Nuclear Security-New Challenge to the Safety of Nuclear Power Plants

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Mr. Chairman, dear colleagues, ladies and gentlemen, good morning,

It is my great honor to be invited to attend this forum and deliver a speech on nuclear security of nuclear power plants.

Although the nuclear security does not only focus on the security guarantee of nuclear power plants, I believe that the public's concern on the security of nuclear power plants has been intensified to an unprecedented extent, especially at this period of global nuclear power renaissance, as well as at the same time, the international terrorism becomes increasingly rampant. If we fail to convince the public that nuclear power plant is secured and has the capability to take measures to deal with the threats from terrorism attack, it would result in a resistance from the public in the development of nuclear power and eventually stop the pace of nuclear power construction.

So, the theme of my speech for today is nuclear security- new challenge to the safety of nuclear power plants.

Ladies and gentlemen,

As we all know, in terms of the nuclear safety of power plants, the various measures shall be taken to ensure that nuclear power plants will never bring any radiological harm to the publics, society and environment. Thus, the safety of nuclear power plants involves two aspects: one is to prevent nuclear accidents resulted from systems and equipments failure or human errors; the other is to refrain nuclear accidents from external intended attack. From this point of view, nuclear security is an organic part of the nuclear safety of power plants since they have basically the same goals and concrete measures with each other.

As to the former, we tried to decrease and eliminate nuclear accidents by using more passive equipments and redundancy systems, by higher quality in the stage of construction, commissioning and operation, and more effective quality assurance management, including enhancing nuclear safety culture in all related staff.

However, we have realized that these were not sufficient because

the most sophisticated design and reliable equipment are so fragile and vulnerable to the intended external attacks. Thereby in order to prevent the malicious attacks; the concept of physical protection of nuclear facilities has been put forward. In many years, a series of codes and regulations as well as technical standard systems on physical protection had been developed at international level. And, to prevent such attacks, the defensive measures through techniques and manpower have been adopted by the nuclear power plants in the countries. The results of practice show that these measures are markedly effective.

But, 9•11 event dramatically altered our perception on outside attack on nuclear power plants. From then on, the public changed their safety concerns from internal nuclear accidents of power plants to the safety threatened by terrorism attack.

In the current design requirements for nuclear power plants, neither the external events are considered in nuclear power plant design, nor the design basis threat for physical protection of nuclear power plant are taken into account the large scaled, well-organized terrorism attack with powerful weapons as a design basis for the security of nuclear power

plants. The need of strengthening the security of nuclear power plants under new circumstances causes a great challenge to the safety of nuclear power plants.

In order to respond to this challenge, the international community has paid much attention to the nuclear security. The United Nations passed No. 1540 resolution as well as "*Convention on the Suppression of Acts of Nuclear terrorism*", and revised "*Convention on Physical Protection of Nuclear Materials*", which has enhanced a higher level capacity of preparedness by international community to deal with security issues of nuclear facilities. Many countries have acted actively to respond to the security issues of nuclear facilities accordingly.

In China, in order to improve the capability of nuclear power plants on preventing and suppressing the external attacks, the Chinese government consecutively developed the related codes and standards as well as technical documents based on the existing laws and regulations, including "*Guide for the Nuclear Security of Nuclear Power Plants*" and "*Guide for the Physical Protection of Nuclear Materials*", so as to upgrade the legislative requirements for nuclear security in power plants.

The government also made greater efforts to support the scientific research and staff training on physical protection, and satisfying the physical protection standards for newly-built nuclear facilities such as large scale nuclear power plants to meet requirement at international level. At the same time, renovation the old facilities designed with the relatively low technical standards in protection are also implemented. Furthermore, in order to prevent the terrorism activities as well as various emergency and accidents in nuclear sector, the Chinese government established a nuclear emergency preparedness coordination mechanism, developed corresponding emergency preparedness plans, intensified the preparation and drills of emergency preparedness of nuclear facilities and carried out actively the preparation of anti terrorism in nuclear sector.

Ladies and gentlemen,

Although the international community has been working on the nuclear security with a series of measures, some issues still call for our wisdom to work out with paths of solution. The following points are what I believe relatively the key perspectives and which I hope to discuss with the colleagues here:

1. It is essential to determine the definition of the nuclear security for power plants and come to a common understanding in the nuclear sector as soon as possible.

