

Nuclear Regulatory and Technical Assistance Programs in support of the International Mission of the US Nuclear Regulatory Commission

Tuesday, 28 October 2014 12:30 (30 minutes)

Nuclear energy offers long-term economic and environmental benefits providing a reliable energy source with significant environmental advantages in reducing the effect of human activities on global warming. National governments in countries operating or planning to establish nuclear facilities have instituted regulatory regimes on the use of nuclear materials and facilities to insure a high level of operational safety. The national regulatory environments fully recognize the potential risk involved in operating nuclear facilities and the additional risk that could extend beyond national boundaries. This unique feature of the risk in operating nuclear facilities require international cooperation among nation states regardless whether they actually operate any nuclear facility. International cooperation allows addressing safety problems in an international forum going beyond national regulatory regimes and offers the potential for cooperation and promotion of common nuclear standards through international regulatory coordination.

In the US the Atomic Energy Act of 1954 together with the Energy Reorganization Act of 1974 (establishing US Department of Energy (DOE) and Nuclear Regulatory Commission (NRC)) provide for the development and regulation of the uses of nuclear materials and facilities with the general goals of promoting "world peace, improve general welfare, increase the standard of living, and strengthen free competition in private enterprise." The Acts empower the NRC to establish rules and orders governing the use of nuclear materials "to protect health and safety and minimize danger to life and property." The NRC supports the international safe and secure use of nuclear materials and actively participates in various international organizations. It aims to provide advice and assistance to international organizations and foreign countries to develop effective regulatory organizations and safety standards. Many of these activities are carried out in direct cooperation with the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency (NEA), or other international organizations. In addition, a number of programs in foreign countries are conducted directly with the counterpart agencies under bilateral regulatory and research cooperation agreements.

One of the key elements determining the operational safety of nuclear facilities is an appropriate regulatory regime establishing the regulatory requirements and the safety envelope for nuclear operations. In the early 1990s the US NRC established an international regulatory safety assistance program in countries with Soviet-designed nuclear reactors. In many of those countries the nuclear regulatory authorities were not well established, had no clear division of responsibility, and had difficulty in enforcing regulatory requirements due to lack of basic nuclear regulatory laws and legal requirements. The initial safety assistance programs provided critical training and technical knowledge of regulatory personnel using US technical experts based at NRC and DOE laboratories such as Brookhaven National Laboratory (BNL).

This paper will review the challenges, development, and successes in the strengthening the regulatory and technical capabilities of the foreign nuclear regulatory organizations and the technical support organizations (TSO) under the NRC international regulatory support program that has expanded beyond its original scope encompassing many countries with operating or planned nuclear facilities

The international assistance, training, and technical support include wide ranging regulatory and technical areas through cooperative training programs, workshops, and joint projects:

- Safety analysis methodologies and code applications, design basis analyses
- Licensing and inspection procedures,
- Risk informed and analytical methods design basis analysis,
- Severe accident methodologies and procedures,
- Emergency response and infrastructure development,
- Development of regulatory guidelines and bases for regulatory actions.

The program also contains a significant infrastructure component providing improvement in analytical hardware, dosimeter equipment, networking capabilities, and communication infrastructure. The paper will further explain the various components, which are used to transfer technologies and establish cooperative projects.

One of the important objectives is to strengthen the oversight capabilities and effectiveness of the foreign nuclear regulatory agencies and improve the TSO's ability to carry out the required technical supports. In each respective countries the program further enhances the regulatory regimes, improve nuclear regulations and standards that is more consistent with international and IAEA practices. The main benefit of the regulatory and technical cooperation is the improvement in regulatory and technical capabilities both at the nuclear regulatory agency and the TSOs. The future challenge is to ensure that the cooperation between NRC and foreign regulatory agencies responds to the country specific regulatory needs and further increase the capabilities with an overall increase in the safety of the nuclear facilities.

Country or International Organisation

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Session Classification: Session 2: Poster Session

Track Classification: Interface Issues