

INITIATING NSC-SELF-ASSESSMENTS IN INDONESIA: OPERATOR'S LEVEL EXPERIENCES

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**WINS-BRIN Regional Workshop on Security Culture to be
conducted in Jakarta, Indonesia from 05 to 07 November 2024**

Short Bio



Khairul is a retired employee of the National Nuclear Energy Agency (BATAN) / National Research and Innovation Agency (BRIN). He has worked in the field of nuclear security for 37 years and as an IAEA nuclear security technical expert (remote expert) for 20 years until now. He was involved as speaker in a number of nuclear security conferences, seminars, workshops.

He participated at Training Course (ITC 20) on Physical Protection of Nuclear Material and Facilities, Albuquerque, NM, USA, 2007 and others security related training.

As a Guest Lecturer at IAEA Training Course on Physical Protection and Nuclear Security Culture at several countries in the region.

He also joined with IAEA expert mission at IPPAS 2005 (Thailand), IPPAS 2013 (Australia), IPPAS 2015 (Japan), IPPAS 2023 (Nigeria), and INSServ 2008 (Sri Lanka).

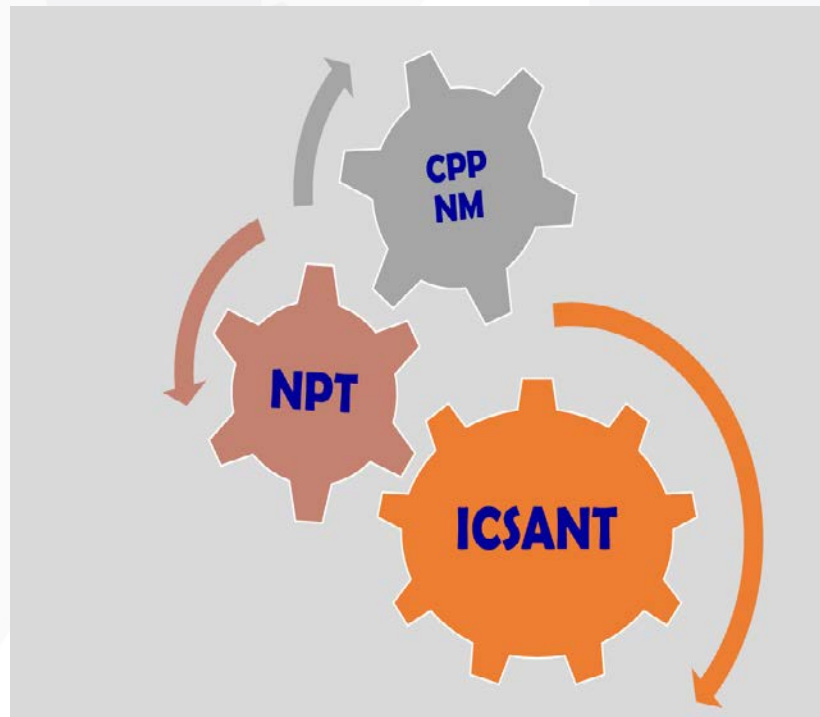
He has been actively involving in the enhancement of nuclear security in Indonesia and the region. Development of self-assessment method for nuclear security culture in cooperation with IAEA and PNS/U.S. DOS, CITS-UGA is one of his major accomplishments.

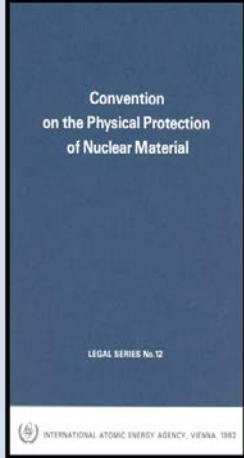
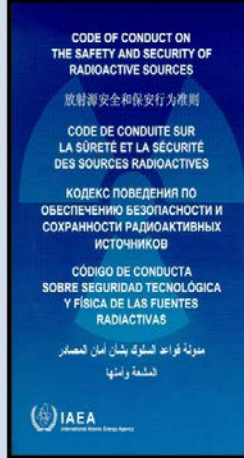
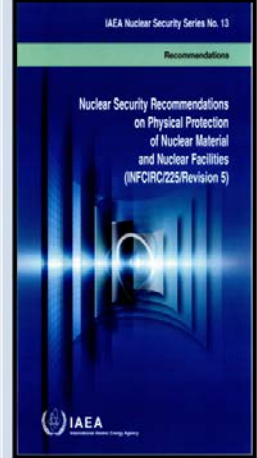
Objectives of the Presentations

