



## **ASIA-PACIFIC SAFEGUARDS NETWORK (APSN) TRAINING NEEDS SURVEY FOR STATES WITH SMALL QUANTITIES PROTOCOLS: REPORT OF FINDINGS**

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### **1. Survey Overview**

During 2017, the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) of the Japan Atomic Energy Agency (JAEA), Japan, conducted a survey on the training needs of states with Small Quantities Protocols (SQPs) to their safeguards agreements.<sup>1</sup> The ISCN administered this survey (referred to here as the “2017 SQP Survey”) on behalf of the APSN, pursuant to an Action Item for Working Group 2 (Capacity Building) adopted during the 7<sup>th</sup> Plenary Meeting of the APSN in October 2016.

The 2017 SQP Survey involved the small population of SQP states<sup>2</sup> with member organizations or observers of the APSN. The Survey aimed to facilitate a needs analysis, identify potential gaps in the provision of training, and assist training providers to optimize their use of existing training capabilities to meet those needs.

This Report, compiled by the ISCN, provides a summary of the findings from the Survey. It compares and contrasts the training needs of SQP states with those of other states with (comprehensive) safeguards agreements.<sup>3</sup> It investigates the topic areas where SQP states need training, assesses the scale of those training needs, and evaluates a variety of methods for providing training. It also investigates the broader challenges that SQP states experience in connection with modification of SQPs. The results indicate that the fulfilment of these training needs is crucial to states’ implementation of Modified SQPs and additional protocols (APs), thereby demonstrating the contribution that training makes to the effectiveness of the international safeguards system.

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<sup>1</sup> The ISCN/JAEA supports Japan in the APSN.

<sup>2</sup> This Report will use the term “SQP state” to refer to any state that has both a comprehensive safeguards agreement and a small quantities protocol in effect for its entire territory. The first page of Appendix 1 (Sample Training Needs Survey for States with Small Quantities Protocols (SQPs)) contains background information on SQPs, including “Original SQPs” and “Modified SQPs”. This Report uses the term “state with a full safeguards agreement” to refer to any state with a safeguards agreement in force that does not have an operational SQP.

<sup>3</sup> Throughout the Report, all responses to surveys are treated anonymously.

Due to the small size of the population in this study, the results presented in this Report are necessarily preliminary. The authors of this Report recommend that the APSN expand the Survey to incorporate all SQP states in the broader Asia-Pacific region. This would involve sending the same survey form to the 24 SQP states in the region (listed in Appendix 2 of this Report) that do not have member organizations or observers in the APSN. This will assist with establishing trends in SQP states' training needs and further the aim of assisting members of the APSN to coordinate training activities and programs according to states' capabilities, resources, and needs.

## **2. Background and Justification for the 2017 SQP Survey**

The 2017 SQP Survey builds on previous surveys involving the APSN's broader membership.

*2.1 The 2011 Survey.* The APSN conducted its first survey on safeguards-related training in the Asia-Pacific region in 2011. The Report of Findings from the 2011 Survey is available on the public section of the APSN website.<sup>4</sup>

*2.2 The 2015 Surveys.* During the 5<sup>th</sup> Plenary Meeting in September 2014, the APSN decided to conduct a second set of surveys, one on training needs and one for training providers, in order to acquire updated and more detailed information. The ISCN conducted these surveys in 2015 and presented the results at the 7<sup>th</sup> Plenary Meeting in October 2016. The Report of Findings from the 2015 Surveys is currently available on the "Members Only" section of the APSN website.

*2.3 The 2017 SQP Survey.* During the 7<sup>th</sup> Plenary Meeting, participants identified that the training needs of SQP states had not been studied comprehensively in previous surveys. This represents a significant gap because more than half of the 173 states with comprehensive safeguards agreements in force do not have nuclear facilities or significant inventories of nuclear material.<sup>5</sup> Most of these states have SQPs to their safeguards agreements with the International Atomic Energy Agency (IAEA). The original standard text for SQPs holds in abeyance most of the procedures in the safeguards agreement.<sup>6</sup> This has the effect of greatly simplifying safeguards implementation for these states but it also severely restricts the IAEA's capability to verify compliance with safeguards agreements (specifically, the verification of the absence of undeclared nuclear activities). The IAEA has identified the modification or rescission of SQPs as a priority for ensuring the effectiveness of safeguards. However, many SQP states have not yet modified or rescinded their SQPs. Many SQP states

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<sup>4</sup> APSN website <<http://www.apsn-safeguards.org/resources/apsn-network-survey-report-findings>>.

<sup>5</sup> See Kalman A. Robertson, Jaime Vidaurre-Henry, and Mizuki Hirai, "The Capacity-Building Support Needs of States with Small Quantities Protocols" (Institute of Nuclear Materials Management 58<sup>th</sup> Annual Meeting, Indian Wells, July 2017) <[https://www.inmm.org/INMM/media/Archives/Annual%20Meeting%20Proceedings/2017/a301\\_1.pdf](https://www.inmm.org/INMM/media/Archives/Annual%20Meeting%20Proceedings/2017/a301_1.pdf)>.

