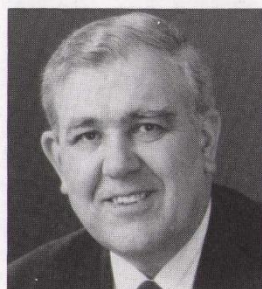


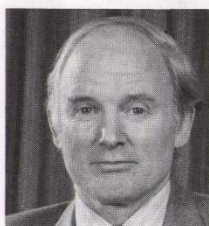
Bulletin

Weekly news from the UKAEA's Harwell Laboratory

Authority Re-organisation from 1 August



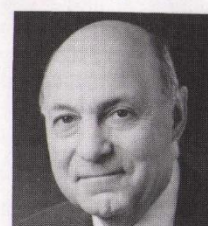
Mr John G Collier
Chairman



Dr Brian Eyre
Member for programmes



Mr Reggie Simeone
*Member for Finance
and administration*



Dr Graeme Low
*Member for
Establishments*

Laboratory Directors

Advanced Gas-Cooled
Reactor

Pressurised Water
Reactor

Fast Reactor

General Safety &
Acceptability

Fuel Processing Research &
Development

Decommissioning and
Radioactive Waste
Management Operations

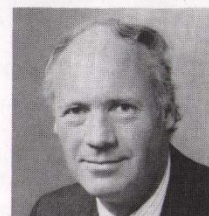
Fusion

Underlying Research

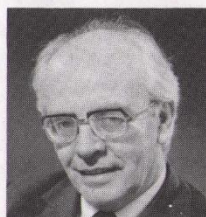
Central
Services



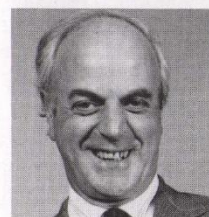
Dr Peter Iredale – Harwell



Dr Stuart Nelson – Northern
Research Laboratories



Dr Mick Lomer – Culham



Mr Harry Allardice – Risley



Dr John Holmes – Winfrith



Mr Gerry Jordan – Dounreay

Profiles

Dr Brian Eyre

Authority Board Member for Programmes.

Brian Eyre graduated in Metallurgy and was awarded a DSc from the University of Surrey. From 1959 to 1962 he worked as a Research Officer for CEBG Berkeley Nuclear Laboratories. He joined HARWELL's Metallurgy Division in 1962 and left in 1979 to become Professor of Materials Science at the University of Liverpool. In 1984 he rejoined the UKAEA as Director, Fuel and Engineering Technology, Risley.

Dr Peter Iredale

Director of Harwell.

Peter Iredale graduated in Physics at the University of Bristol. After carrying out research in cosmic ray and high-energy physics for his Ph.D, he joined HARWELL's Electronics and Applied Physics Division in 1955.

He then carried out research on a number of topics in the area of nuclear instrumentation until 1959, and subsequently worked on nondestructive testing and on a novel form of computer store. He was appointed Manager of the Nuclear Instrumentation Programme (1972), Deputy Head of Marketing and Sales Department (1977), Head of the Marine Technology Support Unit (1979) and Head of the Marine and Engineering Services Division (1980). He was appointed Deputy Director in October 1986.

Dr Stuart Nelson

Director, Northern Research Laboratories.

Stuart Nelson joined HARWELL's Metallurgy Division in 1958 after graduating in Physics from the University of Reading. His early work at HARWELL was concerned with radiation damage and in 1965 he was appointed Leader of the Division's Radiation Effects Group.

He was awarded a DSc from the University of Reading in 1969 for his contributions in the field of radiation effects in solids. He became Manager of the Metals and Chemical Technology Centre in 1976.

In April 1981 he was appointed Head of Materials Development Division, taking over part of Metallurgy Division in April 1984. He was appointed Director, Nuclear Power Research in December 1984.

In 1967 he was elected a Fellow of the Institute of Physics and is a past chairman of the Institute's 'Atomic Collisions in Solids Group'. Since 1968 he has been Visiting Professor at the University of Sussex.

Annual Press Conference

The UKAEA Annual Report for 1986/87 was presented to the press in London on 27 July. The following is a summary of what Mr. J. G. Collier, Chairman, had to say.

