

REGULATOR'S ROLES FOR SUSTAINABLE EFFORT FOR NUCLEAR SECURITY CULTURE IN JAPAN

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Abstract

A strong nuclear security culture serves as an essential element to achieve effective nuclear security, and thus, all organizations involved in nuclear security have a due responsibility to make effort for nuclear security culture. Regulators responsible for nuclear security assume important roles to ensure a sustainable effort of licensees for nuclear security culture. In order to ensure the sustainable effort for nuclear security culture Japan takes an approach of a three-tiered national framework in which the Nuclear Regulation Authority (NRA) as a competent authority (CA) for nuclear activities in Japan requires licensees to develop and implement the plan to foster a strong nuclear security culture and demands the involvement of the top management, in a tangible way, in the implementation result of the plan. In addition, for addressing the challenge of putting a vague concept of nuclear security culture into practice the NRA is taking extra steps to facilitate licensees' effort to be practical and effective, for example, by sharing its own practices within the NRA as a role model and providing tools and experience-sharing opportunities. More, in dealing with nuclear security culture as a regulator a careful consideration needs to be taken not to distort or misguide licensees' effort due to its potentially great influence on licensees. It is particularly true with regard to the way to incorporate elements related to nuclear security culture into NRA's assessment of licensees' physical protection performances. In this regard, the NRA has accumulated the experience of repeating trial and error to find a good balance to incorporate the cultural elements into its physical protection assessment. Based on these experiences the paper presents Japan's nationwide approach with the focus on the regulator's roles for ensuring practical and sustainable effort for nuclear security culture.

1. INTRODUCTION

Fostering and sustaining a strong nuclear security culture serves as the basis for achieving effective nuclear security, as the human factor is involved in all aspects of nuclear security. The importance of nuclear security culture is specified as one of the 12 Fundamental Principles (FUNDAMENTAL PRINCIPLE F: Security Culture) in the Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) [1]. Upon its entering into force on May 8, 2016 the effort for nuclear security culture became a legally binding obligation for States party to the CPPNM and its Amendment. Accordingly, all organizations responsible for physical protection of nuclear material and nuclear facilities assume an international obligation to foster and sustain a strong nuclear security culture. This importance is also reiterated in numerous non-binding IAEA Nuclear Security Series (NSS) documents, including the Nuclear Security Fundamentals: Objective and Essential Elements of a State's Nuclear Security Regime (NSS No. 20) [2] and three Nuclear Security Recommendations documents (NSS No. 13, No. 14, and No. 15) [3] [4][5].

2. CHALLENGES TO THE EFFORT FOR NUCLEAR SECURITY CULTURE

Although the sustainable effort for nuclear security culture is now internationally recognized as a due responsibility for organizations involved in nuclear security, it could be a challenge for these organizations to be continuously committed to fostering nuclear security culture over years, if no incentives provided or compelling power enforced. People's behaviours, which are the ultimate target of nuclear security culture to address, are the reflection of underlining assumptions that have been rooted deeply but unconsciously in people's minds, while various experiences have been accumulating over years. This means that any effort to foster and enhance nuclear security culture requires a longstanding commitment to fostering underlining assumptions that would serve to achieve effective nuclear security. Ideally, the effort made at each organization is to be sustained to achieve continuous enhancement of nuclear security culture; however, in reality, the prospects of the effort is likely to be subject to the policies, management's priorities and resource availability of the organization concerned, and thus,

could be neglected if the situation requires. This suggests that an effort for nuclear security culture merely by an organization itself may not be sufficient and that a holistic approach is deemed necessary.

Another difficulty in fostering nuclear security culture comes from an intangible nature of culture. How to put a vague concept of nuclear security culture into practice poses a big challenge to all licensees as well as to regulators. While the measures and performances of the physical protection system of licensees can be enforced and ensured through regulations and inspections, fostering and sustaining a strong nuclear security culture cannot be ensured merely through these regulatory instruments. Additional approaches need to be taken as a catalyst to support their efforts for nuclear security culture.

3. THREE-TIERED NATIONAL FRAMEWORK FOR ENSURING A SUSTAINABLE EFFORT FOR NUCLEAR SECURITY CULTURE

Various ways of holistic approaches are possible to ensure a sustainable effort for nuclear security culture. As one such way Japan takes an approach of a three-tiered national framework in order to ensure the sustainability of the effort for nuclear security culture nationwide. This three-tiered framework consists of the State, Nuclear Regulation Authority (NRA) as a competent authority (CA) for nuclear activities in Japan, and licensees under the regulatory control of the NRA.