<sup>6</sup> These "Original SQPs" were available to states with little or no nuclear material and no nuclear material in a facility. The standardized text is contained in IAEA Doc GOV/INF/276/Annex B (August 22, 1974).

that are contemplating implementation of Modified SQPs or full safeguards agreements may need assistance with building the capacity required to effectively implement them.<sup>7</sup> The skills required to implement safeguards in SQP states are not identical to those required in states with full safeguards agreements. Since some SQP states do not have established points of contact with the IAEA, regional training providers and regional initiatives (like the APSN) may usefully take an active role in reaching out to SQP states in their respective regions (i.e. providing access to information on training opportunities). By providing such support to SQP states, training providers in the APSN can contribute significantly to enhancing the effectiveness of the international safeguards system.

Members of the APSN decided to investigate the training needs of SQP states more closely. The APSN therefore requested that the ISCN/JAEA prepare and conduct a new training needs survey tailored specifically for SQP states.

The ISCN prepared the 2017 SQP Survey in consultation with the Department of Energy of the United States. In March, the ISCN sent the Survey via the Ministry of Foreign Affairs of Japan to APSN member organizations and observers in seven states that have SQPs: Brunei Darussalam, the Kingdom of Cambodia, Lao People's Democratic Republic, Mongolia, the Republic of the Union of Myanmar, New Zealand, and the Republic of Singapore. These organizations are typically the state authorities responsible for safeguards implementation (and in some cases, government organizations involved in safeguards policy development). The ISCN collected the completed survey forms in June and July 2017.

In parallel with the 2017 SQP Survey, the APSN added an "SQP Resources" page to the public section of its website. This page includes links to guidance for SQP states provided by the IAEA and lists maintained by the IAEA with the status of each SQP.

### **3. Survey Design**

The 2017 SQP Survey begins by asking questions about the size, staffing, and activities of each organization. It allows each organization to indicate specific training needs by selecting from a list of 22 topic areas. It then asks each organization to provide a list of its top three priority topic areas for receiving training. In addition, it asks each organization about needs associated with modifying the state's SQP. The Survey also asks organizations to indicate their preferred methods of receiving training. A sample survey form is provided in Appendix 1 of this Report.

The 2017 SQP Survey contains questions to gauge the actual size of each state authority, including the human resources available for safeguards implementation. Questions 2 and 3 aim to ascertain the number of operational staff members that support the implementation of

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<sup>7</sup> A "Modified SQP" is available to a state that has little or no nuclear material and that has not taken a decision to construct or authorize construction of a facility. The standard text is contained in IAEA Doc GOV/INF/276/Mod.1 and Corr.1 (February 21, 2006).

safeguards, their levels of experience in the field of safeguards, and the percentage of time that they spend on safeguards activities. These questions are particularly important for understanding the training needs of small offices that may be responsible for both safeguards and other regulatory or foreign affairs issues.

Some state authorities may judge that new staff members require training in nearly all safeguards topic areas, while experienced staff members only require training on a few topics. For this reason, the 2017 SQP Survey allows responders to indicate, for each topic area, whether training is required for new staff, experienced staff, or both.<sup>8</sup> To help determine what these responses may mean for the total number of individuals requiring training, Question 3 also asks about the number of new staff members hired in the last two years.

The 2017 SQP Survey arranges topics by target recipient, allowing each responder to indicate the training requirements of the state authority and licensees (or permit holders) separately. In SQP states, it is reasonable to assume that the state authority will be the main training recipient since SQP states, by definition,<sup>9</sup> do not have operating nuclear facilities. However, SQP states may have licensees or permit holders with nuclear material, including operators of declared locations outside facilities where nuclear material is customarily used in amounts of up to one effective kilogram (LOFs).<sup>10</sup> In addition, many SQP states have entities affected by additional protocols to their safeguards agreements. For this reason, Question 4 of the 2017 SQP Survey asks whether or not the state has a system of licenses or permits for locations where nuclear material is present without specifying whether the system is for safeguards purposes, as opposed to safety or security. From a training perspective, any licensing system for locations with nuclear material is a starting point for an SQP state seeking to develop a national safeguards regulatory framework, collect complete information from locations where material may be present, and prepare procedures for supporting IAEA verification activities. By comparison, Question 5 asks specifically about national *safeguards* inspections, with the aim of determining whether or not SQP states currently engage in this specialized activity.

SQP states may be particularly likely to have small state authorities with limited resources, where staff members are also responsible for radiation protection, nuclear security, and strategic trade controls. To gauge whether or not these states would like to integrate these regulation systems in order to enhance efficiency, a separate topic (“Incorporating safeguards

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<sup>8</sup> For this purpose, the 2017 SQP Survey defines “experienced staff” as staff members who have already worked for the state authority, licensee, or permit holder for more than one year.

<sup>9</sup> If a state with an Original SQP introduces nuclear material into a nuclear facility, its SQP becomes non-operational and it ceases to be an SQP state. If a state has a Modified SQP, the SQP becomes non-operational as soon as the state takes a decision to construct or authorize construction of a facility. A state with an SQP also has the option of rescinding the SQP at any time.

