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ADVISORY SERVICE (IPPAS)***



***INTERNATIONAL ATOMIC ENERGY
AGENCY (IAEA)***

***Follow-up Mission Report:
Japan***

26 November - 7 December 2018

Prepared for the Nuclear Regulation Authority (NRA)

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ABBREVIATIONS

ABWR	advanced boiling water reactor
A-CAS	assistant central alarm station
AIP	advance information package
BWR	boiling water reactor
CAS	central alarm station
CCTV	closed circuit television
CPPNM	Convention on the Physical Protection of Nuclear Material (INFCIRC/274/Rev.1)
DBT	design basis threat
DMR	digital mobile radio
ERC	Emergency Response Center
FCA	Fast Critical Assembly
IAEA	International Atomic Energy Agency
INFCIRC	information circular
IPPAS	International Physical Protection Advisory Service
ISO	International Standardization Organization
JAEA	Japan Atomic Energy Agency
JCG	Japan Coast Guard
JSGO	Japan Safeguards Office
LAA	limited access area
MCR	main control room
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MOE	Ministry of Environment
MOFA	Ministry of Foreign Affairs
NMAC	nuclear material accountancy and control
NMCC	Nuclear Material Control Center
NPA	National Police Agency
NPS	nuclear power station
NPSC	National Public Safety Commission
NRA	Nuclear Regulation Authority (of Japan)

NSS	IAEA Nuclear Security Series
PA	protected area
PDCA	Plan Do Check Act
PFPP	Plutonium Fuel Production Facility
PP	physical protection
PPA	peripheral protected area
PPS	physical protection system
RPM	radiation portal monitor
SAS	secondary alarm station
SSAC	State System of Accounting for and Control of Nuclear Material
TEPCO	Tokyo Electric Power Company Holdings, Inc.
URC	unacceptable radiological consequence
VAI	vital area identification

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SUMMARY

This report presents the results of the International Atomic Energy Agency's (IAEA) International Physical Protection Advisory Service (IPPAS) follow-up mission to Japan, conducted from 26 November to 7 December 2018. The mission followed a request from the Government of Japan to the IAEA, provided by the Nuclear Regulation Authority (NRA) in February 2017.

The objectives of the IPPAS follow-up mission were to conduct a review of:

- The follow-up efforts at the national level and at the facility level regarding the recommendations and suggestions provided during the 2015 IPPAS mission.
- Significant changes at the national level related to Japan's legislative and regulatory framework for physical protection (PP) of nuclear material and nuclear facilities and computer security.
- Implementation of the PP measures at the Kashiwazaki-Kariwa Nuclear Power Station (NPS).

The assessment compared the nuclear security regime in Japan with the requirements contained in the Convention on the Physical Protection of Nuclear Material (CPPNM), its 2005 Amendment and with the guidance contained in the IAEA Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), published as Nuclear Security Series (NSS) No.13, and other relevant NSS guidance documents.

The IAEA assembled an international seven-person team for the IPPAS mission. The experts have broad experience in physical protection system (PPS) design, implementation, regulatory oversight, computer security and nuclear legislation. The IPPAS team interacted with personnel from the NRA and with the management and key security staff at the Kashiwazaki-Kariwa NPS.

During the first IPPAS mission to Japan, two recommendations and nine suggestions were identified by the IPPAS team at the national level, and 10 suggestions were identified at the three facilities visited. The facilities visited included the two nuclear facilities of Japan Atomic Energy Agency (JAEA), the Fast Critical Assembly (FCA) and the Plutonium Fuel Production Facility (PFPF), and the Hamaoka NPS operated by Chubu Electric Power Company, Inc. The IPPAS team reviewed the actions taken in response to recommendations and suggestions. The conclusion of the IPPAS team was that actions taken by the NRA and at the facilities addressed all the recommendations and suggestions.

Since 2015, actions were taken by the NRA and the nuclear operators in Japan to address the recommendation regarding trustworthiness checks. Four ordinances were revised in 2016, guidelines were developed and distributed, and licensees implemented the new requirements. To date, trustworthiness checks of 76,000 people have been completed. The IPPAS team recognizes this as a significant accomplishment, and the efforts undertaken to achieve this were monumental.

During the follow-up mission, the IPPAS team identified four suggestions and two good practices at the national level. The suggestions were related to efforts to continuously emphasize the importance of nuclear security, considerations regarding the protection of sensitive information, use of nuclear material accountancy and control measures for nuclear security purposes, and stronger computer security regulations. The good practices identified by the IPPAS team included a strong nuclear security culture and a comprehensive and unified national level contingency/emergency plan for safety and security incidents.

The IPPAS team concluded overall that Japan has a robust nuclear security regime that meets the intent of the CPPNM and its 2005 Amendment. Nuclear security is important, and there is strong leadership at the NRA and at the nuclear facilities to sustain the regime. Most noteworthy, the IPPAS team saw evidence of nuclear security culture focused on continuous improvement in all areas. The recommendation and suggestions provided in this report are intended to assist Japan in applying the principle of continuous improvement in nuclear security. The number of good practices identified might assist other Member States in strengthening their nuclear security regimes.

The IPPAS team recognized the NRA and the facilities for the significant time and resources they invested in the preparation and conduct of the mission. The advance information package (AIP) was comprehensive, and the briefings provided were informative, well structured, clear, and were very useful to the IPPAS team. The site visit was very well planned, targeted, and executed. Personnel from the NRA and the facility's operator were willing to have open, transparent, and honest discussions regarding the strengths and challenges of their PP regime, while understanding and respecting the sensitive nature of the subject. The arrangements allowed the IPPAS team to establish a sound understanding of the implementation of PP measures.

This report, containing the results of the review, is for the exclusive use of the Government of Japan, who may share the report as appropriate. Measures have been taken to protect the confidentiality of the report and other sensitive information related to the conduct of the mission.

I. INTRODUCTION

Since its inception in 1995, the purpose of the International Atomic Energy Agency's (IAEA) International Physical Protection Advisory Service (IPPAS) has been to provide advice and assistance to strengthen the effectiveness of a State's PP regime for nuclear material and nuclear facilities.

This report presents the results of the IAEA's IPPAS follow-up mission conducted for Japan under the leadership of the Nuclear Regulation Authority (NRA) from 26 November to 7 December 2018. This was the IAEA's 85th IPPAS mission.

The first IPPAS mission to Japan was conducted from 16 to 27 February 2015, following the formal request from the Chairman of the NRA provided to the IAEA on 21 January 2014. Its purpose was to evaluate the national regime for PP of nuclear material and nuclear facilities (Module 1) and to review the PPS in place at two nuclear facilities of Japan Atomic Energy Agency (JAEA), the Fast Critical Assembly (FCA) and Plutonium Fuel Production Facility (PFPP), and at the Hamaoka Nuclear Power Station (NPS) operated by Chubu Electric Power Company Inc. (Module 2), as well as to review computer security (Module 5) at the national level and at the facility (Hamaoka NPS) level.

This follow-up mission was requested by the NRA on 3rd February 2017. A preparatory meeting was conducted on 13-14 February 2018 at the NRA's Headquarters in Tokyo to discuss objectives, scope and detailed preparation of the review in connection with the facilities to be visited during the mission.

For this IPPAS mission, the IAEA assembled a team comprising six PP experts and a legal expert. These experts have broad experience in PPS design, implementation, regulatory oversight and nuclear legislation. The team members of the IPPAS mission were: Joseph Sandoval (team leader), Sandia National Laboratories, USA; Stephane Celestin (legal expert), Federal Agency for Nuclear Control (FANC), Belgium; Tapani Hack, Radiation and Nuclear Safety Authority, (STUK), Finland; Anno Keizer, URENCO Netherland B.V., Netherlands; Thomas Languin, Ministry for Ecological and Solidarity Transition (MTES), France; Brett Roberts-Howe, Office for Nuclear Regulation (ONR), United Kingdom and Arvydas Stadalnikas, IAEA (see also Appendix 2).