There is no doubt that the past 12 months have been some of the most momentous and significant in the Authority's history. The year started badly with the disaster at Chernobyl - but ended on a more positive note with the Government's decision to press ahead with the Sizewell 'B' PWR and with the Electricity Board's decision to fund 30% of the Authority's fast reactor programme. Important decisions have also been taken on the future direction of radioactive waste disposal.

The Authority has made great efforts to make the public aware of the benefits of nuclear power and to increase their confidence in it, confidence which was profoundly shaken by the events at Chernobyl. We were disappointed at the ending of the long standing all party consensus that nuclear power has an important role to play in this country's energy supply. We have done what we can to impress on politicians the problems this could bring to an industry where the investment demands are large and take a long time to come to fruition. For the immediate future it is important that the implications for the nuclear industry are fully taken into account in the arrangements being worked up for the privatisation of electricity supply. In addition, we must renew our efforts to find a publicly and politically acceptable way of disposing of radioactive waste.

We recognise the importance of demonstrating to the people of this country that nuclear power is both beneficial and safe, and will continue to be both beneficial and safe. That is why I attach such great importance to our function, as laid down in the Act of Parliament which set up the Authority 33 years ago, to increase public understanding of nuclear power.

Chernobyl

The accident at Chernobyl shook people's belief in nuclear power not only in the United Kingdom but throughout Europe. It emphasised that a fallout cloud is no respecter of national boundaries and that safe nuclear generation in other countries is of as much importance to us here as it is there. We must praise the Russians for their frankness in admitting their failure and informing the West of what happened. This openness on their part has had the immediate effect of improving lines of communication and liaison between the nuclear communities in the USSR and in the West. The International Atomic Energy Agency in Vienna has played a major part in this.

On the basis of this information and our analysis of it we have been able to assure the British people that the accident at Chernobyl could not happen to the reactors in this country because of the basic design differences. The way the Chernobyl reactor behaved was unique to that design but we

can still learn lessons from the accident in respect of evacuation procedures and operator training, for instance.

Trading Fund

Turning from the wider issues of nuclear power, 1986/87 saw our first year as a Trading Fund. A good start was made. We attained the profit levels and financing targets set by the Government. Here I want to pay tribute to my predecessor, Arnold Allen, who guided the Authority through the preparations for the introduction of the Trading Fund and its first 9 months of implementation. His ability in laying the ground rules and the dedication of the Authority's staff in carrying the extra burden of ensuring that the new system worked are worthy of the highest praise. But this is only the start. We must build on this good first year to improve our effectiveness, improve our efficiency, widen our customer base, become more profitable and increase our investment in new skills and technology to ensure our future. Although most of our work is for the nuclear industry, we are continuing to expand our non-nuclear work and applied nuclear programmes. You will see in the report the enormous variety of work we do at our sites: it ranges from enhancing oil-field recovery to assessing systems on Royal Marine Assault ships: from carbon-dating the Turin shroud to drying out old and valuable books; from setting up industrial clubs on a variety of subjects to investigating environmental pollution.

Managerial Changes

The Annual Report refers to some proposed organisational changes to help the Authority cope more effectively with future challenges. The changes, which take effect from 1st August 1987, are aimed at clarifying responsibilities and accountabilities, simplifying our structure and shortening lines of communication.

First, the responsibilities of the technical full-time Board Members will be divided as follows. Dr Graeme Low will become Member for Establishments, with corporate oversight of all Managerial Units. Dr Brian Eyre, currently Director of the Fuel and Engineering Technology Directorate within Northern Division, will become Member for Programmes, responsible for a coherent Authority approach on nuclear energy programmes consistent with our customers' needs.

Second, Northern Division is being replaced by three new Management Units. They are Downreay, Northern Research Laboratories (comprising the laboratories at Windscale, Springfields and Risley) and Risley Technical Services, a new engineering, computing and technical services group serving both external customers and internal needs. The main elements of these new Units will be in place from 1st August, but the full implementation will take place progressively over the rest of this financial year.

The new arrangements will help us to develop our business awareness still further. This means not only providing an even better service to meet our existing customers' needs but also widening the range of customers for our skills and facilities. To this end, we will be appointing Account Executives for each of our major customers. I have also appointed >

▷ Dr Freddy Clarke as the Director for Business Development to coordinate and stimulate corporate marketing activities and the development of new business opportunities.

