Keynote

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Strengthening Nuclear Safety Globally: Results and Challenges in Implementing the Action Plan on Nuclear Safety

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Welcome and Introduction

Good morning again ladies and gentlemen.

The IAEA Action Plan on Nuclear Safety was designed to address nuclear safety issues following the Fukushima Daiichi accident in March 2011. And, in September 2011, the IAEA Board of Governors adopted this Action Plan and our, then 159 Member States unanimously endorsed it at the 2011 General Conference.

This Action Plan covers 12 key areas, which define a programme of work to strengthen the global nuclear safety framework. It is a programme of work for the IAEA Secretariat, it is also a programme of work for many stakeholders in Member States (by stakeholders, I mean government officials, regulators, operators, nuclear industry, radioactive waste management organizations, technical support and safety organizations… among others) from both established and embarking nuclear power countries.

We have stated a number of times that significant progress has been achieved in implementing the Action Plan over the two years that have passed since the launch of the Action Plan on Nuclear Safety, and I would like today to go into some details on what progress we have made? What lessons we have learned? What challenges do we still face?

IAEA Safety Standards Review

One key area in the Action Plan directs the Agency to review the current IAEA Safety Standards. The Commission on Safety Standards (CSS) reported to the Director General in November 2012 that no significant areas of weakness had been identified; however, concrete proposals were made to revise some of the Safety Requirements—namely those covering the safety of NPPs and spent fuel storage.

At the same time, the CSS also stressed that greater attention needs to be paid to the implementation of IAEA safety standards by Member States.

Benefits of IAEA Peer Review Services

Indeed, improving the consistent implementation of the IAEA safety standards is one of the major challenges we face in assisting our Member States. One important means for achieving this, is through our peer review services.

For example, two of the best known IAEA services, the Operational Safety Review Teams (OSARTs), and the Integrated Regulatory Review Service (IRRS), offer opportunities for operators and regulators to identify any safety weaknesses that might exist but had been overlooked, providing an external view, based on our Safety Standards.

Other benefits to Member States from hosting peer review missions and their follow-ups arise through sharing knowledge and experience, while at the same time building confidence through demonstrating an on-going commitment to improving safety, through the timely publication of peer review reports.

However, we face challenges in carrying out these two important services; especially in resourcing the missions and in host countries' understanding of the entire work package of activities required to successfully carry out a mission.

Operational Safety Review Team (OSART)

When I look at OSART missions for example, a typical mission comprises a 10 to 12-strong mixed team of IAEA staff and international experts. These external experts are recruited from nuclear power plants and utilities to provide specific expertise for the host country's particular NPP.

Typical OSART missions require roughly two weeks or more to provide a complete, in-depth review of the operational safety practices at the host country's nuclear installation; follow-up missions are standard and conducted from 12 to 18 months after the initial mission.

We have completed more than <175> OSARTs to date, and have about ten more mission requests being planned and prepared.

The Fukushima Daiichi accident demonstrated that it is essential to have capabilities to monitor relevant plant safety parameters under severe accident conditions. As a result, we have incorporated the Severe Accident Management module into the core of OSART mission services to cover the assessment of severe accident management programmes. In fact, findings from some recent OSART missions indicated that severe accident management guidelines at some nuclear installations were not available, or not fully trained or not fully scoped to properly facilitate management of beyond design basis accidents.

Furthermore, the importance of a sound understanding of the influence of human and organizational aspects on nuclear safety has also been highlighted since the Fukushima Daiichi accident. Mission findings have indicated that operators often lacked a systematic, long-term and committed approach to continuously improving safety culture. To this end, we have developed a safety culture perception questionnaire, which encompasses the various characteristics and attributes of a strong safety culture. This questionnaire will be used in France in 2014 during the OSART missions that also include a review of their Safety Culture.

Additionally, through the Action Plan, IAEA and WANO strengthened their collaboration and coordination by signing a new Memorandum of Understanding. Plans are now in place to coordinate the timing of IAEA OSART missions and WANO peer reviews, and to arrange periodic meetings between WANO and the Agency to discuss major safety-related activities. IAEA and WANO will also coordinate work on their respective performance indicator programmes and will work towards exchanging information and support should a serious event occur at a nuclear power plant or fuel cycle facility. In addition to this, the

IAEA and WANO will supply staff to each other's review teams when appropriate, and have already started exchanging documents relating to operating experience.