3.1. State at the top tier

In this framework the State, at the top tier, serves as the primary initiator for the national effort to foster nuclear security culture by pronouncing Japan's commitment to the effort and empowering the CA for pursuing this effort. As an example of the pronouncement, the Prime Minister of Japan has declared its political commitment to fostering nuclear security culture most noticeably in the form of the national statement at the two Nuclear Security Summits in 2014 and 2016. One example of the national statement of Prime Minister of Japan Abe at the Nuclear Security Summit in 2014 is as follows:

“Japan has a responsibility to lead the global efforts on enhancing nuclear security. I will continue to be in the front line of Japan's efforts. . . . We will continue to enhance activities that foster a nuclear security culture in Japan.” [6]

3.2. The Nuclear Regulation Authority (NRA) as the Competent Authority (CA) at the second tier

Based on this clear political initiative together with the legal authorization, the NRA, at the second tier, is empowered to proactively lead Japan's effort and have the authority to oversee the effort by licensees for nuclear security culture. The regulations of the NRA for various nuclear activities set the requirement for licensees, at the third tier of the framework, to develop and implement the plan to foster a strong nuclear security culture. This plan is required to follow the plan-do-check-act (PDCA) cycle and include the involvement of the top management in a tangible way in this cycle, specifically in the implementation result of the plan. The NRA confirms this plan and examines its implementation status through a nuclear security inspection, if the plan is carried out in a practical way.

As the plan should be designed to foster a strong nuclear security culture to support effective nuclear security, licensees are advised not only to take general approaches, such as awareness-raising of security risks and e-learning on nuclear security, but also to include actions to directly address issues specific to their situation. For example, if a licensee was found through a nuclear security inspection that its access control procedures were not properly performed, as defined by its security plan, its nuclear security culture plan in the next year is expected to include actions to address this deficiency. Expected actions for this purpose may include the provision of the education on the defined access control procedures to the guards at the access control points, which will be followed by comprehension tests and regular check-ups by the physical protection manager. The actions are also expected to include the delivery of the message of the top management to all employees on the importance of adhering to procedures, including those for access control, as well as that of the physical protection manager to the staff responsible for the physical protection system. In this way the NRA ensures that licensees' plan with the PDCA cycle for nuclear security culture is not only carried out properly (not treated as a “pie in the sky”), but also closely linked up to the support for nuclear security.

As another essential factor for fostering nuclear security culture, the NRA closely looks into the involvement of the top management in the implementation of nuclear security culture plan. Particularly, it examines in what ways the top management is involved in the effort, what messages the top management has delivered to the employees for nuclear security, and how these messages have been put into practice.

If the nuclear security culture plan has not been properly implemented, the NRA has the authority to provide the licensee with guidance or instructions to take a corrective action. In addition, the NRA regularly meets with licensees' top management in person to communicate its expectation for their leadership in nuclear security, and if necessary, directly requests them to take the lead in fostering nuclear security culture.

3.3. Licensees at the third tier

This NRA's approach to licensees and to their top management, in particular, serves as a strong incentive for the top management to ensure that their subordinates meet the regulatory requirement, continuously putting the effort for nuclear security culture into practice. As the effect each licensee is to make every effort to develop and take actions, suitable for its situation, to foster a strong nuclear security culture. One such an example is to make daily messages related to nuclear security culture to be visible for security guards in order to heighten their sense of responsibility and professionalism for their daily duties. Another example is to notify the employees of matters that may not present immediate risks but suggest negative signs for possible degradation of the physical protection system for the purpose to raise the awareness that nuclear security is everybody's responsibility. The same licensee also shares with its employees good practices that have been made for the improvement of the physical protection system, aiming to motivate them to further contribute to nuclear security. In this way a variety of unique efforts for nuclear security culture are continuously sought and practiced.

3.4. Effective mechanism for the sustainable effort for nuclear security culture

As discussed, this three-tiered national framework serves as an effective mechanism to ensure the sustainable effort for fostering nuclear security culture in a holistic manner. As the CA for nuclear activities in Japan, the NRA plays a primary role for ensuring licensees' sustainable effort for nuclear security culture through the regulatory requirements for the purpose to foster and enhance nuclear security culture in Japan as a whole.