Dr Tony Hughes from Harwell is being appointed as Authority Chief Scientist with the important task of ensuring that that quality and scientific excellence of the Authority's work is maintained and recognised. He will also ensure that the Authority continues to make a full contribution to national debates and on relevant scientific and research matters.

These changes will help the Authority to meet both the expectations of its customers and the increasing pressures of operating within the commercial structure of the Trading Fund. They should provide for more cohesive corporate policy making while giving local managers greater accountability to use their judgement in implementing their programmes and starting initiatives to develop our business further, within this overall corporate policy.

Reactor Research

In the UK nuclear field the most important development has been the Government's decision to accept the recommendations of the Layfield Report and allow construction of the Sizewell 'B' pressurised water reactor. The Authority welcome the Government's decision, which demonstrated clearly its commitment to a future nuclear power programme. Our research programmes will support the safe and efficient operation of Sizewell 'B' and any future PWR stations. The Spinning Cylinder Test Rig at our Risley laboratory was commissioned this year and will be used to test the integrity of pressure vessels under a variety of working conditions.

Another of our major tasks is to achieve improved reliability and efficiency of the AGR stations. We also provide the Government with independent advice on AGRs. In the shorter term the Authority has helped to solve problems with vibration of control rods in the new reactors at Heysham II and Torness, with the standpipe liner cracking problem and with the understanding of the deposition of carbonaceous deposits on fuel elements and deposition of carbon. One long-term interest is to boost the electricity output from the fuel and I am pleased to report that re-load fuel in Hinkley and Hunterston has approached its higher burn-up targets.

We firmly believe that the fast reactor is the power source of the future and we have a centre of excellence at Dounreay working primarily on this project. At this point I would like to pay tribute to the work of Dr Tom Marsham who will be retiring at the end of this month on completion of his term as an Authority Member after a distinguished career with the Authority going back to 1953. Without his dedication and his ability to overcome formidable technical problems, along with his foresight in setting challenging targets, it is doubtful that we would be as far on with the fast reactor as we are at present.

Technically the year has been a good one for fast reactors. The prototype fast reactor Dounreay has operated at full power for long periods although there have again been some irritating but resolvable problems with the

steam plant. The fuel reprocessing plant has operated very smoothly and has fully confirmed all our high expectations.

Last July the House of Lords Select Committee supported European fast reactor collaboration and its report, 'Nuclear Power in Europe', endorsed the future need for fast reactors in terms of fuel cycle efficiency. In November it was announced that the United Kingdom electricity supply industry would provide some 30% of the Authority's fast reactor funding from 1st April 1987 and this percentage is expected to rise in future years.

The fast reactor programme is a European collaborative activity under a Memorandum of Understanding signed by Governments and utilities to build commercial demonstration reactors in France, Germany and the United Kingdom. These intentions have run into heavy weather in Germany and Italy, in the light of Chernobyl, but the UK's commitment is as strong as ever. An important activity for us in 1986 was the public planning inquiry into the European Demonstration Reprocessing Plant at Dounreay. This plant will be required to service the proposed commercial size demonstration fast reactors. The inquiry into the application for outline planning permission by British Nuclear Fuels and ourselves ran for some months and the evidence submitted is now being considered by the Reporter. We hope that the Reporter's recommendation when he submits his report to the Secretary of state for Scotland later this year will enable us to press our claim to have the European Reprocessing Plant sited at Dounreay.

Nuclear Waste

Deep sea disposal of low level wastes is judged by knowledgeable scientists to be both safe and technically acceptable. However the present moratorium, together with delays in determining burial policy, pose expensive problems of long term storage of wastes both for the Authority and for others. It will be necessary to look further at suitable and economic storage arrangements. The Authority is developing techniques to improve methods of dealing with all nuclear waste from the UK nuclear industry. UK Nirex Ltd, the organisation charged with the task of assessing the best methods of dealing with intermediate and low level wastes, is now concentrating on deep underground disposal following the Government's decision not to press ahead with the shallow disposal of low level wastes. We have been studying water movement in various rock structures and radionuclide behaviour in underground repositories. This research has been carried out for a number of years and I am pleased that NIREX will be able to benefit from this work in developing its strategy for radioactive disposal.

