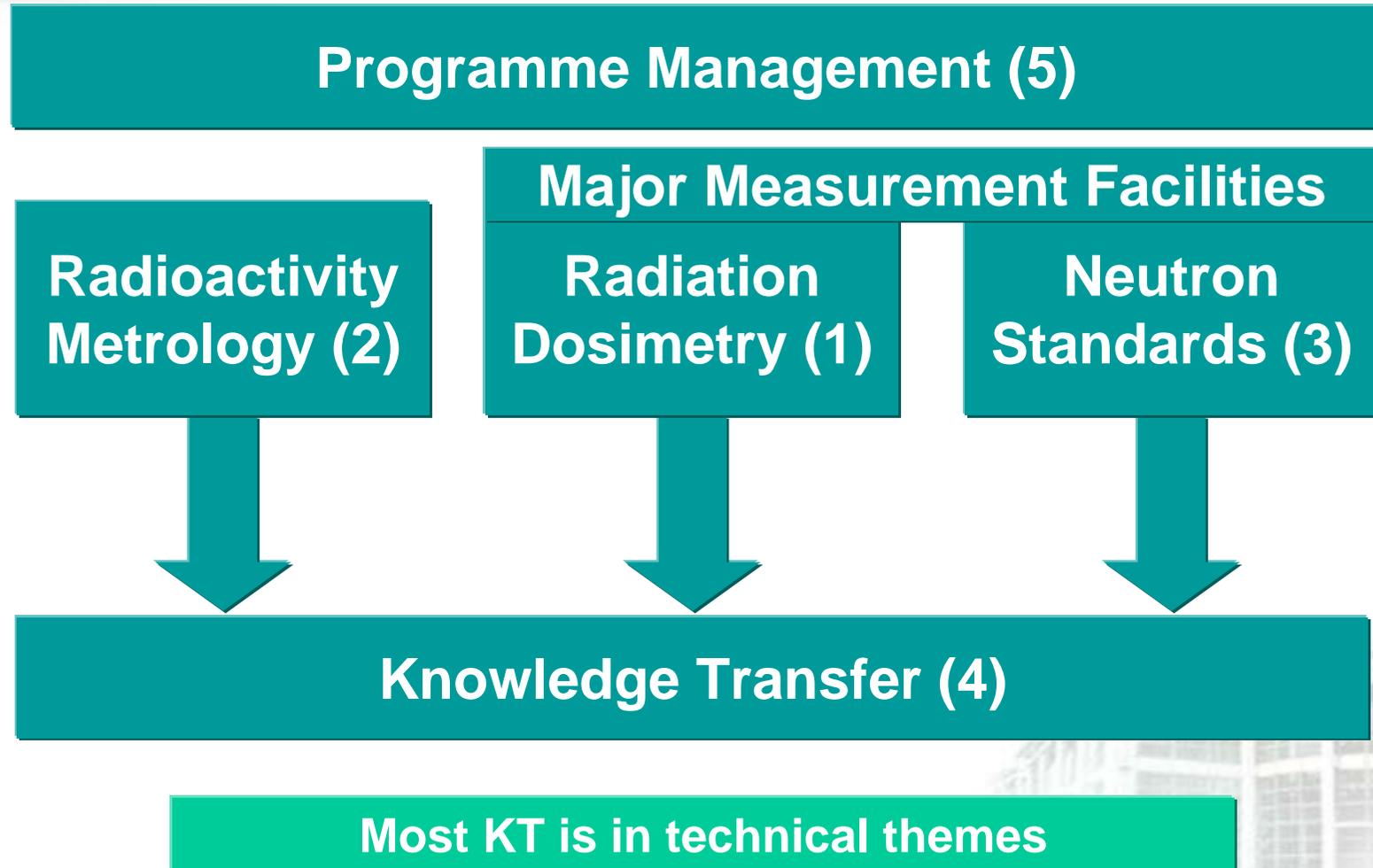


NMS Ionising Radiation Metrology Programme 2004-2007

***September
2004***





Programme structure

Standards of absorbed dose

Standards of air kerma

International equivalence

Maintenance,
development &
validation of
standards

Low dose-rate (environmental, protection & diagnostic)