The IPPAS team received an AIP from the Division of Nuclear Security of the NRA. This package included a brief overview of the various elements of the national nuclear security regime, information about nuclear industry in Japan, including nuclear facilities related to this mission, as well as a translation of the main Japan's legislation relevant to nuclear security. The IPPAS team regarded this as very useful information.

The team gathered additional information on the national nuclear security regime through the series of briefings and interviews with officials of the NRA. The briefings on the implementation of the actions taken in response to recommendations and suggestions of the 2015 IPPAS mission were provided by the representatives of the NRA, JAEA and Chubu Electric Power Company Inc.

The IPPAS team also visited Kashiwazaki-Kariwa NPS, operated by Tokyo Electric Power Company Holdings, Inc. (TEPCO) and observed the security practices in place at this nuclear facility. The detailed briefings and discussions with facility management and personnel and well organized facility walk downs were very transparent and informative. The meetings at the NRA and facility visit also provided an opportunity for the exchange of information on international PP practices.

I.1 Objectives

The objectives of the IPPAS follow-up mission were to:

- Review the response of the NRA and the operators of visited facilities to the recommendations and suggestions of the 2015 IPPAS mission;
- Review the current status of the national PP regime and in particular implementation of PP at the Kashiwazaki-Kariwa NPS;
- Compare the PP procedures and practices in Japan with the Convention on the Physical Protection of Nuclear Material (CPPNM) and its 2005 Amendment, the IAEA Nuclear Security Series (NSS) No. 13 Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5) and other relevant NSS guidance documents;
- Provide advice regarding further enhancement of the national PP regime;
- Identify good practices that could be communicated to other Member States of the IAEA for long term improvement.

I.2 Scope

The scope of the follow-up mission included a review of three IPPAS modules: a National Level Review (module 1), a Facility Level Review (module 2), and a Computer Security Review (module 5) at the national level.

The national level review included a review of the follow-up efforts regarding the recommendations and suggestions provided during 2015 mission, as well as other significant changes at national level related to Japan's legislative and regulatory framework for PP of nuclear material and nuclear facilities and computer security, regulatory practices (licensing and other authorization, inspection and enforcement) and coordination between organizations involved in PP.

The facility level review included a review of actions taken by the operators of two nuclear facilities of JAEA, the FCA and the PFPF, and of the Hamaoka NPS to the suggestions of the 2015 IPPAS mission. The review was based on evidence provided in briefings by the operators, but the facilities were not visited again by the IPPAS team. In addition, the facility level review during this IPPAS mission included implementation of the PP measures at the Kashiwazaki-Kariwa NPS operated by TEPCO. However, review of the actions and equipment of the response force was not included in the scope of the mission.

II. RESPONSE TO RECOMMENDATIONS AND SUGGESTIONS PROVIDED DURING THE 2015 IPPAS MISSION

The IAEA recommends an IPPAS follow-up mission that allows the host country to have an assessment of the adequacy of its response to the recommendations and suggestions of a previous IPPAS mission. Ideally, the IAEA suggests such a mission should be conducted within a period of three to five years. Japan's initial IPPAS mission was conducted in 2015.

The main objective of this IPPAS follow-up mission to Japan was to review the implementation of recommendations and suggestions of the previous IPPAS mission, taking into account the current status of the Japan's nuclear security regime and its implementation at the facility level. The 2015 IPPAS mission to Japan identified two recommendations, 19 suggestions, and 10 good practices related to nuclear security at the national and facility level. As a result, the government and facility operators undertook a number of actions to address the recommendations and suggestions.

The 2015 IPPAS mission included a review of the implementation of PP measures at two facilities operated by the JAEA, the FCA and the PFPP, and the Hamaoka NPS operated by Chubu Electric Power Co., Inc. The national level review also included a high level review of PP regulation for the Fukushima-Daiichi NPS, though a site visit was not conducted to this facility in 2015. There were no recommendations or suggestions regarding the Fukushima-Daiichi NPS.

The following sections describe the actions taken by Japan in response to the 2015 IPPAS recommendations and suggestions, and an assessment by the follow-up IPPAS team whether they have been sufficiently addressed. Each finding was evaluated to determine whether to:

- Close it, indicating the finding had been addressed sufficiently;
- Conditionally close it, indicating that the host country is in the process of implementing measures that, when complete, will sufficiently address the finding; or
- Leave the finding open, indicating further action is deemed necessary to address the finding.

II.1 Response to National Level Recommendations and Suggestions

Recommendation 1 (2015): The Government of Japan should adopt regulations for trustworthiness in accordance with the established policy and legal framework.

The following four Ordinances on (i) Spent Fuel Reprocessing Operations, (ii) the Installation, Operation, etc. of Commercial Power Reactors, (iii) the Installation, Operation, etc. of Power Reactors in a Research and Development Phase, and (iv) Operational Safety of Reactor Facilities at TEPCO's Fukushima Daiichi NPS and Physical Protection of Specified Nuclear Fuel Material, have been revised in September 2016 in order to implement trustworthiness checks for licensees to their employees.

In addition, coinciding with those revisions, the NRA issued Notification and established Operational Guidelines for Trustworthiness Checks. In September 2016, the NRA issued Notification of Trustworthiness Checks to specify the items that the object person for the trustworthiness checks is required to state in a declaration to be submitted to the licensee, and the other documents corresponding to the said items, in accordance with the revision of the aforementioned four Ordinances.

The NRA established guidelines for the implementation of trustworthiness checks in accordance with the NRA Ordinances at the timing of their revision. The guidelines indicate interpretation of the related Ordinances, determination criteria for the trustworthiness checks and other necessary items.

It should be noted that these guidelines describe a standard trustworthiness check; it does not prevent the implementing parties from stipulating and employing additional criteria in accordance with their own judgment.

According to the NRA, the trustworthiness checks of all the employees of the licensees subject to these ordinances were completed by the end of October 2018, and the trustworthiness checks of approximately 76,000 people in total in the corresponding facilities was smoothly conducted. In addition, the target will be extended to the Category I and II facilities (e.g., test reactors and usage facilities) and opinions are being collected through the public comment procedure for the draft of the ordinance; this is expected to come into force in July 2019.

The guidelines specifies all necessary modalities, including the object person, the method of conducting the checks, the determination criteria, the notification of the results and the procedure for filing a complaint.

Trustworthiness checks shall be conducted under the supervision of a PP manager; these include conduct of the required inspections and the interview and aptitude test to assess their personality. The checks encompass investigation of personal record of the object persons, their relationship with other countries and relationship with organizations (including criminal syndicates) that may commit terrorism or other criminal acts, their capacity to distinguish right from wrong, and their criminal or disciplinary records in relation to the PP of specified nuclear fuel material.

The IPPAS team recognizes an impressive improvement in this area of Japan in a relatively short time, which included amendment to the ordinances as well as the establishment of the notification and guidelines.

The IPPAS team concluded that the recommendation has been implemented and it is CLOSED.

Suggestion 1 (2015): The State may consider adopting a process similar to the one defined in NSS 16 for identification of vital areas at nuclear facilities.

The NRA revised their review standards in November 2018 to require licensees to follow a defined process to identify vital equipment requiring additional PP measures. The nuclear licensees have been directed to revise their security plans accordingly by March 2019 and implement the new provisions by July 2019.

The IPPAS team considered that this suggestion has been addressed and will be CLOSED upon implementation at the facility level.

Suggestion 2 (2015): The NRA may consider adopting regulations for a backup alarm station for Category I facilities.

The relevant NRA ordinances have been revised for test reactors and usage facilities, which were not previously subject to the regulatory requirements for installing a backup alarm station. Opinions are being collected through the public comment procedure for the draft of the revised ordinance. Once the amended ordinances are issued by the NRA, the plan is for the licensees to revise their security plans by March 2019, and install backup alarm stations by June 2022.

The IPPAS team considered that this suggestion has been addressed and will be CLOSED upon the adoption of the proposed revision to regulations and its implementation at the facility level.

