Development of Nuclear Security Culture

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Commitment of Global Community to Strengthening of Nuclear Security

- The possibility that nuclear or other radioactive material could be used for malicious purposes cannot be ruled out in the current global situation.
- Global community has committed to strengthening **nuclear security** worldwide and made substantial progress in recent years, including the establishment and implementation of various binding and non-binding international instruments such as CPPNM, UNSCR 1540, Nuclear Security Summits, IAEA safety standards, etc.
- All States are expected in these instruments, to establish an **overall nuclear security policy** and a **nuclear security system**, of which objective is to prevent, detect and respond to theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear or other radioactive substances or their associated facilities.

An Overall Security Policy Should Include Requirement/Guideline for

- Identifying the security significance of individual systems and specifying threat levels;
- Designing physical protection systems, including protection of sensitive information and of facilities, establishing criteria for authorizing access to information and facilities and requirements for the determination of personnel trustworthiness;
- Licensing of organizations for particular activities;
- Developing performance standards and periodic performance testing programmes, including reporting, accounting and record keeping;
- Enforcement regarding non-compliance with regulations or failure of performance testing;
- Measures for the detection of, and response to, malicious acts involving radioactive material;
- Coordination among organizations within the nuclear and radioactive material arena of neighboring countries.

Responsible Organizations of a National Nuclear Security System

- The State should clearly define the responsibilities entrusted to appropriate organizations. They are
  - Nuclear regulatory body
  - Operating organizations of nuclear facilities
  - Law enforcement authorities
  - Defense ministries
  - Health ministries
  - Intelligence organizations
- The State should make provision for appropriate integration and coordination of responsibilities among these entities.

Management of Each Responsible Organization

- Define roles, responsibilities and accountability for each level of the organization;
- Develop, implement, and maintain appropriate and effective integrated management systems including quality management systems;
- Demonstrate leadership in nuclear security matters at the highest levels;
- Develop, foster and maintain a robust nuclear security culture;
- Allocate sufficient human, financial and technical resources to carry out the organization's nuclear security responsibilities on a continuing basis using a risk informed approach;
- Routinely conduct maintenance, training, and evaluation to ensure the effectiveness of the nuclear security systems, taking into account best practices, lessons learned from both internal and external reviews, and changes in the threat level.
- Establish and apply measures to minimize the possibility of insiders becoming nuclear security threats;

The Effectiveness of a Nuclear Security System

- Its depends on proper planning, training, awareness, operation and maintenance, as well as on people who plan, operate and maintain the nuclear security system.
- Even a well-designed system can be degraded if the procedures necessary to operate and maintain it are poor, or if the operators fail to follow procedures.
- Ultimately, the effectiveness of a nuclear security system depends on the behavior of all personnel, including vigilance, questioning, executing work accurately and adhering to high standards for individual and collective behavior.

Prioritization of Security is Essential

- The staff performance in a system is influenced by the quality of management and the provision of expectations, requirements and standards for the conduct of work, training, documented procedures, information systems, etc.
- It is also important to recognize that individuals are inclined to learn and imitate prevailing patterns of behavior existing in the group around them and once established, these patterns can be difficult to alter.
- Therefore, a well-developed management system that prioritizes security is an essential feature of an effective nuclear security system.

Principle F of the IAEA Fundamental Principles of Nuclear Security

All organizations involved in implementing physical protection should give due priority to the **nuclear security culture**, to its development and maintenance necessary to ensure its effective implementation in the entire organization.

Nuclear security culture:

- Is defined as the assembly of characteristics, attitudes and behavior of individuals, organizations and institutions which serves as a means to support and enhance nuclear security.
- Refers to the personal dedication and accountability and understanding of all individuals engaged in any activity that has a bearing on the security of nuclear activities.

An Effective Nuclear Security Culture

- An effective nuclear security culture requires a set of principles that should be instilled in the organization to guide decisions and behavior. They are motivation, leadership, commitment and responsibility, professionalism and competence, and learning and improvement based on the recognition that **a credible threat exists, that preserving nuclear security is important, and that the role of the individual is important.**

- The greatest influences on individual performance are the expectations of leaders. Staff remains vigilant of the need to maintain a high level of security when managers of the organization continually demonstrate their commitment to security through their words and actions, holding a deep rooted belief that there is a credible insider and outsider threat, and that nuclear security is important.

INFCIRC/225/Rev5, Nuclear Security Culture Recommendations

- 3.48. The foundation of nuclear security culture should be the recognition that a credible threat exists, that preserving nuclear security is important, and that the role of the individual is important.
- 3.49. The four component groups – the State, organizations, managers in organizations and individuals – should work together to establish and maintain an effective nuclear security culture.
- 3.50. The State should promote a nuclear security culture and encourage all security organizations to establish and maintain one. A nuclear security culture should be pervasive in all elements of the physical protection regime.
- 3.51 All organizations that have a role in physical protection should make their responsibilities known and understood in a statement of security policy issues by their executive management to demonstrate the management's commitment to provide guidelines to the staff and to set out the organizations security objectives. All personnel should be aware of and regularly educated about physical protection.

