-walking and cycling. I also regularly assist at children's badminton coaching sessions (as a parent volunteer) which are led by Scottish Badminton Union qualified coaches.

My date of birth is 6-July-1965.

Further information is available at; <http://www.linkedin.com/pub/ken-watson/23/a53/212>

## Objective

To carry on with all things 3D, modelling or analysis and develop further, and improve upon, those skills.

## Key technical skills

Abaqus FEA	(Numerical Modelling)– user since December 2006
ProEngineer CAD	(3D Modelling) – user since September 2001

## Career summary

*Dec' 2000 – Present*      Weatherford International Ltd. (~40,000 employees)  
3D Design Analyst (current role)

Initially employed as the departments first ever dedicated 3D Modeller, using IDEAS SDRC software. Models were produced for R&D tools, the designs coming from both the engineers and myself. Within 1-1/2 years the company changed the CAD software to Pro-Engineer, a relatively simple change. I became more involved with the draughting side at this stage, both for new tools or equipment and for sustaining activities. Graphics were produced for magazines, both trade and in-house. I was sent on an ANSYS FEA course at very short notice, early 2006, but we didn't take up the use of that particular software. In late 2006 I had Abaqus FEA training and this is the software that our department continues to use to this day, albeit several releases more advanced. Technical papers have been created and presented based on our main product, Expandable Sand Screens. These have been mainly for the annual customer conference of the company that provides the FEA software. Posters have also been prepared and produced for showing at SPE led conferences, such as the Sand Management Forum.

FEA highlights would have to include a couple of recent projects where our department was able to considerably reduce project time and costs by utilising FEA.

- (1) One particular size of ESS was investigated to potentially increase collapse resistance. By running five separate scenarios, a prime option was chosen to go forward with to fabricate and test.
- (2) A client had a new feature request for ESS. Engineers came up with ten different designs and these were all analysed. The two best options were manufactured and tested.

*May 2000 – Dec' 2000*      Rigserv Ltd. (~20 employees)  
CAD operator and procurement

Taken on as per previous employment (Jan'97 – Jan'00) to cover all drawing requirements for the company, but now also responsible for procurement and materials sourcing and pricing for projects.

*Jan' 2000 – May' 2000*      Unemployed

During this short period, and to keep my hand in, I did some occasional CAD work, on an ad hoc basis, for a small local company (ex-colleague at Rigserv and Brumac) using AutoCAD LT 97. This work consisted of system one-line diagrams, panel general arrangements etc. I also provided some basic Web Authoring assistance to the company.

*Jan' 1997 – Jan' 2000*      Rigserv Ltd. (~20 employees)  
CAD operator

Employed as the senior design CAD operator, using AutoCAD 12, I was responsible for producing all drawings for the company. The drawings were as per my previous employment with the company, from proposal to as built, including electrical, general arrangement, construction, hydraulic, pneumatic etc. and with a heavier emphasis now being placed on 3D line of sight studies for ensuring that all major equipment on a drillfloor could be seen from each position within the Driller's Cabins which were made by the company.

Further responsibilities, included issuing work to the workshop, being involved in hands on work within the workshop and purchasing goods and materials for the company. This meant having direct contact with suppliers and clients. I also produced various forms and documents for proposals and projects, such as bill of materials, cable schedules and document transmittals using Excel, PowerPoint, Word, Paintshop Pro, CorelDraw and other image manipulation tools. I also provided simple "help" documents that aided the office staff in using their PC's more efficiently. Brochures and designs for "freebies", such as T-shirts, mugs and paperweights, at times of exhibitions, were also prepared by me, as well as the stand layouts. Also at the time of the Offshore Europe Exhibitions I helped set it out and officiated on at least one of the days.

Other responsibilities were producing scale panels for our electrical gauges. This involved both pen work and the application of Letraset. Minor hand changes to drawings were also carried out by myself.

During slack periods I enhanced my skills by also producing numerous 3D "solid" drawings of day to day items, quite an achievement considering the early version of AutoCAD that was being used.

During this period I also set up and ran a website for the Aberdeen and District Badminton League. I operated this for a period of eight months before handing it all over to the League.

Made redundant in January 2000 due to the down turn in North Sea work.

*Mar' 1995 – Jan' 1997*      Brumac Engineering Ltd. (~50 employees)  
CAD operator

Employed as the CAD operator, using AutoCAD 12, and responsible for producing all drawings for three engineers and several system/field technicians. Each engineer would be working on different projects so work had to be prioritised and produced to tight schedules. Drawings were mainly for local water authorities, such as panel arrangements, electrical schematics etc., but a period of time was spent in Europort, Rotterdam, producing as supplied drawings on site for our Stirling office. Typical drawings were of cable tray and sensor installation. This involved some surveying and climbing about the inside of rig legs (semi-sub) to see them in-situ.

As well as the CAD work I also got involved in producing some graphics for SCADA systems and some quality system issues, such as backing up all the office computers, ensuring equipment was sent for calibration on time and logging / tagging in-coming software and hardware.

*Aug' 1988 – Mar' 1995*      Rigserv Ltd. (~20 employees)  
CAD operator

Initially employed as one of three CAD operators using AutoCAD 2.6 we produced a full range of drawings from proposal to as built, including electrical, general arrangement, construction, hydraulic etc.

Within one year my responsibilities expanded to training and supervising up to 5 other draughtsmen.

With newer versions of AutoCAD being deployed, further responsibilities included 3D drawings for Line of Sight studies. Throughout this employment I was in constant contact with the other heads of department and the general manager.