Radiotherapy

Industrial applications

Provision of
measurement
infrastructure

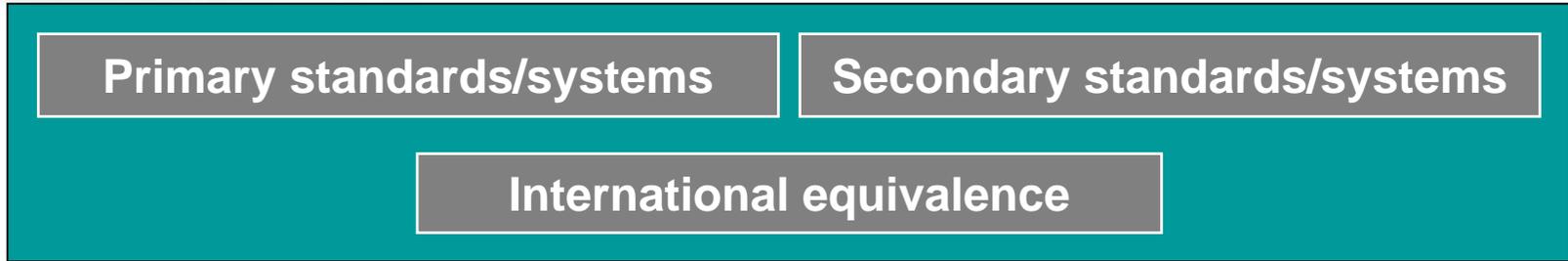
Existing LinAc, Irradiators, X-ray sets

Design, procure, commission new LinAc

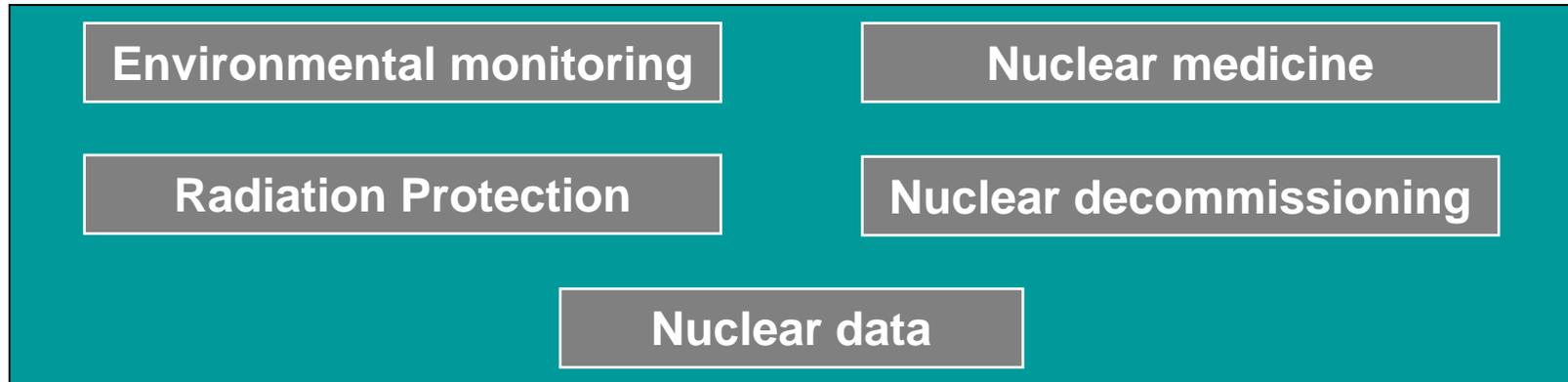
Major
Facilities

THEME 1 – Radiation Dosimetry

Programme structure



Maintenance, development & validation of standards



Provision of measurement infrastructure



THEME 2 – Radioactivity Metrology

3.1 Radionuclide based

3.2 Accelerator based

3.3 Comparisons & Demonstration of equivalence

Fluence
Standards

3.4 Neutron Spectrometry

3.5 Neutron Dosimetry

Applications

3.6 Van de Graaff

MMF

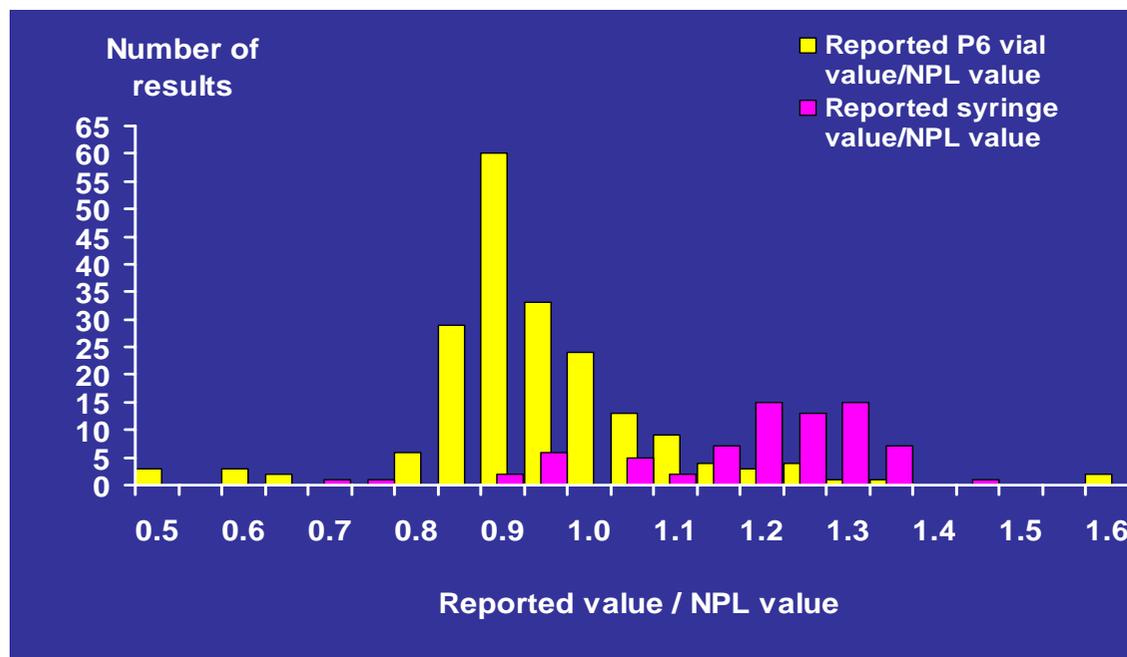
THEME 3 – Neutron Metrology



- Primary standards of relevant radionuclides
- Provision of specialist low activity solution standards
- Comparison exercises (2)
- Good Practice Guides (gamma-ray spectrometry / control charts)
- User Forums (NSUF,LSUF)



- Increase in nuclear medicine provision – new technologies, new radionuclides.
- Increasing regulation from drug development to administration.
- Project working with hospitals will:
 - Develop traceability scheme for PET radionuclides
 - GPG for NM
 - Establish technical audit for nuclear medicine departments



Support for emerging radiotherapy modalities (1.5)

- New conformal radiotherapy techniques offer improved cancer treatment. Radiation beam is tailored to size and shape of tumour (e.g. IMRT)
- Future modalities include proton radiotherapy
- Project will:
 - Work with hospitals and IPEM on dosimetry of small fields (including developing Code of Practice)
 - Work with university on 3D dosimetry systems
 - Work with hospitals to develop traceability and consistency for proton radiotherapy



Decommissioning

“Nuclear clean up is one of the most important technical and environmental challenges facing the UK. We need to ensure that the nuclear legacy is cleaned up in ways which protect the environment for the benefit of current and future generations.”