Suggestion 3 (2015): The NRA may consider recruiting the approved number of physical protection inspectors in order to meet the number of places (43) provided for in the existing legislation.

During the IPPAS mission in 2015, the NRA had 34 PP inspectors and support personnel. They have 38 currently on-roll, and plan to hire additional inspectors to bring the total staff level involved in PP activities to 43 by April 2019.

The IPPAS team concluded that the necessary arrangements have been made to implement this suggestion and it should be CLOSED on the basis of progress and confidence.

Suggestion 4 (2015): The NRA may consider formalizing a certificate programme for testing and certification of physical protection inspectors.

During the 2015 IPPAS mission, training for PP inspectors consisted of one to two weeks of classroom training, and experience gained over a few years in the position. An intensive two year education and training programme has been developed and began in October 2017. It is planned to be fully implemented by April 2020 after a two year trial period which commenced in April 2018.

The programme is composed of three levels, basic, intermediate, and advanced as illustrated in the following figure, and includes six months of basic training followed by 18 months of general proficiency training along with specialized technical proficiency training and qualification. Completion of basic training is mandatory to begin work as a PP inspector. Qualified inspectors must receive refresh training every three years.

The IPPAS team concluded that the necessary arrangements have been made to implement this suggestion and it should be CLOSED on the basis of progress and confidence.

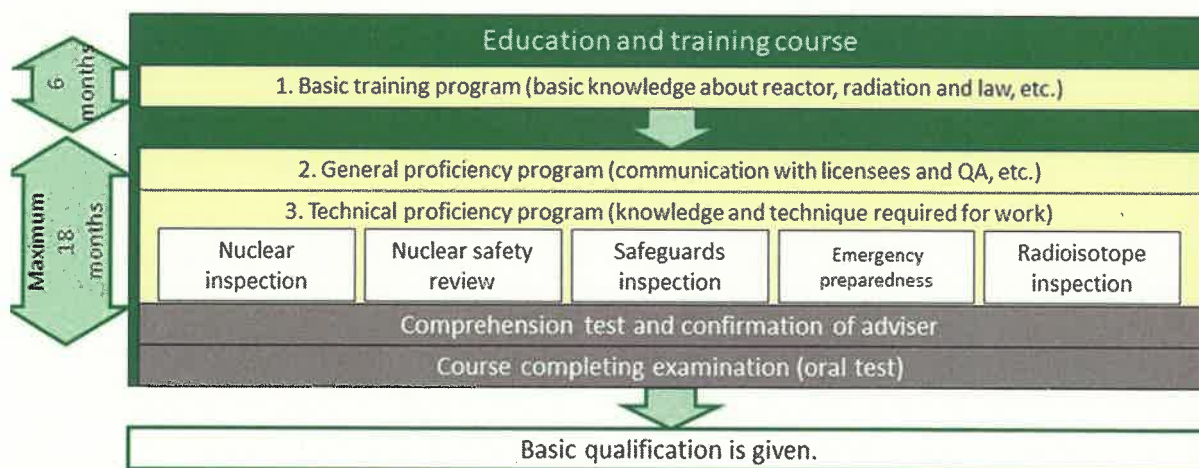


Figure 1. The NRA Education and Training Programme

Suggestion 5 (2015): The NRA is advised to review its required protection measures for secret and top secret information against standards found in other countries and, on that basis, consider revising the current requirements for physically protecting sensitive information.

The NRA has revised internal standards for protection of information defined within the NRA as Physical Protection (PP) Secret. The review standards for the licensees have been revised as well to require similar protection of information.

The IPPAS team concluded that the suggestion has been implemented and it is CLOSED.

Suggestion 6 (2015): The State may consider conducting joint emergency and security exercises at nuclear facilities involving all relevant agencies and organizations.

A joint exercise was conducted at the Tsuruga NPS in July 2017, and included participation from the office of the Prime Minister's Official Residence, the NRA, the National Police Agency (NPA) and the Japan Coast Guard (JCG).

In October 2018, a joint exercise was conducted at the Kashiwazaki-Kariwa NPS and also included participation from the office of the Prime Minister's Official Residence, the NRA, the NPA, JCG, and the local Fire Department. The figure below includes select photographs from the 2018 joint exercise.

The IPPAS team concluded that the suggestion has been implemented and it is CLOSED.

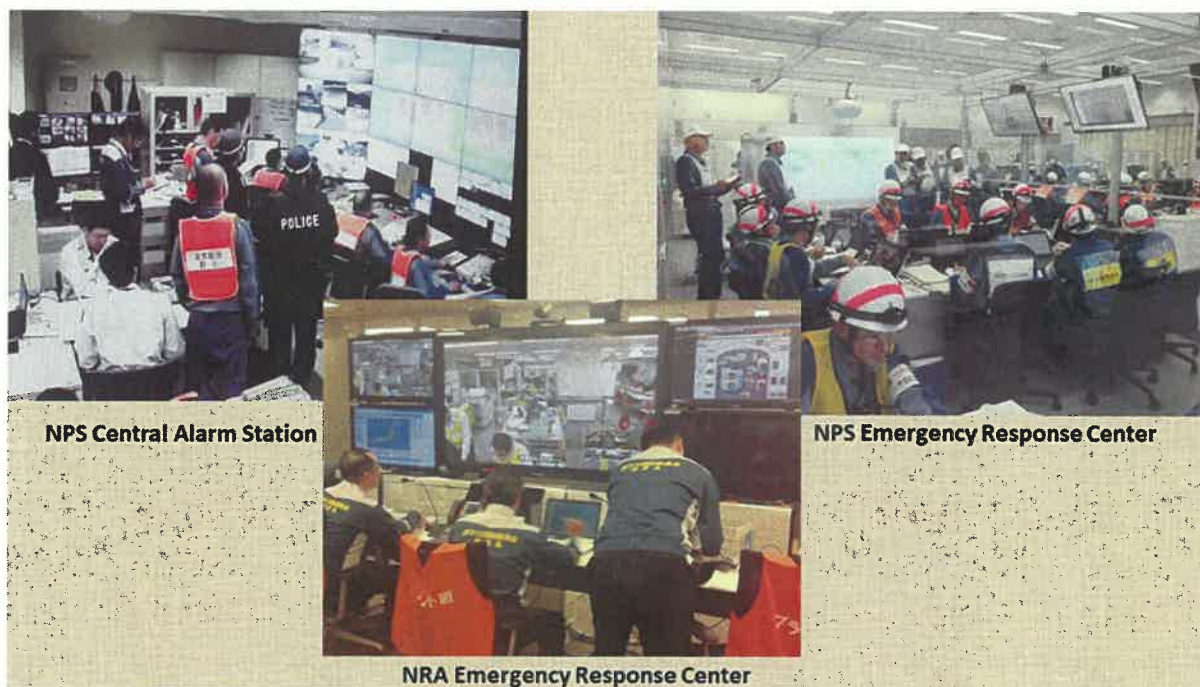


Figure 2. Kashiwazaki-Kariwa NPS Joint Exercise

Computer Security at the National Level

Recommendation 2 (2015): The NRA should consider further strengthening its ability to effectively inspect computer security at nuclear facilities with dedicated computer security experts. The additional resources (either internal or external) should have in-depth and detailed insight in the highly technical and dynamic area of computer security.

The NRA now has five computer security inspectors, an increase from the two in 2015. The NRA has a Cyber Security Support Team consisting of the five computer security inspectors plus an additional five computer security personnel.

The IPPAS team concluded that the recommendation has been implemented and it is CLOSED.

Suggestion 7 (2015): If the NRA continues its practice of using PP inspectors for computer security, it could re-assess and further expand its training curriculum on computer security for the inspectors, using both tailor-made NRA internal training and also commercially available training modules. Where possible, training concluded with an accompanying exam or certification is preferable.

The NRA stated that all personnel involved in computer security inspections are trained and qualified under the new education and training programme. Due to the increase in computer security inspectors, the NRA does not mainly use PP inspectors who are not experts of computer security to conduct computer security inspections.