Other responsibilities included producing brochures and colour slides as well as the running of the company social club, which involved organising trips to go skiing, ice-skating, 10 pin Bowling, etc.

*Oct' 1985 – Aug' 1988*      Engineering Surveys Reproduction Ltd. (~50 employees)  
CAD operator

Employed as the sole CAD operator using Robocom 1500E software on an Apple IIE computer. Initially the work consisted only of Process Loop Diagrams (for an oil major), but the work quickly expanded as the company became aware of the possibilities, to include Battery Layouts, Navigational Aids etc. This work meant being in contact with clients on a day to day basis. Another service provided was visiting client premises, measuring up and then fitting out “virtually” with seats, desks etc. for office floor plans. The CAD work was also done at the premises of a major Oil company using RoboCAD IV software on an IBM PS2 computer.

As well as CAD I operated the computerised phototypesetter, Compugraphic MCS-8208. In addition, I trained personnel in the use of the Typesetter and CAD software as well as occasionally participating in manual (cartographic) draughting.

On my own initiative I also produced bespoke AppleSoft Basic programs to illustrate to the company's head office the percentage productive work, sick time etc. for our office based on input of the weekly office timesheets.

References can be provided upon request (recommendations can be viewed on LinkedIn)

Examples of work can be viewed on-line – a link to a webpage can be supplied

A USB pendrive can also be supplied (complete with videos for some presentations)

## Education

1977 - 1983 **Hazlehead Academy, Aberdeen**

1981 7 Ordinary Grade Passes

1982 1 Ordinary Grade Pass

4 Higher Grade Passes;

Maths (A)

Physics (B)

Metalwork (B)

English (C)

1983 2 Higher Grade Passes;

Technical Drawing (A)

Engineering Science II (Award; Pass)

1 CSYS Pass;

Maths Paper II (Award; B)

Maths Paper IV (Award; D)

1983 - 1985 **Robert Gordon's Institute of Technology, Aberdeen**

BSc Electronic & Electrical Engineering,

(Left during Second Year)

1988 - 1989 **Aberdeen Technical College, Aberdeen**

Scotvec National Certificate

Computer Aided Draughting (Award; Pass)

## Training Courses

<i>August 2001</i>	PTC, ProEngineer Foundation Course
<i>August 2001</i>	PTC, ProEngineer Drawing for Designers
<i>September 2001</i>	PTC, ProEngineer Advanced Custom Training
<i>January 2002</i>	Weatherford, Introduction to Adobe Acrobat
<i>February 2002</i>	PTC, ProMechanica Structure Training
<i>August 2004</i>	Continuum, Project Management for Practitioners
<i>May 2006</i>	Onsite Training Services, Banksman/Slinger incorporating Overhead Gantry Crane
<i>May 2006</i>	Wilde, ANSYS Workbench Simulation V10
<i>December 2006</i>	Abaqus, Introduction to Abaqus
<i>October 2007</i>	Scottish Training Consultants, Setting Priorities & Keeping Organised
<i>December 2007</i>	Simulia, Metal Inelasticity in Abaqus
<i>December 2007</i>	Simulia, Analysis of Geotechnical Problems with Abaqus
<i>April 2008</i>	Simulia, Substructures and Submodelling with Abaqus
<i>April 2008</i>	Simulia, Abaqus/Explicit: Advanced Topics
<i>August 2008</i>	Evolve, Business Report Writing
<i>March 2009</i>	CD Adapco, Introduction to CFD (Star CCM+)
<i>February 2011</i>	Simulia, Introduction to Abaqus/CFD

## Professional Membership

Society of Petroleum Engineers (member number 3361111)

## **Publications; Papers, Presentations and Posters**

### Abaqus/Simulia FEA Conferences (Papers)

#### **FEA Modelling of Expandable Sand Screens**

*Presented at the Abaqus Users Conference, Newport, Rhode Island, USA, 19-22 May 2008*

#### **FEA Modelling of Expandable Sand Screens Interactions with Rock Formations**

*Presented at the Simulia Customer Conference, London, United Kingdom, 18-21 May 2009*

#### **Cyclic Loading of a Rock Mass for Underground Gas Storage Applications**

*Presented at the Simulia Customer Conference, Providence, Rhode Island, USA, 24-27 May 2010*

#### **The use of FEA in sand screen design cuts costs and accelerates development**

*Presented at the Simulia Customer Conference, Barcelona, Spain, 16-19 May 2011*

### Simulia Energy Forum (Presentations)

#### **A short history of our Abaqus experiences Abaqus/CAE – Abaqus/Standard – Abaqus/Explicit**

*Presented at the Simulia Energy Forum, Aberdeen, United Kingdom, 28 April 2010*

#### **Sand Screen developments using Abaqus to Cut Time and Costs**

*Presented at the Simulia Energy Forum, Aberdeen, United Kingdom, 20 April 2011*

### Sand Management Forum (SPE) (Posters and Presentation)

#### **Finite Element Analysis of Weatherford Expandable Sand Screen Products (Poster)**

*Presented at the 3rd European Sand Management Forum, Aberdeen, U.K., 18-19 March 2008*

#### **Numerical Modelling capabilities within Weatherford International Ltd. (Poster)**

#### **Cyclic Loading of a Rock Mass f/ Underground Gas Storage Application (Presentation)**

*Presented at the 4th European Sand Management Forum, Aberdeen, U.K., 10-11 March 2010*

### SPE (Paper)

#### **SPE 143941 – Formation Loading and Deformation of Expandable Sand Screens.**

*Presented at the SPE European Formation Damage Conference, Noordwijk, Netherlands, 10 June 2011*