- Background
- Describe International Convention on Nuclear Security
- Present National Nuclear Security Regime
- Present Nuclear Security Culture Self-assessment Activities
- Conclusions

International Legal Instruments On Nuclear Security:

The state is responsible for nuclear security ?



Legally Binding		Non-binding	
 <p>Convention on the Physical Protection of Nuclear Material</p> <p>LEGAL SERIES No. 12</p> <p>INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, 1982</p>	<p>Amendment to the Convention on the Physical Protection of Nuclear Material</p> <p>1. The title of the Convention on the Physical Protection of Nuclear Material adopted on 28 October 1979 (hereinafter referred to as "the Convention") is replaced by the following title:</p> <p>CONVENTION ON THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND NUCLEAR FACILITIES</p> <p>2. The Preamble of the Convention is replaced by the following text:</p> <p>RECOGNIZING the right of all States to develop and apply nuclear energy for peaceful purposes and that legislative systems in the general interests of the world exist for peaceful applications of nuclear energy;</p> <p>CONVINCED of the need to facilitate international cooperation and the transfer of nuclear technology for the peaceful applications of nuclear energy;</p> <p>BEING OF THE OPINION that physical protection is of vital importance for the protection of public health, safety, the environment and national and international security;</p> <p>EMPHASIZING the purposes and principles of the Charter of the United Nations concerning the maintenance of international peace and security and the promotion of good-neighbourliness and friendly relations and co-operation among States;</p> <p>CONSIDERING that under the terms of paragraph 1 of Article 2 of the Charter of the United Nations, "all members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations";</p> <p>RECALLING the Declaration on Nuclear Security in Economic and Social Commission for Western Asia, adopted by General Assembly resolution 48/40 of 2 December 1994;</p> <p>DETERMINED to meet the present danger posed by their technology, the nuclear industry and use of nuclear material and the safety of nuclear material and nuclear facilities, and asking that physical protection system such as has been developed in a number of countries be adopted and strengthened;</p> <p>DEEPLY CONCERNED by the worldwide escalation of acts of terrorism as well as its scope and sophistication, and by the threat posed by international terrorism and organized crime;</p> <p>BELEIEVED that physical protection plans are important tools in supporting nuclear proliferation and counter-terrorism objectives;</p>	 <p>CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES</p> <p>放射源安全和保安行为准则</p> <p>CODE DE CONDUITE SUR LA SÛRETÉ ET LA SÉCURITÉ DES SOURCES RADIOACTIVES</p> <p>КОДЕКС ПОВЕДЕНИЯ ПО ОБЕСПЕЧЕНИЮ БЕЗОПАСНОСТИ И СОХРАННОСТИ РАДИОАКТИВНЫХ ИСТОЧНИКОВ</p> <p>CÓDIGO DE CONDUCTA SOBRE SEGURIDAD TECNOLÓGICA Y FÍSICA DE LAS FUENTES RADIOACTIVAS</p> <p>مؤونة قواعد السلوك بشأن أمن المصادر المشعة وأنشأها</p> <p>IAEA International Atomic Energy Agency</p>	 <p>IAEA Nuclear Security Series No. 13</p> <p>Recommendations</p> <p>Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (NFCIRC/225/Revision 5)</p> <p>IAEA International Atomic Energy Agency</p>
CPPNM	Amendment to the CPPNM	Code of Conduct	Nuclear Security Guidance Documents