How to Maintain an Effective Nuclear Security Culture

- Top management should provide appropriate and continuous training and education for all personnel, so as to prevent complacency from compromising overall security objective, based on the recognition that a credible threat exists, that preserving nuclear security is important, and that the role of the individual is important.
- At national level, encourage all stakeholders to maintain strong communication and coordination of activities that assure nuclear security, sharing best practices, benefiting from relevant experience, technical developments and events of security significance and promote self-assessment and the establishment of a security culture among all individuals and in all responsible bodies.
- At international level, establish nuclear security support centers that provide nuclear security training for countries that are in need of, and expect the IAEA promoting networking among such centers to share best practices and lessons learned for optimizing available resources, in addition to fostering nuclear security culture in member countries by providing opportunities for developing human resources, publications, equipment, and advisory and expert services.

In the Case of Japan

- JAEC decided “Basic Policy for Strengthening Nuclear Security” in September 2011, in which all organizations responsible for maintaining nuclear security and their members were requested to give due priority to the **nuclear security culture** and its development and maintenance so as to ensure its effective implementation in the entire organization.
- The Rules for Installation and Operation of Nuclear Facilities were revised with a view to strengthening the nuclear security measures at the facilities in consistent with the IAEA Recommendations of Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5) published in 2011.
- The revision included the new request for nuclear operators to promote the **nuclear security culture** in their organization.

Actions Taken by Nuclear Operators

- Every nuclear operator's top management announced guidelines for action that request employee to act with the recognition that
  - **The nuclear threat is real and nuclear security is important**:
  - **The assurance of nuclear security is everyone's responsibility and the compliance to rules is the minimum requirement for the assurance of nuclear security.**
- They initiated activities to maintain and improve security culture:
  - Set appropriate standards of behavior and performance associated with security:
  - Establish a formal decision making mechanism that is based on good communication within the organization and involves their staff with insights and ideas for improving the security regime in the organization:
  - Maintain effective communications within the organization:
  - Ensure that training is conducted to develop skills and tools to promote and implement security culture.

Nuclear Power Plant Vendors

- In 2011, the world major nuclear power plant vendors and a group of world-class nuclear experts jointly developed the Nuclear Power Plant Exporters' Principles of Conduct (the POC), which is a set of principles that reaffirm and enhance national and international governance and oversight, and incorporate recommended best practices in the areas of safety, security, nonproliferation and so on.

- Major nuclear vendors in Japan have adopted this POC as the norms of corporate self-management in the exportation of nuclear power plants, and they are effectively implementing the POC in their business activities with a view to pursuing continuous improvement in their efforts by themselves, discussing their ongoing commitment to the POC at semiannual implementation review meetings in which the Carnegie Endowment for International Peace also participates.

Education and Training Centers

- Japan established, in December 2010, the “Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN)” in the Japan Atomic Energy Agency (JAEA).
- The ISCN has been providing training courses to support capacity building for regulators from emerging countries, by using the “Physical Protection Exercise Field” and the “Virtual Reality System” in cooperation with the IAEA.
- In the two years since its establishment, the ISCN, in cooperation with the IAEA, USDOE and WINS, has provided seminars and workshops on nuclear security, including nuclear security culture, to about 700 experts from Asian and other countries.
- Japan will continue and strengthen this kind of contribution. As it is important for this sort of activity to coordinate and cooperate among organizations with similar mission around the world, ISCN will continue to promote such coordination and cooperation.

Research and Development Activities

- Technologies for managing nuclear and highly radioactive materials, facilities that store such materials and transportation of such materials.
  - Control and accountancy
  - Safeguards
  - Physical protection (defer, detect, delay and response)
  - Nuclear forensics technologies
- Security risk assessment
  - The basis for security system design is an assessed threat (or Design Basis Threat (DBT) if one exists) that profiles the type, composition and capabilities of adversaries (sensitive information)
  - Assuming the possibility of the existence of intelligent adversaries, each operator should be recommended to perform the site specific assessment of a spectrum of threats beyond DBT, utilizing publicly available general methods to perform such assessment, i.e., probabilistic risk assessment (PRA) and RAMCAP.

Conclusion

- The establishment and maintenance of a national nuclear security system is the key for a State to address nuclear security in a holistic manner.
- All organization involved should know their roles and responsibilities, and nuclear security systems for prevention, detection and response should be designed, implemented, and sustained.
- Any weakness in the chain of nuclear security matters, because those intending to do harm will find and exploit that weak link. Without nuclear security culture in place, a State is not managing its risk.
- Key for strengthening nuclear security culture is the leadership of top management to maintain strong communication and coordination of activities that assure nuclear security, share best practices and benefit from relevant experience, technical developments and events of security significance.
- FNCA will be able to promote mutual exchange among member countries of experience on ways to develop, foster and maintain a robust nuclear security culture in responsible organizations, including the potential contribution of industry initiatives in this regard.