The IPPAS team concluded that the suggestion has been implemented and it is CLOSED.

Suggestion 8 (2015): The NRA may consider increasing its capability to conduct frequent and comprehensive computer security inspections.

As described previously, the increase in qualified computer security inspectors along with the formation of the cross-sectional computer security support team has allowed the NRA to significantly increase the number and comprehensiveness of their inspections. The computer security inspectors have been involved in all PP inspections conducted since fiscal year 2017.

The IPPAS team concluded that the suggestion has been implemented and it is CLOSED.

Suggestion 9 (2015): The NRA could consider adding adversary cyber skills — which could be used in a cyberattack or blended attack — to the Design Basis Threat (DBT), and adding information regarding identification of cyber related protection targets.

The IPPAS team concluded that the necessary arrangements have been made to implement this suggestion and it should be CLOSED on the basis of progress and confidence.

II.2 Response to Facility Level Suggestions

NATIONAL REVIEW OF NUCLEAR SECURITY REGIME FOR NUCLEAR MATERIAL (MODULE 1)

III. Government Organization, Assignment of Responsibilities, International Obligations and International Cooperation

The IPPAS team has not been informed about any major changes since the 2015 report, for what regards the constitutional system of Japan, its legislative, executive and judicial branches, nor as regards the international aspects (except the conclusion of a bilateral agreement with India).

In July 2018, the Fifth Basic Energy Plan defining Japan's medium- to long-term energy policies was approved by the Cabinet. The plan places nuclear energy as an important baseload electric power with the premise that nuclear safety is to be ensured, which contributes to the long-term stability of Japan's energy supply-demand structure. On the premise that safety comes before everything else and that every possible effort is made to resolve the people's concerns, judgment as to whether nuclear power plants meet the new regulatory requirements will be left to the NRA, and if the NRA confirms the conformity of nuclear power plants with the new regulatory requirements, the Government of Japan will follow the NRA's judgment and will proceed with the process for the restart of nuclear power plants.

Since the occurrence of the 2011 Great East Japan Earthquake, all nuclear power plants in Japan had stopped operation by September 2013 due to the earthquake or maintenance outages. As a result of conformance review under the New Regulatory Requirements (enforced on July 8, 2013) conducted by the NRA, nine units have restarted operation as of September 28, 2018.

It could be stressed that Japan subscribed to the Joint Statement on Strengthening Nuclear Security Implementation (INFCIRC/869), adopted in 2014 in the frame of the Hague Nuclear Security Summit, by which subscribing States commit to pursue the intent of the recommendations of the IAEA Nuclear Security Series.

IV. Legislative and Regulatory Framework

IV.1 Laws and Secondary Legislation

The IPPAS team refers to the 2015 report for the general description of the domestic legal and regulatory framework, which remains valid. By its very nature, this framework allows subsequent laws and regulations to expand upon it. There have been no significant changes at the national level above the NRA since the 2015 IPPAS mission.

A number of the ordinances and subsequent regulations have been amended by the NRA on a continuous basis in various areas since the previous IPPAS mission, including on:

- **Trustworthiness Checks:** The most significant change since the 2015 IPPAS mission was regarding the development of a trustworthiness check system for personnel involved in nuclear related activities. The following four Ordinances on (i) Spent Fuel Reprocessing Operations,

(ii) the Installation, Operation, etc. of Commercial Power Reactors, (iii) the Installation, Operation, etc. of Power Reactors in a Research and Development Phase, and (iv) Operational Safety of Reactor Facilities at TEPCO's Fukushima Daiichi NPS and Physical Protection

- of Specified Nuclear Fuel Material, have been revised in September 2016 in order to implement trustworthiness checks for licensees to their employees. In addition, in September 2016, coinciding with those revisions, the NRA issued Notification of Trustworthiness Checks and established Operational Guidelines. It should be recognized that the NRA has made considerable progress in the implementation of a trustworthiness check programme in a relatively short period of time. The process appears to be comprehensive in terms of delivering a degree of assurance to the operator on the reliability of workforce and other persons who have access to PP Secret information. The IPPAS team recognises that the NRA has engaged in wide ranging consultation in the preparation and establishment of the trustworthiness check programme and considers the programme is likely to mature over time.
- **Vital Equipment Identification:** The NRA revised its review standards in November 2018 to require licensees to follow a defined process to identify vital equipment requiring additional PP measures.
- **Backup alarm station for Category I facilities:** The NRA ordinances regulating test reactors and usage facilities are in the revision process in order to require them installing a backup alarm station. Opinions are being collected through the public comment procedure for the draft amendments.
- **Computer Security:** Guidelines for Information System Security Measures at Nuclear Facilities, were formulated in March 2018 as a material to be referred to when a licensee itself conducts continuous improvement of the information security measures. Based on this guideline, the NRA reviews the implementation status of the information system security measures by licensee and gives instructions as necessary.

The IPPAS team considers, as in 2015, that ample coverage had been made in acts and associated delegated legislation (orders, ordinance and guidelines) for the obligation of the State to establish and maintain a legislative and regulatory framework to govern PP of nuclear material and nuclear facilities, as prescribed in the 2005 Amendment to the CPPNM in Fundamental Principle C: Legislative and Regulatory Framework. The process of continuous legislative alignment with the current internationally recognized standards, guidelines and good practices is in place through the system of amendments of the legal and regulatory framework.

V. Roles and Responsibilities of the Competent Authority

V.1 Japan's Competent Authority

The most notable change in terms of the organisation of the Competent Authority is reflected in the promotion of the Nuclear Security function to divisional status in July 2017, from its former position as a section within the NRA. This has resulted in the appointment of a Director of the Division of Nuclear Security, reporting to the Director-General for Radiological Protection Strategy and Security. The IPPAS team considered this to be a positive step, which will inevitably raise the security profile both within the NRA as an organisation and externally to the industry.

It was noted that the NRA has begun an effort to consolidate offices and relocate inspectors. This programme has seen a number of security inspectors relocated to Tokyo up to April 2018 and further offices will be integrated into the NRA headquarters by the end of March 2019. It is likely this initiative will have benefits around the delivery of consistent security regulation and knowledge transfer.

Since the time of its inauguration, the NRA has assigned six safety inspectors responsibility for the conduct of PP inspections at five sites. Any issues identified with the PP, or concerns identified between safety and security are reported to the Division of Nuclear Security.

The Act for Establishment of the Nuclear Regulation Authority (Act No.47 of June 27, 2012) establishes the NRA as an independent regulatory body. This Act stipulates clearly its mission (article 1 and 3) and which affairs are under its jurisdiction (see article 4). Under these articles the relations between the "safety in the use of nuclear energy", the "physical protection of nuclear fuel material and other radioactive material" and the safeguards are stated. The IPPAS team has understood that the "safety in the use of nuclear energy", in the broad meaning of the terms, constitutes the ultimate objective of the NRA action, to which PP, safety (in the narrow meaning of the terms) and safeguards measures contribute. The NRA's intent to harmonize the functions of safety and security is defined in the NRA's Code of Conduct for Nuclear Security Culture and Declaration for Nuclear Safety Culture. The NRA recognises there are clear synergies between the related topic areas which deliver mutually supportive functions and consequently their interdependence is vital.

Suggestion 1: To meet the mid-term strategy of the NRA regarding harmonization of Safety, Security & Safeguards, the NRA may consider specifically referring to Security along with Safety in relevant NRA documents.

V.2 Licensing & Authorisation

There have been no significant changes to the Licensing and Authorisation functions of the NRA since the last IPPAS mission in 2015. The primary roles remain:

- Designation or permission of activities and permission for nuclear reactor installation.
- Approval of a security plan before commencing handling specified nuclear fuel material by a licensee in accordance with Article 12-2 of the Reactor Regulation Act.
- Periodic inspections on the status of compliance with the licensee's security plan (See Inspection & Enforcement) in accordance with the provisions of Article 12-2 of the Reactor Regulation Act.