It is known that, prior to 9•11 event, the security for nuclear power plants is called “physical protection”, mainly aimed at preventing criminals from destroying nuclear facilities or stealing or robbing nuclear materials. After 9•11 event, the concept of counter-nuclear-terrorism was brought forward in the international community, which primarily supposes criminals may use large air crafts, missiles and so forth to attack nuclear facilities so as to induce radiological accidents. As a matter of fact, for the purpose of ensuring the safety of nuclear facilities, both physical protection and security should call for the same requirements. If the measures taken to deal with external terrorism threats and to prevent nuclear and radioactive materials from being stolen can be integrated into the same one definition of “nuclear security of nuclear power plants”, it will have significant meanings in future for the research and development of codes, regulations and standards, the design of security system of nuclear power plants and international cooperation in this area.

2. An international unified design basis threat to nuclear security of nuclear power plants should be developed to apply to the design of the nuclear security system of newly-built nuclear power plants and to evaluate the existing nuclear security system in the operating nuclear power plants so as to take improved measures.

It is known that the design basis threat is the foundation for setting up nuclear security system in nuclear power plants, and the preventive and defending measures for the security of nuclear power plants are designed based on supposed design basis threat. The Safety Guide of IAEA prescribed the method of how to determine the design basis threat, i.e., to determine the design basis threat of a nuclear power plant according to local potential threatening factors provide by local police. However, the nuclear terrorism activities now have the tendency of being internationalized and regionalized, so that force us unable to estimate where terrorism is coming from and going to. Because of the great influence of nuclear accidents on the international society, plus the characteristics that terrorists intend to cause a social panic disturbance, it is difficult for us to decide that nuclear terrorism will not start from the countries or regions acknowledged the safest. Therefore, for any country

or region, the design basis threat for the security of nuclear power plant, with consideration of nuclear terrorism attacks, is in fact the same. This makes it possible to develop the international unified design basis threat for nuclear security of nuclear power plants.

3. The dividing of responsibilities between national government and nuclear power plants should be redefined in the new regime of nuclear security of nuclear power plants.

In the concept of the original physical protection, nuclear power plants undertook all the responsibilities of the security-related work in the nuclear power plant. However, the new regime of nuclear security of power plants determines that nuclear power plants can not shoulder such heavy responsibilities on their own. For instance, no matter how perfect a nuclear security system is set up by nuclear power plants, it is impossible for the nuclear power plants to survive under the terrorism attack such as missile. Hence, it is necessary to intensify the direct responsibilities of the nation under the new nuclear security regime of nuclear power plants, i.e., nation should also be required to act as the direct participant in nuclear security of power plant, in addition to developing laws, policies,

supervision and surveillances, eventually take the nation’s responsibilities for society. It can be expected that nation at least should be responsible for detecting and alarming the possible large scale attack to nuclear facilities, as well as offering the supports such as air-defense. Through the legislation, the responsibilities on nuclear security between national government and nuclear power plants should be defined clearly.

4. The relationship between the requirements of nuclear security and of the economy of nuclear power development should be balanced.

It can be foreseen that the new requirements for nuclear security in the nuclear power plants will affect the design not only for nuclear security system, but also for the system and construction building of the nuclear power plants. It is said that some designers have proposed to design containment and auxiliary building strong enough to stand against the crash of Boeing 747. Regardless such design will come true or not, there is no doubt that the new requirements for nuclear security will greatly increase the cost of nuclear power plants for construction and operation, thereby decrease the competitiveness of nuclear power.

As a consequence, while developing the new requirements for nuclear security and materializing them, we need to consider these factors adequately to ensure that both rational external attack (with certain basis) can be effectively prevented or defended and development of nuclear power can be smoothly fostered.

5. The technical standard system that suitable for new regime of nuclear security of nuclear power plants should be developed and improved to accelerate the enhancing of capability in nuclear security of nuclear power plants.

New requirements for nuclear security of the power plants have challenged the previous technical standard system, for sure, many aspects can not be suitable for new situation, and concurringly, the new requirements for nuclear security may also encounter new problems that need systematic study to work out the best solutions. Each country also depends on the technical standard as the basis to establish the nuclear security system in strengthening the security of nuclear power plants. For all aspects, an improved technical standard system needs to be established. In order to save time, reduce cost and unify standard, IAEA should play

an important role in organizing and carrying on international cooperation actively and comprehensively.

Ladies and gentlemen,

Nuclear terrorism is the common enemy to all the human beings. To strengthen the capacity of nuclear security of power plants, to ensure nuclear safety, are in the common interest and the responsibility of the entire international society. Recognizing the significance of strengthening the international cooperation on nuclear security, it is expected that the international society should closely cooperate together to establish the regime for nuclear security, share information and crack down nuclear terrorism.

As a responsible member of the international community, China will continue to join the various endeavors initiated by international community aimed at strengthening nuclear security and fighting against nuclear terrorism, to make contribution in realizing a sustainably peaceful and universally prosperous international society.

Thank you very much!