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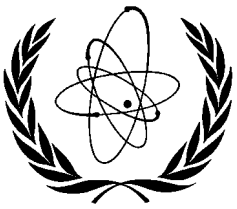

INTERNATIONAL ATOMIC ENERGY AGENCY

➔**Slide 1**

Good Morning

NUCLEAR SAFETY: a work in progress

Twenty seven years ago, in 1986, I was a young nuclear attaché in the French embassy in Moscow, Soviet Union. Since then, I have been repeatedly asked whether, since my first stay and given my first-hand experience of living and working through the Chernobyl accident, I could say that Russian NPPs were now safe.

My constant answer was that since Chernobyl, I did not know any ex-Soviet NPP which had not received advice or assistance from the international nuclear community, and I did not know any of these NPPs where at least one of the staff had not been involved in international safety programmes. My conclusion was that through this widespread international engagement, the use of nuclear energy in former soviet countries had become safer. I relied on my deepest conviction and understanding that nuclear safety is a work in progress, and not a status that is reached once and forever.

Two and a half years ago, I had the privilege to join the IAEA with the awesome responsibility to facilitate, promote, and assist in strengthening and expanding the global nuclear safety framework worldwide.

Today, when asked a similar question about the safety of NPPs in, say, Ruritania, I add to my initial answer that this plant has (or has not) received so many OSART missions which gives us inter alia an understanding of the safety culture at the plant. I add also that we were able (or we were not able) to identify strengths and weaknesses of the regulatory body, through international peer reviews, against the benchmark of our safety standards.

I shall focus my intervention to the major issues of nuclear safety and security, some are specific to the post-Fukushima period, but most are pertaining to our programmes aimed at continuously strengthening nuclear safety and security in Member States.

➔Slide 2

The most significant developments in nuclear safety were the results of the Chernobyl accident back in 1986. This is the time where the development of IAEA safety standards and services saw a strong acceleration, at the same time where three major conventions – the Notification and Assistance Conventions and the Convention on Nuclear Safety – were adopted. A decade later, the Department of Nuclear Safety was created inside the Agency.

➔Slide 3

The history of nuclear security saw a similar acceleration following the terrorist attacks on 11th September 2001.

➔Slide 4

Following the March 2011 Fukushima Daiichi accident in Japan two years ago, enhancing nuclear safety has become one of the high priorities in the world. This is a collateral benefit of the crisis.

➔Slide 5

September last year, the Agency's Member States approved unanimously the IAEA Action Plan on Nuclear Safety consisting of 12 main actions to guide both our actions and the Member State actions.

A lot has been done already, and progress —taking into account lessons learned from this accident — has been made in many areas of Nuclear Safety such as assessments of safety vulnerabilities of nuclear power plants (NPPs), strengthening of the Agency's peer review services, improvements in emergency preparedness and response capabilities, strengthening and maintaining capacity building, and widening the scope and enhancing communication and information sharing with Member States, international organizations and the public. These have contributed to the enhancement of nuclear safety at a global level. But a considerable amount of work still remains to be done.

➔Slide 6

The Global nuclear safety framework

Our best tool in the Agency to strengthen nuclear safety worldwide is to use, strengthen, support all the components of the global nuclear safety framework. Its basis relies on the Member States infrastructure covering the operator, indissolubly linked to its prime responsibility for safety, the regulatory infrastructure, research and development and scientific fabric in the country. This is complemented by regional infrastructure and networks.

The top tier of the framework is constituted by the international instruments, either legally binding such as the Convention on Nuclear Safety, the Convention on the Physical Protection of Nuclear Materials, or voluntarily binding such as the Code of Conduct on the safety and security of radioactive sources.

As a link between these two tiers, we in the IAEA produce safety standards and security guidance, we provide for their application through peer reviews, advisory services and education and training, and we foster nuclear knowledge networks, research, cooperation and information exchange.

➔Slide 7

The foundation of the IAEA safety standards comes from article III A 6 of our Statute which state that *"the Agency is authorised to establish and adopt […] standards of safety for protection of health and minimization of danger to life and property […] and to provide for the application of these standards"*.

➔Slide 8

Along the years we have developed some 150 safety standards, and, more recently, we have started to develop security guidance. The Safety and Security documents are structured in Fundamentals, followed by safety requirements or security guidance, whose detailed implementation is supported by Guides.

➔Slide 9

However, standards are only effective inasmuch as they are effectively implemented in practice. To assist Member States in applying these standards and enable valuable experience and insights to be shared, we developed a number of services to help Member States assess their national framework and implement in real life our standards and guidance. These services address all fields of nuclear safety and security, radiation protection, emergency preparedness and response. They cover the roles of the regulators, the operating organizations, Governments and Law enforcement, in short, all actors. They are all based on the request of Member States, and they bring together high level international experts. They benefit in this way not only the requesting State, but also the international experts and their organizations through the identification and sharing of best practices.

I will now focus on three of the programme directions of the Department: Emergency Preparedness and Response, the Safety of Nuclear Installations, and Nuclear Security.

➔Slide 10

The worldwide emergency preparedness and response framework

The accident at Fukushima Daiichi was a wake-up call for many. It reminded that nuclear accidents can happen, they do happen. Our common goal, in the Agency as well as in the wider international community, is that nuclear accidents become less and less likely. Our goal is also that, would an accident happen, all measures for minimizing its consequences would be available, exercised, and effective.

