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Security Culture and Its Self-Assessment as Supplementary Tools for Nuclear Security Training

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Abstract

Nuclear security culture – an emerging and widely recognized practice – serves as a means to support and enhance nuclear security. In fact, many International Atomic Energy Agency (IAEA) publications and the Nuclear Security Summits have highlighted the vital role of nuclear security culture and raised its status to the same level as physical protection and material accountancy. Consequently, there is a great need to include the concept of nuclear security culture and its self-assessment methodology in existing nuclear security education and training programs as a cross-cutting topic and as a means to improve the efficiency of the currently applied learning methods. This paper outlines the importance of including training modules on nuclear security culture and its self-assessment as a way in which to improve and complement existing nuclear security education and training programs.

I.   Introduction

The International Atomic Energy Agency (IAEA) defines security culture as "the assembly of characteristics, attitudes, and behavior of individuals, organizations, and institutions which serve as a means to support and enhance nuclear security" *[1]*. As a supporting and enhancing practice, the role of culture can be deduced from the definition of nuclear security which, according to the International Atomic Energy Agency (IAEA), is "the prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities" *[2]*. Accordingly, the cross-cutting concept of security culture is not limited to such basic principles as physical protection and material accountancy, but it also covers a much wider playing field including customs and border security, illicit trafficking prevention, and

personnel reliability screening and training. The scale, recognition, and visibility of security culture has been increasing in momentum for its use not only as a vital component of nuclear security but also as a vehicle for reinforcing professional skills and improving motivation.

This paper focuses on the genesis of security culture as a subset of organizational culture and its effect on the overall nuclear security regime. It traces the rapid evolution of security culture into the multi-functional practice supported by assessment and enhancement methodologies, which can serve as a supplementary tool to make conventional classroom training more effective and sustainable.

II.   Human Performance and Training Objectives

Nuclear security education and training have diverse functions, but they are all designed to train the entire workforce to carry out their assigned security functions effectively and reliably. Given the cross-cutting nature of security and its applicability to all personnel, security culture is a vehicle to improve overall human performance at nuclear facilities and associated activity exposed to both inside and outside threats. Numerous International Atomic Energy Agency (IAEA) publications in the Nuclear Security Series identify culture as an indispensable element for both strengthening security and improving the quality of training. Significantly, "Objectives and Essential Elements of a State's Nuclear Security Regime" (Nuclear Security Series #20, 2013) stipulates that each competent authority and authorized person with nuclear security responsibilities contribute to the sustainability of the nuclear security regime by "developing, fostering and maintaining a robust nuclear security culture" *[3]*. When organizations set out to improve the human component by promoting a security culture, they set out to cultivate relevant habits, attitudes, and perceptions among its staff members.

The multi-disciplinary approach in education and training encompasses a variety of managerial, organizational, behavioral, and other inputs. There is no need to choose between a technology- centered and a human-centered syllabus design. Rather, a commitment to security arises from the interplay among technology, culture, and people. These elements cannot be separated from one another in the process of training. In other words, a major objective of nuclear security training is to facilitate human interaction with technology – both hard and soft, covering procedures and regulations – in security systems with a view toward helping staff members recognize problems, identify emergent events, anticipate patterns that might lead to a security breach, and, consequently, take appropriate action. The more sophisticated security technologies and arrangements are, the more important it is for personnel within the organization to be trained in designing, operating, maintaining, and improving these security technologies and arrangements.

III. Need for Differentiated Approach

While it is safe to assume that most personnel take ownership of nuclear safety, security may give rise to divergent views around the workforce and create glitches in the training process. This dichotomy makes classroom training both challenging and demanding. A wide range of attitudes toward security requiring a differentiated and tailored approach is demonstrated below:

- ♦ *Ownership*: Personnel assume responsibility, regard security as their program, and feel accountable for security throughout the organization.
- ♦ *Participation*: Personnel provide their point of view regarding security, and adopt a more creative approach toward security regulations and rules for compliance.
- ♦ *Compliance*: Personnel follow the rules regardless of whether their compliance contributes to better security.
- ♦ *Apathy*: Personnel do not care one way or the other about security.
- ♦ *Avoidance*: Personnel regard security as inherently dangerous, unnecessary, or even harmful *[4]*.

The main premise is not what people know or are aware of, but rather, it is what they do after its completion, which is guided by their beliefs and attitudes. Unless people understand and believe that there is a credible threat and that security is important, some of them are unlikely to personally contribute to security despite the availability of carefully developed and user-friendly requirements and procedures.

