

# BIBLIOGRAPHY

Compiled by the Proliferation Resistance and Physical  
Protection Working Group (PRPPWG)

Revision 10, September 2023

**DISCLAIMER**

This report was prepared by the Proliferation Resistance and Physical Protection Working Group (PRPPWG) of the Generation IV International Forum (GIF). Neither GIF nor any of its members, nor any GIF member's national government agency or employee thereof, makes any warranty, express 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. References 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 GIF or its members, or any agency of a GIF member's national government. The views and opinions of authors expressed therein do not necessarily state or reflect those of GIF or its members, or any agency of a GIF member's national government.

---

## Preface

---

This bibliographic list compiles publications, including articles of scientific journals and papers presented in proceedings of conferences, symposia and workshops, related to the PR&PP Methodology developed by the GIF PRPPWG and its applications. It is intended as a source of information for interested experts and researchers within and outside the GIF community.

Sections 1 to 3 are devoted to reports, articles and papers on the PR&PP Methodology and on its applications.

Section 4 deals with articles and papers authored by PRPPWG members and/or non-members on topics related to the PR&PP Methodology.

Relevant IAEA and IAEA-INPRO documents making reference to the PR&PP Methodology or dealing with related topics are listed in Appendix A.

For the purpose of the present document “members of the PRPPWG” is defined as colleagues who are or were members or observers in the Group or contributed to its work on an ad hoc basis and, therefore, co-signed some of its outcomes.

In each section/subsection papers are presented by member country/organization in alphabetical order and, for each country/organization, chronologically.

Only references of openly available written reports, articles and papers are included; oral presentations are not considered.

---

## Table of Contents

---

<b>Section 1</b>	Official GIF PRPPWG reports and deliverables (and their translation in non-English languages).....	<b>2</b>
<b>Section 2</b>	Official/collective GIF PRPPWG articles and papers on the PR&PP Methodology and its applications.....	<b>4</b>
<b>Section 3</b>	Papers and articles authored by GIF PRPPWG members (from one institution) and non-members on the PR&PP Methodology and its applications.....	<b>9</b>
<b>Section 4</b>	Papers and articles authored by individual GIF PRPPWG members and non-members on PR&PP related topics.....	<b>15</b>
<b>Appendix A</b>	Selected IAEA and IAEA-INPRO publications .....	<b>30</b>

## 1. Official GIF PRPPWG reports and deliverables (and their translation in non-English language)

### 1.1 Official reports

GIF PRPPWG, “PR&PP Evaluation: ESRF Full System Case Study Final Report, October, 2009,” GIF/PRPPWG/2009/002. [https://www.gen-4.org/gif/jcms/c\\_40415/esfr-case-study-report](https://www.gen-4.org/gif/jcms/c_40415/esfr-case-study-report)

GIF PRPPWG, “Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems,” Technical Addendum to Revision 5, January 31, 2007, Revised April 13, 2007, GIF/PRPPWG/2006/005-A.

GIF PRPPWG, “Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems,” Revision 6, September 15 2011, GIF/PRPPWG/2011/003. [https://www.gen-4.org/gif/jcms/c\\_40413/evaluation-methodology-for-proliferation-resistance-and-physical-protection-of-generation-iv-nuclear-energy-systems-rev-6](https://www.gen-4.org/gif/jcms/c_40413/evaluation-methodology-for-proliferation-resistance-and-physical-protection-of-generation-iv-nuclear-energy-systems-rev-6)

GIF PRPPWG and SSCs, “GIF Proliferation Resistance and Physical Protection of the Six Generation IV Nuclear Energy Systems,” July 15 2011, GIF/PRPPWG/2011/002. [https://www.gen-4.org/gif/jcms/c\\_40414/proliferation-resistance-and-physical-protection-of-the-six-generation-iv-nuclear-energy-systems](https://www.gen-4.org/gif/jcms/c_40414/proliferation-resistance-and-physical-protection-of-the-six-generation-iv-nuclear-energy-systems)

GIF PRPPWG, “Frequently Asked Questions on Proliferation Resistance and Physical Protection,” GIF/PRPPWG/2013/002. [https://www.gen-4.org/gif/jcms/c\\_44998/faq-on-proliferation-resistance-and-physical-protection](https://www.gen-4.org/gif/jcms/c_44998/faq-on-proliferation-resistance-and-physical-protection)

GIF PRPPWG, *Workshop on the Proliferation Resistance and Physical Protection Evaluation (PR&PP) Methodology for Generation IV Nuclear Energy Systems*, University of California, Berkeley, Berkeley, California, November 4, 2015. [https://www.gen-4.org/gif/jcms/c\\_79016/prppwg-workshop-materials](https://www.gen-4.org/gif/jcms/c_79016/prppwg-workshop-materials)

GIF PRPPWG, *Workshop on the Proliferation Resistance and Physical Protection Evaluation (PR&PP) Methodology for Generation IV Nuclear Energy Systems*, Jeju Island, RoK, November 4, 2016. [https://www.gen-4.org/gif/jcms/c\\_87571/prppwg-presentations-seoul-2016](https://www.gen-4.org/gif/jcms/c_87571/prppwg-presentations-seoul-2016)

GIF PRPPWG, “Bibliography,” Revision 10, September, 2023

GIF PRPPWG and LFR pSSC, “GIF Lead-Cooled Fast Reactor Proliferation Resistance and Physical Protection White Paper”, GIF/PRPPWG/2021/002, Generation-IV International Forum, October 2021. [https://www.gen-4.org/gif/jcms/c\\_196730/lfr-prpp-white-paper-2021-final-22102021-clean2](https://www.gen-4.org/gif/jcms/c_196730/lfr-prpp-white-paper-2021-final-22102021-clean2)

GIF PRPPWG and SFR SSC, “GIF Sodium-Cooled Fast Reactor Proliferation Resistance and Physical Protection White Paper”, GIF/PRPPWG/2021/003, Generation-IV International Forum, October 2021. [https://www.gen-4.org/gif/jcms/c\\_196731/sfr-prpp-white-paper-2021-final-18102021v8](https://www.gen-4.org/gif/jcms/c_196731/sfr-prpp-white-paper-2021-final-18102021v8)

GIF PRPPWG and SCWR SSC, “GIF Supercritical Water-Cooled Reactor Proliferation Resistance and Physical Protection White Paper”, GIF/PRPPWG/2022/002, Generation-IV International Forum, April 2022. [https://www.gen-4.org/gif/jcms/c\\_200150/scwr-prpp-white-paper-2022-final-full-cover-page](https://www.gen-4.org/gif/jcms/c_200150/scwr-prpp-white-paper-2022-final-full-cover-page)

GIF PRPPWG and GFR SSC, “GIF Gas-Cooled Fast Reactor Proliferation Resistance and Physical Protection White Paper”, GIF/PRPPWG/2022/003, Generation-IV International Forum, April 2022. [https://www.gen-4.org/gif/jcms/c\\_200149/gfr-prpp-white-paper-2022-final-full-cover-page](https://www.gen-4.org/gif/jcms/c_200149/gfr-prpp-white-paper-2022-final-full-cover-page)

GIF PRPPWG and VHTR SSC, “Very-High-Temperature Reactor Proliferation Resistance and Physical Protection White Paper”, GIF/PRPPWG/2022/005, Generation-IV International Forum, August 2022.

