**Report on 4th Fusion Energy All-Party Parliamentary Group meeting**

**Wednesday 16 November 2022, 10:00-11:00am –** Committee Room 17, Palace of Westminster

*“Building a fusion power plant in the UK: the STEP programme and how Britain will benefit”*

Speakers:

* Paul Methven, STEP Director at the UK Atomic Energy Authority
* Ben Bradley, MP for Mansfield and Leader of Nottinghamshire County Council
* Christophe Junillon, Power New Build Director, Atkins
* Valerie Jamieson, UK Fusion Cluster Development Manager

Acting Chair:

* Heather Wheeler MP

**Summary:**

The main theme of the meeting was UKAEA’s STEP (Spherical Tokamak for Energy Production) programme, which has a target of constructing a UK prototype fusion plant by 2040. STEP’s purpose is to demonstrate fusion electricity, and to provide a pathway to commercial plants that will deliver fusion power around the world, stimulating a supply chain in which the UK can be a leading player.

The site for STEP has just been announced – West Burton, Nottinghamshire. Delivering it will provide immense economic opportunities to the local region and for businesses across the whole of the UK.

Heather Wheeler MP, deputising for John Howell MP, opened the meeting by underlining the potential of fusion as part of the future low-carbon energy mix.

**Introduction to STEP: Paul Methven, STEP Director at the UK Atomic Energy Authority**

Paul Methven emphasised that, although the Fusion Energy APPG’s theme today was STEP, it represented the whole of the UK fusion research community, including the thriving private sector fusion scene. He recapped the basics of how fusion works, why it is needed – particularly with the backdrop of the COP27 climate talks – and the advantages and challenges of fusion.

Paul stressed STEP’s importance in preparing the way for future commercial fusion plants. The 2040 target date for operations is challenging, and achieving it will involve making STEP a major UK infrastructure and manufacturing programme. A new organisation, specifically set up to deliver the STEP plant, is being planned.

He summarised the inclusive siting process which has resulted in West Burton being selected to host STEP, and the regional footprint the programme will produce in infrastructure, jobs and industrial opportunities.

Paul ended by outlining the important role of Government and Parliament in giving investors and researchers certainty by setting out the regulatory framework for the future fusion industry.

**Regional benefits of STEP: Ben Bradley, MP for Mansfield and Leader of Nottinghamshire County Council**

Ben Bradley reported that he and his East Midlands colleagues – several of whom attended the meeting – are excited to host STEP; a world-changing project with great opportunities for the region.

It will be more than a power station. It is a chance to improve infrastructure, attract inward investment, and to improve economic and career prospects for the community – it could change the lives of young people now growing up in the area. Ben spoke of STEP enabling the East Midlands to become a clean energy leader, building on work already taking place on nuclear SMRs and other technology.

As council leader and as an MP, Ben is linking national and regional policy to ensure that maximum benefits are secured from STEP. Work is already underway on a local partnership led by Sir John Peace to map out the work required to do this. For example, West Burton is in a remote location and connectivity will need to be improved.

For now, he sees it as the start of a great relationship with UKAEA and the fusion community.

**Industrial view of fusion: Christophe Junillon,** **Power New Build Director, Atkins**

Christophe explained the potential for fusion and STEP for UK companies like Atkins. As ‘energy agnostics’, Atkins’ view there is no ‘silver bullet’ for energy – but there will be a huge need for fusion post-2050 as world energy demand continues to grow.

It will be complex to commercialise and will require major industry involvement in engineering, manufacturing, construction and programme management. A combination of amazing science and muddy building sites! The technical challenges of fusion will drive innovation – Christophe cited the example of the ITER project, which Atkins have been involved in since 2010.

STEP now brings a huge opportunity for industry, and Atkins will apply lessons from its ITER experience. Atkins has already been engaged in STEP siting and engineering design and sees great potential for future involvement.

**UK Fusion Cluster – introduction and news round-up: Valerie Jamieson, UKAEA**

Valerie outlined the aims of the UK Fusion Cluster – bringing together public and private sector organisations to advance fusion and attract investment into the field. Fusion R&D in the UK is in a healthy position and is envied around the world, with a number of overseas fusion companies announcing plans to establish a presence here.

Valerie then rounded up recent news from key players in the Fusion Cluster.

* Tokamak Energy – achievement of significant technical milestones in 2022 and plans for a new prototype machine using High Temperature Superconductor technology;
* First Light Fusion – first demonstration of fusion with their innovative projectile and target approach, working towards a pilot plant in the 2030s;
* General Fusion – plans to build a demonstration plant at UKAEA’s Culham site, and production of test components by Sheffield Forgemasters to help validate plant design;
* Collaboration agreements between UKAEA and three private fusion companies during 2022.

During the Q&A session, Paul Methven and UKAEA CEO Ian Chapman highlighted the global opportunity for the UK in commercialising fusion, stating that ‘where the UK leads, the world succeeds’ and drawing parallels with the COVID vaccine programme in what can be achieved.

Heather Wheeler MP closed the meeting by thanking all who attended; she looks forward to hearing about more developments from the ‘white heat of technology’ in UK fusion.