

# UK Irradiation Archive Options Study

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# Background

- The Irradiated Materials Archive Group (IMAG, chair Peter Flewitt) first met over four years ago with representatives from universities, national labs, NDA, EPSRC, etc. It was established because of the threat of irradiated Magnox pressure vessel material being discarded. IMAG initiated cataloguing of this material. IMAG work has been presented at previous Nuclear Academic Discussion Meetings.
- There is a wide range of irradiated material of known provenance at Sellafield, power stations and other sites. But much of this is not well catalogued and there is no central way of ascertaining what is available. Some material useful for research may be disposed of if steps are not taken to preserve it. IMAG has developed the concept of a national archive that researchers can access. This concept has been supported by NIRAB.
- UKAEA, Bristol University and NNL made a submission for NNUF funding for a detailed options study. This will be funded subject to a satisfactory gateway review later this month. We will need to consult a wide range of stakeholders.
- The output would be a report in March 2021 with recommendations for consideration by EPSRC, the NNUF Management team and owners of material (NDA and Rolls Royce have said they will participate and we hope EdF Energy will too). A decision will then be made on whether to proceed with one of the options.

# The Options

- We will examine the need, feasibility, value, cost-effectiveness and sustainability of a number of options. These include
  1. Do nothing
  2. Have a virtual archive – unirradiated and irradiated samples of pedigree material of interest are catalogued and stay at their current location. One or more databases are established that researchers can access to find out what is available and request material.
  3. Bring samples of interest to new, dedicated archive stores at Sellafield and (for low activity samples) Culham, with databases that researchers can access.Other options, e.g. a mix of 2 and 3, are possible.
- The US DoE has an existing initiative in this area, the Nuclear Fuels and Materials Library (NFML) led by Idaho National Laboratory. They are happy to advise us from their experience to date.

# Main elements of the project if the Gateway Review is passed

1. We will establish what samples are available and which are of interest to UK researchers.
  - a. NNL will lead on discussions with owners (NDA and Sellafield SLC in particular). Issues such as ownership, liability, conditions of use, transport and eventual disposal will need to be covered.
  - b. An essential task is consultation with the academic community. Bristol and IMAG will run a series of workshops around the country. We hope the first will be before Christmas. We will use the Nuclear Academic Mailing List, the NNUF Management Team and other means to publicise these.**
2. NNL and UKAEA will produce costed concept designs for archive stores. An existing facility that could be adapted has already been identified at Sellafield and the Culham store would be in UKAEA's Materials Research Facility.
3. Options for an archive will be considered; how they would work in practice and their pros and cons. This will be summarised in a report with recommendations for the implementation of a national archive.