[https://www.gen-4.org/gif/jcms/c\\_205621/2022-vhtr-prpp-white-paper](https://www.gen-4.org/gif/jcms/c_205621/2022-vhtr-prpp-white-paper)

GIF PRPPWG, “Proliferation Resistance and Physical Protection Crosscutting topics”, GIF/PRPPWG/2022/004, Generation-IV International Forum, December 2022. [https://www.gen-4.org/gif/jcms/c\\_209989/prpp-crosscutting-topics-report-final](https://www.gen-4.org/gif/jcms/c_209989/prpp-crosscutting-topics-report-final)

## 1.2 Translations in non-English languages

Kawakubo, Y., Inoue, N., Senzaki, M., “Introduction to the Revision 5 of Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems (Tentative Japanese Translation),” JAEA-Review 2011-024, December 2011. <http://jolissrch-inter.tokai-sc.jaea.go.jp/pdfdata/JAEA-Review-2011-024.pdf>

Sagara, H., Kawakubo, Y., Inoue, N., “PR&PP evaluation; ESFR full system case study final report (Tentative Japanese Translation),” JAEA-Review 2013-011, January 2014. <http://jolissrch-inter.tokai-sc.jaea.go.jp/pdfdata/JAEA-Review-2013-011.pdf>

Kim, H.D., Ahn, S.K., Jeong, J.S., “Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems (Korean Translation),” KAERI/TS-333/2018, November 2018.

## 2. Official/collective GIF PRPPWG articles and papers on the PR&PP Methodology and its applications

### 2003

Roglans-Ribas, J., Bari, R.A., and Peterson, P.F., "Development of an Assessment Methodology for Proliferation Resistance of Generation IV Systems," in *proceedings of International Workshop on Methodologies for Quantitative Assessment of Nuclear Fuel Cycle Technological Proliferation Resistance*, Obninsk, Russia, June 3-5, 2003.

Peterson, P.F., Bari, R.A. and Roglans-Ribas, J., "Assessment Methodology Development for Proliferation Resistance and Physical Protection of Generation IV Systems," in *proceedings of Global 2003*, New Orleans, LA, USA, November 16-20, 2003.

### 2004

Roglans-Ribas, J., Bari, R.A., Peterson, P.F., Nishimura, R. and Mladineo, S., "A Proliferation Resistance and Physical Protection Assessment Methodology for Use at the Nuclear System Design Stage," in *proceedings of the Seventh International Conference on Facility Operations-Safeguards Interface*, American Nuclear Society, February 29-March 5, 2004.

Bley, D., Bari, R.A., Peterson, P.F., and Roglans-Ribas, J., "Defense in Depth and Risk Management Approach to Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems," in *proceedings of the Seventh International Conference on Probabilistic Safety Assessment and Management*, Berlin, Germany, June 14-18, 2004.

### 2005

PRPPWG members and other contributors, "Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems," Presented by Cojazzi, G.G.M., *27th ESARDA Annual Meeting Symposium on Safeguards and Nuclear Material Management*, IEE Savoy Place, London, United Kingdom, May 10-12, 2005.

Bari, R. A., Peterson, P.F., Nishimura, R., and Roglans-Ribas, J., "Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems," in *proceedings of Global 2005*, Tsukuba, Japan, October 9-13, 2005.

### 2006

Bari, R.A., Nishimura, R., Peterson, P.F., Roglans-Ribas, J., Bjornard, T., Cazalet, J., Cojazzi, G.G.M., Delaune, P., Golay, M., Haas, E., Rochau, G., Renda, G., Senzaki M., Therios, I.U., and Zentner, M.D., "Evaluation Methodology for Proliferation Resistance and Physical protection of Generation IV Nuclear Energy Systems: an Overview," in *proceedings of the 8th International Conference On Probabilistic Safety Assessment and Management (PSAM 8)*, New Orleans, LA, USA, May 14-19, 2006.

PRPP Exec. Group members and other contributors, "Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems," Document prepared by G. Cojazzi, In: *Application of System Analysis and RAMS to Security of Complex Systems. Proceedings of ESReDA 29th Seminar, October 25-26, 2005*, G.G.M. Cojazzi Editor, ISBN: 92-79-01228-2, ISSN 1018-5593, Catalogue number: LB-NA-22112-EN-C, DG Joint Research Centre, Printed in Italy, EUR 22112 EN, 2006.

## 2007

Cojazzi, G.G.M., Renda, G., Sevini, F., Bari, R.A., Peterson, P.F., Nishimura, R., Therios, I.U., and Bertel, E., "GIF Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems: Overview and Perspectives," in *conference proceedings of The 29th Annual Meeting; Symposium on Safeguards and Nuclear Material Management*, L.V. Bril, A. De Luca, Editors. Luxembourg (Luxembourg): Office for Official Publications of the European Commission; 2007. pp.1-14. JRC38039.

## 2008

Pomeroy, G., Bari, R.A., Wonder, E.F., and Zentner, M.D., "Approaches to Evaluation of Proliferation Resistance of Nuclear Energy Systems," in *proceedings of the INMM 49<sup>th</sup> Annual Meeting*, Nashville, TN, USA, July 13-17, 2008.

Bari, R.A., "Generation IV Proliferation Resistance and Physical Protection Methods and Applications," in *proceedings of the 16th Pacific Basin Nuclear Conference*, Aomori, Japan, October 13-18, 2008.

Cojazzi, G.G.M., Renda, G., Sevini, F., Bari, R.A., Peterson, P.F., Nishimura, R., Therios, I.U., and Bertel, E., "GIF Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems: Overview and Perspectives," *ESARDA Bulletin - Special Issue on Proliferation Resistance* (39); 2008. p. 55-68. JRC47411.

Cojazzi, G.G.M., Renda, G., and Choi, J., "Applying the GIF PRPP Methodology for a Qualitative Analysis of a Misuse Scenario in a Notional Gen IV Example Sodium Fast Reactor," in *proceedings of the INMM 49th Annual Meeting*, Nashville, TN, USA, July 13-17, 2008. pp. 1-8. JRC46063.

Pomeroy, G., Bari, R.A., Wonder, E.F., Zentner, M.D., Haas, E., Killeen, T., Cojazzi, G.G.M., and Whitlock, J.J., "Approaches to Evaluation of Proliferation Resistance of Nuclear Energy Systems," in *proceedings of the INMM 49th Annual Meeting*, Nashville, TN, USA, July 13-17, 2008. pp. 1-8. JRC46103.

## 2009

Zentner, M.D., Pomeroy, G., Bari, R.A., Cojazzi, G.G.M., Haas E., Killeen T, Peterson, P.F., Whitlock, J.J., and Wonder, E.F., "Interpretation and Use of the Results of Proliferation Resistance Studies," in *proceedings of the INMM 50th Annual Meeting*, Atlanta, GA, USA, July 12-16, 2009. JRC54038.

Bari, R.A., "Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology: Objectives, Accomplishments, and Future Directions," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

Boyer, B., "Implications for Advanced Safeguards Derived from PR&PP Case Study Results," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

Cojazzi, G.G.M., Hassberger, J., and Renda, G., Applying the PR and PP Methodology for a Qualitative Assessment of A Misuse Scenario in a Notional Generation IV Example Sodium Fast Reactor. Assessing Design Variations, in *proceedings of Global 2009*, Paris, France, September 6-11, 2009. Omnipress; 2009, pp. 2421-2430, JRC50665.

Khalil, H., Peterson, P.F., Bari, R.A., Fiorini, G-L., Leahy, T., and Versluis, R., "Integration of Safety and Reliability with Proliferation Resistance and Physical Protection for Generation IV Nuclear Energy Systems," in *the proceedings of Global 2009*, Paris, France, September 6-11, 2009.

Zentner, M.D., Pomeroy, G., Bari, R.A., Cojazzi, G.M.G., Haas, E., Killeen, T., Peterson, P.F., Whitlock, J.J, and Wonder, E.F., "Interpretation and Use of the Results of Proliferation Resistance Studies," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

Bari, R.A., Peterson, P.F., Therios, I.U., and Whitlock, J.J., "Proliferation Resistance and Physical Protection Evaluation Methodology Development and Applications," in *proceedings of the Generation IV International Forum Symposium*, Paris, France, September 9-10, 2009.