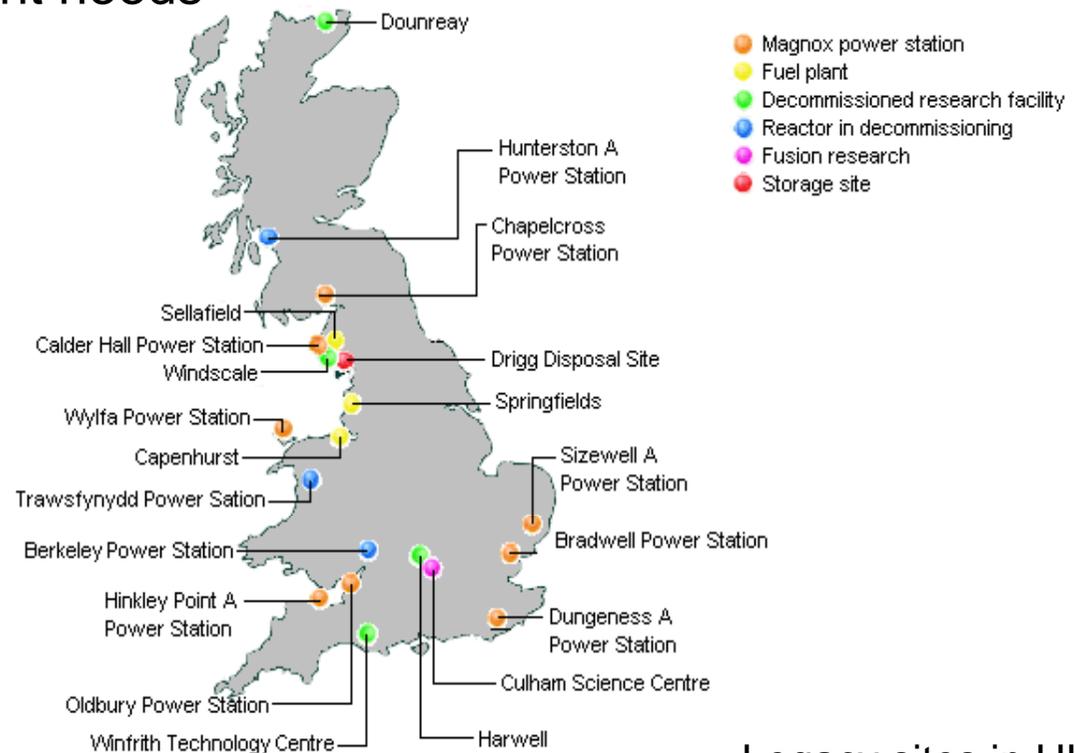
Brian Wilson, Minister of State for Energy and Construction.



Support for nuclear de-commissioning (2.7)

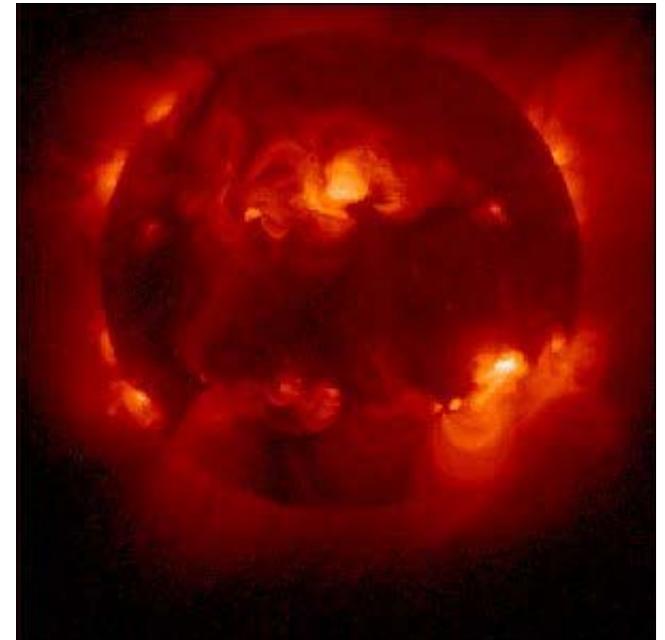
Project will:

- Run workshop to define measurement needs
- Work with industry on measurement codes of practice
- Produce reference material (e.g. standard drum)



Solar flare-watch (3.5) **(collaboration with MSSL, CAA, Airlines)**

- Air crew are UK population cohort with greatest occupational exposure to radiation (Cosmic rays)
- Work in 2001-2004 programme to validate systems for assessing dose in normal flights
- Solar flares could possibly result in dose-rates 1 – 50 mSV/h (calculation – no measurements)
- Airlines may need take drastic action if dose rates increase (drop altitude, ground flights....)
- Project aims to keep detector(s) in the air at all times to produce data to enable airlines to make rational decisions – results fed into CRAG



Questions / suggestions ?

