

# David Gibson – Biographical Record

(16 July 2015, CV17.doc, rev 2)

Profession Electronic Engineer  
Present Position I am available for consultancy and part-time employment.  
Field of work Through-the-earth radio communications with emphasis on caving/mining/sub-sea applications.  
Electronic hardware design (analogue and digital). Microcontroller software. PCB design.  
Technical report writing, web-site & graphic art design.  
Nationality British  
Age in 2015 56

## Contact Details

Address ■■■■■■■■■■ In this web-visible version of my CV these details have been redacted.  
Telephone ■■■■■■■■■■ Please contact me at the email address on my web site.  
E-mail ■■■■■■■■■■

## Education

Qualifications University of Leeds, Ph.D. degree, 2003  
University of Cambridge, M.A. degree, 1984 / B.A. degree in Maths/Engineering (aegrotat), 1980.  
Professional MIET, Member of the Institution of Engineering and Technology (formerly the IEE) [*resigned membership in 2015*]

## Career Summary

2010 to present (*voluntary*) Secretary and a trustee of the British Cave Research Association, a registered charity.  
2010 to 2014 Principal Research Engineer (*part-time*) at **WFS Technologies**, Edinburgh.  
WFS manufactures specialised sub-sea electronic communications equipment  
2003 to 2013 Research Project Manager (*part-time*) at the **Mines Rescue Service**, Mansfield.  
As part of my duties, I attended meetings in Spain, Germany and Poland to discuss projects funded by the European Commission's Research Fund of Coal and Steel (RFCS). Areas of work included research into through-rock radio communication, electro-fracture of rock and the design of electronic equipment related to medical and health & safety issues. I was made redundant in June 2013.  
1996 to 2003 PhD student (*part-time*) at University of Leeds. Consultant electronic engineer; principal clients included the Mines Rescue Service Ltd (MRSL) and International Mining Consultants Ltd (IMCL).  
1989 to 1996 Consultant electronic engineer; principal clients included SmartDrive, Optimised Control, GeoQuest, Schlumberger and several companies working with low power radio and through-the-earth communications.  
Technical editor of the British Cave Research Association's Cave Radio journal (to 2008).  
1983 to 1989 Senior Development Engineer at Parker Digiplan Ltd. (At the time, a world-leading SME, producing drives and controls for stepper motors). Received training in electronic design and manufacturing.

## Summary of Skills

Through-the-Earth Communications I am an acknowledged expert in through-the-earth (TTE) communications. The subject of my PhD was "Channel Characterisation and System Design for Sub-Surface Communications". [ I have published many papers and articles and have acted as a peer reviewer for *IEEE Transactions on Geoscience & Remote Sensing* ]. I have written two books on TTE comms and further works are in preparation.

Electronics Proficient in design of digital systems, microprocessor hardware (incl. PIC), analogue instrumentation, LF radio communications, gate array/ASIC design, motion control (steppers, dc). Low power/short-range radio, DSP, optical (ccd, laser), switch-mode power supplies, integrated magnetics.

Mathematics I am able to confidently apply mathematical analysis to a wide variety of design problems, including DSP, control theory, electromagnetic propagation, circuit design and general physics.

Software I am proficient in programming in MatLab, the scripting languages PHP and JavaScript (incl. Ajax), and in assembler for PIC micro-controllers. I am an expert in Forth, and its meta-compilation. [ I have written a high-level language cross-compiler in Forth, and have developed a 'virtual machine with threaded interpreter' for PIC MCUs ]. I also have some knowledge of Visual Basic, Java, C, XML, Python, Croydon.

CAD / simulation I am proficient in Easy-PC PCB design software and Easy-Spice circuit simulation software.  
I have extensive knowledge of IEEE logic symbols and their use in the design of digital systems.

Internet I am an expert in several high-level application protocols at a command-line level, e.g. HTTP, SMTP, POP3, FTP and I have written control software using these protocols. I am familiar with issues of DNS hosting and the operation of email and web servers. I am proficient in HTML and CSS and I maintain several web sites, with pages utilising database access and running server-side scripting in PHP. I am familiar with cellphone and GPRS protocols and have written software to interface to the cellular network.

Writing I have many years' experience as a technical author. I can use a wide range of software for graphics, photo-processing, word-processing and Web authoring. I am familiar with short-run print publishing techniques.

Scientific I studied chemistry and physics to A-level, with some physics as part of my degree course; and I still retain this knowledge. I am familiar with electrochemistry, optics and the physiology of colour vision.

Computer literacy I am fully PC-literate. I have an extremely detailed and expert understanding of MS Word and Excel.

Languages French (mais pas très bon en conversation)

Other **1)** I am an experienced caver. I am a Trustee of the British Cave Research Association (a registered charity) and am currently its secretary. Previous posts in BCRA have included administrator of its research fund, editor of its magazine, Speleology; and the technical editor of the journal of its Cave Radio & Electronics Group. I am currently the editor of the BCRA's web site, and I have written extensive web-based systems – databases, payment systems and so on. **2)** I can read music. I am familiar with Midi systems and I have an interest in the mathematics of music. **3)** I am a photographer and have won prizes in national competitions.

Security Clearance I hold a basic level of security clearance from the Defence Vetting Agency. (Level SC, expires in 2020).