## 2010

Cojazzi, G.G.M., Bari, R.A., Bertel, E., Peterson, P.F., Sevini, F., Therios, I.U., Whitlock, J.J., and Zentner, M.D., "The GIF Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology: Overview and Perspectives," in *proceedings of ENC 2010*, Barcelona, Spain, May 30-June 2, 2010. Transactions - ISBN 978-92-95064-09-6. Brussels (Belgium): European Nuclear Society; 2010. p. 5. JRC58624.

## 2012

The special issue on Safeguards of the Journal Nuclear Technology of July 2012, vol. 179, Number 1, contains several papers related to the PRPP methodology some of them are explicitly recalled hereafter:

Bari, R.A., "Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology: Objectives, Accomplishments, and Future Directions," *Nuclear Technology*, vol. 179, pp. 35-44, July 2012.

Boyer, B., Erpenbeck, H., and Scherer, C., "Implications for Advanced Safeguards Derived from a Proliferation Resistance and Physical Protection Case Study for a Generation IV Nuclear Energy System", *Nuclear Technology*, vol. 179, pp. 61-69, July 2012.

Cojazzi, G.G.M., Renda, G., Choi, J., and Hassberger, J., "Applying the GIF-PR&PP methodology for a qualitative analysis of a misuse scenario in a notional Generation IV Example Sodium Fast Reactor," *Nuclear Technology*, vol. 179, pp. 76-90, July 2012. JRC62419.

Khalil, H., Peterson, P.F., Bari, R.A., Fiorini, G-L., Leahy, T., and Versluis, R., "Integration of Safety and Reliability with Proliferation Resistance and Physical Protection for



Generation IV Nuclear Energy Systems,” *Nuclear Technology*, vol. 179, pp.112-116, July 2012.

Whitlock, J.J., Inoue, N., Senzaki, M., Bley, D., and Wonder, E.F., “Proliferation Resistance of a Hypothetical Sodium Fast Reactor under an Assumed Breakout Scenario,” *Nuclear Technology*, vol. 179, pp. 91-96, July 2012.

Zentner, M.D., Pomeroy, G., Bari, R.A., Cojazzi, G., Haas, E., Killeen, T., Peterson, P., Whitlock, J.J., and Wonder, E.F., “Interpretation and Use of the Results of Proliferation Resistance Studies,” *Nuclear Technology*, vol. 179, pp. 106-111, July 2012.

Bari, R.A., Whitlock, J.J., Therios, I.U., and Peterson, P.F., “Proliferation Resistance and Physical Protection Working Group: Methodology and Applications,” in *proceedings of GIF Symposium*, San Diego, CA, USA, 14-15 November 2012. [https://www.gen-4.org/gif/jcms/c\\_40359/2012-annual-report-gif-symposium-proceedings](https://www.gen-4.org/gif/jcms/c_40359/2012-annual-report-gif-symposium-proceedings)

## 2014

Whitlock, J.J., Bari, R.A., Peterson, P.F., Therios, I.U., Cojazzi, G.G.M., Bertel, E., Hori, K., Padoani, F., Renda, G., Sprinkle, J., Haas, E., Cazalet, J., Kawakubo, Y., Kim, H.D., Kwon, E.H., Yoo, H.S., Chang, S.Y., Chebeskov, A., Pshakin, G., Pilat, J., and Moses, D., “Status of the Gen-IV Proliferation Resistance and Physical Protection (PRPP) Evaluation Methodology,” in *proceedings of IAEA: Symposium on International Safeguards: Linking Strategy, Implementation and People*, IAEA, editor, vol. IAEA-CN-20. Vienna (Austria): IAEA; 2014. p. 408 - paper n° IAEA CN-220 #289.

## 2015

Hori, K., “Proliferation Resistance and Physical Protection (PR&PP) Working Group Activities,” Presented at: *Session I-2 2015 GIF Symposium*, Chiba, Japan, May 19, 2015. [https://www.gen-4.org/gif/upload/docs/application/pdf/2015-06/1-2-1\\_hori\\_prppwg\\_gif\\_symposium\\_may\\_2015\\_draft\\_v32.pdf](https://www.gen-4.org/gif/upload/docs/application/pdf/2015-06/1-2-1_hori_prppwg_gif_symposium_may_2015_draft_v32.pdf)

Cazalet, J., Bari, R., Peterson P., Whitlock J., Therios I., Cojazzi G, Renda G., “Status of the Generation IV Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology,” *GLOBAL 2015 21st International Conference and Exhibition: ‘Nuclear Fuel Cycle for a Low-Carbon Future’*; SFEN; 2015. p. 5460.

## 2016

Cojazzi G.G.M., Renda G., Bari R.A., Whitlock J., Peterson P.F., Therios, I.U., and Cazalet J., “The GIF Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology: Status and Outlook,” *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference: Bridging the Gaps in Nuclear Nonproliferation*, September 25-30, 2016, Santa Fe, NM, USA.

## 2017

Chebeskov A., Cojazzi G.G.M., Bari R., Whitlock J., Peterson P., Cazalet J., Kwon E., and Hori K., “The GIF Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology: Status, Applications and Outlook,” *International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)*. June 26-29, 2017, Yekaterinburg, Russian Federation.

## 2018

Bari, R., Webinar Series 20: Proliferation Resistance and Physical Protection of Gen IV Reactor Systems, 23 May 2018. [https://www.gen-4.org/gif/jcms/c\\_98430/dr-bari-webinar-annoucement-rev0](https://www.gen-4.org/gif/jcms/c_98430/dr-bari-webinar-annoucement-rev0)

Cojazzi, G.G.M, Renda, G., Cheng, L., Peterson, P., Bari, R., Boyer, B., Chebeskov, A., Edwards, G., Henderson, D., Hervieu, E., Hori, K., Kim, D. and Padoani, F., “The GIF Proliferation Resistance and Physical Protection working group (PRPPWG): achievements and perspectives,” in *Atoms for the Future 2018 and GIF Symposium*, 16-17 October 2018, UIC Paris, *Atoms for the Future 2018 and GIF Symposium*, 2018, JRC111512.

Cojazzi, G., Renda, G., Cheng, L., Peterson, P., Bari, R., Henderson, D., Boyer, B., Chebeskov, A., Choe, K., Cipiti, B., Edwards, G., Hervieu, E., Hori, K., Kim, H. and Padoani, F., “The GIF Proliferation Resistance and Physical Protection methodology applied to GEN IV system designs: some reflections,” *IAEA Safeguards Symposium 2018*, IAEA, Vienna, 5-9 November 2018, (IAEA-CN-127), JRC111517.

## 2019

Cheng, L., Cojazzi, G., Renda, G., Cipiti, B., Boyer, B., Edwards, G., Hervieu, E., Hori, K., Peterson, P. and Kim, H., “The GIF Proliferation Resistance and Physical Protection methodology applied to GEN IV system designs: an update,” In: *ESARDA`19: ESARDA Symposium 2019 - 41st Annual Meeting*, 14-16 May 2019, Regina Palace Hotel, Corso Umberto I, 29, Stresa (VB), Italy, JRC115610.

Cipiti, B., Cojazzi, G., Cheng, L., and Renda, G., “An Update of the GIF Proliferation Resistance and Physical Protection White Papers for the Six Gen IV Systems,” In: *9<sup>th</sup> INMM/ESARDA/INMMJ Joint Workshop*, 7-10 October 2019, Plaza HEISEI, Tokyo, Japan.

