

TOPICAL ISSUE 2: INFLUENCE OF EXTERNAL FACTORS ON SAFETY

Session Chairpersons' Summary

Current Status

The conference reached a general consensus that the external factors reviewed in the Issue Paper were real and would continue to exist and intensify for the foreseeable future. External changes and pressures are inevitable and the vital question is therefore how transitions and changes are to be managed. To maintain and enhance nuclear safety it is necessary that safety performance, safety management and safety culture be fully embraced by operating organizations, and monitored by regulators (with appropriate interventions as required).

External change brings with it the opportunity for utilities to make significant internal change. For example, competition and deregulation have brought a new focus to economic performance, and a common response of utilities has been to improve the management of operations and maintenance and to improve the condition of plants. This has had a very positive effect on plant performance and reliability, and has also evidently enhanced the level of safety. Other responses by the industry have been changes in plant ownership, measures to cut costs and initiatives to reduce regulatory burdens.

Erosion of the technical infrastructure is a cause for concern, especially in countries where no new construction is taking place and where measures to modernize the operating plants are not being taken. Erosion is seen in reduced opportunities for university education in the nuclear field, decreasing investment in R&D, rapid degradation at the original plant vendors of the skills needed to support plant operation, and withdrawal of equipment suppliers from the market. (The specific issue of "Maintaining Competence" was the subject of a separate Panel Discussion).

Political decisions on early closure of some plants have been made as part of national energy policies (for example, Germany, Sweden), and also under political pressure from other countries (for example, some EU candidate countries). The main consequences seen today are reduced motivation among plant staff to strive for excellence and accelerated erosion of the technical infrastructure.

Inadequate financing of nuclear activities is a problem, especially in the countries of the former Soviet Union and in some other countries of Central and Eastern Europe. When revenues from power production cannot be collected and adequate Government funding is not available, it is difficult to make the necessary investments in plant condition and work practices and to have qualified, motivated staff working in the nuclear field.

The conference heard about a variety of changes taking place in the regulatory frameworks of different countries. Some of these changes are occurring in response to insights

and experience gained over many years, and represent a maturing and refinement of the regulatory systems. In other cases the changes are more directly related to shifts in the external environment, such as the introduction of market competition for electricity.

A broad conclusion of the conference is therefore that, although safety can be maintained through times of change, this will not happen by itself. It requires leaders who are knowledgeable, who are determined to give nuclear safety high priority, and who give their personal and visible support to the safety culture and safety standards of their organizations. In certain cases this may involve making some very difficult decisions, up to and including plant shutdowns. In all cases it means that the manner in which change is executed must be supportive of the safety culture. As a consequence, people who occupy senior roles in utilities, regulatory bodies and governments must have a respect for the hazards of nuclear power operations and a solid understanding of what is required to manage the risks.

Findings And Conclusions

1. A solid safety culture throughout operating organizations is the best means to ensure safety in times of change. The IAEA should therefore continue its efforts to promote good management of safety and safety culture.
2. New management approaches introduced in response to economic pressures have provided improved safety performance in many cases. The IAEA could arrange for the sharing of such positive experiences internationally between responsible organizations.
3. While changes in organizational structures and ownership can clearly be managed so that they have a positive impact on nuclear safety, there is also a risk of deterioration in the safety culture if managers are not familiar with nuclear safety principles or if they do not demonstrate a positive and visible safety attitude to their organizations. The IAEA, together with other international organizations such as WANO and the OECD/NEA, should therefore emphasize and promote a commitment to a strong safety culture among the corporate management of all organizations that are entrusted with responsibility for nuclear power operations.
4. A lesson from other industries that have experienced deregulation, mergers and other major external changes is that these changes need not of themselves threaten safety but that, because of their impact on the people in the organization, the transitions need to be well managed. Change management processes and open communications should be applied during all major organizational changes, including for example, reductions in staffing levels and major changes in structure.
5. As seen in other industrial fields, open exchange of safety information is beneficial for all stakeholders and must not be reduced in response to the more competitive environment. The IAEA needs to continue to promote open communication between all organizations in the nuclear field.
6. Maintaining a high level of safety is facilitated if organizations in transition can build upon a well established national culture that supports a positive attitude towards safety

matters. However, organizations can have difficulties in countries where the society does not generally give high priority to safety. Guidance from the IAEA on how to improve the safety culture in such countries would be very valuable.

7. Inadequate financing of nuclear power plants in many countries (in most cases due to the inability to collect revenues from power production) has created a situation that cannot be solved by the operating organizations or the regulators alone. Therefore the concepts of safety culture need to be brought to the attention of the political decision makers at the highest levels, and the IAEA should elaborate means for doing this.
8. The most severe and widespread adverse impact on the capability to keep currently operational plants in a safe condition is probably due to the erosion of the technical infrastructure (including both technology and human capability). In addition, political decisions on early closure of nuclear power plants have created a situation where it is uncertain whether safe operation can be continued for the remaining operating lifetime. Safety cannot be ensured by strict regulation alone if the operating organizations have lost their motivation and skills, or if they cannot get technical support and spare parts from external sources. It was recommended that the IAEA assist in bringing these issues to the attention of the decision makers, who may think that the current generation of plants can safely operate to the end of their designed life even if the technical infrastructure is lost.
9. Operating organizations have the responsibility, and the best capability, to respond to changing situations quickly. Therefore regulatory organizations should preferably provide only a general framework for the changing activities of the industry, while observing what the industry is doing. Open dialogue and close interaction between the highest levels of management of operating organizations and regulatory bodies is necessary and commendable to ensure that both parties have a mutual understanding of the direction and the limits of new developments. This open dialogue is vital for building mutual trust between the regulators and the operators which, in the wider view, is a necessary part of improving the effectiveness and efficiency of regulation. The IAEA should provide a forum and guidance in this area.
10. There would be value to both utilities and regulators in having tools available for assessing the effectiveness of management systems in maintaining safety through transitions. There was not a consensus on whether the regulators would need to perform such assessments themselves, or could require that the utilities perform the assessments and present the results. In either case, there was agreement that experience with such assessment methodologies should be shared, and the IAEA should assist in this area.