



Bristol-Oxford Nuclear Research Centre

A centre of nuclear expertise in the Southwest supporting new build and associated infrastructure



Nuclear Research Centre (NRC)

The NRC is a joint venture between the University of Bristol and the University of Oxford, creating a centre of national and international importance in Nuclear Research.

Our purpose is to provide leading edge and innovative research to support the safe operation of current and future generation nuclear systems. This centre builds on the advantages of our existing strategic alliances with EDF-Energy, Rolls-Royce and AWE; the firm plans for new nuclear build in the South of England; our geographical focus on nuclear research and the co-location of key nuclear stakeholders in the region.

The centre provides a highly professional team of scientists, engineers and external experts in the South of England that underpins future developments in nuclear safety and economic operation, seeks to ensure continuity of the nuclear community and safeguard the expert knowledge base, and importantly provides leading edge research to support the nuclear business community.

A Community of over 100 Key Research Personnel in Nuclear Research

The centre assembles underpinning research groups at Bristol and Oxford, involving the Safety Systems Research Centre in Civil Engineering at Bristol, Chemistry, Physics and Materials Research in the Oxford Division of Mathematical, Physical and Life Sciences, the Oxford Martin School, and in the Bristol Faculty of Science and the Interface Analysis Centre, Mechanics of Materials and Structural Integrity, Seismic Research in the Departments of Engineering at Bristol and Oxford and expert groups in Social Science and Law examining social policy and public perceptions.

As well as our research focus we will be developing new skills and providing high quality graduates and post doctoral researchers, capturing, sustaining and transferring skills related to the safe and extended operation of current and future nuclear systems and facilitating, via a neutral network environment, discussion on all aspects of nuclear futures.

NRC Themes:

The centre will focus on work for both fundamental research and allow emergent topics to be addressed. The centre has the following themes:

• Nuclear Futures:

Modelling nuclear futures; new power systems; economic, social and environmental impact; sustainability and resilience; national and global policy; risk assessment; safety case management; non-proliferation strategies.

• Advanced Research:

Undertaking fundamental research in physics, materials including the nano-scale, chemistry, geo-sciences, engineering and exploring atomistic modelling, nuclear batteries, novel control and protection, smart sensors.

• Applied Research:

Focussed on current operational needs to ensure safe nuclear systems, lifetime extension, non-destructive testing, human factors and organisational safety, instrumentation obsolescence, waste disposal, new build digital systems assurance, system resilience, decommissioning, risk and uncertainty assessment.



NRC: Working with Key Stakeholders

The centre provides a focus for engaging with the key stakeholders in the nuclear sector ; exploring the challenges for the development of skills, future research needs and research programmes. There is a strong group of geographically co-located potential stakeholders in the South of England, particularly in the South West within the Bristol-Gloucestershire-Oxfordshire 'triangle' encompassing the M5-M4-A34 'corridor'.

Industry: EDF (Barnwood, Gloucester), Horizon Nuclear Power, a joint Eon-RWE venture (Gloucester Business Park), EDF Nuclear New Build (NNB) GenCo, SERCO, Quedgeley, Gloucestershire), Frazer-Nash Consultancy (Bristol), Babcock-BNS (Plymouth), Magnox North (Culham).

Regulator: HSE Nuclear Directorate / Nuclear Installation Inspectorate, which will become the new nuclear Statutory Corporation (Cheltenham, Gloucestershire).

Government Agencies / Funding Bodies: Nuclear Decommissioning Authority (NDA) (Didcot), South West of England RDA (Exeter and Bristol), Somerset, South Gloucestershire and South Oxford District Councils, EPSRC and other Research Councils (Swindon), Environment Agency (Exeter).

Future Engagement with the NRC

We are seeking engagement and support from stakeholders in a variety of ways which include: providing matching funds to support the development of the centre and its work with the Nuclear Community, supporting and becoming actively involved in specific work programmes within the three centre themes (Nuclear Futures, Advanced Nuclear Research and Applied Nuclear Research), involvement on programmes that support PhD research students and doctoral engineers and shaping future programmes of research to meet the future needs of the sector.

NRC – What we offer Industry, Government and the Research Community

The history of the two universities in working to advance fundamental understanding and the applications of nuclear research is the key to the NRC contribution to Industry, Government and the Research Community.

It is based on the collective experience of a large, research active community at the two institutions with direct experience of the nuclear sector:

- helping to solve problems in the operation of nuclear facilities
- advancing the thinking on technical operations and future research needs
- building a strong platform of pre-eminent world class researchers in nuclear research
- providing access to geographically accessible, world class research facilities and expertise relevant to the nuclear sector
- developing the skills needed for the new generation who will work in the nuclear facilities of the future
- responding to needs in an effective, professional way in partnership with Industry, Government and the wider nuclear Research Community
- cost effective research that adds value to the operation of nuclear facilities
- a research platform to help government and the regulatory authorities develop policy and make informed decisions
- ensuring the UK has a strong nuclear research sector in the South and South West of England
- maintaining the UK's reputation for the quality of its international research, partnerships and competitiveness in the nuclear sector.



Contacts, Visits and Partnerships

The NRC invites key stakeholders to arrange visits to its facilities and to meet the world class nuclear research community within the University of Oxford and the University of Bristol.

The NRC adopts a partnership approach to the research it undertakes. There are always opportunities to discuss new partnerships.

The NRC is a research collaboration between the two Universities. It does not have any separate corporate identity or contractual capacity. It can be contacted in the following ways:

Professor David Smith
Director, NRC Bristol
University of Bristol
Queen's School of Engineering
Queen's Building
University Walk
Bristol, BS8 1TR UK
Tel: +44 (0)781 806 7360
Email: david.smith@bristol.ac.uk

Professor Chris Grovenor
Director, NRC Oxford
University of Oxford
Department of Materials
Parks Road
Oxford, OX1 3PH UK
Tel: +44 (0)1865 273700
Email: chris.grovenor@materials.ox.ac.uk