## 2021

Cheng, L., Cojazzi, G., Renda, G., Cipiti, B., Boyer, B., Edwards, G., Hervieu, E., Hori, K., Kim, H., Tomooki, S. and Van Der Ende, B., “White Papers on Proliferation Resistance and Physical Protection Characteristics of the Six GEN IV Nuclear Energy Systems”, In: *INMM and ESARDA 2021 Joint Annual Meeting*, 21-26 August 2021, Online, INMM and ESARDA 2021 Joint Annual Meeting, 2021. <https://resources.inmm.org/annual-meeting-proceedings/white-papers-proliferation-resistance-and-physical-protection>

## 2022

Cipiti, B.B., Cheng, L.Y., Renda, G., Cojazzi, G.G.M., Boyer, B., van der Ende, B., Edwards, G., Hesketh, K., Nguyen, F., Hervieu, E., Hori, K., Shiba, T., *Proliferation Resistance and Physical Protection White Papers of the six Generation IV E. Nuclear Energy Systems and Crosscutting Topics: 2021-2022 Update*, *IAEA Safeguards Symposium*, 2022, IAEA, Vienna, November 2022, (IAEA-CN-303).

### **3. Papers and articles authored by GIF PRPPWG members (from one institution) and non-members on the PR&PP Methodology and its applications**

#### **3.1 Canada**

##### **2010**

Whitlock, J.J., "Incorporating the GIF-PRPP Proliferation Resistance Methodology in Reactor Design", in *proceedings of the INMM 51st Annual Meeting*, Baltimore, MD, USA, July 11-15, 2010.

#### **3.2 Euratom**

##### **2012**

Alim, F., Cojazzi, G.G.M., and Renda, G., Proliferation Resistance Considerations of the Collaborative Project on the European Sodium Fast Reactor (CP-ESFR). Poster presentation in: *ITU-INE Research Fellows` Day*; 22 June 2012; Fortbildungszentrum für Technik und Umwelt (FTU) (Karlsruhe (Germany); EC-JRC-ITU and FTU (Organiser), 2012. JRC72336.

Alim, F., Cojazzi, G.G.M., and Renda, G., "The Collaborative Project on the European Sodium Fast Reactor and its Proliferation Resistance Evaluation," in *proceedings of ENC 2012*, Manchester, United Kingdom, December 9-12, 2012. ENS, editor. ENC 2012, European Nuclear Conference. Vol. Transactions Civil Society. Brussels (Belgium): ENS; 2012. p. ENC2012-A0249. JRC71856.

##### **2013**

Alim, F., Cojazzi, G.G.M., and Renda, G., "Proliferation Resistance Considerations within the Collaborative Project for a European Sodium Fast Reactor", in *proceedings of 35th ESARDA Annual Meeting*, Bruges, Belgium, May 27-30, 2013. Conference Proceedings: F. Sevini, Editor. ESARDA Symposium 2013, Ispra, Italy: European Commission, Joint Research Centre, ITU; 2013. JRC79455.

##### **2014**

Renda, G., Cojazzi, G.G.M., and Alim, F., "Proliferation Resistance and Material type considerations within the collaborative project for a European Sodium Fast Reactor," European Commission Joint Research Centre, EUR 26996, Luxembourg (Luxembourg): Publications Office of the European Union; 2014.

## 2015

Renda, G., Alim, F., and Cojazzi G.G.M., "Proliferation Resistance and Material Type Considerations within the collaborative project for a European Sodium Fast Reactor," *ESARDA Bulletin*; Luxembourg (Luxembourg): Publications Office of the European Union; 2015, p. 124-143.

### 3.3 France

## 2009

Carré, F., and Felix, S., "Proliferation Resistance and Physical Protection in the Generation IV International Forum System Design Concepts," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

### 3.4 Japan

## 2008

Kuno, Y., Inoue, N., and Senzaki, M., "Nuclear proliferation-resistance and safeguards for future nuclear fuel cycle," *Journal of nuclear Materials*, 385-1, pp.153-156, July 2008.

Senzaki, M., Inoue, N., and Kuno, Y., "The Japanese PR&PP program," in *proceedings of 16th Pacific Basin Nuclear Conference (PBNC-16)*, Aomori, Japan, October 13-18, 2008.

## 2009

Kuno, Y., Inoue, N., and Senzaki, M., "Advanced safeguards and proliferation resistance of the future nuclear fuel cycle systems," in *proceedings of INMM 50th Annual Meeting*, Tucson, AZ, USA, July 12-16 2009.

Senzaki, M., Inoue, N., Kuno, Y., and Namba, T., "Nuclear Nonproliferation Technology Development Program for Future Nuclear Energy Systems in Japan," in *proceedings of Global 2009*, September 6-11, Paris, France.

Kuno, Y., Senzaki, M., and Inoue, N., "Role of safeguards in proliferation resistance for the future nuclear fuel cycle systems," in *proceedings of International Conference on Fast Reactors and Related Fuel Cycles (FR 2009)*, Kyoto, Japan, December 7-11 2009.

## 2010

Inoue, N., and Kuno, Y., "Safeguards System of Advanced Aqueous Reprocessing for Nuclear Proliferation Resistance Enhancement," *Transactions of the Atomic Energy Society of Japan*, vol. 9, No. 3, pp. 305-317 (In Japanese), 2010.

Inoue, N., Kaji, N., Suda, K., Kawakubo, Y., Suzuki, M., Koyama, T., Kuno, Y., and Senzaki, M., "A Consideration on proliferation resistance of a FBR fuel cycle system," in *proceedings of the INMM 51st Annual Meeting*, Baltimore, MD, USA, July 11-15, 2010.

Inoue, N., Kawakubo, Y., Seya, M., Suzuki, M., Kuno, Y., and Senzaki, M., "The Status of proliferation resistance evaluation methodology development in GEN IV International

Forum,” in *proceedings of 31st INMM Japan Chapter Annual Meeting*, Tokai, Japan, December 2-3, 2010.

## 2011

Sagara, H., Inoue, N., Kawakubo, Y., and Watahiki, M., “Report and analysis on "PR&PP Evaluation; Example Sodium Fast Reactor Full System Case Study", in *conference proceedings of 32nd INMM Japan Chapter Annual Meeting*, Tokyo, Japan, November 10-11, 2011.

## 3.5 Republic of Korea

### 2010

Kim, H-D., Chang, H-L., and Ko, W-I., “Proliferation Resistance Activities in ROK”, in *proceedings of INMM 51st Annual Meeting*, Baltimore, MD, USA, July 11-15, 2010.

### 2012

Ahn, S-K., Shin, H-S., and Kim, H-D., “Safeguardability Analysis for an Engineering Scale Pyroprocess Facility,” *Journal of Nuclear Science and Technology*, vol. 49, No. 6, pp. 632-639, June, 2012.

### 2014

Kim, H-M., Ahn S-K., Kwon, E-H., and Kim, H-D., “Review of GIF PR&PP Evaluation Case Study for Application to Pyroprocessing,” *Transactions of the Korean Nuclear Society Spring Meeting*, Jeju, Korea, May 29-30, 2014.

Ahn, S-K., Kwon, E-H., Chang, H-L., and Kim H-D., “A Proliferation Resistance Evaluation for a Pyroprocessing Facility Design,” in *proceedings of INMM 55th Annual Meeting*, Atlanta, GA, USA, July 19-25, 2014.

### 2015

Ahn, S-K., Seo C-S., Kwon E-H., and Kim H-D., “Linkage Options between Unit Process to Enhance Proliferation Resistance of Pyroprocessing,” *Annals of Nuclear Energy*, vol.75, pp. 184-188, 2015.

## 3.6 United States

### 2005

Yue, M., Cheng, L., Papazoglou, I.A., Azarm, M.A., and Bari, R.A., “Calculations of Proliferation Resistance for Generation III Nuclear Energy Systems,” in *proceedings of Global 2005*, Tsukuba, Japan, October 9-13, 2005.

Yue, M., Cheng, L., and Bari, R.A., “Markov Methodology for Proliferation Resistance of Nuclear Energy Systems,” in *proceedings of the 29th European Safety, Reliability and Data Association (ESReDA) Seminar: Systems Analysis for a More Secure World*, Ispra, Italy, October 25-26, 2005.

