

Technical Meeting
to
Develop a Guidance Document on the Preservation (and Enhancement) of Nuclear Knowledge for Nuclear Power Plant Operating Organizations
28 November- 2 December 2005, Vienna, Austria

Background

The IAEA is developing guidance documents on nuclear knowledge management (KM) including knowledge preservation and knowledge transfer in the nuclear sector.¹ This activity will assist nuclear organizations in MS to effectively apply this guidance, and to assist them in benchmarking their practices against those of other industry organizations.

The first Technical Meeting to Develop a Guidance Document on the Preservation (and Enhancement) of Nuclear Knowledge for Nuclear Power Plant Operating Organizations was held 14-17 June 2004 in Vienna. As a result, a preliminary draft document on the subject prepared by Secretariat was reviewed and the outline of the new technical document developed. Meeting participants encouraged the Agency to work closely with other nuclear industry international organizations that are also working on NKM. These include: NEI, OECD/NEA, WANO/INPO, and EPRI.

This Technical Meeting with a participation of experts from different Member States will review a draft document on the subject and provide a forum for information exchange and benchmarking on KM for NPP operating organizations.

This Technical meeting is being organized within the framework of the Programmes: C.3. Nuclear Knowledge Management and A.2. Improving Quality Assurance, Technical Infrastructure and Human Performance, and is also sponsored by the Nuclear Energy Institute (NEI).

Objectives of the technical meeting

The following objectives have been set for the meeting:

- To provide a forum for presentations and discussions regarding practical methods being used/developed today for KM in NPP operating organizations.
- To review a planned IAEA technical document on KM for NPP operating organizations. The presentations and discussions during the meeting should provide a framework within which to review the document.
- To obtain overall comments on the structure and organization of the document, comments on the examples proposed for the document, and identification of additional examples to be included in the document.

¹ For already published documents see <http://www.iaea.org/Publications/index.html>

Outcomes of the technical meeting

- Approved structure and organization of the document.
- Agreed examples on current practical methods being used/developed today for KM in NPP operating organizations.
- Action plan to complete the document.
- CD-ROM of the meeting materials/proceedings.

Outcomes and recommendations from the first Technical Meeting on the subject (June 2004)

A new technical document on Preservation (and Enhancement) of Nuclear Knowledge for Nuclear Power Plant Operating Organizations is under preparation. The document will identify the fundamental elements needed for an effective KM system, as well as providing guidance concerning methods for KM implementation.

This document is intended for senior managers of NPP operating organizations up to and including the Board of Directors. For this audience, KM should be important because: there is a 100-year or more life-cycle for the knowledge needed to effectively and safely manage an NPP; thus KM needs to be part of the long term strategy of the organization. Additionally, through KM:

- Operational and safety performance can be improved
- Operational and personnel safety risks can be reduced
- Re-engineering opportunities can be identified

Collectively these results should lead to improved business performance.

While there is no universally accepted definition of knowledge management, for the purposes of this document, knowledge management is defined as a systematic process of finding, selecting, organizing, distilling, validating and presenting knowledge in a way that improves an employee's or organization's comprehension in a specific area. For an NPP operating organization, specific knowledge management activities help focus the organization on acquiring, storing and utilizing knowledge for such things as effective transfer of knowledge from an ageing workforce to the next generation, problem solving, dynamic learning, strategic planning and decision making.

KM is quite a new concept, having come to prominence during the 1990's. However, due to the nature of NPP operating organizations (high hazard but low risk) a number of plant activities and programmes have been in place throughout the industry to manage and control the knowledge and information related to NPP design, construction, operation and maintenance. Examples of existing KM activities for NPP operating organizations include:

- Configuration management
- Document control

- Work control systems
- Quality assurance and quality management
- Operating experience programmes
- Corrective action systems
- Safety analysis
- Training and development
- HR management

KM implementation is not intended to replace any of these systems, but rather should increase the benefits from these systems through providing an integrated approach to:

1. Increasing the value of existing knowledge
2. Collecting, developing, and integrating tacit knowledge, and
3. Identifying business, operational and safety risks due to knowledge gaps

If properly implemented, KM shouldn't "take over" any existing plant programmes or activities, but rather should be a catalyst to increase the benefits to the organization of these activities. The lessons learned in the nuclear industry in the past 20 years in moving from inspecting in quality through large quality assurance organizations to building quality into all plant processes (with associated reductions in the number of quality assurance auditors/inspectors), have considerable relevance for KM implementation

If we look 5 or 10 years into the future, the success of KM for NPP operating organizations shouldn't be measured by whether or not there is a Knowledge Management Officer or a large KM organizational unit, but rather that KM ideas are a part of the daily life, practices and culture of NPP operating organizations, and that KM methods are being used to make established processes for managing knowledge and information more effective.

In June 2004 the IAEA organized a Technical Meeting to Develop a Guidance Document on the Preservation (and Enhancement) of Nuclear Knowledge for Nuclear Power Plant Operating Organizations. The meeting made the following recommendations:

1. The IAEA should publish a technical document on this topic, as there is an immediate need for this information at many NPP operating organizations in Member States.
2. Due to the immediate need for this information, the publication of this technical document should be expedited as much as possible.
3. Meeting participants provided inputs for a proposed outline for this technical document. They recommended that the IAEA use this outline as the basis for developing a draft document. They also suggested that the draft document be reviewed by a small number

of NPP operating organization managers who have not been involved with its development in order to ensure that it is presented and organized in a manner that will be most suitable for the target audience. They suggested an additional meeting to review the document prior to its publication.

4. Meeting participants encouraged the Agency to work closely with other nuclear industry international organizations that are also working on KM. These include: NEI, OECD/NEA, WANO/INPO, and EPRI. For example the Nuclear Human Resource Group (NHRG) Community of Practice under NEI is considering a workshop later this year at INPO Headquarters in Atlanta.
5. Meeting participants indicated that there would be considerable benefit for NPP operating organizations to have access to services to assist in the implementation of the fundamentals and guidelines to be provided in the proposed technical document on knowledge management for NPP operating organizations. The nature of these services could be a combination of communities of practices, benchmarking and assist visits/missions.
6. As developments in KM are moving quite rapidly, both within the nuclear power industry and in other relevant industries, it is recommended that the Agency develop and maintain a data base of examples of good practices in KM, rather than providing them as annexes or appendices in the proposed technical document (e.g., web space with password control). In that way the information can be kept current and quickly reflect new developments in this field. It is suggested that examples be provided in all areas for which methods are discussed in the guidelines, and also address as many application areas as possible (e.g., document control, work control, configuration management, training, HR, OE, corrective action systems).
7. Providing a CD-ROM at the end of the meeting that includes all presentation and reference materials from the meeting is an effective way for participants to have information that may be of immediate use to them in improving their organization's practices in this topic area. We encourage the adoption of this as a standard approach for Agency meetings.
8. It is suggested that the Agency include KM support for the industry in its medium and long term strategies and plans.

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