

Safe nuclear power plants: technical support services and contractors

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A common concern to both regulators and the nuclear industry is the ongoing gradual loss of experienced and competent personnel in nuclear technology, and the resulting weakening of nuclear field organisations. In some cases nuclear power plant vendors have merged with other companies and are no longer offering their earlier designs, while the technical strength of some others has decreased since the time they were actively designing and constructing nuclear power plants (NPPs). Consequently, some nuclear operating organisations have difficulty finding sufficient external support needed for the maintenance and operation of their facilities. Additionally, suppliers of specific nuclear equipment are disappearing from the market and as a result the in-depth knowledge on the design features of their equipment is being lost. Similarly, nuclear research institutes and other expert organisations have reduced their nuclear staff and budget.

Several alternatives can be used to fill this gap. One is for the licensee(s) to either strengthen their overall technical support services or maintain expertise in vital areas. But

market competition is leading licensees to reduce operating costs, which in turn can lead to safety challenges. Another alternative is to use consultants and specialised companies that offer contracted services. The drawback to this approach is that the expert knowledge of these contractors is often limited in scope, and does not include a comprehensive understanding of the NPP safety concept. Furthermore, contractors may not have had sufficient involvement and experience at the specific plant sites where they are working. Therefore they require due guidance and supervision by the operating organisation.

The licensee's ability to maintain control over the nuclear safety aspects of the technical support services and contracted work represents a safety concern that cuts across the spectrum of contracting activities. This ability was identified as a topic for which an international exchange of views and experience could bring useful insights to operators and regulators. It was considered worthwhile to identify commendable means used by the operators to maintain such control as well as the type of regulatory oversight (e.g. inspections,

assessment, etc.) that allows the regulator to gain assurance of the adequacy of such controls. Recognising the importance of these concerns, the NEA Committee on Nuclear Regulatory Activities (CNRA) decided to hold an international forum on this subject in June 2004. Heads of nuclear regulatory authorities were brought together with executives from the nuclear industry to exchange perspectives and experience.

The underlying starting point for this forum was a survey performed by the CNRA Working Group on Inspection Practices (WGIP). The survey was undertaken by the WGIP to identify trends and impacts from the use of contractors by NPPs in member countries. The resulting report, NEA/CNRA/R(2003)4, was used as a basis for planning and holding discussions at the forum.

The report itself was based on a survey that consisted of 20 questions that focused on licensing, process control, safety issues and other inspection areas. Fourteen member countries completed the survey. The appendices to the report include the survey questionnaire, a summary table of the answers received and the full text of the answers. The results indicate that the NPP licensees in all

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surveyed countries use contractors. The spectrum of contracted activities includes maintenance, inspections, engineering and analytical services. Management and operator tasks (e.g. control room operations) are not contracted out.

The main objectives of the June 2004 forum were to have an international exchange of views which would:

- focus on the means used to ensure the safe operation of NPPs – looking at how operators control the quality of contracted work; at technical support; and at regulatory oversight of the competence of both operator and contractor;
- provide a clear picture of the current use of expert support to nuclear power plant operation and identify commendable solutions for ensuring the availability of support, including in the future;
- improve understanding of what the regulators, licensees and contractors should do to promote resolution of the concern.

During the forum debates, three key areas of interest emerged: the overall environment, the licensees' responsibilities and the regulators' responsibilities. Small breakout sessions were held to further develop these themes; the discussions can be briefly summarised as follows:

The overall environment

- Globalisation and consolidation – While fewer key suppliers of nuclear components exist, many small expert contractors are available and sufficient competition continues. It is clear that the use of contractors will continue, but what is important is to clearly recognise how and what work they do.

- While the nuclear industry is considered to be a specialised environment, the use of contractors is not unique to this sector. The overall environment differs nevertheless throughout the world and undergoes change (e.g. market economies, political uncertainty, etc.).

The licensees' responsibilities

- The licensee is always responsible for safety. Core activities such as control and supervision of operation, or quality assurance, cannot be contracted out. In order to fulfil their responsibilities, they must be "smart buyers"/"intelligent customers". This requires good control, supervision and oversight of contractors' work.

The regulators' responsibilities

- The regulator needs to provide clear explanations of what is required to the highest management levels of the licensee or its parent organisation, and to closely follow the contractors' actions to ensure that safety.
- The regulator must have sufficient, appropriate tools (e.g. expertise, resources, etc.) and must maintain capability for self- or independent review.

After having reviewed the outcomes of the discussions, the forum's final open panel presented the following conclusions:

- Licensees need to develop strategies for dealing with diversified contractors who are becoming more global.
- Regulators need to develop their practices for verifying adequate arrangements between licensees and contractors.
- Licensees need to improve their own knowledge in

Ensuring safety by being clear about responsibilities

One of the keys to ensuring safety at nuclear power plants, as well as many other industrial facilities, is to be clear about who is responsible for what. Failure to do so can lead to tasks undone or poorly done, producing in certain cases the opposite of the intended outcome. This point was summed up by Nils Diaz, Chairman of the US Nuclear Regulatory Commission, during his presentation at the forum. He told the story about four people named Someone, Anyone, Everyone and No one. There was an important job that had to be done; Someone should have done it; Anyone could have done it; Everyone thought that Someone would do it. In the end, No one did it. At the beginning, the responsibility was not assigned.

order to conduct more technical work in-house or to become more intelligent customers.

- Certain core tasks cannot be outsourced and must be conducted by the licensee staff (international guidance is needed on what those tasks are).
- Contracting work is not a threat to safety but management of the tasks on site must be in the hands of the licensee.
- There is a need to develop a concrete description of what is meant by the statement "the licensee has full responsibility for the safety of the plant"; international guidance on this is missing today.

It was noted that the latter point on defining what licensee responsibility means has been debated for some time and may be an appropriate topic for further discussion by NEA committees. The NEA Committee on the Safety of Nuclear Installations will be assessing and determining how to address this issue in its forthcoming programme of work. ■