

[SE2-LT-2] Intersection between Nuclear Safety and Nuclear Security

Dawn Verdugo

James Martin Center for Nonproliferation Studies

Full Summary

Dr. Khripunov opened this session likening the current overall environment linking nuclear security and safety to a “prearranged marriage”, where the two fields often do not equally help one another. He stated that the two fields within the nuclear industry need instead to move towards a “loving relationship” where each communicates and helps one another to achieve shared goals. He posited that 3 major nuclear safety “wake-up calls” have highlighted that this relationship needs to change. For instance, the Three Mile Island crisis presented many lessons learned to those in the nuclear safety community on how to improve and strengthen management of reactor facility. This crisis also presented new opportunities for strengthening the safety of nuclear facilities by design. Not long after, the Chernobyl crisis catalyzed a growth in a culture of safety within the international nuclear energy community. Finally, in the aftermath of the most recent crisis at Fukushima Daiichi, Japan, nuclear experts are keenly watching and studying the events as they continue to unfold, in order to try and glean important new lessons learned for further strengthening the safety of nuclear industry. Yet, one important point must be made regarding these three nuclear “wake-up” calls. Dr. Khripunov acknowledged that we have yet to experience comparable nuclear security crises that have presented equally valuable lessons learned for strengthening the security of nuclear industry. These three nuclear crises have all attested to the needs for strengthening safety within nuclear industry, whereas the issue of nuclear security has often received little scrutiny. Dr. Khripunov did note that in the wake of Fukushima, we are beginning to see experts shift their emphasis away from safety considerations alone, and move towards discussing how nuclear safety and security might be mutually strengthened together. Experts in both fields are now starting to discuss the intersection between nuclear security and safety. However, experts that concentrate on nuclear security and those on nuclear safety have often faced challenges in bringing their two worlds together. For one, there is a clear understanding that nuclear security issues are often dealt with confidentiality. This confidentiality makes it very hard to test and strengthen aspects of nuclear safety without considering their implications for nuclear security. He closed his introduction by asking the panelists and audience to consider how we might optimize the collaboration or

interface linking safety and security. To consider this question himself, he recognized a need for undertaking a multi-disciplinary approach, as no one solution tailored for improving nuclear security can be exactly applied to improve nuclear safety- there needs to be flexibility and understanding of the unique demands facing each field. He believed the key lies in building cooperation vertically, from building and relying upon international frameworks, reinforcing national regulations and legislature, down to the facility level through the development of optimally-trained human resources. Finally, he noted that in order to build such a strong interface between nuclear security and safety, experts must be keen to the fact that no one solution can exactly or easily fit for the other- flexibility is paramount.

Dr. Dalnoki-Veress focused his presentation on trying to understand how the safety and security communities have been interacting with one another thus far, specifically during the emergency response to the Fukushima nuclear crisis. He began by noting the clear evidence that nuclear safety and security are inherently linked. For instance, Fukushima has demonstrated that spent fuel cooling ponds may be extremely vulnerable to either accidental or intentional events. He reasons that a strengthened defense in depth approach must be undertaken to overcome this vulnerability and to secure critical nuclear structures. For instance, he suggests secondary containment structures, and development of more redundant protection mechanisms for spent fuel cooling ponds.

He did note however, that nuclear safety and security measures can often be at odds with one another because they are tasked with meeting different, and often opposing, goals. For instance, in the immediate aftermath of a large-scale catastrophic accidental event such as Fukushima, he noted that emergency first responders are tasked with the most primary goal of saving lives by assisting victims and removing the population away from harm. However, had a similar event been caused by intentional or malicious means, such as by a terrorist sabotage of the facility, law enforcement would need to work within this environment and attempt to preserve a crime scene. Securing the area and protecting precious evidence that could provide clues as to the nature of the attack becomes imperative. Forensic evidence is an absolute necessity in order to track and prosecute the perpetrators. He noted that one way to bridge the gap between experts working in nuclear security and safety would be increased training activities, so law enforcement and emergency responders can become aware of the unique challenges facing each community in the immediate aftermath of a nuclear crisis- whatever its origin. He noted that in the wake of nuclear crises, government transparency with the public is key, as public trust is difficult to regain once it is lost. For instance, in the wake of the Fukushima crisis, Japan is now applying lessons learned from their initial slow pace in releasing accurate and timely information to the public. In public communication, he also noted that there must be special considerations for vulnerable populations affected by a nuclear emergency, such as the elderly, children, or those that are disabled. It is public