4. REGULATOR'S ROLES IN DEALING WITH NUCLEAR SECURITY CULTURE

While the top-down approach described in the three-tiered national framework is a common and main practice of the NRA in all areas of nuclear regulation in Japan, additional consideration should be made in applying certain regulatory tools specifically in dealing with nuclear security culture. In addition, in order to further facilitate licensees' effort for nuclear security culture the NRA is expected to assume extra roles of supporting them for putting the vague concept of nuclear security culture into practice. The followings present nuclear security culture specific consideration and some examples of supportive activities that the NRA is engaged in fostering nuclear security culture of licensees.

4.1. Ensure an effective PDCA cycle, not to directly assess nuclear security culture

Due to an intangible nature of culture the focus of a nuclear security inspection related to nuclear security culture plan needs to be placed on the examination of licensees' PDCA performances and should not be on the assessment of the status of nuclear security culture itself. In other words, understanding the status of nuclear security culture requires a deep insight into people's underlying assumptions by applying various tools, such as interviews, focus groups, observations, etc., which takes a long time and cannot be done in a limited timeframe of one week, which a nuclear security inspection normally takes. With this limitation in mind the regulatory oversight better serves to ensure the practical and effective implementation of the PDCA cycle aimed to foster a strong nuclear security culture of licensees.

In addition, the attempt to assess the status of nuclear security culture of licensees by a regulator could distort licensees' effort for nuclear security culture due to the difference in positions between licensees and a

regulator. For example, if the NRA tries to assess the status of licensees' nuclear security culture through a nuclear security inspection, it would be a likely tendency of licensees to hide a negative state in their behaviours and attitudes, and licensees would even pretend that they are at a good status of nuclear security culture, as they would be afraid that any negative features in nuclear security culture could be possibly judged as nonfulfillment of the regulatory requirement. In this way the assessment of nuclear security culture of licensees by the NRA would be ineffective and even worse, could mislead their effort for nuclear security culture.

As the NRA is the CA for nuclear activities in Japan, its approach to licensees could have a great influence on them. With this potentially great influence in mind the NRA is mindful of the need to be careful not to distort or misguide licensees' effort for nuclear security culture.

4.2. Understand the relationship between physical protection performances and status of nuclear security culture of licensees

Although the assessment of licensees' nuclear security culture by a regulator could be counterproductive, a regulator needs to keep in mind that most deficiencies in the performances of physical protection are the manifestation of the weakness or negative status of nuclear security culture. With this in mind a regulator needs to have a better understanding of the relationship between physical protection performances and status of nuclear security culture of licensees.

For this purpose the NRA is currently developing the guide on nuclear security culture that describes performance indicators of nuclear security culture in relationship to physical protection performances, while closely referring to IAEA Implementing Guide on Nuclear Security Culture (NSS No. 7) [7] and IAEA Technical Guidance on Self-assessment of Nuclear Security Culture in Facilities and Activities (NSS No. 28-T) [8]. NSS No. 7 provides 120 indicators for 30 nuclear security culture characteristics and NSS 28-T further provides additional 201 indicators for the same 30 nuclear security culture characteristics. Based on these provided 321 indicators in total the NRA is selecting some of them or creating or personalizing them to make them suitable for its need to provide nuclear security inspectors with a better understanding on the relationship between certain underperformance or deficiencies of physical protection performances and characteristics of nuclear security culture. This guide is expected to help nuclear security culture inspectors to assess licensees' nuclear security culture plans in a more practical way and, if necessary, provide them with better instructions to ensure effective efforts for nuclear security culture.

Finally, a special care should be taken with regard to the way to incorporate elements related to nuclear security culture into NRA's assessment of licensees' physical protection performances. If a certain deficiency of physical protection performances is assessed to be the manifestation of an organizational malfunction, the NRA considers it to be more serious than other cases considered to be resulted from a feature that seems to be less relevant to the organizational governance. However, a difficulty often remains in deciding whether or not an organizational issue is a major cause of the identified deficiency of physical protection performances. In this regard, the NRA has accumulated the experience of repeating trial and error and continues to seek a good balance to incorporate the cultural elements into its physical protection assessment. In the effort for addressing this difficulty the aforementioned guide is planned to include some criteria for the NRA to assess in a consistent manner the level of relevancy of the organizational governance to the identified deficiencies of physical protection performances.

4.3. Support licensees' effort through being a role model, providing tools and experience-sharing opportunities

With the consideration of an intangible nature of culture regulatory instruments only may not be sufficient to facilitate the effort of licensees for nuclear security culture, and additional approaches are necessary. For this purpose the NRA is not only taking various approaches previously discussed for ensuring the sustainable effort by licensees but also is taking external steps to facilitate their effort to be practical and effective. Followings are such approaches that the NRA has taken for nuclear security culture.