Fusion

The splitting of the uranium atom has, of course, been the mainstay of the world's nuclear programme but fusing light atoms together also holds out the prospect of providing the future world with much needed energy. The Authority's programme at the Culham Laboratory is an important component of the European Community's fusion programmes. In addition, the Laboratory provides a high level of support

for JET - the Joint European Torus, with about 200 staff in the team and a financial contribution of some £8 million a year. During the past year the plasma in JET attained a temperature of 140 million degrees Kelvin which is close to the temperature necessary for a power-producing reactor. The magnetic thermal insulation, however, needs to be increased by a factor of ten to reach the region required for power production.

You will see from the Annual Report that this has been a very eventful, fruitful and may I say profitable year for the Authority. I think 1987/88 will be even more exciting for the UKs nuclear power programme.

Question and Answer Session

In an answer to a question on how the new organisational changes would increase the business awareness of the UKAEA, Mr Collier said that three-quarters of our business was done with three major customers - the Government, the electricity supply industry and British Nuclear Fuels Ltd. With the present financial stringency in this country, these areas were not going to increase very much and we would look towards growth in the other quarter of our business area. We would be intensively marketing our very wide range of non-nuclear activities in the business areas mentioned in the Annual Report - many of them at HARWELL but also in other parts of the UKAEA. We want to get the UKAEA's research and development findings and their developments into British industry.

In answer to another question, Mr Collier said while we had a major continuing role in the nuclear business, expertise gained was being applied successfully in the non-nuclear area. We supported the Government's aim of getting a better and faster turn-round from research and development into British industry to make it more effective. HARWELL has been very successful in this area and we want to build on that success.

Film Badge Notice

2 Weekly Films: Period 33F (Colour stripe BLACK)

4 Weekly Films: Period 09M (Colour Stripe RED)

Commencing Monday 10 August.

Please change your film(s) promptly and return old ones for processing.

WRONG!

Discerning readers will have noticed that the photograph of the Gleep Reactor (1947) in the 25/87 issue was in fact one of the BEPO Reactor taken in 1949! When space permits we shall publish the correct picture and meanwhile we apologise for any embarrassment caused.

Diary

CODED FOR 1,

**Sept
2 - 4**

- *Uranium Institute*
Twelfth Annual Symposium
Institution of Electrical Engineers

Savoy Place
London WC2
Enquiries Tel. 01-222-9493

6 - 11

- *The Institute of Physics*
EMAG '87 - Meeting
Electron Microscopy and Analysis Group and others

Manchester
Enquiries Tel. 01-235-6111

7 - 9

- *The Institute of Physics*
Nuclear Interactions and Structures - Conference

University of Sussex
Enquiries Tel. 01-235-6111

13-18

- *Sun-Fri The Institution of Electrical Engineers*
Designing for electromagnetic compatibility - Vacation School

University of Sussex
Brighton
Further details from the IEE
Tel: 01-240 1871
Ext 308

15-18

- *Centre for Extension Studies*
**Hazardous Wastes Legislation,
Monitoring, Disposal** - Short course

Loughborough University of Technology
Further details from Pat Stenhouse
Centre for extension studies
Loughborough
Tel: (0509) 222161.

22-24

- *Institute of Physics*
Eurosensors - Sensors and their applications - 3rd Conference
and exhibition
For topics to be covered, see feature inside

Cavendish Laboratory
Cambridge
Further details from the
Meetings Officer
The Institute of Physics
Tel: 01-235 6111

23

- *One-Day Course*
National Centre of Tribology
Pump problems in process industries

Main Lecture Theatre
Canteen Building
UKAEA
Risley, Warrington.

**28 to
Oct 2**

- *The Institution of Electrical Engineers*
**Plasma processing of materials for the
electronics industry** - Vacation School

University of Liverpool
Further details from the IEE
Tel: 01-240 1871
Ext 308

**Oct
14**

- *The Institute of Physics*
Rapid thermal processing in semiconductor technology - Meeting
Society of Chemical Industry

Belgrave Square
London
Further details from
The Institute of Physics
Tel: 01-235 6111

14-15

- *BHRA*
Offshore Separation Processes - International Conference

London
Further details from BHRA
The Fluid Engineering Centre
Bedford
Tel: 0234 750422.

27-29

- *BNES*
**International Conference on Materials for Nuclear
Reactor Core Applications**

Holiday Inn Hotel
Bristol
Further details from
Dr Ted Little
MDD Harwell
Ext 4001
or BNES Tel: 01-222 7722