<sup>10</sup> There were 55 SQP states with Modified SQPs in force on December 31, 2015. According to the IAEA’s Safeguards Implementation Report for 2015, every one of these 55 states has a material balance area containing one or more LOFs under safeguards. See IAEA, “The Safeguards Implementation Report for 2015” GOV/2016/22 (3 May 2016) <<https://armscontrollaw.files.wordpress.com/2016/10/iaea-2015-sir.pdf>>.

compliance management within broader nuclear regulation systems”) has been introduced to the Survey. If SQP states are interested in leveraging radiation protection or nuclear security infrastructure to implement their systems of accounting for and control of nuclear material (SSACs), training providers could consider combining SSAC training for SQP states with security and/or safety training in a single course.

If an SQP state chooses to modify its Original SQP, it faces a number of new safeguards obligations. Questions 8 and 9 aim to help understand the needs of SQP states associated with modification of their SQPs. The questions extend to non-training-related needs in order to gauge the relative importance of training for implementation of Modified SQPs. For states that already have Modified SQPs, the question covers the needs that the state experienced when it began implementing its Modified SQP. For states that still have Original SQPs, the question covers the needs that the state anticipates it would experience if it chose to modify its SQP. The questions are designed to facilitate a comparison of the expectations of Original SQP states with the actual experiences of Modified SQP states.

Question 10 of the Survey asks about preferred training methods. It includes descriptions of the indicative formats and durations of various training modalities. In particular, the category “bilateral consultations” is split in two, in order to distinguish brief awareness-raising seminars that may have a broad audience of government officials (including policy makers) from technical training focused on individuals with specific safeguards responsibilities in the state authority or regulated entities.

#### **4. Summary of Responses**

Four state authorities responsible for safeguards implementation (national regulators) in four SQP states completed the 2017 SQP Survey, indicating an interest in receiving training on specific safeguards-related topics. This represents a response rate of four out of seven (57%). (See Tables 1 and 2 for summaries of responses.) Each SQP state has been randomly assigned a letter (Country A through Country D) to protect the confidentiality of information provided.

In order to compare the training needs of SQP states with available data on training providers, this Report refers to the outcomes of the 2015 Training Providers Survey. Each of the states that completed this 2015 Survey has been assigned a number (Country 1 through Country 7).

With a few potential exceptions (discussed below), each organization can be thought of as representing the state in which it operates for the purposes of safeguards training. Consequently, this Report refers to “states” as the unit of analysis (e.g., “three states expressed an interest in receiving training in...”)

## 5. Analysis of the Surveyed States' Training Needs by Topic

All of the safeguards topic areas listed in the survey were of interest to at least two out of the four SQP states completing the survey. These results confirm the importance of including each topic area in safeguards training.

Each of the four surveyed states indicated that training on certain topics was required for both new staff and experienced staff. All of the surveyed states indicated “Requirements for reporting to IAEA under SQP”, “Preparing and submitting reports under SQP”, “Developing procedures for supporting IAEA inspections”, “Preparing and submitting AP declarations”, and “Commodity identification training for AP” as topics where their entire organizations, including experienced staff, could benefit from training. These topics are likely to represent the most important capability gaps among SQP states. As expected, states tended to place these topic areas in their lists of top priority training needs (see Table 2).

Among these priority areas, commodity identification training stands out because detailed training on the subject has primarily been conducted through bilateral consultations. The interest in commodity identification training is also significant because some SQP states in the region play a prominent role in international trade in high technology/strategic goods. This topic should remain a focus of bilateral consultations. Training providers may also consider how this topic could be given greater emphasis in regional courses.

One surveyed state mentioned that training providers in the APSN could assist with improving understanding of the items covered by Annex II of the Model Additional Protocol, particularly by providing photographs of the items and references to the Harmonized Commodity Description and Coding System of product/tariff nomenclature (i.e. the “HS Codes” or “Harmonized Tariff Numbers” applicable to each item) when they present technical descriptions of Annex II items, if they do not already do so. (This could be accomplished by presenting information on mapping the Annex II list to HS codes by means of existing correlation/correspondence tables).

Every surveyed SQP state indicated an interest in receiving training in “Preparing and submitting AP declarations” and “Outreach to AP-affected entities”. This is significant because a previous study has shown that only 6 out of 95 SQP states in the world submitted all of the declarations required by article 2 of the additional protocol on time in 2013.<sup>11</sup> All of the SQP states responding to the 2017 SQP Survey appear to be interested in receiving training for implementing additional protocols, even though one has not yet brought its additional protocol into force. The provision of training to SQP states on additional protocols may significantly improve rates of adherence.

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<sup>11</sup> Kalman A. Robertson, Jaime Vidaurre-Henry, and Mizuki Hirai, “The Capacity-Building Support Needs of States with Small Quantities Protocols” (INMM 58th Annual Meeting, Indian Wells, July 2017) <[https://www.inmm.org/INMM/media/Archives/Annual%20Meeting%20Proceedings/2017/a301\\_1.pdf](https://www.inmm.org/INMM/media/Archives/Annual%20Meeting%20Proceedings/2017/a301_1.pdf)>.