- UN Security Council resolutions 1373 and 1540

National Nuclear Security Regulations In Relation With International Instruments

- Government Regulation No. 45 / 2023, on ionizing radiation safety and security of radioactive sources
- Government Regulation No. 58 / 2015, Safety and Security during Transport of Radioactive Sources
- Government Regulation No. 54 / 2012 on the Safety and Security of Nuclear Installations and Materials
- BAPETEN Chairman Regulation No. 6 / 2015, on Security of Radioactive Source (**under revision**)
- BAPETEN Chairman Regulation No. 1 / 2009, on Physical Protection of Nuclear Materials and Facilities (**under revision**)



Indonesia's Nuclear Research Reactors



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Reactor Triga Mark II

- Location: **Bandung**
- Operated on **1964**, 250 kW
- Upgraded to 2000 kW on 2000
- Main function: research and isotopes production



Reactor Kartini

- Location: **Yogyakarta**
- Operated on **1979**, 100 kW
- Main function: research and human resource training facilities



MPR G.A Siwabessy

- Location: **Serpong**, Tangerang
- Operated on **1987**, 30 MW
- Main function: research and isotopes production and material research

Background

- CPPNM/A, 2005-Ratified into Presidential Regulation No. 46/2009
- IAEA IPPAS Mission invited in 2001, and follow up mission in 2007 both recommended an improvement of NSC. The latest IPPAS mission was in 2014
- Indonesia has established nuclear security legal framework such as Government Regulation No. 54/2012 on Safety and Security in Nuclear Installation
- BAPETEN Chairman Regulation No. 6 / 2015, on Security of Radioactive Source (under revision)
- BAPETEN Chairman Regulation No. 1 / 2009, on Physical Protection of Nuclear Materials and Facilities (under revision)
- Operator (BATAN's) Standard on the Security Management System, (SB 009/2010)

Needs Self-assessment

- The Real threats occurred at national and worldwide, requires strong nuclear security culture and robust physical protection in place
- Operator (BATAN's) disseminated Nuclear Security Culture for entire workforces since 2010 annually
- In the implementation of regulation and procedures there were some obstacles in place (triggered topic: Adherence to Procedure)
- High level requested the team to find out current status of the implementation of NSC