While some Member States request OSART missions on a regular basis, Member States that have not hosted an OSART in recent years are encouraged to do so as called for in the Action Plan. Indeed, the Action Plan requests: *"Each Member State with nuclear power plants to voluntarily host at least one IAEA Operational Safety Review Team (OSART) mission during the coming three years, with the initial focus on older nuclear power plants. Thereafter, OSART missions to be voluntarily hosted on a regular basis."*, unfortunately as the books stand today, out of 30 Member States operating a NPP, 12 only have hosted an OSART mission since 2011. This is a serious concern.

Integrated Regulatory Review Service (IRRS)

Taking a look at the Integrated Regulatory Review Service, these missions are designed to strengthen and enhance the effectiveness of the national regulatory infrastructure of States for nuclear, radiation, radioactive waste, and transport safety. In particular, IRRS missions focus on both regulatory technical and policy issues in light of the international guidelines set forth in the IAEA Safety Standards and of good practices observed in other States. This service is used to share regulatory experiences, to harmonize regulatory approaches among Member States and to create mutual learning opportunities among regulators.

Depending upon the scope of the mission and the programmes to be reviewed, the number of expert reviewers may vary (typically 10 to 20). The IRRS external review team members are senior experts recruited from the regulatory bodies of Member States. The bare arithmetic of IRRS missions is that in 46 missions, lasting from 5 to 15 days, 322 experts from 52 Member States filled 566 team functions. This is a high investment from Member States, which illustrates the collective international responsibility in strengthening nuclear safety worldwide.

In September, the EC and the IAEA signed a Memorandum of Understanding to strengthen and structure their cooperation in the matters of nuclear safety. Specific areas include: the provision of assistance to countries requesting IRRS as well as Radioactive Waste/Spent Fuel Management peer review missions. For this new field now included in the EU Waste Directive, as expressed in a meeting of ENSREG (European Nuclear Safety Regulators Group) the preference seems to be towards combining into the IRRS mission our waste and fuel management review services that we have recently overhauled.

In a view to continuously improve our services to Member States, we review periodically through workshops the lessons learned from these past services. In that process, a review of the findings from IRRS missions showed that in some cases findings had not been addressed; which could have a negative impact on nuclear safety.

One of the challenges we have, in short and simple economics terms, is that the demand for IRRS and OSART missions has risen and the number of international experts and IAEA staff trained and available to cover them has not. These missions are resource-intensive, both for the Secretariat and our Member States. We address this challenge through increased training of potential reviewers from Member States to meet the expected increased demand for these missions in the coming years.

Effectiveness of IAEA Peer Review Services

One key conclusion from the Ottawa Regulatory Effectiveness conference held last April was the necessity for Member States to grasp that requesting an IAEA peer review mission, was indeed a commitment to a Package. This package consists of a prior self-assessment related to the focus of the mission as an essential element of the success of the mission itself. Then, as a result of the mission itself, an Action Plan needs to be prepared by the Host to address the recommendations identified in the report. The final element of the Package is the hosting of a follow-up mission, in a time frame ranging from 18 months to 3 years, to review the implementation of the Action Plan and the actions to answer the recommendations. This is in direct connexion with the mandate of the Agency "to provide for the application of these standards" in Article III A 6 of our Statute. We have also worked with Member States to increase the transparency of the process, by making available through our public web site the calendar of past and requested peer review missions, together with their main conclusions. This is a strong step towards answering the call for action for increasing peer pressure as an essential tool to strengthen safety on a global scale.

Enhancing the Effectiveness of the Convention on Nuclear Safety (CNS)

Since the accident at Fukushima Daiichi, the Contracting Parties (CP) to the Convention on Nuclear Safety (CNS) faced many challenges taking account the lessons learned. However, as part of the Action Plan, they have been addressing key technical issues together.

The Second Extraordinary Meeting of the Contracting Parties in August last year, allowed for a review of actions taken to strengthen nuclear safety at NPPs following the Fukushima Accident, and most Contracting Parties having nuclear power plants presented the results of their targeted safety reviews of their nuclear power plants (so called Stress Tests) and the additional actions to enhance the protection of the reactor units from extreme natural hazards.

Maybe one of the key messages from the Second Extraordinary Meeting of the CNS is that the Contracting Parties agreed that "nuclear power plants should be designed, constructed and operated with the objectives of preventing accidents and, should an accident occur, mitigating its effects and avoiding [long

term] off-site contamination". This needs to be the mantra for the nuclear industry, the nuclear operators, States and regulatory bodies.

The Second Extraordinary Meeting of the CNS also established a Working Group on Effectiveness and Transparency tasked with crafting a list of actions required to strengthen the CNS and on proposals to amend, where necessary, the Convention. The working group has discussed 63 proposals received on actions to strengthen the Convention, including proposals to amend the Convention. There are high expectations from the international community for early results on further improvement of the overall Convention review process. Some of the actions being identified by the Working Group will be relatively easy to implement. However, it should be noted that the entry into force of an amendment to the Convention is a lengthy process which may not match the expectations of many stakeholders, including the public, for an early strengthening of nuclear safety at NPPs.

