

# New UK Atomic Energy Authority board ready to take on fusion challenges

The UK Atomic Energy Authority's new board holds its first meeting on 13 December, following the recruitment of a team of world-renowned physicists and highly-skilled professionals as directors. The board will lead the authority into a new era of unique and exciting challenges. These challenges include overseeing the authority's main research into fusion at Culham Centre for Fusion Energy (through operation of the JET and MAST fusion experiments) and, further into the future, positioning the Authority to best exploit work on the new international ITER device and future fusion power plants.

Professor Roger Cashmore chairs the new board. Professor Cashmore was formerly the Director of Research and Deputy Director General of CERN. He is finishing a successful 7-year stint as Principal of Brasenose College, Oxford.

Professor Cashmore will be joined by new board members Professor Keith Burnett, currently the Vice Chancellor of Sheffield University, and Dr Steve McQuillan, formerly CEO of the National Physical Laboratory. Peter Jones, currently Chairman of the Audit Committee of National Nuclear Laboratory, and Martin Cox, the authority's Operations Director, round off the impressive list of additions to the board.

Roger Cashmore said:

It's exciting to be working with such highly qualified and eminent physicists and engineers, who all believe, like me, in a great future for nuclear energy – in particular fusion. With the experience and skills of the new board members, I'm confident that we can provide the leadership that the authority deserves as it tackles matters of huge importance to the UK and the future energy needs of the world.

## **More information**

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## **Notes to editors**

### **UK Atomic Energy Authority**

Originally formed in 1954 to carry out nuclear research for the Government, the Authority now manages the UK fusion research programme at Culham Centre for Fusion Energy in Oxfordshire, including the Mega Amp Spherical Tokamak (MAST) experiment. It also operates the Joint European Torus (JET) fusion facility on behalf of the European Fusion Development Agreement (EFDA) at Culham. Fusion research at Culham is funded by the Research Councils UK Energy Programme and by the European Union under the EURATOM Treaty. See <http://www.uk-atomic-energy.org.uk> and [www.ccfef.ac.uk](http://www.ccfef.ac.uk) for more information.

### **Director profiles**

Roger Cashmore was the Director of Research and Deputy Director General of CERN from 1999 to 2004. In that capacity he was primarily responsible for the major experiments and facilities (ALICE, ATLAS, CMS and LHC-b) at the newly-constructed Large Hadron Collider (LHC) at the CERN Laboratory in Geneva, Switzerland. These experiments have taken 15 years to design, build, commission, and operate and are now making spectacular measurements in a totally new energy regime, pushing back the frontiers of knowledge in high-energy particle physics. In September 2011 he retires as Principal of Brasenose College, Oxford after seven years in the post.

Keith Burnett became Vice-Chancellor of the University of Sheffield in 2007. Previously he was Head of the Division of Mathematical, Physical and Life Sciences at the University of Oxford, having been a professor of Physics there for almost 20 years.

Stephen McQuillan is currently the CEO of a listed UK Engineering group – Avingtrans plc. His previous position was as Director/CEO of the National Physical Laboratory (working for Serco). Prior to joining NPL, Stephen ran a division of Oxford Instruments.

Peter Jones became a non-executive director of the National Nuclear Laboratory and Chairman of its Audit Committee in August 2009. Peter is also a qualified Chartered Accountant and has had exposure to a wide range of financial management and planning issues in a wide range of sectors varying from financial services to electricity production.

Martin Cox is a theoretical physicist who joined Culham upon graduating, working on plasma modelling. From 2000, when the Authority assumed responsibility for the operation of JET on behalf of the European fusion community, he became manager of the Machine Operations Department, overseeing the operation of most of the JET facilities as well as the MAST device. In

2007 he became Senior Manager for all aspects of JET operation and in 2008 was appointed Assistant Director (Operations). He was appointed Operations Director on 1 November 2009.

## **Fusion energy**

Fusion is the process which powers the Sun and stars. When light atomic nuclei fuse together to form heavier ones, a large amount of energy is released.

To utilise fusion as an energy source on Earth, gas is heated to extreme temperatures, over 100 million degrees – hotter than the centre of the Sun. This creates a plasma in which fusion reactions take place. A commercial power station will use the energy produced by fusion reactions to generate electricity.

Fusion will have major advantages as an energy source:

- no atmospheric pollution: the fusion reaction produces helium, which is not a greenhouse gas
- abundant fuels, found in seawater and the Earth's crust, with supplies for millions of years
- no long-lived radioactive waste
- an inherently safe system: even the worst conceivable accident would not require evacuation of the surrounding population
- the fusion research programme's objectives are to obtain and study conditions approaching those needed in a power plant, using the 'tokamak' machine concept – effectively a magnetic bottle which contains the hot plasma. The next step is ITER, an international tokamak experiment which should provide a full scientific demonstration of the feasibility of fusion in powerplant-like conditions. The facility is now being constructed at Cadarache in the south of France. ITER ([www.iter.org](http://www.iter.org)) will be followed by a demonstration fusion power station, DEMO, and electricity from fusion is expected to be on the grid by 2040.