

Open Government Status:

FULLY OPEN

NuSAC/SCR/07/9

HEALTH AND SAFETY COMMISSION

NUCLEAR SAFETY ADVISORY COMMITTEE

SUB-COMMITTEE ON RESEARCH

6 February 2007

ACCESS TO INDEPENDENT TECHNICAL CAPABILITY

Paper by HSE

Introduction

1 Part of the strategy for managing the HSC Co-ordinated programme of Nuclear Safety Research (NSR) is an arrangement for maintaining independent technical capability by HSE, in accordance with the DTI guidelines for the HSC NSR programme. This capability includes both experienced technical staff as well as experimental research facilities. The function of the independent capability is to provide HSE (NII) with a source of technical advice, in addition to its own staff, that is as far as is possible, independent from sources of advice used by licensees. This advice is used to support HSE (NII's) own research purposes and regulatory activities. Support for essential research capability (ERC), including experimental research facilities, is managed by the nuclear reactor licensees to support their own safety case needs.

2 This paper provides an update on the review of independent capability reported in NuSAC/SCR/06/12 at the April 2006 meeting.

Assessment

3 HSE (NII) has carried out this assessment of Independent capability across all the technical areas of the programme. It should be noted that when HSE (NII) needs to actively maintain this Independent capability, the Levy element of the NSR programme is used with the agreement of the licensees. When the capability is required for regulatory purposes, the Nuclear Safety Studies (NSS) support budget is used. For issues with underlying generic science, NII may use the same advisor as the licensees, but for issues specific to a safety case, NII needs to be able to obtain independent advice.

4 There are various degrees of independence, and it is acknowledged that most experts in the field will have or will have had some association with the licensees. A balance is struck between the level of expertise that comes through working for the industry and the independence from specific plant evaluation.

Status of Current ITC arrangements

5 Presently there is in general an adequate level of Independent capability available to HSE (NII) through the traditional nuclear safety contractors, Universities and HSE's Health and Safety Laboratory. However the situation is currently under review due to the increasing demands being placed upon the nuclear contractor community resulting from an upturn in the nuclear industry. It is uncertain what effect the current nuclear skills shortage will have on the expertise which will continue to be available to NII. The current availability of ITC varies between different technical areas:

- PSA – There are adequate sources of independent advice available in the UK and overseas
- Civil Engineering – No problems as most advice needed is not specific to the nuclear industry

- Structural Integrity – Independent advice can be obtained from TAGSI (Technical Advisory Group on Structural Integrity) and TWI (The Welding Institute) if required. For independent advice on NDT (Non-Destructive Testing) we can use ESR (formerly AEA Technology National Centre of NDT) and TWI. Serco are also available for both NDT and Structural Integrity Assessment provided the Licensee has not used them.
- Graphite – NII's source of ITC is the Graphite Technical Advisory Committee (GTAC). This Committee consists of representatives from the Universities of Manchester, Birmingham and Leeds as well as consultancy organisations. This ITC arrangement continues to work satisfactorily. The Graphite team at Manchester University is receiving enough work through NSS contracts to ensure its viability without the need for intervention from the levy programme. Because of regulatory concerns over future graphite weight losses in AGRs, it is proposed that funding for the graphite oxidation part of the programme of the Harwell Radiation Chemistry Key Team be transferred from British Energy Essential Research Capability to an NII NSS contract.
- Waste management and decommissioning - this is a growth area, so there are no problems of access to independent advice
- Nuclear Systems and Equipment - most work is done by the licensees themselves, so independence is not relevant
- Radiological protection - independent advice is provided by Health Protection Agency -Radiological Safety Division
- PWR Coolant chemistry - most capability is already taken up by the industry. For the past three years, independent advice has been obtained through employing a consultant (a former BE employee) under the Levy. This consultant is also employed separately by BE. However he has been able to satisfy the NII project officer that the advice he gives reflects his own opinion and not that of BE. NII is considering an initiative to use the expertise of this consultant to develop the plant chemistry and corrosion expertise of younger specialists employed by HSL, AMEC NNC or Nexia solutions.
- Chemical Processes Secondary circuit chemistry - a second consultant (also a former BE employee) is funded under the levy to maintain a watching brief on developments overseas and to provide advice to NII as and when required. This Consult-

ant is also employed separately by BE and Magnox Electric. However, he has been able to satisfy the NII project officer that the advice he gives reflects his own opinion and not those of the Licensees. NII is considering an initiative to use the expertise of this consultant to develop the plant chemistry and corrosion expertise of younger specialists employed by HSL, AMEC NNC or Nexia solutions.