**2006**

Yue, M., Cheng, L., and Bari, R.A., "Methodology for Proliferation Resistance for Advanced Nuclear Energy Systems," in *proceedings of the International Conference on Probabilistic Safety Assessment and Management (PSAM8)*, New Orleans, LA, USA, May 14-18, 2006.

**2008**

Bari, R.A., "Framework for Proliferation Resistance and Physical Protection for Nonproliferation Impact Assessments," BNL-80083-2008, March, 2008.

Yue, M., Cheng, L., and Bari, R.A., "Markov Model Application to Proliferation Risk Reduction of an Advanced Nuclear System," in *proceedings of the INMM 49th Annual Meeting*, Nashville, TN, USA, July 13-17, 2008.

Yue, M., Cheng, L., and Bari, R.A., "Markov Based Approach for Proliferation Resistance Assessment of Nuclear Energy Systems," *Nuclear Technology*, 162, 88, pp. 26-44, 2008.

**2009**

Bari, R. A., Cheng, L., Phillips, J., Pilat, J., Rochau, G., Therios, I.U., Wigeland, R., Wonder, E.F., and Zentner, M.D., "Proliferation Risk Reduction Study of Alternative Spent Fuel Processing Technologies," in *proceedings of the INMM 50th Annual Meeting*, Tucson, AZ, July 12-16, 2009.

Yue, M., Cheng, L., and Bari, R.A., "Relative Proliferation Risks for Different Fuel Cycle Arrangements," *Nuclear Technology*, 165, pp. 1-17, 2009.

**2010**

Zentner, M.D., Therios, I.U., Bari, R.A., Chang, L., Yue, M., Wigeland, R. Hassberger, J., Boyer, B., and Pilat, J., "An Expert Elicitation Based Study of the Proliferation Resistance of a Suite of Nuclear Power Plant," in *proceedings of the INMM 51st Annual Meeting*, Baltimore, MD, USA, July 11-15, 2010.

Bari, R.A., Book Chapter contributor on "Proliferation Resistance and Safeguards," *Handbook of Nuclear Engineering*, edited by Cacuci, D., Springer USA and Springer, DE, ISBN 978-0-387-98130-7, 2010.

**2012**

Bari, R.A., Johnson, S.J., Hockert, J., Wigeland, R., Wonder, E.F., and Zentner, M.D., "Overview of the Facility Safeguardability Analysis (FSA) Process," PNNL-21698, Pacific Northwest Laboratories, August 2012.

**2013**

Yue, M., Cheng, L., and Bari, R.A., "Modeling and Evaluating Proliferation Resistance of Nuclear Energy Systems for Strategy Switching Proliferation," *Annals of Nuclear Energy*, vol. 54, pp. 11-26, 2013.

**2016**

Cheng, L., Yue, M., and Bari, R.A., "Markov Approach to Evaluate Physical Protection of Nuclear Energy Systems," *IAEA International Conference on Nuclear Security: Commitments and Actions*, December 2016.

Pilat, J., "Proliferation Resistance Redux," *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference: Bridging the Gaps in Nuclear Nonproliferation*, September 25-30, 2016, Santa Fe, NM, USA.

**2020**

Cheng, L.-Y., and Bari, R.A., Book Chapter contributors on "Proliferation Resistance and Physical Protection (PR&PP) in Small Modular Reactors (SMRs)," *Handbook of Small Modular Nuclear Reactors*, Second Edition, edited by D. Ingersoll and M. Carelli, Woodhead Publishing Limited, An imprint of Elsevier Science and Technology Books, 2020.

**3.7 Paper by Non members****2011**

Kuno, Y., Oda, T., Tanaka, S., Fukasawa, T., Tanabe, T., Tamai, H., Horio, K., Hamasaki, M., Shinohara, N., and Ikeda, Y., "Study on effectiveness assessment of proliferation resistance," *INMM 52nd Annual Meeting*, July 17-21 2011, Palm desert, California, USA.

Ikegame, K., Kuno, Y., and Tanaka, S., "Evaluation of Proliferation Resistance of Uranium Enrichment Technologies by Using GIF PR&PP Evaluation Method," in *proceedings of 32nd Annual Meeting of INMM Japan Chapter* (In Japanese), 2011.

**2013**

Glaser, A., Berzak Hopkins, L., and Ramana, M.V., "Resource Requirements and Proliferation Risks Associated with Small Modular Reactors," *Nuclear Technology*, 184 (1), pp.121-129, October 2013.

Rossa R., van der Meer, K., and Borella, A., "Application of the PR&PP methodology to the MYRRHA research facility", *ESARDA Bulletin*, No. 49, pp. 82-94. 2013

**2014**

"Handbook of Small Modular Nuclear Reactors", edited by M. Carelli and D. Ingersoll, Woodhead Publishing Limited, An imprint of Elsevier Science and Technology Books, 2014.

Rossi, F., "Application of the GIF PR&PP Methodology to a Fast Reactor System for a Diversion Scenario," in conference proceedings: IAEA, editor. *IAEA: Symposium on International Safeguards: Linking Strategy, Implementation and People*. Vol. IAEA-CN-20. Vienna (Austria): IAEA; 2014. p. Page 360 - paper n° IAEA CN-220 #271.

**2015**

Rossi F., “Application of the GIF PR&PP methodology to a commercial fast reactor system for a preliminary analysis of PR scenarios,” *ESARDA Bulletin*; Luxembourg (Luxembourg): Publications Office of the European Union; 2015, pp. 98-113.

**2020**

“Handbook of Small Modular Nuclear Reactors,” Second Edition, edited by D.Ingersoll and M. Carelli, Woodhead Publishing Limited, An imprint of Elsevier Science and Technology Books, 2020.

WINS, “Security of Advanced Reactors,” WINS Special Report Series, World Institute for Nuclear Security, August 2020.

Allibert, M., Merle, E., Delpéch, S., Gerardin, D., Heuer, D., Laureau, A., and Moreau, S., “Preliminary proliferation study of the molten salt fast reactor,” *EPJ Nuclear Sci. Technol.*, vol. 6, 5, 2020.



#### **4. Papers and articles authored by individual PRPPWG members and non-members on PR & PP related topics**

##### **4.1 Canada**

###### **2010**

Casterton, J.A., Ellacott, T., Kent, M., “Safeguards-by-Design: The Canadian Experience,” Canadian Nuclear Safety Commission, in *proceedings of IAEA Symposium on Safeguards*, Vienna, Austria, November 1-5, 2010.

Whitlock, J.J., “Application Of Safeguards-by-Design to a Reactor Design Process,” in *proceedings of IAEA Symposium on Safeguards*, Vienna, Austria, November 1-5, 2010.

###### **2022**

Buijs, R.I.A., Luxat, J., “Assessment of the material attractiveness and reactivity feedback coefficients of various fuel cycles for the Canadian concept of Super-Critical Water Reactors”, *Nuclear Engineering and Technology*, Volume 54, Issue 7, July 2022, Pages 2660-2669, <https://doi.org/10.1016/j.net.2022.01.036>

##### **4.2 People’s Republic of China**

###### **2020**

Wu, J., Ma, Y., Yu, C., Zou, C., Cai, X., and Chen, J., “Nuclear non-proliferation review and improving, proliferation resistance assessment in the future”, Special Issue Review Paper, *International Journal of Energy Research*, 5 April 2020.

##### **4.3 Euratom**

###### **2003**

Cojazzi, G.G.M., and Renda, G., “Applying systems analysis and risk based approaches to assess nuclear safeguards and non-proliferation regimes,” in *proceedings of ESARDA Symposium*, Stockholm, Sweden, May 2003.