**Table 1:** Summary of responses to Question 6 on training needs by topic area for each SQP state. In the columns on the right side of the table, an “N” means that the state indicated that new staff members in the organization would benefit from training on the topic. An “E” means that the state indicated that training would benefit experienced staff members.

Category and Topic Area	Country			
	A <sup>12</sup>	B	C	D
<b>Capacity Building for State Authorities</b>				
NPT and IAEA safeguards system	NE		N	E
Developing national nuclear law/regulations	NE		E	E
Requirements for reporting to IAEA under an SQP	NE	NE	E	E
Preparing and submitting reports under an SQP	NE	NE	E	E
Locations of reportable nuclear material: gathering info	NE		E	E
Developing procedures for supporting IAEA inspections	NE	NE	E	E
Nuclear material accounting and control	NE	N	E	E
Licensing requirements for possession and import/export	NE		E	E
Inspections conducted by state authority	NE		E	E
Incorporating safeguards in broader nuclear regulation	NE		E	E
Transition to full comprehensive safeguards agreement	NE		E	
<b>Capacity Building for Licensees/Permit Holders</b>				
Understanding national nuclear law/regulations	NE		E	E
National reporting requirements	NE		E	E
Supporting IAEA inspections and complementary access	NE		N	E
Nuclear material accounting and control	NE	NE	E	E
Nuclear security and physical protection	NE	NE	E	E
<b>Additional Protocol Implementation by State Authorities</b>				
Requirements for reporting to IAEA under AP	NE		N	E
Preparing and submitting AP declarations	NE	NE	E	E
Commodity identification training for Annexes I and II	NE	NE	E	E
Complementary access	NE		N	E
Outreach to AP-affected entities	NE	NE	N	E

**Table 2:** Top three priority training needs listed by each state in response to Question 7. Colored boxes indicate that two or more states listed the topic as a top three priority; gray boxes indicate that no response was given.

	Country A	Country B	Country C	Country D
<b>1st</b>	Inspections conducted by state authority	Requirements for reporting to IAEA under an SQP		Developing national nuclear laws/regulations
<b>2nd</b>	Licensing requirements for possession and import/export	Commodity identification training, AP Annexes I and II		Locations of reportable nuclear material: gathering information
<b>3rd</b>	Requirements for reporting to IAEA under an SQP	Outreach to AP-affected entities		Commodity identification training, AP Annexes I and II

<sup>12</sup> Country A indicated under “other” that it also has an interest in receiving training on “non-destructive assay measurement techniques”.

Interest in NMAC extended to capacity building for both state authorities and licensees/permit holders in all surveyed states. This illustrates that a LOF operator may need training on preparing reports and creating a general ledger, but these training needs will usually be narrower than the needs of the state authority.

One state indicated under “Other” that it would like training in “non-destructive assay [NDA] measurement techniques”. A second state indicated that “inspection equipment” was needed for implementing a Modified SQP. Training providers tend to focus NDA training on states that already have NDA equipment and nuclear facilities. The results of the Survey indicate that training providers should provide introductory information to participants from all states (including SQP states) on procurement and use of NDA equipment.

## **6. Needs Associated with Modification (or Rescission/Non-Operation) of SQPs**

In response to Questions 8 and 9, all surveyed states indicated that training officials in safeguards is a critical need associated with modifying SQPs. Two states (one with an Original SQP and one with a Modified SQP) noted the particular challenge of identification of declarable nuclear material under paragraph 34(c) of INFCIRC/153 (including non-fuel cycle applications of nuclear material), suggesting that training for SQP states should include this topic as a focus.

Three of the four surveyed states already have systems of permits/licenses for locations where nuclear material is present and both of the states with Modified SQPs have conducted national safeguards inspections in the last two years (see Table 3). Furthermore, three state authorities have staff members with over five years of experience in the field of safeguards (see Table 4). These factors should be useful for gathering information on locations where nuclear material is present and preparing initial reports required under Modified SQPs. They may also serve as a useful base for strengthening national systems of regulatory control and preparing to facilitate IAEA verification activities.

Most of the surveyed states indicated an interest in receiving training in conducting national inspections. Although national inspections are not a legal requirement under any type of IAEA safeguards agreement, one state with an Original SQP indicated this was a critical need for implementing a Modified SQP. Given that states have concluded that training on conducting national inspections and identifying locations of reportable nuclear material are critical needs for implementing Modified SQPs, effective provision of training in these areas may significantly contribute to strengthening the international safeguards system.

Two surveyed SQP states expressed interest in the topic “Transitioning to implementation of a full comprehensive safeguards agreement”. This is an important topic for SQP training because some SQP states in the region may anticipate rescission or non-operation of their SQPs in the future as they pursue their long-term goals of developing nuclear facilities.



However, in the view of the authors of this Report, once a state is facing imminent rescission or non-operation of its SQP, it should receive training on the full comprehensive safeguards agreement, rather than being treated as an SQP state for training purposes.

**Table 3:** Current status of each state’s SQP and licensing system.

Country	Original SQP or Modified SQP	System of permits or licenses for locations with nuclear material	National safeguards inspections in last 2 years
A	Modified	Yes	Yes
B	Modified	Yes	Yes
C	Original	Yes	No
D	Original	No	No

**Table 4:** The number of staff members that support the implementation of safeguards as recorded by each state that completed the 2017 SQP Survey.