4.3.1. Tool provision

The NRA developed educational videos for nuclear security culture in 2014. These videos cover the following three topics: (i) Overview of nuclear security and nuclear security culture, (ii) Stories of employees, and (iii) Stories of executive-managers. The part of Stories of employees highlights that nuclear security is everybody's responsibility and suggests possible ways to raise employees' awareness on their responsibility for nuclear security. The part of Stories of executive-managers simulates several inappropriate attitudes or behaviours of executive-managers that may degrade performances of nuclear security and prompts consideration for possible improvements to serve for a stronger nuclear security culture. These educational videos are open at NRA's website and available for licensees to utilize for their educational purposes for nuclear security culture. The NRA also developed model survey questionnaires aimed to raise awareness on nuclear security and to understand employees' perceptions with regard to nuclear security in order to identify possible areas for fostering nuclear security culture. The NRA provided licensees with these questionnaires for their effort for nuclear security culture. These educational videos and questionnaires have been appreciated as practical and useful to advance their effort to foster nuclear security culture.

4.3.2. Role modelling

The NRA developed Code of Conduct on Nuclear Security Culture in January 2015. It is providing the education on nuclear security culture and this NRA's Code of Conduct for all its employees including those newly employed. It also provides nuclear security inspectors with the training on the understanding of the relationship between physical protection performances and status of nuclear security culture. The NRA shared with licensees its developed Code of Conduct on Nuclear Security Culture and information on these education and training. By presenting its own effort to licensees in fostering and enhancing nuclear security culture of the NRA it tries to encourage licensees to take actions for their side. Accordingly, several licensees have developed their own Code of Conduct on Nuclear Security Culture and are promoting the understanding on the importance of nuclear security culture for their daily duties based on their developed Code of Conduct.

4.3.3. Provision of experience-sharing opportunities

Another helpful way to facilitate licensees' effort for nuclear security culture is to provide opportunities for the experience-sharing among licensees. In the occasion of a meeting with all licensees this year the NRA distributed a CD to licensees that compiled the information on the efforts and materials for fostering nuclear security culture by 17 licensees who voluntarily provided the information. Several very unique activities were shared including the following. The activity was titled as "Training against suspicious items". In this activity the licensee placed suspicious items at several locations along with employees' commuting paths. It also placed observers nearby the items but in a hidden spot from the sight of employees so as to secretly observe whether or not the items would be noticed and reported. If the items were not reported, the observer asked the persons who did not report the item for the reason of their inactions. The licensee conducts this training every year from 2015, and the rate at which items are noticed and reported is steadily increasing year by year. Last year one employee found a suspicious parcel on its way to the office, which was not placed for the training purpose. The employee reported it to the guard. As the parcel was picked up by a metal detector, the guard reported it to the police. At the end the parcel was found to contain gardening scissors and incense but no dangerous items. This episode together with the increasing rate of reporting demonstrate a heightened awareness of its employees on possible threats and their enhanced understanding that it is their responsibility to report if they find suspicious items.

5. SUSTAINING AND ADVANCING THE EFFORT FOR A STRONG NUCLEAR SECURITY CULTURE

The NRA, as a regulator for nuclear activities in Japan, assumes important roles in ensuring the sustainable effort for nuclear security culture in Japan as a whole. The NRA has been and continues to be committed to fulfilling the regulatory responsibility for nuclear security culture. In so doing, the three-tiered national framework is proved to be an effective mechanism in which the NRA has the regulatory authority to oversee licensees' effort

for nuclear security culture. NRA's regulatory oversight is focused on the assurance of practical and sustainable implementation of their nuclear security culture plan with the direct involvement of the top management.

While the primary responsibility for the status of nuclear security culture of licensees should reside in themselves, the NRA is taking extra steps to support and facilitate their effort by providing tools and opportunities for experience-sharing, and playing a role-model. It also provides them with advice or instructions, if necessary, to make their plan to be effective to address their respective situation. For this purpose the NRA is trying to develop its own capability for understanding the relationship between physical protection performances and nuclear security culture. NRA's various efforts started upon its establishment in September 2012, not a long time ago, and thus, we have great potential to further advance the effort to make it more practical and effective to ensure the sustainable effort for nuclear security culture nationwide.

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