The NRA maintains the requirement to approve operators' security plans and any proposed changes to those approved plans will require an application by the operator to the NRA providing a detailed explanation of the proposed changes and likely impact on security with appropriate adapted security measures fully described. The NRA will review the application and proposed changes before providing an official approval.

Before approval of the security plan the NRA hear the opinion of the National Public Safety Commission (NPSC) and the Commandant of the JCG.

V.3 Inspection & Enforcement

Under the provisions of the Reactor Regulation Act, the NRA has the authority to conduct inspections of all nuclear facilities once per year or to the extent required, to confirm the compliance with the site security plan and the effectiveness of the operator's PP measures.

The NRA regular inspection methodology includes at least two inspectors conducting both document and on site checks over the duration of a week.

The inspections will look to consider compliance of the operators' security arrangements both in terms of PP and computer security. The NRA inspects a facility in principle once a year. Typically one month before the annual inspection, a site visit is conducted by the NRA to assess the implementation of the improvement actions that resulted from the previous inspections. The IPPAS team learned that last year 56 of these inspections have been done and that each inspection resulted in an inspection report. The NRA has the possibility to do more inspections and the IPPAS team wants to encourage them to do that from time to time.

There is provision in the Reactor Regulation Act for the NRA to conduct unannounced inspections of facilities as required, but to date the NRA has not conducted any unannounced inspections to date. In the opinion of the IPPAS team, the use of unannounced inspections can provide clear evidence as to the normal operating conditions of the facility in relation to security measures and their use and function is considered to be evidence of a mature regulatory – operator relationship. It is acknowledged that the NRA plans to implement an unannounced inspection regime starting in 2020.

In addition to physical inspections, the NRA in conjunction with the NPA and JCG, observe and assess site joint security exercises based on scenarios in line with the capabilities outlined in the DBT.

In discussion, the NRA has highlighted challenges in the assessment and evaluation of site exercises due to insufficient staff resources. Because these exercises provide important information regarding the effectiveness of a licensee's PPS, the NRA should work to resolve these challenges. Possible ideas to consider the inclusion of the use of other NRA personnel, such as safety inspectors, in key locations, where safety and security assessment operate in a similar manner e.g. the MCR. Although not ideal, this may be resolved in future by the use of safety inspectors in the security function, in line with the NRA enhancement programme of the security inspection process. Another option, evidencing a mature regulatory relationship with the operator, is to consider the use or development of an operator's internal assurance staff to support these activities and provide assessment reports to the site inspector for consideration in the formulation of the NRA exercise inspection report.

Turning to enforcement, the NRA has specific responsibility in respect of enforcement of regulation where an operator falls below the standards identified in the NRA Guidelines and has a process to address identified issues. It is clear that the NRA meets this obligation.

V.4 Coordination with Other State Organizations that contribute to Nuclear Security

The NRA is established at government level by the Ministry of Environment (MOE), as set out in the Atomic Energy Basic Act. The Reactor Regulation Act defines the relationship between the NRA and the NPSC which is an extra-ministerial bureau of the Cabinet Office delivering a supervisory function over the NPA. In addition, the NRA also has a close relationship with the JCG which is an extra-ministerial bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) delivering a

maritime security function separate from the NPA. The NRA is also in relation with the Ministry of Foreign Affairs (MOFA) for what regards the implementation of the international obligations of Japan.

According to Article 4 (1)(ix) of the Establishment Act, the NRA takes charge to coordinate affairs of the access to facilities by relevant administrative organizations related to the PP of nuclear fuel material and other radioactive material.

The relationship between the NRA and these other bodies is captured in the approval of the site security plan, where the opinion of the NPSC and the Commandant of the JCG is considered as part of the overall NRA approval process. Equally, the findings of PP inspections conducted by the NRA are shared with both the NPSC and the Commandant of the JCG.

Other examples of cooperation between these organisations include:

- Coordination of emergency response between site, the NRA Emergency Response Center (ERC) and the Crisis Management Center in the Office of the Prime Minister's Official Residence.
- The NRA joint participation in inspection of PP of nuclear material with the NPA
- Coordination of all three bodies in the oversight of site PP exercises
- Discussions relating to the requirements and potential changes to the DBT as required.

VI. Threat Assessment and Design Basis Threat (DBT)

VI.1 Threat Assessment

The NPA conducts a country wide threat assessment used as the basis for the DBT developed by the NRA. Details of the threat assessment are highly sensitive and were not provided to the IPPAS team, but due to the perceived increase in the risk of terrorism, Special Guard Unit for nuclear power plant were deployed across Japan.

VI.2 DBT

VII. Risk Informed Approach

The NRA continues to deliver risk informed regulation of the nuclear industry through the formulation of a threat assessed DBT specific to the nuclear industry. On this basis, the NRA has prepared Guidelines for the operators to meet these requirements in the design of their PPS and this in turn is assessed on an annual basis through site security inspection and security exercise demonstrations supported by other security organisations as referred to earlier.

VII.1 Risk Management

The strengthening of the PP regime remains a high priority strategy for the NRA, which is reflected in the adoption of the vital area identification (VAI) methodology as defined in NSS No. 16. Introduced through revised review standards in November 2018, licensees will be expected to have completed the work and revised their security plans by March 2019 and implement any additional protection measures as required by July 2019. This process will clearly identify equipment requiring protection which may as yet sit outside a specific protection measure and the NRA should be commended for its introduction. This VAI process will complement the NRA's review of the DBT and the provision of a sustained inspection regime together with oversight of security exercises.

In other areas, risk management has been identified by the implementation of policy at State, the NRA and Division of Nuclear Security level to ensure appropriate standards for the protection of sensitive information. This is complemented by the clear evidence that the NRA has adopted the suggestion provided by the 2015 IPPAS mission to improve PP measures across the industry. The most significant of which is perhaps the delivery of a trustworthiness check programme, which has challenged societal norms, but reduces the potential insider threat risk at the facility level.

Finally, the introduction of additional monitoring capabilities around vital equipment demonstrates a process of continuous improvement, which is further highlighted by the risk reduction measures taking place around the removal of excess plutonium and highly enriched uranium from Japan's FCA facility for storage in the United States. This clearly demonstrates Japan's commitment to global nuclear security initiatives.

VII.2 Graded Approach

The principle of a graded approach is designed to ensure the PP measures are commensurate with the assessed prevailing threats as defined in the DBT and the potential consequences of any malicious attack. Japan continues to apply the principle of a graded approach to deliver appropriate PP measures to all categories of nuclear facilities in accordance with the categorization of nuclear material as described in NSS No.13.

VII.3 Defence in Depth

Defence in depth is the application of physical and procedural security measures in a layered structure. The NRA continues to adopt the principles of defence in depth through the expectations of the Guidelines requiring facilities to deliver layered security subject to categorisation of the facility, through the application of

- Limited Access Area (LAA)
- Peripheral Protected Area (PPA)
- Protected Area (PA)
- Specific physical and procedural security measures associated with protection of vital equipment

The adoption of a VAI process in accordance with NSS No. 16 will enhance the NRA's approach in this area and should provide a more robust basis on which to implement protection measures at sites.

VIII. Sustaining the Physical Protection Regime

Sustaining an organisation's PP regime requires the delivery of appropriate mechanisms to ensure sufficient resources are available to finance, staff and provide the appropriate training and equipment to implement the physical security requirements as determined by the prevailing threat.

VIII.1 Security Culture

The 2015 IPPAS mission recognised the strong commitment the NRA had made in the development and delivery of an industry wide nuclear security culture and it is clear that this initiative continues today as a nationwide effort for nuclear security culture among the State, the NRA in its capacity as the Competent Authority, and the industry.

The NRA's initiatives in line with Article 96 (1) (ii) of the Ordinance for Commercial Reactors, have included the development of a Code of Conduct, educational films, and questionnaires to share with operators and the provision of guidance to the operators through dialogue. It has accelerated the effort for educating its own inspectors and new employees. It would appear the message has been positively received at the operator level. The NRA has continued to deliver cross industry learning at regulator /operator forums and there is some evidence that security culture initiatives have been shared at industry only forums held by operators.