Country	Operational staff members supporting safeguards implementation	Proportion of time spent on safeguards activities	Staff members with more than 5 years’ experience	New staff members hired in last 2 years
A	5 <sup>13</sup>	80%	0	6
B	4	30%	1	2
C	1	50%	1	1
D	10	50%	10	0

## 7. Scale of Training Needs Among SQP States

The number of personnel supporting the implementation of safeguards varies considerably among surveyed SQP states, from just one staff member to as many as ten (see Table 4). However, most of the SQP states have only one or two staff members (full-time equivalent). A small office may only be able to send one staff member at a time to attend training. This is essential if these organizations are to avoid being short-staffed at home. Training providers should coordinate the scheduling of training opportunities to minimize scheduling clashes. In particular, training courses should be sufficiently spread out over time to ensure that each state has an opportunity to send at least one staff member to participate in each training course that could be useful to it.

Two of the surveyed states also indicated that training on certain topics was required only for individual new staff. Even though SQP states do not have nuclear facilities, the surveyed state authorities appeared to hire new staff fairly frequently. Most of the state authorities have hired new operational staff in the last two years. Furthermore, most SQP states have few, if any, staff members with more than five years of experience in safeguards, meaning that maintaining adequate human resources as experienced staff members retire (succession planning and knowledge management) is a foreseeable challenge. Some safeguards activities (such as inspections) are not conducted frequently in SQP states, but it is still important for

<sup>13</sup> Country A indicated that 2 of its staff members are primarily responsible for nuclear safeguards, while the other 3 are also responsible for other aspects of nuclear regulation.

each SQP state to have staff members that are capable of performing those activities when the need arises. Training courses can provide an opportunity for new staff to prepare for these activities. In order to keep up with the rate of new hires, training providers should ensure that at least one broad-based technical training course is available per year. The next two sections of the Report evaluate available methods for providing training to SQP states.

## 8. Preferred Methods of Receiving Training

The states that completed the 2017 SQP Survey indicated an interest in receiving training via a variety of training methods (see Table 5). The Report of Findings from the 2015 Surveys showed that training providers are similarly interested in providing training via a range of methods. For the most part, providers should be able to meet SQP states’ preferences regarding methods of training.

For organizations with few resources and limited experience administering SSACs, fellowships and technical visits in other states may be a useful way for individual staff members to develop expertise. Only one of the states responding to the 2015 Training Providers Survey indicated that it provides long-term fellowships, so supply may be insufficient to meet demand. Other training providers should consider adding long-term fellowships (or mentoring arrangements) as a training option for officials from other states.

**Table 5:** Responses from SQP states (Countries A through D) on preferred methods of receiving training. The methods used by regional training providers that responded to the 2015 Survey (Countries 1 through 7) are included in the columns on the right for the purposes of comparison. Note that “Bilateral consultation” appeared as a single option in the 2015 Training Providers Survey without distinguishing between awareness raising and technical training.

Preferred methods of receiving or providing training	Responses of SQP States (2017 SQP Survey)				Responses of (potential) providers (2015 Survey)						
	A <sup>14</sup>	B	C	D	1 <sup>15</sup>	2	3 <sup>16</sup>	4 <sup>17</sup>	5	6	7
Bilateral consult, awareness raising (1 day)			X		X	X		X	X		X
Bilateral consult, technical training (up to 1 week)	X	X	X								
Regional courses (up to 2 weeks)	X		X	X		X		X	X		X
Hands-on training	X		X	X		X		X	X		X
Short-term technical visit		X	X	X		X			X		X
Long-term fellowship	X		X						X		
E-learning		X	X	X				X	X		X
Copies of existing course curricula and training materials			X			X		X	X		X

<sup>14</sup> Country A indicated under “other” that it would benefit from provision of a scholarship for a master’s degree in nuclear engineering.

<sup>15</sup> Country 1 indicated under “other” that it also provides support to other training providers when requested.

<sup>16</sup> Country 3 indicated under “other” that it also provides or is interested in providing “training materials development”.

<sup>17</sup> Country 4 indicated under “other” that it also provides or is interested in providing group exercises and IT-based simulation training.

Considering the broad geographical distribution of SQP states in the Asia-Pacific region, e-learning modules may represent a cost-effective and convenient method of providing training. Training providers should discuss options for further developing e-learning on topics where training is in high demand, such as “Requirements for reporting to the IAEA”.

## **9. Implications for Regional Training Courses**

Traditionally, each training provider has tended to offer a single regional or international course on SSACs for both SQP states and non-SQP states (i.e. states with full safeguards agreements). However, in recent years, some training providers have begun offering regional or international courses designed exclusively for participants from SQP states. These SQP-specific regional/international courses may be shorter than the traditional two-week regional courses on SSACs. Due to the small sample size in this Survey, it is difficult to determine whether participants from SQP states would be better served by being invited to take part in training courses alongside non-SQP states or whether they would benefit more from having separate SQP-specific regional training courses.