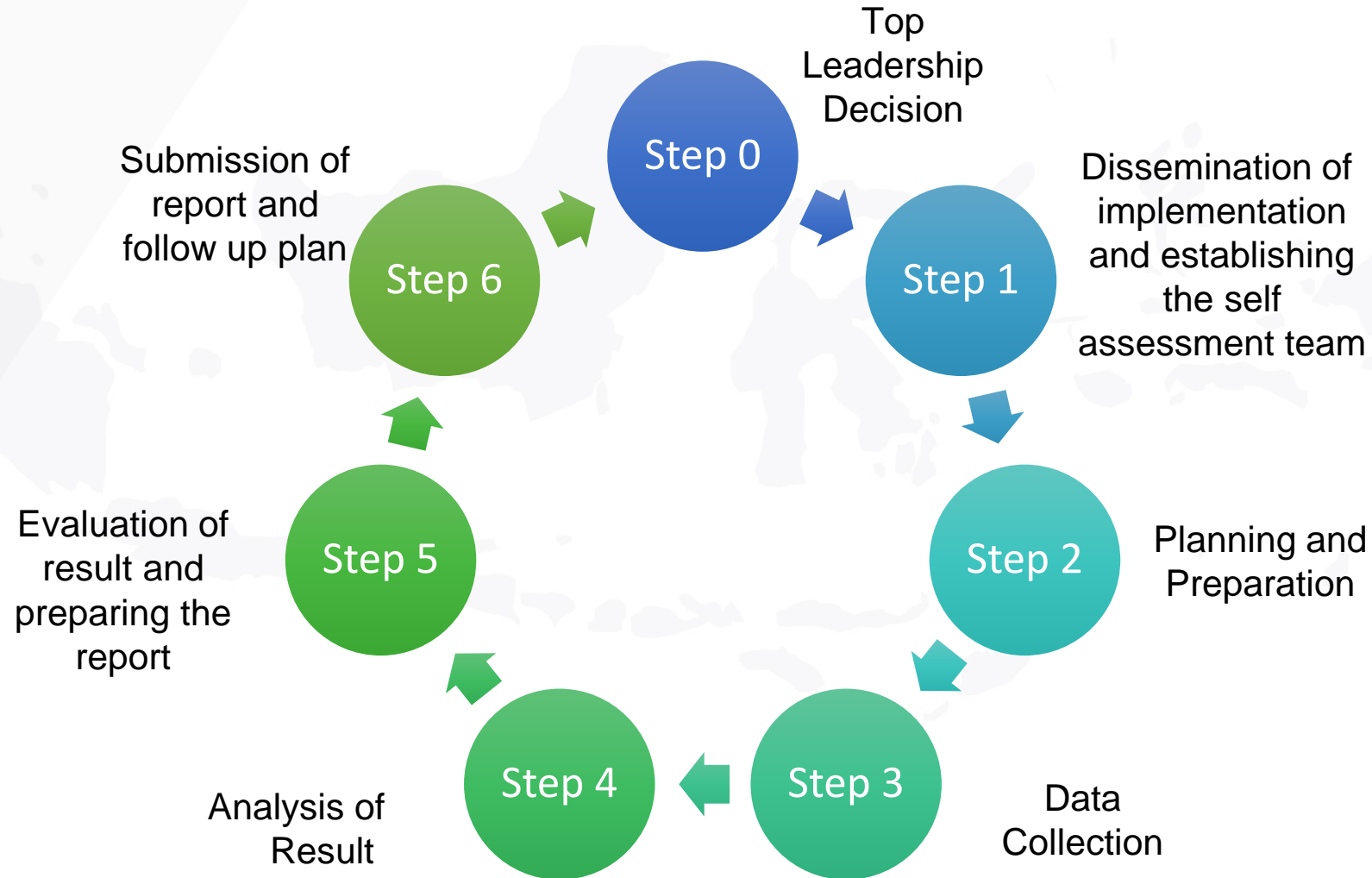
Expectations

- To determine security culture level at the Nuclear Research Reactors in Bandung, Yogyakarta and Serpong
- To find out the baseline of Nuclear Security Culture implementation
- To provide recommendations to the High-Level Management to better implementation on the NSC as required
- To test the IAEA draft guidance under preparation as a pilot project

High Level Commitment

- Coordinator's of Serpong site submitted a proposal to the Chairman, with one of the reasons was that NSC is required by law and regulations (see Background)
- Top Leaders acknowledged the needs to implement NSC from other sources (IAEA ICONS, and Nuclear Security Workshop).
- Directive Letter on 5 Dec, 2012 by Chairman to conduct Self-assessment in three research reactors

Self Assessment Methodology



Goal: Effective Nuclear Security

Management Systems are well developed and prioritize security

- (a) Visible security policy
- (b) Clear roles and responsibilities
- (c) Performance measurement
- (d) Work Environment
- (e) Training and qualification
- (f) Work management
- (g) Information security
- (h) Operation and maintenance
- (i) Continual determination of trustworthiness
- (j) Quality assurance
- (k) Change management
- (l) Feedback process
- (m) Contingency plans and drills
- (n) Self-assessment
- (o) Interface with the regulator
- (p) Coordination with off-site organizations
- (q) Record keeping

Behavior foster more effective nuclear security

Leadership behavior

- (a) Expectations
- (b) Use of authority
- (c) Decision making
- (d) Management oversight
- (e) Involvement of staff
- (f) Effective communication
- (g) Improving performance
- (h) Motivations

Personnel behavior

- (a) Professional conduct
- (b) Personal accountability
- (c) Adherence to procedure
- (d) Teamwork and cooperation
- (e) Vigilance