###### **2004**

Cojazzi, G.G.M., and Renda, G., “Safeguards Assessment Methodologies: Review and Perspectives from a Systems Analysis Point of View,” EUR 21307 EN, September 2004.

**2005**

Cojazzi, G.G.M., and Renda, G., "Proliferation Resistance Characteristics for Civilian Nuclear Fuel Cycles Assessments," in *proceedings of 27th ESARDA Annual Meeting Symposium on 'Safeguards and Nuclear Material Management'*, IEE Savoy Place, London, May 10-12, 2005.

Cojazzi, G.M.G., Contini, S., and Renda, G., "FT Analysis in Security Related Applications: Challenges and Needs," in *proceedings of the 29th ESARDA Seminar*, October 25-26, 2005. Proceedings: A. Lannoy, G.G.M. Cojazzi, editors. Luxembourg (Luxembourg): Office for Official Publications of the European Communities; 2005. pp. 345-366. JRC31835.

**2007**

Cojazzi, G.G.M., Renda, G., and Sevini, F., "Proliferation Resistance Characteristics of Advanced Nuclear Energy Systems: a Safeguardability Point of View," in *conference proceedings of Symposium on Safeguards and Nuclear Material Management*, L.V. Bril, editor Luxembourg (Luxembourg): Office for Official Publications of the European Commission; 2007, p. 1-12. JRC37861.

Sevini, F., Cojazzi, G.G.M., and Renda, G., "Proliferation Resistance and Physical Protection Robustness Characteristics of Innovative and Advanced Nuclear Energy Systems," in *conference proceedings of the 29th ESARDA Annual Meeting*, L. V. Bril, editor. Luxembourg (Luxembourg): Office for Official Publications of the European Commission; 2007. pp. 1-16. JRC38146.

**2008**

Cojazzi, G.G.M., Renda, G., and Sevini, F., "Proliferation Resistance Characteristics of Advanced Nuclear Energy Systems: a Safeguardability Point of View," *ESARDA Bulletin - Special Issue on Proliferation Resistance* (39); 2008, pp. 31-40. JRC47408.

Sevini, F., Cojazzi, G.G.M., and Renda, G., "Proliferation Resistance and Physical Protection Robustness Characteristics of Innovative and Advanced Nuclear Energy Systems," *ESARDA Bulletin - Special Issue on Proliferation Resistance* (39); 2008. pp. 3-20. JRC47483.

Renda, G., "Resisting Nuclear Proliferation Through Design - A Systems Approach to Nuclear Proliferation Resistance Assessment," Thesis. Bristol (United Kingdom): University of Bristol; 2008. JRC58146.

Contini, S., Cojazzi, G.G.M., and Renda, G., "On the Use of Non-Coherent Fault Trees in Safety and Security Studies," *Reliability Engineering and System Safety*, vol. 93 (12); 2008, pp. 1886-1895. JRC38257.

**2009**

Renda, G., Contini, S., and Cojazzi, G.G.M., "On the Methods to Model and Analyze Attack Scenarios with Fault Trees," in *conference proceedings of the ESREL 2008 Annual Conference*, S. Martorell, C. Guedes Soares, J. Barnett, editors. London (United Kingdom): Taylor and Francis Group; 2009. pp. 3135-3142. JRC44427

**2010**

van der Meer, K., Turcanu, C., and Carchon, R., "Non-Proliferation Assessment of the XT-ADS MYRRHA". *ESARDA Bulletin*, No. 44, June 2010.

Hedberg, M., Luetzenkirchen, K., and Mayer, K., "Proliferation Resistance and Safeguards". In: Dan Gabriel Cacuci, editor. *Handbook of Nuclear Engineering*. Springer, pp. 3421-3538, 2010. JRC62609.

Sevini, F., Peerani, P., Janssens, W., Cojazzi, G. G.M., Boella, M., Koutsoyannopoulos, C., Chare, P., and Killeen, T., "EURATOM's contribution to the IAEA Safeguards by Design process," in *proceedings of INMM 51st Annual Meeting*, Baltimore, MD, USA, July 11-15, 2010.

Sevini, F., Peerani, P., Janssens, W., Boella, M., Koutsoyannopoulos, C., Chare, P., and Killeen, T., "Development of IAEA High Level Guidelines for Designers and Operators - Safeguards-By-Design," in *proceedings of IAEA Safeguards Symposium 2010*, Vienna, Austria, November 1-5, 2010.

Boella, M., Koutsoyannopoulos, C., Chare, P., Killeen, T., Sevini, F., Peerani, P., and Janssens, W., "The Safeguards-by-Design Process for a More Effective and Efficient Safeguards Implementation," in *proceedings of ENC 2010*, Barcelona, Spain, May 30-June 2, 2010. Conference Proceedings: ENC 2010 Transactions - ISBN 978-92-95064-09-6. Brussels (Belgium): European Nuclear Society; 2010.

**2011**

Starflinger, J., Schulenberg, T., Bittermann, D., Andreani, T., and Maraczy, C., "Assessment of the High Performance Light Water Reactor Concept," *The 5th Int. Sym. SCWR (ISSCWR-5)*, Vancouver, British Columbia, Canada, March 13-16, 2011.

Sevini, F., Renda, G., and Sidlova, V., "A Safeguardability Check-List for Safeguards by Design," in *proceedings of 33<sup>rd</sup> ESARDA Symposium*, Budapest, Hungary, May 16-19, 2011, ISBN 978-92-79-18525-0.

Sevini, F., Renda, G., and Sidlova, V., "A Safeguardability Check-List for Safeguards by Design," *ESARDA Bulletin*, vol. 48, pp. 79-88. December 2011.

**2012**

Renda, G., Alim, F., Cojazzi, G.G.M., and Peerani, P., "Material type and safeguardability considerations for innovative sodium fast reactors fuel including different minor actinides compositions," in *proceedings of INMM 53rd Annual Meeting*, Orlando, FL, USA, July 15-19, 2012. JRC72399.

Abousahl, S, Rangelova, V., Janssens, W., De Cort, M., Waetjen, U., Cojazzi, G.G.M., Marin Ferrer, M., Sequeira, V., Wallenius, M., Mayer, K., and Hedberg, M., "Technical Synergies between Nuclear Safety and Security," in *proceedings of INMM 53rd Annual Meeting*, Orlando, FL, USA, July 15-19, 2012. JRC78335

Janssens, W., Luetzenkirchen, K., Emons, H., Abousahl, S., Aregbe, Y., Berndt, R., Cojazzi, G.G.M., Hedberg, M., Littmann, F., Mayer, K., Peerani, P., and Sequeira, V., “Recent JRC Achievements and Future Challenges in Verification for Nuclear Safeguards and Nonproliferation,” *JNMM, Journal of the Institute of Nuclear Materials Management* 40 (4), pp. 11-23, 2012. JRC83322

## 2013

Abbas, K., Cojazzi, G.G.M., Mercurio, G., Peerani, P., and Renda, G., “Proliferation resistance features of reprocessed uranium,” in *proceedings of 35th ESARDA symposium on Safeguards and Nuclear Non-Proliferation*, Bruges, Belgium, May 27-30, 2013.

Abbas, K., Cojazzi, G.G.M., Mercurio, G., Peerani, P., and Renda, G., “Proliferation resistance features of reprocessed uranium,” *ESARDA Bulletin*, No. 49, pp. 75-81, June 2013.

## 2018

Maiani, L., Abousahl, S., and Plastino, W., Editors, “International Cooperation for Enhancing Nuclear Safety, Security, Safeguards and Nonproliferation—60 Years of IAEA and EURATOM,” in *proceedings of the XX Edoardo Amaldi Conference*, Accademia Nazionale dei Lincei, Rome, Italy, October 9–10, 2017, Springer Proceedings in Physics 206, 2018.