On the one hand, the surveyed SQP states showed a relatively high degree of interest in topic areas where states with full safeguards agreements traditionally have more experience (including NMAC, supporting IAEA inspections, physical protection, and additional protocol-related topics). Like the states that completed the 2015 Training Needs Survey, the SQP states in the 2017 SQP Survey clearly expressed a need for additional protocol commodity identification training. Furthermore, three out of the four surveyed SQP states indicated an interest in attending regional courses of up to two weeks’ duration. Interest in these topics and availability to attend relatively lengthy training courses indicate that SQP states may benefit from participating in traditional two-week regional training courses on SSACs alongside states with full comprehensive safeguards agreements. By allowing participants from SQP states to interact with participants from other states, this course format may provide SQP states with the best opportunity to build broad skills and knowledge useful for establishing operational SSACs, reporting to the IAEA, and preparing to support IAEA in-field verification activities.

On the other hand, most of the surveyed SQP states indicated an interest in receiving bilateral technical training, suggesting that SQP states appreciate training specific to their own situations. Furthermore, all surveyed SQP states indicated an interest in receiving training on reporting under SQPs, a topic that is not relevant to states with full safeguards agreements. Three out of the four surveyed states indicated an interest in receiving training on “Developing national nuclear laws/regulations”, a topic that was not of interest to the majority of states with full safeguards agreements in the 2015 Training Needs Survey. (Many states in the 2015 Survey already have long-standing national nuclear laws.) In addition, all surveyed SQP states indicated an interest in receiving training on nuclear security and/or incorporating safeguards compliance management in broader nuclear regulation systems.

These factors suggest that courses designed specifically for SQP states, perhaps covering both safeguards and security, may be particularly useful.

In order to determine the relative merits of these different methods of providing regional training, it will be necessary to gather survey responses from more SQP states.

## **10. Conclusion and Ideas for Further Consideration by the APSN**

The results of the 2017 SQP Survey demonstrate that SQP states are interested in receiving training on a variety of safeguards-related topics. The results also confirm that training is a critical need for states during modification of SQPs and implementation of additional protocols. This illustrates the importance of capacity-building support activities for strengthening the effectiveness of international safeguards.

The Report of Findings from the 2015 Surveys found that there is sufficient interest and expertise in the region to address training needs with respect to nearly all safeguards-related topics. The results of the 2017 SQP Survey indicate some of the priority training needs of SQP states and suggest that there are opportunities for training providers to more effectively utilize their capabilities to address those needs.

Based on the responses from the SQP states, the most pressing needs for implementing the Modified SQP appear to be training on reporting requirements, preparing reports, identifying locations of reportable nuclear material, and conducting national inspections. Training providers may also be able to enhance training opportunities for SQP states by increasing the availability of fellowships and e-learning modules.

The surveyed states also demonstrated a high degree of interest in training on additional protocol declarations, particularly commodity identification. Such training may help to improve rates of on-time submission of declarations by SQP states. Based on the responses, training providers may be able to optimize delivery of commodity identification training, by using photographs and HS codes, and improve availability of this training, by featuring it more prominently in regional courses.

There are both pros and cons to designing a regional training course specifically for participants from SQP states, as opposed to inviting them to attend the same courses as participants from states with full comprehensive safeguards agreements. If an SQP-specific regional/international course is not available in a given year, then participants from SQP states should be invited to attend regional courses alongside participants from states with full comprehensive safeguards agreements. Regardless, training providers should also continue to offer bilateral consultations and short-term technical visits for participants from SQP states as there are likely to be relatively high demands for these methods of training.

The authors of this Report suggest that the APSN expand the 2017 SQP Survey to include all of the SQP states in Asia and the Pacific. This would allow the APSN to more precisely establish trends in the training needs of SQP states. This should be particularly useful for the APSN members and observers that provide training to a large number of states across Asia and the Pacific. This research could also make an original contribution to global capacity-building efforts in the field of safeguards. If the APSN conducts this additional research, the APSN could draft a summary of the results of all of its training surveys and, if members approve, communicate the summary to the IAEA for publication as an Information Circular.<sup>18</sup>

Given the growing number of training providers and the relatively small number of officials in SQP states that require training, it will be important to coordinate training efforts and manage scheduling date clashes. Some training providers may not be in a position to provide complete annual plans (or longer-term plans) of their safeguards capacity-building support activities in advance due to uncertainties about scheduling dates, availability of resources, or attainment of necessary approvals. Indeed, a training provider may wish to discuss its ideas for future training activities informally with other providers before it formalizes its plans. The APSN could ask each member to post on the “Members Only” section of the APSN website a list of the training courses that the member has conducted in *previous* years, along with a brief statement of the course dates, content and target participants. In most cases, a training provider’s recent experiences offer a general indication of the likely future direction of its training activities. This could facilitate informal discussion amongst training providers about opportunities to cooperate in planning their future training courses.

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<sup>18</sup> In 2012, the APSN transmitted a paper titled “Fundamentals and Good Practices of Safeguards Regulatory Authorities” to the IAEA. It was published as INFCIRC/845 (January 2013).