health officials jobs to respond to the many needs of the public after these crises, and to anticipate how the public will realistically behave after an event, not what they “should” do based on scenario planning (for example, even when instructed, many during a nuclear crisis may not want to ‘shelter in place’). To deal with these issues, we need more realistic nuclear emergency exercises to test responses, and to appreciate that no nuclear emergency will be identical. Therefore, planners need to design emergency response plans that are flexible and modular. To do this, they should incorporate a multiple design-based, all-hazards event planning strategy.

Dr. Findlay followed, and centered his discussion around the global governance aspects of nuclear safety and security. He began with a discussion contrasting features of the nuclear safety and security regimes. The nuclear safety regime is well-established, elaborate, and incorporates many legal instruments. Alternatively, the nuclear security regime, which has evolved separately, is younger, not as elaborate, and has fewer legal mechanisms. The treaties affecting the two regimes also have different origins, which makes it difficult to find clear intersection points. Yet the IAEA is the common ground, and takes on the major role of governance for nuclear safety and security. The IAEA has gradually overtaken an expanded role regarding nuclear safety (beyond safeguards implementations), and currently offers many programs for advising/assisting states in this arena. Yet, the organization does not have similar programs in place dedicated to nuclear security, and currently faces challenges in integrating the two realms. One reason for this is because there are different motivations for states with regard to nuclear safety and security. From a safety standpoint, states are more willing to increase transparency. Alternatively, from a security standpoint, states show a reluctance to increase transparency as it could infringe on their confidentiality, rights and state secrets. Additionally, there is a “North-South divide”, where some states see nuclear security as a “Western” problem, whereas nuclear safety is a larger issue for states just starting their nuclear energy programs. A third difficulty is that the IAEA traditionally has a ‘stove-piping’ method for analyzing issues. For instance, experts working on safety and security issues may lack resources and mechanisms for formally collaborating and sharing information. This is promulgated by the fact that international stakeholders very based on the community- there currently is no international mechanism in place for those in the safety community to share information/data with those in the security community. Findlay noted that WINS is currently attempting to fill this gap through various initiatives, but recognizes the difficulties in bringing together different stakeholders around the table. He presented a few ideas for addressing these difficulties. For one, there needs to be an increased awareness-raising around potential emergencies. There are many opportunities for discussing each issue without overwhelming or drowning out the other, especially at high-level meetings. The IAEA is crucial for enmeshing the two communities together, break barriers, but still maintain appropriate confidentiality. The security regime should emulate successful features

inherent to the safety regime. Finally, adding peer-reviews to each regime could strengthen each, and make them more similar.

Dr. Choong-hee concentrated his discussion on the interface between safety and security in the context of preparation for the 2012 nuclear security summit in Seoul. He noted that this conference will be different from the previous summit in Washington, D.C. (2010), in that this time there will be a greater focus integrating both realms. He noted that issues will need to be addressed in a coordinated fashion, in order to achieve safety and security objectives during the Summit. One new focus for this summit will be the discussion of nuclear security and how terrorism plays into this, post-Fukushima. This crisis may have provided hints to terrorists that targeting nuclear facilities for sabotage may be more feasible than other activities based on smuggling illicit materials for malicious purposes. He went further and noted that the common goal between the two realms is protecting society and the environment- that in this sense, the emergency response will become more similar as the regimes evolve. At the nuclear security summit, he foresees discussions on radiological and nuclear terrorism, but does not think that bringing in some discussion of the integration of safety should obscure the summits' main purpose. Rather, there needs to be a coordination and positive synergy to integrate the two realms beyond general discussions. He considered whether, in light of the Fukushima crisis, whether the IAEA should now undertake a more profound and thorough review of the 2 realms to uncover important interface mechanisms. He further considered the need for more professional, formal studies prior to the 2012 Summit, addressing modes for integration. This is imperative, because nuclear energy will continue to grow to new states. There needs to be a high-level commitment demonstrated to the public and international community that nuclear safety and security systems are being reinforced in order to support one another. The IAEA will be an important partner in this regard, especially from a technical