## 2019

Glinatsis, G., Gugiu, D., and Padoani, F., “Improvement of Proliferation Resistance based on ‘By-Design’ Approach,” *Journal of Nuclear Research and Development*, No. 17, May 2019.

## 2022

Kovacic, D., Renda, G., “Considering International Safeguards during the Design of Advanced Reactors and Interfaces with Safety and Security”, *Proceedings of the International Conference on Topical Issues in Nuclear Installation Safety: Strengthening Safety of Evolutionary and Innovative Reactor Designs*, Vienna, 2022.

## 4.4 France

### 2004

Grenèche, D., and Xerri, C., “How useful can Probability Risk Assessment tools be for Proliferation Resistance assessment,” in *proceedings of the 7th International Conference on Probabilistic Safety Assessment (PSAM 7)*, Berlin, Germany, June 14-18, 2004.

### 2008

Grenèche, D., “A Practical Tool to Assess the Proliferation Resistance of Nuclear Systems: the SAPRA Methodology,” *ESARDA Bulletin - Special Issue on Proliferation Resistance*, N° 39, pp. 41-49, October 2008.

**2009**

Grenèche, D., and Boucher, L., "A Status of Methodology Developments in France for Assessing Proliferation Resistance of Nuclear Energy Systems," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

**4.5 Japan****2011**

Kawakubo, Y., Inoue, N., Watahiki, M., Suzuki, M., Kuno, Y., and Mochiji, T., "Study of response time for proliferation time evaluation", In: *Transactions of the American Nuclear Society Winter Meeting*, Washington, DC, USA, October 30-November 3, 2011.

**4.6 Republic of Korea****2005**

Kang, J., "Analysis of nuclear proliferation resistance," *Progress in Nuclear Energy*, vol. 47, Issues 1-4, pp. 672-684, 2005.

**2006**

Yim, M-S., "Nuclear nonproliferation and the future expansion of nuclear power," *Progress in Nuclear Energy*, vol. 48, Issue 6, pp. 504-524, August 2006.

**2007**

Kang, J., "Proliferation resistance of PEACER system," *Progress in Nuclear Energy*, vol. 49, Issue 2, pp. 115-119, March 2007.

**2008**

Li, J., Yim, M-S., and McNeils, D.N., "Assessing the proliferation resistance of nuclear fuel cycle systems using a fuzzy logic-based barrier method," *Nuclear Technology*, vol. 162, Number 3, pp. 293-307, June 2008.

**2009**

Kwon, E-H., and Ko, W.I., "Evaluation method of nuclear nonproliferation credibility," *Annals of Nuclear Energy*, vol. 36, Issue 7, pp. 910-916, July 2009.

Yoo, H., "A new physical protection measure for evaluating risks at nuclear facilities," *Annals of Nuclear Energy*, vol. 36, Issue 9, pp. 1463-1468, September 2009.

**2010**

Li, J., Yim, M-S., and McNelis, D.N., "Model-based calculations of the probability of a country's nuclear proliferation decisions," *Progress in Nuclear Energy*, vol. 52, Issue 8, pp. 789-808, November 2010.

**2011**

Skutnik, S.E., and Yim, M-S., "Assessment of fuel cycle proliferation resistance dynamics using coupled isotopic characterization," *Nuclear Engineering and Design*, vol.241, Issue 8, pp. 3270-3282, August 2011.

**2012**

Skutnik, S.E., and Yim M-S., "An Examination of simplification and uncertainty on material attractiveness evaluation for proliferation resistance assessment," *Nuclear Technology*, vol. 179, Number 3, pp. 374-381, September 2012.

Kim, H.D., Shin, H.S., Song, D.Y., Lee, T.H., Han, B.Y., Ahn, S.K., and Park, A.H., "Application of Safeguards-By-Design for the Pyroprocessing Facilities in the ROK," *Journal of Nuclear Material management*, vol. XL, pp. 24-31, Summer, 2012.

**2013**

Kim, H.D., Kwon, E-H., Ahn S-K., Park, S-H., and Ku, J-H., "3S-by-Design for Engineering-Scale Pyroprocessing Facility," in *proceedings of ESARDA Symposium*, Bruges, Belgium, May, 2013.

**2017**

Kim H-D., Park, S-H., Ahn, S-K., Seo, H., and Won, B-H., "Status of Safeguards R&D on Pyroprocessing related Facilities at KAERI," *ESARDA Bulletin* No. 55, pp. 59-63, December, 2017.

**2018**

Kim, H.D., Ahn S.K., Ku J-H., Park, J-M., and Lee, K-S., "The History and Status of KAERI's Research Activities to Strengthen Non-proliferation for Nuclear Fuel Cycle," in *proceedings of INMM 59th Annual Meeting*, Baltimore, MD, USA, July 22-26, 2018.

**4.7 Russian Federation****2002**

Chebeskov, A.N., Oussanov, V.I., Pshakin, G.M., and Korobeynikov, V.V., "Approaches to Assess Attractiveness of Fissile Materials towards their Misuse and Theft," in *proceedings of the 12th MEPhI International seminar VOLGA*, Moscow, Russia, September 2-6, 2002.

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., and Tikhomirov, B.B., "System Analysis of Weapons and Civilian Plutonium Utilization Scenarios Taking Into Account Economic, Nonproliferation and Ecology Factors," *Ibid.*

Chebeskov, A.N., "Methods of Proliferation Risk Assessment for Nuclear Fuel Cycle Stages," *Ibid.*

Poplavski, V.M., Chebeskov, A.N., Oussanov, V.I., Korobeinikov, V.V., and Tikhomirov, B.B., "An Approach to Evaluate Nuclear Fuel Cycle Proliferation Resistance," in *proceedings of the Russia-France Workshop*, IBRAE RAS, Moscow, Russia, October 10-11, 2002.

## 2003

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., and Tikhomirov, B.B., "One of the Possible Approaches to Assess Attractiveness of Plutonium of Different Origin," in *proceedings of the International Workshop*, Obninsk, Russia, June 03-05, 2003.

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., and Tikhomirov, B.B., "Development of Multi-Attribute Analysis Methodology to Assess Risk of Fissile Material Proliferation," *Ibid.*

Chebeskov, A.N., Korobeynikov, V.V., and Tikhomirov, B.B., "Study of Proliferation Risk in Nuclear Fuel Cycles with Plutonium Breeding," *Ibid.*

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., Iougai, S.V., and Tikhomirov, B.B., "An Approach to Evaluate Proliferation Attractiveness of Plutonium of Various Origins," in *proceedings of Global 2003*, New Orleans, LA, USA, November 16-20, 2003.

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., and Tikhomirov, B.B., "One of the Possible Approaches to Evaluate Attractiveness of Plutonium of Different Origin," in *proceedings of the International Forum*, Obninsk, Russia, December 08-12, 2003.

Chebeskov, A.N., Oussanov, V.I., Korobeynikov, V.V., Iougai, S.V., and Tikhomirov, B.B., "Comparative Analysis of Fissile Material Risk Proliferation in Fuel Cycles with Fast and Thermal Reactors," *Ibid.*

## 2005

Butler, J., Chebeskov, A.N., Dyer, J., Edmunds, T., and Oussanov, V.I., "The United States and Russia Evaluate Plutonium Disposition Options with Multi-attribute Utility Theory," in *journal "INTERFACES"*, USA. vol.35, no.1, pp. 88-101, January-February, 2005.

A.N. Chebeskov, V.V. Korobeynikov, E.G. Kudryavtsev, and B.B. Tikhomirov, "Quantitative Approach to Evaluate Attractiveness of Nuclear Fuel Cycle Materials," in *proceedings of the International Conference*, Moscow, Russia, July 13-15, 2005.