Beliefs and attitudes are drivers of people's behavior. Commitments to nuclear security are formed in people's minds over time and become causal factors to both the precursors to security events and also influence the response to events. The proper assembly of beliefs and attitudes in combination with an appropriate management system leads to an effective nuclear security culture. Without a strong substructure of beliefs and attitudes about threats, an effective nuclear security culture cannot exist. Efforts to instill such beliefs and attitudes must be carefully calibrated to reach *everyone* working in the facility and not just the organization's security professionals alone.

Three closely integrated sources of such beliefs and attitudes include (i) leadership, (ii) training, and (iii) work experience. Leaders need to lead by example to forge the appropriate patterns of security-related perceptions within the staff. The leadership is broken down into two tiers – (1) top leaders and senior managers, and (2) managers of all kinds of levels – where distinctly different roles are performed to help shape beliefs and attitudes. For example, top leaders typically create visions and strategies, (for instance, a sensible picture for the future and logic for how the vision can be achieved), while the managers focus tends to be on plans and budgets, (for instance, specific steps and timetables to implement the strategies and plans to convert them into reality). A major portion of work experience as a source of nuclear security culture comes from efforts to enhance security culture and implement its self-assessment methodologies.

The conventional classroom format has its limitations insofar as effective nuclear security education, and training is concerned. The most common defaults include: a minimal personalized approach, a focus on generic security requirements rather than specific needs of the organization, and insufficiently differentiated curricula to meet requirements of various professional groups.

In order to create effective nuclear security education and training, a creative vision and an updated toolset are required. An example would be to include training on security culture and the use of its emerging methodologies, with an emphasis on regularly held culture self-assessment, which is discussed in greater detail below.

IV. A New Toolset

Nuclear security culture emerged as a concept at the turn of the century, and, since then, it has evolved into a widely recognized practice. In 2008, the International Atomic Energy Agency (IAEA) published an Implementing Guide on nuclear security culture as part of its Nuclear Security Series **[5]**. The guide defines the concept and characteristics of nuclear security culture while describing the roles and responsibilities of institutions and individuals entrusted with a function in the security regimes. Since then, the International Atomic Energy Agency (IAEA) has conducted over 25 international, regional, and national workshops to promote security culture and to train nuclear security personnel at all levels.

Since then, two draft Technical Guidance documents – "Self-Assessment of Nuclear Security Culture in Facilities and Activities" and "Enhancing Nuclear Security Culture in Facilities and Activities" – are currently under development, and are expected to be released in 2016-2017. The draft self-assessment methodologies have been successfully applied in three countries and at three different facilities: Indonesia's research reactors (2012-2013), Bulgaria's nuclear power plant (2014), and at a hospital for radioactive sources in Malaysia (2014-2016). The results of these self-assessment exercises were

submitted to International Atomic Energy Agency (IAEA) technical meetings as well as to international conferences.

Furthermore, all four Nuclear Security Summits (Washington, D.C., 2010, Seoul, 2012, The Hague, 2014, and Washington, D.C., 2016) significantly boosted the concept and practical application of nuclear security culture. One important innovation was raising its status of security culture to the same level of importance as physical protection and material accountancy. The Hague Nuclear Security Summit, for example, encouraged all relevant stakeholders to build and sustain a strong nuclear culture to effectively combat nuclear terrorism and other criminal threats. Another step forward in promoting the concept was its emphasis on the need to focus on the safety-security interface.

Self-assessment is a multistage process comprising interactive methods (individual interviews, focus group discussion, and to some extent observation) and non-interactive methods (survey, document review, and again observation). It is a process that focuses on the characteristics of behavior and management systems (of which there are a total of 30 characteristics). These characteristics are evaluated by comparing what the culture is at present to their optimal parameters specified by culture indicators assigned to each characteristic as benchmarks. Due to the heavy focus on beliefs and assumptions, there are many benefits to regularly conducting self- assessments. First, they help personnel understand the reasons for an organization's pattern of behaviors in certain circumstances; second, they devise optimal security arrangements; and, third, they predict how the workforce may react to a wide range of risks.

In addition to evaluating security culture, self-assessment exercises can perform a valuable educational and training function similarly to on-the-job-training. Below are examples of why and how security culture self-assessment can help to move organizations along in its learning curve and supplement conventional classroom practices:

♦ Preparation for the self-assessment process highlights the importance of nuclear security throughout the organization. Usually, senior management is seen as having initiated and supported the process. The head of the organization releases a directive stating the assessment's purpose, outlining the procedure for carrying it out, and explaining how the results will be used.