- Nuclear Science, PWR and AGR Plant modelling – There are at present no particular problems.
- Fuel and thermal-hydraulics modelling – Independent advice on fuel modelling can be obtained through NII's arrangements for access to the OECD Halden programme and membership of the Studsvik Clad Integrity Project (shortly to be transferred to Halden), and Cabri programmes and for LWR thermal-hydraulics, the ROSA programme and NEA PKL project. In the opinion of NII's Project officers, these programmes have delivered useful experimental results and analyses. However resource restrictions (principally overseas travel budget cuts) have meant that NII Project Officers have not been able to attend meetings of these projects and so maintain access to potential sources of independent advice from overseas. This problem will be addressed in 2007 either by NII staff attending these meetings or commissioning contractors to do so on our behalf.

Potential future problems

6 The review identified some potential future problems:

- Human factors - there is a potential difficulty ahead in that several of the key consultants will retire over the next 5 years (not unique to human factors). The problem arises because young graduates with Human Factors relevant degrees are not choosing to enter the nuclear industry, so independent advice on nuclear specific issues will become harder to obtain. NII is developing nuclear capability in HSL as a source of independent advice but will rely increasingly on new staff recruited to NII.
- Control & Instrumentation - There are plenty of sources of general independent advice available in the UK and overseas. Nothing is actively done currently to develop independent leading edge suppliers, but it might be considered in the future. CINIF arrangements make sure that the current leading edge suppliers (City and Bristol universities) give the same advice to both the industry and NII.

- Chemical processes & Radionuclides - there are experts at Harwell in radiation and radionuclide chemistry that are employed by Nexia Solutions and have been identified as one of a number of Key Teams in a review conducted by the company of its own capabilities. NII is confident of continuing support for these experts. However, this Harwell based team also makes use of expertise from Winfrith through a sub-contract. This Winfrith team was not taken in to Nexia solutions. The Harwell team report that they have not had any problems accessing the expertise at Winfrith. There is unlikely to be any need for advice on Magnox issues on these topics in the future, the remaining issues applying exclusively to BE.
- Fire and Internal Hazards – Expertise in fire safety engineering in conventional plant is readily available. However, because of the need to contain radionuclides and prevent the spread of radiological contamination, fires in nuclear plant present particular fire safety engineering problems. Specialist expertise in this area of fire safety engineering is becoming scarce. The option of developing nuclear capability in conventional fire safety engineers is being explored. HSL will be considered as a possible source of advice to NII.

Possible future actions

7. The level of available advice has remained adequate since the previous review in April 2006. If the available expertise declines further, possibilities that might be considered include:

- Ring fenced teams within consultants
- Using capability in one licensee to assess the safety case of other licensees
- Tapping into more overseas capability where possible
- Growing more teams at universities to provide ITC in a manner analogous to the licensee URA's
- Where taking advice from the same source as the licensee are unavoidable, introducing arrangements to ensure that the advice given reflects the considered opinion of the advisor and not that of the licensee. The CINIF arrangements in the Control and Instrumentation technical area are an example of this.
- To date the ITC arrangements have been used exclusively to provide advice to support HSE (NII's) regulatory activities with the operating reactor licensees. How-

ever, the position will be kept under review to determine if such arrangements are necessary, to support regulatory activities with decommissioning, fuel cycle or defence licensees.

- Work on pre-licensing of new designs of civil reactors will commence during 2007 and consideration will be given to independent technical capability needs for these new designs of reactors to be assessed.

Conclusions.

8. The review of access to Independent technical capabilities has confirmed that currently the position is generally secure and that adequate arrangements are in place to maintain teams and provide active support that are needed now. However there are clear indications that this situation is likely to change due to increasing industrial activity. Sources of advice that reside within Nexia Solutions are increasingly needed to provide advice only on BE issues. There is, in general, access to a number of teams in each technical area but in some technical areas, where available expertise is limited, NII has had to develop arrangements so it can satisfy itself that the advice given by a team that also advises the licensees reflects the advisors own considered opinion and not that of the licensee. The continuous monitoring of the situation by NII assessment staff remains effective. A more fundamental review will be carried out over the next 12 months and the results reported to NuSAC/SCR.

Action

9. The NuSAC/SCR are invited to note the outcome of the review of access to Independent technical capability and comment on the information presented in this paper.