One of the possible ways for strengthening the CNS review process identified by the Working Group on Effectiveness and Transparency, might be to address in the review process of the CNS a description of policies, plans and schedules for inviting international peer review missions and follow-up missions, mentioning the type and the scope of the missions already conducted or planned for the future, to report on the results of international peer review missions, including the IAEA missions conducted in the Contracting Party during the review period, and on progress made by the Contracting Party in implementing any findings, and plans for follow-up. This would once again strengthen the effectiveness of our peer review services, and through them the implementation of the IAEA Safety Standards.

Emergency Preparedness and Response: Plan Ahead

The Fukushima accident showed that strong communication plans, in plain language that the public can understand, are a vital element of emergency preparedness. The Action Plan outlines activities to strengthen Emergency Preparedness and Response, especially so when communicating to public stakeholders. Coordination and consistency in national and international responses to emergencies require the development, testing and implementation of national communication—well before any accident occurs, so governments, regulators and operators alike can answer the most important question in the public's mind: "Am I safe?"

In the area of emergency preparedness and response, the Agency's Incident and Emergency Centre was working on further strengthening the international emergency preparedness and response framework. Several examples of the most recent activities include extension of Response and Assistance Network, review of Safety Requirements for emergency preparedness and response, review of the Joint Radiation Emergency Management Plan of International Organizations and increasing membership of Inter-Agency Committee on Radiological and Nuclear Emergencies. The IEC continues to actively support Member States with the

provision of training on emergency preparedness and response and Emergency Preparedness Reviews (EPREV).

The Agency works closely with the European Commission in the area of emergency preparedness and response. We took part in the core group of the project on Review of current off-site nuclear emergency preparedness and response arrangements in EU Member States and neighbouring countries. This could serve as a basis for further promotion of the IAEA services, namely Emergency Preparedness Review missions, as well as implementation of international safety standards in the area of emergency preparedness and response.

Nuclear Security and Nuclear Safety: Two ends of the same rope

After the first shock of the Fukushima accident, many realised that a terrorist action aimed at a NPP could also result in catastrophic consequences. In fact, the evolution of thoughts in this field during the last decades may be seen in the following way: Chernobyl was a safety-related nuclear accident when nuclear security was not very high on the international concerns. The 9/11 attacks in 2001 did not feature any nuclear aspect, but raised the concerns about possible attacks on nuclear facilities. And finally, in a security conscious era, the Fukushima accident, though not security-related, created a living image of what the possible results of a terrorist attack might be.

Nuclear security and nuclear safety have in common the ultimate goal of protecting people, society and the environment against the effects of ionising radiation. Security and safety measures have to be designed and implemented in an integrated manner to develop synergy between these two areas in such a way that security measures do not compromise safety, and safety measures do not compromise security.

But commonalities, synergies and interfaces do not erase the differences between nuclear safety and security. One very visible example where safety and security might pull in opposite directions is access to information. I remember that, already in 2002 at the Scientific Forum during the General Conference, I stated that: "if in Nuclear Safety, transparency is an obligation, in Physical Protection, it is an offence". Put in other words, transparency is a weapon against innocent mistakes challenging safety, whereas confidentiality is a limitation put on transparency in the interests of security. However, in the same way as building confidence in the safety of nuclear energy relies in demonstrating that very safety, building confidence in the security of nuclear energy must rely in some visible demonstration that security is seriously addressed. The window is not very wide, but it needs to exist.

Concluding Remarks

To conclude, I want to state that the way we collectively address nuclear safety issues since the Fukushima accident has changed dramatically, and we must continue to progress. Substantial efforts and resources have already been invested by the IAEA, its Member States, and the nuclear industry as a whole to

gain an understanding of what happened and why in the Fukushima Daiichi accident. Substantial progress in implementing the Action Plan has been made in its 12 key areas. Learning, sharing lessons learned and implementing the activities necessary to strengthen nuclear safety, is and will continue to be an on-going process.

Today, we are working hard with around 150 international experts to gather in an IAEA comprehensive report the best available knowledge on the Fukushima Daiichi Accident. Our plan is that the report, which will be finalised towards the end of next year, will then be presented to the IAEA Board of Governors and then to the 2015 General Conference. Our plan is to capture in a single document all relevant lessons learned from the accident. This will mark a milestone in the implementation of the Action Plan on Nuclear Safety,…and the start of a new phase for further strengthening nuclear safety on a global scale.

Thank you for your attention.