LAWRENCE
LIVERMORE
NATIONAL
LABORATORY

LLNL-CONF-698243

A Review of U.S. and Serbia Cooperation on Implementation of the Additional Protocol in Serbia

J. Essner, M. Steljic

July 20, 2016

Institute of Nuclear Materials Management Annual Meeting
Atlanta, GA, United States
July 24, 2016 through July 28, 2016

Disclaimer

This document was prepared as an account of work sponsored by an agency of the United States government. Neither the United States government nor Lawrence Livermore National Security, LLC, nor any of their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or Lawrence Livermore National Security, LLC. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States government or Lawrence Livermore National Security, LLC, and shall not be used for advertising or product endorsement purposes.

A Review of U.S. and Serbia Cooperation on Implementation of the Additional Protocol in Serbia[1]

Jonathan Essner, Lawrence Livermore National Laboratory
Milijana Steljiç, Serbian Radiation Protection and Nuclear Safety Agency
July 2016

The International Nuclear Safeguards Engagement Program (INSEP), a part of the United States Department of Energy (DOE) National Nuclear Security Administration (NNSA), and the Serbian Radiation Protection and Nuclear Safety Agency (SRPNA), as well as counterparts at the International Atomic Energy Agency (IAEA) and in the European Commission (EC)/EURATOM, have recently concluded a multi-year collaboration aimed at assisting the Government of Serbia to prepare for the entry-into-force of the Model Additional Protocol (AP). From the U.S. perspective, the goal of the engagement was to prepare the State System of Accounting for and Control of Nuclear Material (SSAC), in this case SRPNA, to administer the Additional Protocol. During five engagements over four years, dozens of persons committed, time, energy and resources to ensure that the stakeholders achieved this goal.

The Safeguards Agreement[2], concluded between the Socialist Federal Republic of Yugoslavia and the IAEA, was signed on May 26, 1972 and in force since December 28, 1973; subsequently, safeguards inspections have been carried out regularly to this date. The agreement continues to be applied in the Republic of Serbia (formerly in Serbia and Montenegro) by succession, to the extent relevant to its territory.

Following the conclusions from the 56th session of the Council of Ministers of Serbia and Montenegro, on September 9, 2004, a letter of intent was sent to the IAEA Secretariat, and the Protocol Additional to the Agreement for the Application of Safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons was signed on July 3, 2009, in Belgrade, during a visit by the IAEA Director General.

According to the new law[3] from 2009, a regulatory body was founded and SRPNA finally established on December 18, 2009 by the Governmental Decision[4], in order to provide conditions for effective implementation of radiation protection and nuclear safety measures, when carrying out radiation

---

[1] This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. LLNL-CONF-490854.

[2] Law on ratification of the Agreement between the Socialist Federal Republic of Yugoslavia and the IAEA for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons, Official Gazette of SFRY No. 67/73, (INFCIRC/204, based on the model of so-called comprehensive safeguards agreement under INFCIRC/153).

[3] Law on Radiation Protection and Nuclear Safety, Official Gazette of the Republic of Serbia No. 36/2009 and 93/2012, Article 5, para. 1.

[4] Decision on Establishment of the Serbian Radiation Protection and Nuclear Safety Agency, Official Gazette of the Republic of Serbia No. 76/2009 and 113/2013.

practices and nuclear activities. As such, SRPNA is responsible for the implementation of the Additional Protocol.

The partnership between the United States and the Republic of Serbia concerning the preparatory activities for the AP ratification and implementation in Serbia was initiated by the US Department of State and the Serbian Ministry of Foreign Affairs in 2011. The United States and Serbia then agreed to collaborate on education and training to support SRPNA, resulting in five workshops over nearly four years. Early on, INSEP and SRPNA developed a plan to establish SRPNA as an effective AP authority, capable of educating and training its workforce on AP adherence.

The Workshops

Each of the five workshops took place in Belgrade, Serbia. Whenever possible and practical, simultaneous translation was offered to participants. The IAEA and/or EURATOM participated in most of the workshops, allowing Serbia the opportunity to engage on possible issues of interest on the margins of the workshops.