Dr. Howsley concluded the session, and agreed with his panel colleagues on the general steps necessitated for a prosperous path forward. He also recognized that in light of the 2012 Nuclear Security Summit, South Korea has a huge, timely role in shaping the policy agenda for our shared nuclear future. He surmises that security should be the focus, but the discussions must also address the safety and security interface. He commented on observations from managing the World Institute for Nuclear Security (WINS). This institute relies on several corporate partners, and focuses upon developing practical 'best-practices' guidelines. They deal with recognizing and overcoming barriers in a straightforward way, but have encountered challenges in bringing safety and security professionals together. This is because of the different disciplines in the 2 realms, where the safety community comprises technologists and engineers, and the security community includes police/law enforcement officials. There is often a lack of transparency and trust between these two communities.

Further, there are often concerns amongst those in the security community that through increased integration with the nuclear safety community, they will lose their autonomy or authority. This is one important concern that must be addressed. He noted a recent WINS report (May 2011) that focused upon lessons emerging from the Fukushima crisis, which highlights several important lessons learned that resulted from multi-disciplinary roundtable discussions with different safety and security experts. He concluded that the time is right for changes in attitudes and international policy with regard to nuclear safety and security, and looks forward to the 2012 Summit as an initial start in this direction.

Dr. Khripunov opened the question and discussion portion of the session and one audience member initiated by asking the panelists why, in their opinions, they think there has been no successful intentional nuclear or radiological event to date? He elaborated that clearly the intentions are there, but apparently the capacity is lacking. Dr. Khripunov commented first, noting that people intent on such malicious activities are usually seeking to send a message to a larger audience, and that for now, conventional means seem to be fulfilling that goal. However, he does see a time when such methods will become obsolete, as people already are beginning to pay less attention to conventional attacks. Once malicious perpetrators sense that their message isn't reaching the public as intensely, he believes that they will start experimenting with different targets in order to achieve their intended effects. Dr. Dalnoki-Veress seconded this comment and noted how unprotected hospital radioactive sources are, and that some focus in securing these materials is seriously warranted. Dr. Howsley ended, by noting how astonished he was that the world has not witnessed a dirty bomb attack yet, even in light of recent cases of terrorists trying to obtain materials to implement such an attack. The time is now for strengthening radiological security, he surmised.

On other question posed to the panel concentrated upon the role of the IAEA in strengthening the integration of nuclear safety and security. The audience member asked whether a team approach might be a better way of achieving this integration. Dr. Howsley acknowledged that this type of approach would make sense, and that the industry needs to do more of this. He further called for a comparison and study for benchmarking nuclear security and safety standards to those that are implemented for civilian aircrafts. Civilian aircraft regulations have a strong and deep integration of safety and security regulations. He believes that similar stringent safety and security regulations for the nuclear industry are absolutely necessitated, as any regulations that seem too 'soft' will likely be largely ignored by the public.

As a final question, one audience member asked whether where the leverage would exist in implementation of voluntary, or eventually required nuclear safety and security requirements. He further elaborated on this point by asking the panelists how they envision making it more attractive for companies or governments to want to abide by new, potentially strenuous

regulations. Dr. Howsley stated that we need to explore more fully the area of insurance and liabilities for counterterrorism efforts. He notes that industry needs to be realistic, because operators cannot be fully expected to protect from every possible contingency, all the time. Dr. Khripunov followed, and considered that we might take existing legislation and documents and strengthen them from peer-review rather than create brand new ones. Dr. Findlay ended, stating the number of states seeking nuclear energy for the first time is shrinking, and that those remaining are seriously looking to the IAEA for guidance. Therefore, the IAEA might take a more activist role with serious newcomers by giving practical, real safety and security advice.

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