Red Color : 1st SA
- 29 indicators

Purple color: 2nd SA
- 30 indicators

Principles that influencing the decision and behavior

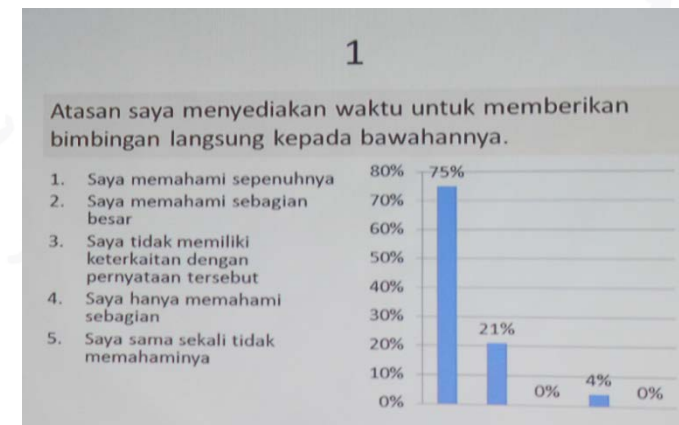
- (a) Motivation
- (b) Leadership
- (c) Commitment and responsibility
- (d) Professionalism and competence
- (e) Learning and improvements

Believes and Attitude

- (a) The threat is real and credible
- (b) Nuclear security is important

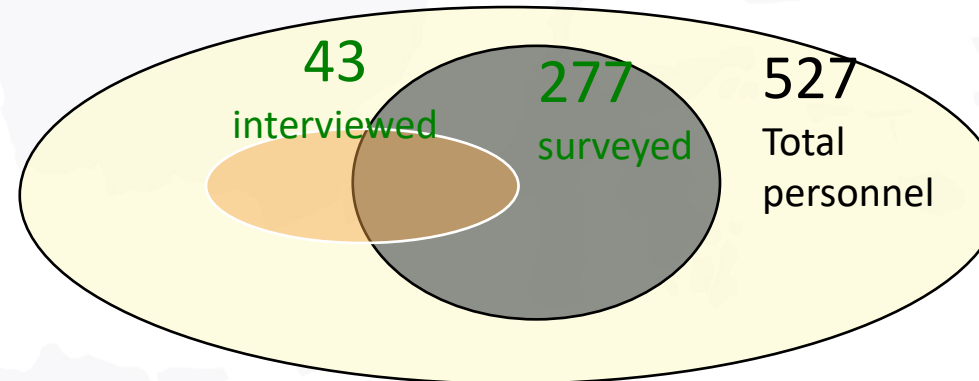
Survey Statement: Validation

- Referring to the 1st self-assessment, using first person statement (**without validation**)
- To ensure the clarity of the statement, **validation was done by involving 25 personnel**
- The validation responses are as follows: **Fully don't understand, half understand, not relevant, half understand, and fully understand.**
- The validation result was **70% of the respondents UNDERSTAND** the survey statement.
- Several **statements were revised** after the validations.



Survey & Interview: Composition

32 members of self-assessment team



INTERVIEW CONDUCT

- There are 13 questions, related to negative survey results
- The interview method used is semi-structured, added with in-depth questions
- Interview participants are randomly selected, where 50% of them are survey respondents.
- 1 hour interview duration, by 2 interviewers