### **Appendix 3. Sample Training Needs Survey for States with Small Quantities Protocols (SQPs)**

#### **Asia-Pacific Safeguards Network (APSN)**

This survey is designed to assess the training needs of States with a Small Quantities Protocol (SQP).<sup>1</sup> The results of this survey will help APSN members and APSN observers to plan training and outreach activities targeted to States with SQPs.

The APSN understands that it is in the interest of all of its members to implement International Atomic Energy Agency (IAEA) safeguards effectively and efficiently. As a forum for sharing knowledge on nuclear safeguards, the APSN makes available information on resources and assistance to its members and observers, matching the safeguards needs of States in the region. Surveys like this one, help attain the objectives of the APSN.

#### **Background Information on SQPs**

Each non-nuclear-weapon State party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is required to conclude a comprehensive safeguards agreement with the IAEA. The IAEA verifies the compliance of States with their commitments to the peaceful use of nuclear material pursuant to the NPT.

Many States have little or no nuclear material and no nuclear material in a facility. The IAEA first developed the SQP in the 1970s to simplify certain procedures under comprehensive safeguards agreements for these States.

The original standard text of the SQP was submitted to the IAEA Board of Governors in 1974 (GOV/INF/276/Annex B<sup>2</sup>). This “Original SQP” holds in abeyance most of the procedures in the safeguards agreement.

In 2005, the IAEA Board of Governors approved a revised standard text (GOV/INF/276/Mod.1 and Corr.1<sup>3</sup>), referred to as the “Modified SQP”. The Modified SQP changes the eligibility criteria and reduces the number of safeguards procedures held in abeyance. In effect, it increases the safeguards obligations on States with SQPs in order to improve the overall effectiveness of the IAEA safeguards system.

The IAEA encourages States with the Original SQP to move to the Modified SQP or rescind the SQP entirely. Currently, some States have the Modified SQP but many still have the Original SQP.

Since 1997, many States have also adopted additional protocols (APs) to their safeguards agreements. The AP extends the range of activities under safeguards, expanding the tools available to the IAEA to complete its verification mission.

For more information on safeguards and the SQP, please refer to:

<https://apsn-safeguards.org/resources>

If you would like any clarification on the questions in this survey, please contact:

[iscn\\_training@jaea.go.jp](mailto:iscn_training@jaea.go.jp)

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<sup>1</sup> This survey has been sent to APSN members and observers in Brunei Darussalam, the Kingdom of Cambodia, Lao People’s Democratic Republic, Mongolia, the Republic of the Union of Myanmar, New Zealand, and the Republic of Singapore.

<sup>2</sup> For a copy of this document, please refer to <https://ola.iaea.org/ola/documents/GINF276.pdf>

<sup>3</sup> For a copy, please refer to [https://www.jaea.go.jp/04/iscn/iscn\\_old/resource/New%20text%20SQP.pdf](https://www.jaea.go.jp/04/iscn/iscn_old/resource/New%20text%20SQP.pdf)

## Training Needs Survey for States with a Small Quantities Protocol (SQP)

1. Please indicate the name of your organization and country. If you work in a government department, please indicate the name of the department and the name of your office or division that is responsible for safeguards implementation:

\_\_\_\_\_

2. How many operational staff members\* in your organization support the implementation of safeguards?

\_\_\_\_\_

- a. On average, what percentage of time do these operational staff members spend on safeguards activities? (For example, if your staff members work full time and they split their time equally between implementing nuclear safeguards and radiological safety, then write "50%".)

\_\_\_\_\_

- b. How many of the operational staff members have more than 5 years of experience in the field of safeguards? \_\_\_\_\_

3. In the last two years, how many new operational staff members has your organization hired to support the implementation of safeguards? (Please include both new positions and replacements of retiring staff members.) \_\_\_\_\_

4. Does your country have a system of permits or licenses for locations where nuclear material is present?

Yes

No

5. In the last two years, has your organization conducted any inspections for safeguards purposes at locations in your country where nuclear material is present?

Yes

No

6. Please indicate the safeguards and safeguards-related topics that your organization would like to receive training in:

If only new staff in your organization would benefit from training on a particular topic, please tick the box marked "N" (for new staff).

If training would also benefit staff members who have already worked for your organization for more than one year (or training is required for your organization as a whole), please tick the box marked "E" (for experienced staff).

If your organization does not need training on a particular topic, please leave the boxes blank.

### 6.1 Capacity Building for the State Authority Responsible for Safeguards Implementation

N	E	The NPT and the IAEA Safeguards System (history, evolution, agreements, protocols)
N	E	Developing National Nuclear Law/Regulations
N	E	Requirements for Reporting to the IAEA under an SQP
N	E	Preparing and Submitting Reports under an SQP

\* Please assume that "operational staff members" do not include:

- General administrative support for your organization,
- Senior management, or
- Officials working in missions in Vienna responsible for forwarding reports and declarations.