The NRA continues the effort to instil the nuclear security culture message at the highest levels requiring CEOs' involvement and the application of internal assurance of security implementation through the Plan Do Check Act (PDCA) cycle and the requirement to foster nuclear security culture is to be included

in an operator's security plan. The NRA maintains oversight of the implementation processes for nuclear security culture across industry through the annual inspection process.

Of particular note is the freedom enshrined in law that employees can report issues related to non-compliance directly to the Competent Authority without fear of retribution.

Japan has demonstrated an impressive upward trend in their nuclear security regime driven by a strong nuclear security culture. They continue to demonstrate the importance of nuclear security, and have implemented a structured methodology to identify and implement improvements. In the short period of time since the 2015 IPPAS mission, Japan has made significant progress in implementing difficult changes, such as the implementation of trustworthiness checks for personnel at its nuclear facilities. There appears to be a long term commitment from senior management throughout the NRA, and staff and management actively participate to use its processes in order to contribute to continual process improvement.

Good Practice 1: The continued efforts by management to emphasise the importance of nuclear security, to foster a strong nuclear security culture, and a well-structured methodology to identify and implement improvements is a good practice.

VIII.2 Quality Assurance

Regulations require the operator to periodically evaluate the PPS to ensure it is appropriately designed, implemented, operated and maintained:

- Article 91 (2) (xxx) of the 'Ordinance on Installation, Operation, etc. of Commercial Power Reactors requires: 'periodic evaluating the measures set forth in the preceding items and making necessary improvements based on the results of the evaluation'.
- Article 96 (1) (xviii) requires the security plan to contain information regarding 'the matters concerning periodic evaluation and improvements of measures necessary for the PP of specified nuclear fuel material'.

The NRA has implemented a process management approach in the form of International Standardization Organization (ISO) 9001. Furthermore, the NRA presented its integrated management system, which includes a PDCA process as displayed in Figure 6. This process is based on 'NRA Core Values and Principles', the 2nd 'Guiding Principles for Activities' being 'Effective actions' and the 4th being 'Improvement and Commitment'.

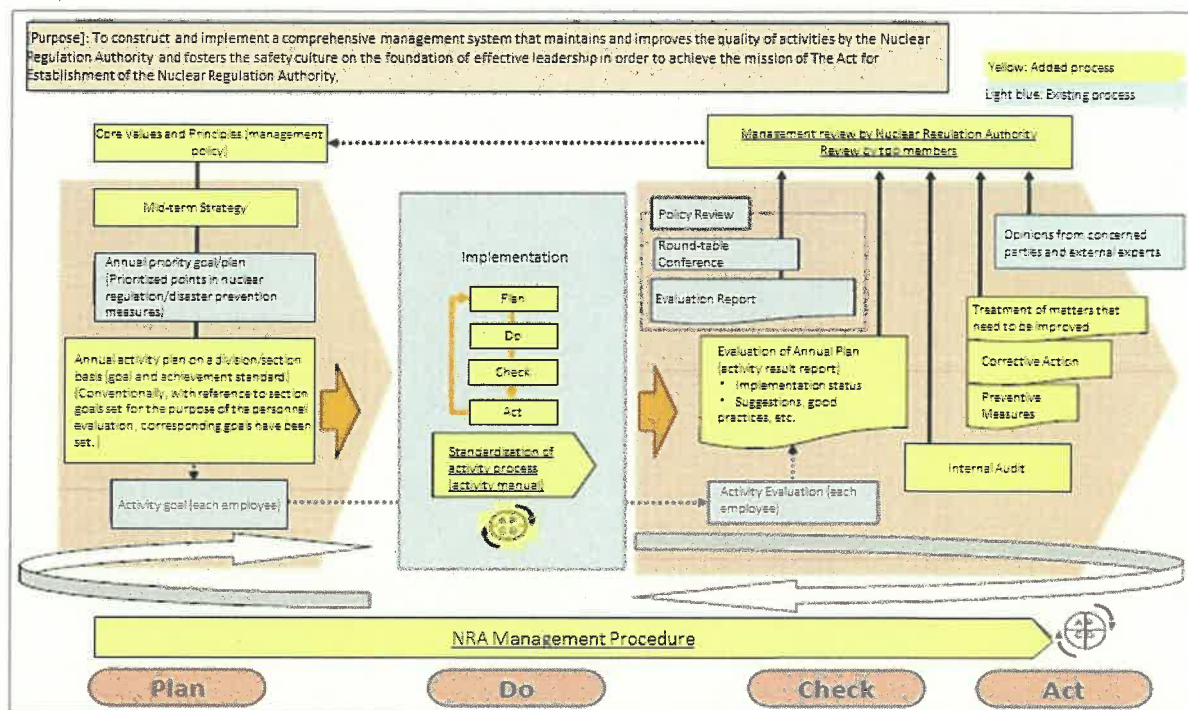


Figure 6. NRA Integrated Management System

A mid-term Strategy guides NRA’s actions. For the 2015-2019 period, one of the six goals is ‘to enhance nuclear security and to ensure safeguards implementation’. The NRA explained the progress regarding the main actions related to nuclear security:

- Trustworthiness checks programme
- Regulation for radioactive sources security
- Enhancement of nuclear security capabilities within the NRA
- Strengthen efforts addressing the interface with nuclear safety

The PDCA process includes an evaluation of the annual plan and internal audits. The NRA didn’t mention the existence of an NRA independent entity in charge of internal assessment.

VIII.3 Confidentiality

The NRA has management procedures for the protection of information which complements the State security measures and is aligned with the Public Records and Archives Management Act. The NRA has developed rules for the protection of information at Top Secret and Secret ensuring that the documentation is clearly labelled to reflect the protection requirements.

The IPPAS team noted that in order to access PP Secret information the NRA PP staff have been subject to the trustworthiness check since April 2018. This represents significant progress in the management and control of protectively marked information. Controlled Information at the facility level is accessed on a need to know basis. However, the IPPAS team was informed that information considered as PP Secret did not include information regarding safety systems that could be used to commit a sabotage act. NSS No. 23-G provides examples of the types of information that may be protected for nuclear security purposes.

Suggestion 2: The NRA may consider identifying all sensitive information (Information adversaries might use to their advantage if disseminated), and require similar protection as for PP Secret information (e.g., trustworthiness and need to know).

In response to Suggestion five from the 2015 IPPAS mission report on the storage of protectively marked information, the NRA has addressed the matter at Article 10 of “Handling Procedures for Administrative Documents for the Physical Protection of Nuclear Materials in the Division of Nuclear Security”, describing appropriate physical containers with security locking mechanisms commensurate with the level of security it is protecting. In addition, it was noted that appropriate procedures are in place for the transmission of protectively marked information through the use of Delivery and Receipt Notes described in the handling procedures .

Furthermore, the NRA has provided broad guidelines with respect to the notification process around security related events at facilities. This notification procedures takes into account the potential requirement for the reporting of a loss of classified documents and makes provision for the facility PP manager to contact the NRA for guidance as required.

VIII.4 Sustainability Programme

As defined in NSS No. 27-G, a sustainability programme is a programme that specifically addresses the maintenance, resources and infrastructure — financial, human and technical — needed for effective PP.

It would appear from the information provided that the NRA has been utilizing several site safety inspectors to compensate the insufficient number of security inspectors. It was clear that these inspectors are primarily engaged in safety assessment and the IPPAS team understands that they are only required to contribute to a single security inspection at site once in any 12 month period. The IPPAS team considers that this organization can contribute to reinforcing security and its interface with safety, on the condition that security inspections and other regulatory actions will still be headed or monitored by experienced security inspectors.