♦ Surveys and interviews involve a major portion for the workforce who is no longer in the position of passive observers in the classroom. Those selected for surveys are supposed to grade survey statements (which are based on security culture indicators listed in relevant IAEA publications) from "strongly agree" to "strongly disagree." This assignment gives participants a chance for self-reflection and encourages them to understand the meaning of culture indicators in the context of their organizations. As to the number of people involved, in the course of the 2012-2013 self-assessment at Indonesia's three research reactors, 624 people were surveyed (60 percent of the workforce) and 128 people interviewed (12 percent of the workforce). A total number of employees at the three sites was 1,035.

♦ Though culture indicators listed in International Atomic Energy Agency (IAEA) publications are mostly generic, self- assessment teams at each organization are encouraged either to adjust them to their needs or develop their own indicators consistent with the profiles of these organizations. As a result, survey respondents can clearly see how their provisions fit into their security regimes. Moreover, since most indicators apply to the entire organizations, it is recommended to personalize them and to focus on strictly individual attitudes. Accordingly, the culture indicator "Organization's instructions on security are easy to follow because they are clear, up-to-date, readily available, and user-friendly" can be changed to the following personalized survey statement: "It is easy for me to follow instructions for security because they are clear, up-to-date, readily available, and user-friendly." Expressions of personal views from respondents not only facilitate the search for cultural root causes but also reinforces and expands their knowledge.

♦ Interviews allow for personal contact between an interviewer and a respondent, ideally for starting an unconstrained flow of information and providing a chance for respondents to review their own role in the security regime. An experienced interviewer may be in a position to identify gaps in the ongoing security training and later recommend adjustments and updates to the program.

♦ The self-assessment process culminates in a final document summarizing the findings, setting the foundation for communicating key message, and providing the baseline for subsequent self-assessment(s). A major purpose of the report submitted to the management for sharing with the organization is to foster a sense of ownership among the staff. This makes each person in the organization a joint custodian of the security culture. The final communication phase acclimates senior management and the entire organization to the role of the human factor in security, which, in turn, helps them learn lessons and encourages them to improve professional skills. It is important to stress that the self-assessment findings should be debated rather than simply published in a report.

♦ The challenge for practitioners is how to combine self-assessments and traditional training in a way to raise the effectiveness of both in a mutually complementary manner. For example, a self-assessment of security culture can be preceded by a classroom training session to explain and discuss, among other topics, the meaning of culture indicators used for surveys, interviews or focus group discussion. On the other hand, before recommending a focus for self-assessment, the management or self-assessment team should review the records and syllabi of the most recent nuclear security training sessions to identify a match. The objective would be to emphasize to the extent possible those issues, which were covered by those sessions and complement the classroom experience with practical insights.

Upon completion of the self-assessment exercise at the Kozloduy nuclear power plant in Bulgaria, the head of the self-assessment team concluded: "In general, the self-assessment appears to be an excellent addition to the regular security training which includes involvement of staff as well as collecting information for current security culture level. The involvement of staff is very positive for the training, which not only motivates the employees but also gives a real-time feedback for their progress and for the current state of the security regime" [*6*].

V.   Conclusions

Security culture and its self-assessment methodology must be seen in their broadest context as both an evaluation tool and an individual skills enhancer. All elements of nuclear infrastructure, including fuel cycle facilities, research reactors, manufacturers and users of radioactive sources, and transport companies, must be secure. Once instituted, this methodology will not only facilitate identification of vulnerabilities but also help transform the human factor from a problem to be overcome into an asset to strengthen security.

VI.   Notes and References

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VII. Authors' Bio and Contact Information

Dr. Igor Khripunov is a leading expert on nuclear security, security culture, and CBRN proliferation. He edits the 1540 Compass, and works closely with international organizations like the UN Office for Disarmament Affairs and the International Atomic Energy Agency on security assessment, training, and best practices. Dr. Igor Khripunov joined the Center for International Trade and Security (formerly the Center for East-West Trade Policy) at the University of Georgia in 1992 and is now a Distinguished Fellow with the Center as well as an Adjunct Professor for the University of Georgia's School of Public and International Affairs. He is also a consultant and training instructor for the International Atomic Energy Agency (IAEA) and Editor-in-Chief of the "1540 Compass," published in cooperation with the UN Office for Disarmament Affairs. Igor Khripunov has contributed to a number of books and book chapters on WMD arms controls and nonproliferation, nuclear security and CBRN security culture. He has written numerous op-eds in world media as well as articles published in journals such as Arms Control Today, Comparative Strategy, Security Dialogue, Jane's Intelligence Review, Nonproliferation Review, Problems of Post-Communism, and The Bulletin of the Atomic Scientists.
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