- N E Identifying Locations where Reportable Nuclear Material may be Present and Gathering Information on Those Locations
- N E Developing Procedures for Supporting IAEA Inspections
- N E Nuclear Material Accounting and Control
- N E Licensing Requirements for Possession and Import/Export of Nuclear Material
- N E Inspections Conducted by the State Authority
- N E Incorporating Safeguards Compliance Management within Broader Nuclear Regulation Systems
- N E Transitioning to Implementation of a Full Comprehensive Safeguards Agreement (Rescinding the SQP)

6.2 Capacity Building for Licensees or Permit Holders with Nuclear Material or Associated Equipment

- N E Understanding National Nuclear Law/Regulations
- N E National Reporting Requirements (Accounting and Additional Protocol reports)
- N E Preparing for and Supporting IAEA Verification Activities (Inspections and Complementary Access)
- N E Nuclear Material Accounting and Control
- N E Nuclear Security and Physical Protection

6.3 Capacity Building for Additional Protocol (AP) Implementation by the State Authority

- N E Requirements for Reporting to the IAEA under an AP
- N E Preparing and Submitting AP Declarations (and Updates), Including the Use of Protocol Reporter Software
- N E Commodity Identification Training for AP Annexes I and II (Manufacturing and Export/Import)
- N E Complementary Access (Including Developing Procedures for Supporting IAEA Complementary Access)
- N E Outreach to AP-Affected Entities

6.4 Any Other Safeguards-Related Topic

- N E Other (please specify): \_\_\_\_\_

**7. Please list your top three priority training needs from the above list: (In order of importance)**

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

**8. If your country currently has an Original SQP in force, please write one critical need (such as legal authority, training, or equipment) that your organization would experience if your country chose to begin implementing a Modified SQP.**

\_\_\_\_\_

\_\_\_\_\_



9. If your country has a **Modified SQP** in force, please write one critical need (such as legal authority, training, or equipment) that your organization experienced when your country started implementing the Modified SQP.

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10. What method of training delivery would you prefer? (Please check all that apply)

- Bilateral consultations: awareness-raising seminars for government officials (one day)
- Bilateral consultations: technical training for State authority or regulated entities (up to one week)
- Regional courses/workshops with multiple member States (up to two weeks)
- Hands-on training: instrumentation training, demonstrations, tours, or mock exercises
- Short-term technical training visits to another State (up to three weeks)
- Long-term fellowships in another State (several months)
- E-Learning (websites, computer based, distance learning)
- Copies of existing course curricula and training materials
- Other: (please describe) \_\_\_\_\_

11. Please indicate which Member States, international organizations, or other entities are currently providing or have previously provided safeguards training to your organization. Please list the topics they are addressing with you.

Australia: \_\_\_\_\_

Canada: \_\_\_\_\_

People's Republic of China: \_\_\_\_\_

European Union: \_\_\_\_\_

IAEA: \_\_\_\_\_

Indonesia: \_\_\_\_\_

Japan: \_\_\_\_\_

Republic of Korea: \_\_\_\_\_

Russian Federation: \_\_\_\_\_

United States of America: \_\_\_\_\_

Other (Please provide country name and topics): \_\_\_\_\_

12. If you would like to add any clarifications for any of your answers to the questions above, please write here. Please also provide any additional comments and suggestions on how you would like APSN to increase opportunities for safeguards training for your organization:

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**MANY THANKS FOR YOUR COOPERATION!**

(Please use additional pages if there is not enough space for your answers)

## Appendix 2. List of SQP States in the Broader Asia-Pacific Region as of May 19, 2017

	Original SQP in Force*	Modified SQP in Force
States with APSN Member Organizations or Observers – Received the 2017 SQP Survey in March 2017	Brunei Darussalam Lao People’s Democratic Republic Mongolia Republic of the Union of Myanmar	Kingdom of Cambodia New Zealand Republic of Singapore
States that do not have APSN Member Organizations or Observers – Japan/ISCN could send the 2017 SQP Survey to these states in November 2017	Kingdom of Bhutan Republic of Fiji Republic of Kiribati Kyrgyz Republic Republic of Maldives Republic of Nauru Federal Democratic Republic of Nepal Sultanate of Oman Independent State of Papua New Guinea Independent State of Samoa Kingdom of Saudi Arabia Solomon Islands Kingdom of Tonga Tuvalu Republic of Yemen	Islamic Republic of Afghanistan Kingdom of Bahrain State of Kuwait Lebanese Republic Federated States of Micronesia** Republic of Palau State of Qatar Democratic Republic of Timor-Leste** Republic of Vanuatu

\* In May 2017, it was reported that the IAEA verified an initial report by the United Arab Emirates (UAE) but the rescission or non-operation of its Original SQP has not yet been confirmed by the IAEA (see <https://www.fanr.gov.ae/>). It is reasonable to assume that the SQP of the UAE is either non-operational or it will become non-operational in the next few months. If organizations in the UAE require training, they will require it in connection with a full comprehensive safeguards agreement, rather than an SQP. On that basis, the authors argue that the UAE should not be considered an SQP state for the purposes of this Survey.

\*\* Safeguards agreement with Modified SQP signed but not yet in force

### References:

IAEA, “Status of Small Quantities Protocols”

<https://www.iaea.org/topics/safeguards-legal-framework/status-small-quantities-protocols>

IAEA, “Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols” (Status as of May 19, 2017) <http://fissilematerials.org/library/iaea17.pdf>