The IPPAS team noted the introduction of a new qualification scheme for NRA's inspectors based on recommendations in the 2015 IPPAS report. Since then, the NRA has made considerable progress in the development of this inspector qualification training programme. The programme, introduced in October 2017 is based on the United States Nuclear Regulatory Commission (NRC) format and delivers a combination of classroom, individual study and on the job training. Currently the course is in design phase, but is expected to be fully implemented in April 2020 after a 2 year trial.

IX. Planning and Preparedness for and Response to Nuclear Security Events

The process for notification of safety and security events at nuclear facilities has been refined since the previous IPPAS mission in 2015. In 2017 a process was revised to reflect the status of the PP events to emergency categories by integrating the notification process of PP events and others.

There is clear evidence of close cooperation of relevant government ministries and agencies in the delivery of contingency planning at the national level. The NRA has demonstrated close working relations with the NPA and the JCG for planning and preparedness for and response to nuclear security events. Although out of scope for the purposes of this report, it was also noted that the NRA has a relationship with the MLIT for the purposes of nuclear transport security.

Referred to earlier in this report the NRA has notification arrangements in place for information gathering purposes or for security events resulting in the activation of the ERC.

Notifications are sent from facilities to the relevant government ministries and agencies as well as the NRA. This process was revised in October 2017, and when an event categorized as either "Alert (AL)" or "Information Gathering" happens at a facility, the facility is to send the notification to the NRA. At the same time, the facility is to notify the relevant government agencies including the NPA and JCG of the event as soon as possible, while keeping the event's category in mind. With this revision, the Government can take response actions immediately according to the incident's category, including the activation of the Crisis Management Center in the Office of the Prime Minister's Official Residence.

In the event of a notification, information and reporting is shared between the NRA, NPA and JCG who will in turn coordinate their activity if required with the Crisis Management Center at government level as displayed in Figure 8.

The IPPAS team noted as part of the NRA presentations that Contingency Response Plan has been exercised at all levels from the facility to the Crisis Management Center at both Tsuruga and Kashiwazaki-Kariwa NPSs in 2017 and 2018 respectively. These exercises included all concerned parties of the government (the Crisis Management Center in the Office of Prime Minister's Official Residence, the NRA, NPA, JCG, etc.) two years in a row.

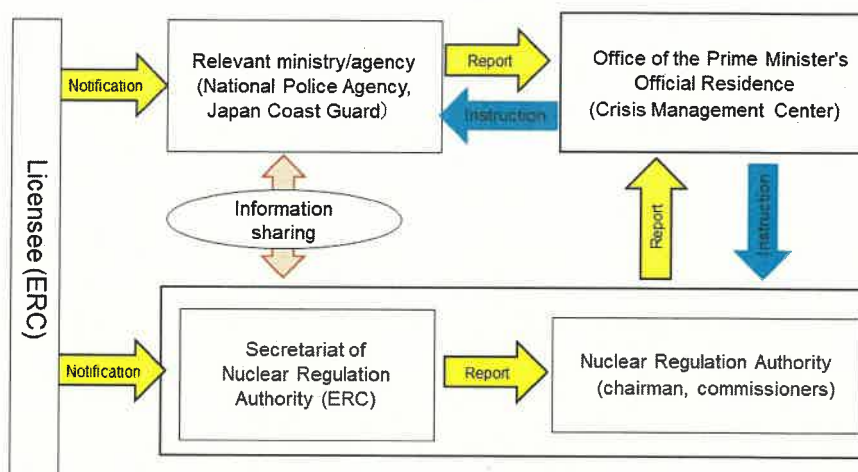


Figure 8. Notification Arrangements During a Nuclear Security Event

Regarding nuclear security, the National Contingency Response Plan is tested once a year during a national scale exercise at a nuclear site. All the national stakeholders (The Crisis Management Center in the Office of Prime Minister's Official Residence, the NRA, NPA and operator's headquarters) and local stakeholders (operator, prefectural police, JCG, and the local fire department) are involved.

Good Practice 2: Emergency incident reporting and crisis management for a General Emergency by the national authorities are unified, regardless of the cause of the initiating event (e.g., safety related – human error, equipment failure, or natural disaster or security related – initiating event of malicious origin) and are documented in a single national contingency/emergency plan.

X. Security Interface with Nuclear Safety and with Nuclear Material Accountancy and Control

The NRA Establishment Act stipulates that the NRA shall be established as the single government body whose mission is to ensure safety in the use of nuclear energy. To achieve this mission, Article 4 of the Act directs the NRA to take charge of affairs for ensuring safety in the use of nuclear energy, affairs concerning implementing regulations for implementing safeguards based on international commitments, and affairs related to the PP of nuclear material and other radioactive material.

The NRA fully understands the importance of harmonizing nuclear security and nuclear safety. The NRA's Code of Conduct on Nuclear Security Culture and the Statement on Nuclear Safety Culture document the NRA's intent to achieve mutual respect between nuclear security and nuclear safety and implement appropriate processes to resolve conflicts between the two. The briefing regarding the NRA provided to the IPPAS team listed one of the mid-term strategies to enhance nuclear security as: "Efficient and harmonious coordination of nuclear safety and security for measures taken."

In regards to safeguards, the Reactor Regulation Act authorizes the NRA to exercise and enforce the necessary action to implement safeguards in Japan, which includes the authority to issue licenses for the use of nuclear material, approve nuclear material accounting measures, collect nuclear material information to be provided to the IAEA, and to carry out inspections and other verification activities. Within the NRA, the Japan Safeguards Office (JSGO) manages the safeguards programme.

The Reactor Regulation Act also provides a legal basis for the NRA to delegate parts of its responsibility for implementing safeguards to designated organizations. The NRA has delegated management of the State System of Accounting for and Control of Nuclear Material (SSAC) to the Nuclear Material Control Center (NMCC), a public interest incorporated foundation, and assigned them the responsibility for analysis of information regarding nuclear material and for conducting safeguards inspections and associated work.

Operators of nuclear facilities and locations outside facilities are required to establish an adequate nuclear material accounting system and to provide necessary information defined in the Reactor Regulation Act to NRA. The NRA provides the information to NMCC to be verified and for development of reports submitted through the NRA to the Ministry of Foreign Affairs to the IAEA and to partner States with bilateral agreements.

The goal of international safeguards is for nuclear energy to be used exclusively for peaceful purposes by the Member States. The objective of safeguards is to demonstrate that nuclear material is not being diverted by a State for other than peaceful uses, and is implemented by accountancy and control measures. This principle is implemented in Japan in international agreements and domestic laws and regulations, and is intended to provide credible assurance to the international community that Japan is honouring its international commitments.

The purpose of NMAC for nuclear security is to deter and detect both the abrupt and protracted theft of nuclear material by non-state actors, specifically insider threats. As defined in NSS No. 13, an NMAC system is an integrated set of measures designed to provide information on, control of, and assurance of the presence of nuclear material, including those systems necessary to establish and track nuclear material inventories, control access to and detect loss or diversion of nuclear material, and ensure the integrity of those systems and measures.

While the nuclear material accountancy and control measures implemented for safeguards and security are the same in many cases, they are designed for different purposes. An NMAC system uses the same type of measures (e.g. accounting, inventories, seals, process monitoring, etc.), but for nuclear security purposes. A comprehensive SSAC within a State should be designed to meet both safeguards and nuclear security objectives.

While the NRA has established a robust safeguards programme in its SSAC, there are no regulations requiring a system for NMAC for nuclear facilities. These requirements should address both preventive and contingency measures.

Suggestion 3: The NRA may consider reviewing, and revising if necessary, nuclear material accounting and control regulations to ensure they meet nuclear security objectives of protecting against insider threats, especially for bulk nuclear material facilities. NSS No. 25-G, *Use of Nuclear Material Accounting and Control for Nuclear Security Purposes at Facilities*, may be used as a guide for this review.

XI. Computer Security State Level Review

XI.1 Legal and Regulatory Framework

The IPPAS follow-up mission reviewed enhancements to the NRA's computer security framework and the NRA's inspection process for nuclear operators in Japan.

Suggestion 4: The NRA may consider reviewing their requirements on computer security in the review standards and guidelines on computer security to determine if any important elements in the guidelines might be included in the review standards.