Furthermore, we know that an emergency preparedness and response programme adequate to mitigate the emergency and protect people and the environment from any resulting radiological effects must be in place and exercised to ensure its adequacy. The IAEA, with its Member States, has established international requirements and guidance on emergency preparedness and response to include recommendations for the distances of emergency zones. The Fukushima accident confirmed the necessity of predetermined criteria for taking protective

and other response actions from the start of the emergency until the return to normality, going through a post accidental phase.

As a result of the accident, the mandate of the Agency has been widened, from simply sharing information provided by the affected State, to include the analysis of available information and prognosis of possible scenarios.

One extremely important additional lesson from the accident, is that it demonstrated the importance of communicating with the public and decision makers the risk to health and answering the principle concern: "Am I safe?"

➔**Slide 11**

The safety of Nuclear Power Plants

New nuclear power programmes as well as expanding existing programmes continue to be of interest to a number of Member States. To accompany this interest and assist them in building their regulatory safety infrastructure and global safety capacity in time, we have recently created a Regulatory Cooperation Forum to optimize regulatory resources and assist Newcomers in their development of independent, effective and sustainable regulatory bodies / and developed a safety guide on "establishing a safety infrastructure for a nuclear power programme".

➔**Slide 12**

The IAEA Action Plan on Nuclear Safety puts an emphasis on Member States voluntarily hosting site and design safety reviews, prior to commissioning the first nuclear power plant. Our dedicated service is the recently redesigned Site and External Event Design Review Service (SEED) for new and existing NPP sites.

A large percentage of the 441 reactors currently in operation today are expected to see their operating life extended beyond their initial, nominal design lifetime - frequently foreseen as 30 years - to some 50 years or more.

New NPPs currently under construction or in the design phase, are being designed with higher safety goals, and are advertised as being designed to 80 years operation. Which means two things: the next reactors will still be operating into the next, 22nd century, and they will be operated in parallel with the old generation for 20 to 40 years. As a result, we need to bring forward an internationally harmonised vision of the safety goals for the future nuclear power plants, and to promote ways of reducing (bridging) the generation safety gap to enhance nuclear safety throughout the generations.

Today these issues are being addressed at various national and regional levels. As concerns the Agency, the International Safety Group –INSAG –is working to develop a vision of the safety goals for the 21st century and beyond, a forerunner to developing safety standards for the future.

Post Fukushima, we have developed a harmonised methodology for assessment of safety margins against extreme natural hazards, and have strengthened the significance of international peer reviews for the international community.

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I shall now say just **a word on nuclear security**, in advance to your session on this subject.

To put it simply, our work focuses on helping to minimize the risk of nuclear and other radioactive material falling into the hands of terrorists, or of nuclear facilities being subjected to malicious acts.

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The IAEA has established internationally accepted guidance and standards which are used as a benchmark for nuclear security. We help countries to apply these through expert peer review missions, specialist training and human resource development programmes.

The Agency also helps countries to put laws and regulatory infrastructure in place to protect nuclear and other radioactive material.

We have helped States to implement their international obligations in this area.

The IAEA helps countries to strengthen physical security at nuclear, industrial or medical facilities where nuclear or other radioactive material is stored, or while it is being transported.

We have helped to ensure that radioactive sources which were not properly secured were transported either to a safe and secure national storage facility, or repatriated to their country of origin. We have also helped countries to put a considerable amount of high enriched uranium into more secure storage.

The IAEA has a strong focus on education and training. In the past ten years, we have trained over 12 000 people in more than 120 countries in nuclear security. Six universities around the world will soon offer a Master's degree in Nuclear Security Education. This will be based on a syllabus developed by the Agency and Member States, reflecting IAEA standards and guidance.

Finally, we, at the Agency, are convinced that in many respects, Safety and Security must work hand in hand, with the same goal of protecting the people and the environment against ionizing radiations. To take stock of the numerous interfaces between these two faces of a single coin, we have launched a process to bring closer together our tools and documents: safety standards and security guidance. In the same spirit as for safety, we are also developing for newcomers guidance on how to develop a security infrastructure.

And I shall skip the last two slides to conclude:

➔Slides 15/16/17

Conclusion

My concluding words will be about the future of nuclear security and safety, possibly your future.

Standards, guides and codes are necessary for the safe and secure operation of nuclear facilities, they are vital, but they are not enough.

Their implementation and mechanisms for experience feedback are also indispensable.

The prime responsibility of operators needs to be implemented fully, in a proactive way, with a permanent vigilance to the culture of staff, from top to bottom. But this is not enough. Without a strong, competent, independent and knowledgeable national control, there is a risk that safety and security will stop being an overall priority.

Human resources in nuclear science have declined even faster than in Science itself. Nuclear safety expertise is not a bureaucratic activity, it is a permanent questioning. A questioning attitude is a necessity if we are to strengthen and expand the Global nuclear safety and security framework. I said that safety is an ever progressing subject, and I am convinced that the famous quote from the **bridge on the river Kwai** applies: *"As I've told you before, in a job like ours, even when it's finished there's always one more thing to do."*