



Assessment of Safety Culture: Changing Regulatory Approach in Hungary

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Abstract: Hungarian Atomic Energy Authority (HAEA) is changing its inspection practice and assessment methods of safety performance and safety culture in operating nuclear facilities. The new approach emphasises integrated team inspection of safety cornerstones and systematic assessment of safety performance of operators.

1. Introduction

Regulatory assessment of the improvement of safety culture in operation of nuclear installations requires new methodologies and evaluation techniques from Regulatory Bodies. HAEA is implementing a new inspection philosophy following the recommendations of an International Regulatory Review (IRRT) mission and the RAM-G project of the European Union in order to provide a good basis for assessment of safety culture.

Inspection and assessment have been governed by detailed internal guidelines in the framework of HAEA's Quality Management System. The guides cover following areas:

- core inspection program for planned inspections of operation, maintenance, refuelling, technical support etc. (elements of the earlier inspection program)
- integrated team inspection program for new, general inspection areas
- safety indicator evaluation and assessment program
- new event investigation program (under development).

This paper introduces the new elements of the inspection program.

2. Integrated team inspections

- Integrated team inspection program was introduced in 2001 as implementation of the following IRRT-recommendations: strengthening of the inspection department, utilisation of the corporate knowledge, implementation of a middle term inspection plan, inspection experience feedback etc.
- Mean features of the program are as follows:
 - detailed guidance for preparation, execution, documentation and utilisation of inspection results
 - 3 inspections per year
 - 12 selected topics (average inspection period: once in 4 years – rearrangement between topics is possible)
 - inspection time: 1 week with 6–8 participants from all departments of HAEA
 - “mild” enforcement (An evaluation report is sent to Licensee within 3 weeks after the inspection. A response with the intended corrective actions is expected. Regulatory actions are taken on the base of the aforementioned documents.)
- Inspection topics for 2001–2002:
 - Operations management
 - Documentation handling
 - Strategic maintenance planning
 - Waste management
 - Fire protection strategy
 - Safety analyses

- An example of the integrated inspection: operations management:
 - 12 areas of inspection were identified: external influences, goals and strategies, management functions and overview, resource allocation, human resource management, training, co-ordination of work, organisational knowledge, proceduralization, organisational culture, organisational learning, communication.
 - A questionnaire of about 80 items was prepared for the inspection, which is going to be a guide for inspection of the management self-assessment required by the Requirements for Quality Assurance.
 - Typical findings of the inspection
 - a) The Licensee has no plans for substitution of important subcontractors
 - b) The list of positions important to safety is not complete – it only consists of shift personal.
 - c) No strategic plan exists for preventive maintenance program.
 - d) There exists shortage of personnel at the Safety Directorate and at the Technical Support Directorate.
- Licensee's response: the Licensee agreed most of the findings and sent a proposal for corrective actions.
- HAEA actions: The proposal was agreed with, some remaining activities were prescribed to the Licensee.

3. Operational Safety Performance Assessment

- The program relies on all relevant information gathered by HAEA:
 - results of inspection activities (including assessment of databases through on-line access to computer network of the Licensee),
 - quarterly, annual and other regular reports of the Licensee,
 - event investigation reports and their analyses,
 - results of evaluation of licence applications,
 - results of Licensee's self-assessment including its own safety performance assessment program.
- The structure of the program is based on the IAEA-TECDOC-1141 recommendations.
- HAEA tried to collect its own set of performance indicators (PI). PI used by the utility are considered as supplementary information for the HAEA.
- Every specific indicator (the lowest level of the system) has evaluation criteria for ranking it in green, yellow or red field. The meaning of evaluation criteria are as follows:
 - green: everything is "ok", no deviations
 - yellow: small deviations identified within the approved limits or conditions
 - red: deviations exceeded the approved limits or regulatory expectations— there is a need for corrective actions from the Licensee or Regulator.
- Strategic indicators are painted according to the colour and trend of their specific PI (trends are established for the last five years).
- Overall indicators are not coloured. Their assessment takes in consideration not only PI values but also other information gathered by HAEA.

- Overall indicators are collected in three safety attributes: characteristics of smooth operation, risk characteristics and safety attitude of operation. Safety attributes have a rather detailed evaluation with recommendations of the HAEA for corrective or improvement measures. HAEA understands that safety culture can be assessed only by both quantifiable and non quantifiable characteristics, and no one of them can be nominated as a single mark of safety culture.

Current situation

- A safety performance assessment manual has been elaborated. It identifies
 - the purpose of every PI,
 - the methodology of calculation,
 - the source of input information,
 - the evaluation criteria,
 - the responsible person for obtaining or confirming the input information,
 - the responsible person for evaluation,
 - the documentation requirements,
 - the date of introduction of the PI (some of them will be introduced only after having reliable input information by the HAEA)
- The tasks (the indicators) were distributed among the whole staff of the HAEA and a team leader was appointed.
- The first official report on 2001 year was issued recently. HAEA intends to issue the report every year in April-May in order to give an explanation for the Licensees about the regulatory evaluation of their safety performance.
- Only the safety indicators of the Paks Nuclear Power Plant have been elaborated yet, but HAEA is planning to introduce a set of safety indicators for research and training reactors and also for the dry spent fuel storage facility.
- The results of the first-year-report should be handled very carefully. Measurement of safety performance should be in accordance with goals of whole performance assessment: improvement of performance, identification of weaknesses etc. That's why both quantitative and qualitative **comparison** of safety performance indicators of the Licensee with it's similar indicators at an earlier assessment or with widely recognised good practices are necessary. (In other words: some times not the values are most important but the trends.)
- However there is a significant finding in the first-year-report on safety performance evaluation of Paks NPP: the safety indicators of smooth operation and the risk characteristics are very good, but in the third area (safety attitude of operation, which is part of safety culture) there are numerous "red" indicators and both the Licensee and the Regulator have to investigate this results and take necessary measures.

4. New approach to event reporting and investigation

- A new event investigation guideline is under preparation at the HAEA. There are some new features in our regulatory approach to this sensitive inspection area.

- HAEA will not directly participate in the International Nuclear Event Scale rating of operational events. It will issue the Hungarian version of INES manual and prescribes to follow its instructions in rating of events.
- At the same time HAEA elaborates it's own event rating scale with more emphasis on INES-0 level, on human errors and management issues in operational events. This new regulation is going to be introduced in 2003–2004.