The above mentioned the NRA computer security guidelines were not available in the English language and therefore the IPPAS team did not have in-depth access to these guidelines. However, the IPPAS team understood that above mentioned guidelines were developed with amongst other IAEA NSS No. 17 “Computer Security at Nuclear Facilities” as basis. The IPPAS team underlines that it is important to have specific requirements on zoning and interfacing between different levels of computer security network. From this follows, that it is also important to have specific requirements on protection of equipment per zone, using graded approach, applying concepts such as redundancy and diversity of systems. As a result, the interface between computer security, physical security, and safety is critical to ensure that a balance is achieved to meet their different objectives, that malicious acts are considered,

and risk is minimized. This is important for existing facilities and new builds to achieve security by design.

The IAEA guide NSS No. 33-T “Computer Security of Instrumentation and Control Systems at Nuclear Facilities” can be used to evaluate the NRA’s current “Guidelines for Information System Security Measures at Nuclear Facilities.”

XI.2 Roles and Responsibilities of Competent Authority

The IPPAS team was informed that the NRA is the only body defining computer security requirements for nuclear operators. The NRA explained that there are other agencies, such as the National Center of Incident readiness and Strategy for Cyber security (NISC) and the NPA that develop computer security policy and / or provide guidance on computer security for critical industry in Japan. However, the IPPAS team understands that this does not put binding requirements on nuclear operators.

The IPPAS team understands that the requirements to the operators in computer security may only originate from the Reactor Regulation Act. However, there is also an Act on the Prohibition of Unauthorized Computer Access (Act No. 128 of 1999), which may promulgate requirements.

The IPPAS team was informed that the NRA brings the PP managers of nuclear sites together on a regular basis (five times in 2018). The IPPAS team sees this as an important and valuable mechanism in leveraging (computer) security knowledge in the nuclear sector, which is especially important in the knowledge intensive and dynamic area of computer security. And the IPPAS team would like to encourage the NRA to continue with this process of bringing the operators together a number of times per year for exchange of knowledge and experience.

On the topic of knowledge exchange, next to the nuclear industry, also regulators in other critical industry sectors like banking, aviation, and internet providers will have experience in computer security. The NRA may consider establishing and strengthening the relations between the NRA and regulators in other relevant critical industry sectors and leverage knowledge and experience that is available there.

The computer security threat for nuclear facilities is defined in the cyber DBT. The IPPAS team understood the cyber DBT is reviewed on a regular basis. However, the details of specific computer security threats change much more frequently than the DBT can be changed; and also to implement effective countermeasures against threat, more detailed information on current threats is needed than can be given in the cyber DBT. Therefore it is important that there is another mechanism to communicate current threat information to nuclear sites. Partly nuclear operators can use publicly available sources for this. The NRA may consider if nuclear industry could be given also specific threat information on current threats, which might be available at the NISC. This could go along with directives of the NRA to operators to monitor for certain “Indicators of Compromise” and/or check or change certain settings on their computer networks.

The NISC and the NPA also set computer security policy and provide advice specifically for critical infrastructures in Japan. The NRA should maintain a close relationship with these entities. These entities might also be a source for the current threat info mentioned in the previous paragraph.

NUCLEAR FACILITY REVIEW (MODULE 2)

ACKNOWLEDGEMENTS

The IPPAS mission team received outstanding cooperation from personnel at all management, technical and administrative levels. Practical arrangements for conduct of the mission made by the NRA, and in particular, by its Division of Nuclear Security were excellent. Throughout the mission, personnel of the NRA, the management and staff of visited Kashiwazaki-Kariwa NPS and off all other organizations involved cooperated very effectively with the IPPAS team, generously giving their time, relevant information and providing kind hospitality. Such helpful assistance and the timely provision of comprehensive information ensured the mission was a success. Moreover, the exchange of knowledge and experience between the team and their Japanese colleagues was mutually beneficial. Additionally, notwithstanding the need to exercise discretion with regard to all mission-related information, the team appreciated the transparency displayed by those involved in discussing sensitive matters. The IPPAS team expresses sincere appreciation to Japanese host for such outstanding cooperation.

APPENDIX I: SYNOPSIS OF RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

National Level Review

Suggestion 1: To meet the mid-term strategy of the NRA regarding harmonization of Safety, Security & Safeguards, the NRA may consider specifically referring to Security along with Safety in relevant NRA documents.

Suggestion 2: The NRA may consider identifying all sensitive information (Information adversaries might use to their advantage if disseminated), and require similar protection as for PP Secret information (e.g., trustworthiness and need to know).

Suggestion 3: The NRA may consider reviewing, and revising if necessary, nuclear material accounting and control regulations to ensure they meet nuclear security objectives of protecting against insider threats, especially for bulk nuclear material facilities. NSS No. 25-G, *Use of Nuclear Material Accounting and Control for Nuclear Security Purposes at Facilities*, may be used as a guide for this review.

Suggestion 4: The NRA may consider reviewing their requirements on computer security in the review standards and guidelines on computer security to determine if any important elements in the guidelines might be included in the review standards.

Good Practice 1: The continued efforts by management to emphasise the importance of nuclear security, to foster a strong nuclear security culture, and a well-structured methodology to identify and implement improvements is a good practice.

Good Practice 2: Emergency incident reporting and crisis management for a General Emergency by the national authorities are unified, regardless of the cause of the initiating event (e.g., safety related – human error, equipment failure, or natural disaster or security related – initiating event of malicious origin) and are documented in a single national contingency/emergency plan.

Facility Level Review

APPENDIX II: IPPAS TEAM COMPOSITION

Joseph Sandoval, Distinguished Member of Technical Staff, Sandia National Laboratories, USA, (team leader)

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Thomas Languin, Deputy Head, Division of Regulations and International Affairs, Department of Nuclear Security, Ministry for Ecological and Solidarity Transition (MTES), France (nuclear security regulatory expert)

Brett Roberts-Howe, Superintending Inspector – Civil Nuclear Security, Office for Nuclear Regulation (ONR), United Kingdom (nuclear security regulatory expert)

Arvydas Stadalnikas, IAEA (mission coordinator and nuclear security expert)

APPENDIX III: HOST COUNTRY COUNTERPARTS

Nuclear Regulation Authority (NRA)	
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Mr. Yohei KOJIMA	Director, Division of Nuclear Security
Mr. Makoto KUROKI	Director for International Nuclear Security, Division of Nuclear Security
Mr. Motohiro YOSHIKAWA	Director for Inspection Group, Division of Nuclear Security
Mr. Hiroataka OKU	Deputy Director, Division of Nuclear Security
Mr. Michio KUBOTA	Deputy Director, Division of Nuclear Security
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Ms. Kazuko HAMADA	Nuclear Security Inspector / Senior Specialist, Division of Nuclear Security
Mr. Toshifumi KATO	Nuclear Security Inspector / Specialist, Division of Nuclear Security
Mr. Naoki MIYAMOTO	Nuclear Security Inspector / Specialist, Division of Nuclear Security
Mr. Keita ISHII	Assistant Director, Division of Nuclear Security
Mr. Hiroshi YOKOTA	Technical Advisor, Division of Nuclear Security
Japan Atomic Energy Agency (JAEA)	
Mr. Yoshiro SHIRASU	Manager of Nuclear Material Management Section, Department of Operational Safety Administration, Nuclear Science Research Institute
Mr. Takashi ASANO	Deputy Director of Technical Administration Department, Plutonium Fuel Development Center, Nuclear Fuel Cycle Engineering Laboratories

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Mr. Yusuke NAGAI	Senior Staff, Nuclear Security & Physical Protection Section, Risk Control & Crisis Management Department, Hamaoka Nuclear Power Station
Tokyo Electric Power Company Holdings, Inc. (TEPCO)	
Mr. Takeshi OTA	PP Manager, Nuclear Safety Center Superintendent, Kashiwazaki-Kariwa Nuclear Power Station
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