Document Review: Preparation Steps

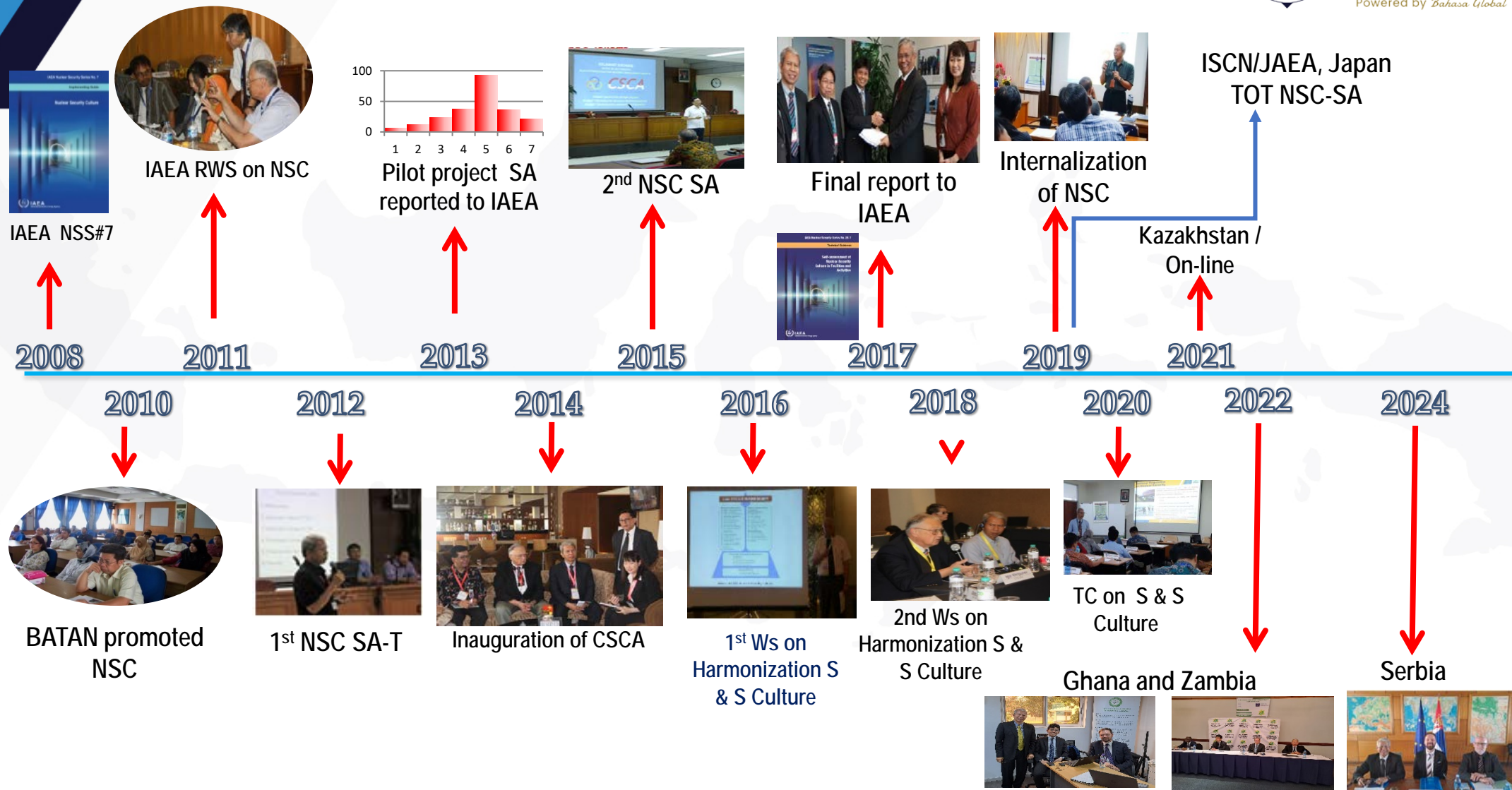
- Guidelines for document review are prepared with 7 nuclear security culture indicators
- Review materials are particularly in the form of SOPs and recordings in Nuclear Security Unit
- **Confidentiality undertaking** is also included to be signed by team members.



Observation

- Performed in joint national nuclear emergency exercise situation dated November 25, 2015.
- Evaluator team was established involving radiation protection officers, security officers, safety and observing officers from CSCA.
- Compliance with procedures has been illustrated in joint exercise.
- The use of authorities still seems weak, including in terms of coordination and cooperation among work units.

Milestone



Conclusions

- ✓ In general, strong indicators lie on personnel behaviour characteristics, while some weak indicators lie on leader behaviour characteristics. Normal indicators mostly lie on management system characteristics.
- ✓ With applying IAEA SA methods, it can be proven procedures compliance indicators have been achieved and there are strong indications on it.
- ✓ Enhancements on NSC showing by leaders commitment in conducting self-assessment at radioactive source facilities in 2018 and 2nd Self-assessment at RRs in Bandung 2019.
- ✓ During pandemic, 2020 – 2021 we conducted survey online only not to used 4 tools to follow the health protocol from government.



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