- The first and second workshops (July 2011 and February 2012) focused on educating SRPNA and other government institutions on the Additional Protocol. IAEA and DOE subject-matter experts from the national laboratories[5] lectured on the IAEA safeguards system, including detailed discussions on AP declaration requirements and the use of software tools to assist in declaration preparation. In turn, SRPNA colleagues presented overviews of AP-related institutions within Serbia (e.g. Public Company Nuclear Facilities of Serbia - PCNFS) and the Serbian nuclear fuel-cycle, and provided tours of various relevant facilities, including a shut-down nuclear research reactor at PCNFS, called RA. RA provided an excellent instructional opportunity to contrast the differences between the comprehensive safeguards agreement and the AP regarding shut-down reactors. Serbia-based participants[6] included representatives from the Ministry of Foreign Affairs, Ministry of Economy and Regional Development, Ministry of Environment, Mining and Spatial Planning, and Ministry of Education and Science.
- The third workshop (October 2012) differed from the first two as it focused narrowly on a single topic: commodity identification. Participants received briefings on export controls in the AP (a presentation covered export controls in the United States as an example) and reporting requirements as they relate to the Annexes I and II, with presentations prepared for each stage of the nuclear fuel cycle. EC presented sample declarations. SRPNA invited all possible stakeholders within the Serbian government, including those from aforementioned ministries

[5] Over five engagements, INSEP relied on subject-matter experts representing DOE national laboratories, including Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Livermore National Laboratory, Oak Ridge National Laboratory, Pacific Northwest National Laboratory and Savannah River National Laboratory.

[6] At the first workshop 24 participants from 9 institutions were present, and at the second workshop there were 33 participants from 19 institutions.

plus, among others, the Ministry of Defense, Ministry of Finance (Customs Administration), Ministry of Infrastructure and Energy, Ministry of Interior, and the Security Information Agency.

- The fourth workshop (November 2013) marked a change in approach by placing SRPNA in the lead role and INSEP in a support role. The primary purpose of this engagement was for SRPNA to lead a two-day workshop on AP outreach, with one full day dedicated for Serbian universities and one full day for Serbian industry. SRPNA provided participants with brochures and information sheets and delivered presentations on the AP much like those given in the earlier engagements. DOE representatives were available to participate in the outreach as "on demand" technical advisors. A second purpose of the engagement concerned training SRPNA staff on the collection, evaluation and analysis of open-source information in support of AP implementation.
- The final workshop (November 2014) took place at Vinča Institute of Nuclear Sciences (VINS) and at PCNFS and concerned complementary access (CA). DOE, IAEA and EC representatives role-played as inspectors while SRPNA role-played as the SSAC for four different types of CA visits:
    - CA 1 took place at Research Reactor RA and was a 24-hour notice under Article 4.b.(ii)
    - CA 2 took place at Waste Facilities and was a two-hour notice under Art. 4.b.(i); the CA notice was given during a routine inspection
    - CA 3 took place at Laboratories and was a 24-hour notice under Article 4.b.(ii)
    - CA 4 took place at the Accelerator and was a 24-hour notice under Article 4.b.(ii)); the IAEA had asked for clarification using 2.c letter and requested a CA for further information

In addition to the education and training, the workshops had a second important benefit in that they provided an opportunity for the participants to establish or strengthen relationships. These relationships can be called upon when questions arise, easing concerns as Serbia evaluates its path forward with respect to the AP.

Other supported activities

In April 2012, DOE organized an international workshop on the AP for partner countries[7], and two of SRPNA's employees participated in this event. The first week of training was organized by Argonne National Laboratory, and included, *inter alia*, the US experience in preparation for the AP ratification, outreach planning, export controls in relation to the AP, and declaration preparation. Complementary access (CA) training with practical exercises simulating CA inspections was held in Brookhaven National Laboratory during the second week.

[7] Indonesia, Malaysia, Morocco, Philippines, Thailand, Vietnam and Serbia

Serbian representative from SRPNA participated in the Fourth International Meeting on Next Generation Safeguards, which was held in July 2012 in Hanoi, Vietnam, and also organized by DOE. There were 75 participants from 26 countries, 3 IAEA and 2 EC representatives present.

An important aspect of DOE's assistance to SRPNA was the provision of a variety of outreach materials, such as an AP brochure template, draft presentation slides on different AP-related topics, an information document, etc. Moreover, DOE experts assisted SRPNA in developing a SRPNA-branded AP website[8] to share with stakeholders within government, university and industry. SRPNA launched the website in April 2014, which now includes draft declaration forms for potential stakeholders.

Current status

At the time this paper was written in June 2016, Serbia completed an official translation of the AP text and was drafting a law aimed to support AP ratification.

Prepared by LLNL under Contract DE-AC52-07NA27344.

[8] Available at: http://www.dp.gov.rs/dp/en/main.html (accessed 13 June 2016)