V.M. Poplavsky, A.N. Chebeskov, Korobeynikov, V.V., and Tikhomirov, B.B., "Comparative Analysis of Proliferation Risk in Open and Closed Nuclear Fuel Cycles," *Ibid.*

Chebeskov, A.N., Eliseev, V.A., and Matveev, V.I., "Fuel Cycle of Advanced Fast Reactors and Problem of Nonproliferation," *Ibid.*

Zrodnikov, A.V., Chebeskov, A.N., Korobeynikov, V.V., and Tikhomirov, B.B., "Multi-Attribute Analysis of Nuclear Fuel Cycle Resistance to Nuclear Weapons Proliferation," in *proceedings of the NATO Workshop*, Yerevan, Armenia, October 3-6, 2005.

**2006**

Chebeskov, A.N., Korobeynikov, V.V., and Tikhomirov, B.B., "Methodical Approach towards Assessment of Features of Fuel Cycle Materials which are Important for Nonproliferation," in *proceedings of the 14th MEPhI International Workshop VOLGA*, Moscow, September 4-8, 2006.

**2007**

Kagramanyan, V.S., Chebeskov, A.N., Mostinskiy, S.B., Fedorov, Yu.S., and Shkabura, I.A., "Closed Nuclear Fuel Cycle Technologies in Solving Nonproliferation for Broad-Scale Nuclear Power Development," in *proceedings of the 2nd International Conference of "Rosenergoatom"*, Moscow, Russia, November 28-29, 2007.

Butler, J., Chebeskov, A.N., Dyer, J., Edmunds, T., Jia, J., and Oussanov, V.I., "The Adoption of Multi-attribute Utility Theory for the Evaluation of Plutonium Disposition Options in the United States and Russia," in *monograph Advances in Decision Analysis*, pp. 489-513, Cambridge University Press 2007.

Chebeskov, A.N., Korobeynikov, V.V., and Tikhomirov, B.B., "Risk Proliferation Studies in the Cycles with Plutonium Breeding," *Nuclear Power 'News of Higher Education Institutes'*, 4b, pp. 62-71, 2007.

**2008**

Korobeynikov, V.V., Chebeskov, A.N., and Tikhomirov, B.B., "Preliminary Assessment of Innovative Nuclear Energy System using INPRO Methodology, Nonproliferation Aspect," in *proceedings of the International Meeting on Nonproliferation*, Obninsk, Russia, September 29-October 3, 2008.

Chebeskov, A.N., and Kagramanyan, V.S., "Role of the International Fuel Centers with Fast Reactors in Minimization of Proliferation Risk," in *proceedings of the 16th Pacific Basin Nuclear Conference*, Aomori, Japan, October 13-18, 2008.

**2009**

Chebeskov, A.N., and Kagramanyan, V.S., "Role of the International Fuel Centers with Fast Reactors in Minimization of Proliferation Risk," in *proceedings of Global 2009*, Paris, France, September 6-11, 2009.

Kagramanyan, V.S., and Chebeskov, A.N., "International Nuclear Fuel Centers in Global Nuclear Power Infrastructure," in *proceedings of the International Workshop on Non-Proliferation*, Obninsk, Russia, September 30-October 2, 2009.

Zrodnikov, A.V., Kagramanyan, V.S., Chebeskov, A.N., and Poplavskaya, E.V., "International Nuclear Fuel Cycle Centers in the Global Infrastructure of Nuclear Power (Technological aspects of the problem)," in *proceedings of the International Conference on Fast Reactors and Related Fuel Cycles: Challenges and Opportunities (FR09)*, Kyoto, Japan, December 07-11, 2009.



**2011**

Chebeskov, A.N., "An Approach to Proliferation Risk Assessment for Research Nuclear Reactors," in *proceedings of the Russian-American Symposium on the Conversion of Research Reactors to Low Enriched Uranium Fuel*, Moscow, Russia, June 6-10, 2011.

**2013**

Avrorin, E.N., and Chebeskov, A.N., "Fast reactors and nuclear nonproliferation," in *proceedings of the International Conference on Fast Reactors and Related Fuel Cycles (FR13)*, Paris, France, March 4-7, 2013.

**2014**

Avrorin, E.N., and Chebeskov, A.N., "Fast reactors and nuclear non-proliferation," in *Nuclear Power 'News of Higher Education Institutes'*, No.1, pp. 64-76, 2014.

**2015**

Avrorin, E.N., and Chebeskov, A.N., "Fast reactors and nuclear non-proliferation," in *Nuclear Energy and Technology*, vol.1, Issue 1, pp. 1-7, September 2015.

**2016**

L'vova, E.M., and Chebeskov, A.N., "Analyses of the attractiveness of materials as applied to the fuel cycle of large capacity fast reactor of BN-type," in *Nuclear Power 'News of Higher Education Institutes'*, No.2, pp. 35-42, 2016.

**2017**

L'vova, E.M., and Chebeskov, A.N., "Analyses of the attractiveness of materials as applied to the on-site fuel cycle of fast reactor BR-1200 of natural safety," in *Nuclear Power 'News of Higher Education Institutes'*, No.26, pp. 106-117, 2017.

Klinov, D.A., Gulevich, A.V., and Chebeskov, A.N., "Fast neutron reactors and problem of nuclear nonproliferation," *IX International Forum ATOMEXPO*, Moscow, Russia, Gostiny dvor, 19-21 June, 2017.

Avrorin, E.N., Gulevich, A.V., Simonenko, V.A., and Chebeskov, A.N., "Fast Neutron Reactors, Fuel Cycles and Problem of Nuclear Nonproliferation," *International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)*, Yekaterinburg, Russian Federation, 26-29 June 2017.

L'vova, E.M., and Chebeskov, A.N., "Analysis of Attractiveness of Nuclear Materials as Applied to the On-site Fuel Cycle of Inherently Safe Fast Reactor," in *Nuclear Engineering and Technology*, 3 (2017), pp. 224-230.

**2018**

Kagramanyan, V.S., Chebeskov, A.N., Dekusar, V.V., and Gurskaya, "O.S. Solution of the problem of SNF from thermal reactors in a two-component system of nuclear power,"

*Eleventh International Scientific and Technical Conference: 'Safety, Efficiency and Economics of Nuclear Power Industry', 23-24 May 2018, Concern "Rosenergoatom", Moscow, Russia.*

Klinov, D.A., Gulevich, A.V., and Chebeskov, A.N., "Export potential of Russian fast reactors and technologies of closed nuclear fuel cycle," *V International Scientific and Technical Conference, 'Innovative Projects and Nuclear Power Technologies' (MNTK NIKIET-2018), October 2-5, 2018, JSC NIKIET, Moscow, Russia.*

Avrorin, E.N., Simonenko, V.A., Gulevich, A.V., and Chebeskov, A.N., "Fast reactors, fuel cycles and problem of nuclear non-proliferation," in *Problems of atomic science and technology 'nuclear and reactor constants', Issue 2, 2018.*

## 2019

Gulevich, A.V., Dekusar, V.M., Klinov, D.A., and Chebeskov, A.N., "Export potential of Russian fast reactors and technologies of closed nuclear fuel cycle," in *Problems of atomic science and technology 'nuclear and reactor constants,' Issue 2, 2019* (<https://www.vant.ippe.ru/en/>).

Kagramanyan, V.S., Chebeskov, A.N., Dekusar, V.V., and Gurskaya, O.S., "Solving the problem of SNF from thermal reactors in a two-component system of nuclear power," in *Problems of atomic science and technology 'nuclear and reactor constants,' Issue 2, 2019* (<https://www.vant.ippe.ru/en/>).

## 2020

Chebeskov, A.N., "Features of fast neutron reactors for export deliveries," *Scientific and Practical Webinar of Experts of the Union of Veterans of the Science City, AtomInfo.ru, December 4, 2020.*

## 4.8 United Kingdom

### 2012

National Nuclear Laboratory, "Proliferation Resistance and Physical Protection – Position Paper", 2012. [https://www.nnl.co.uk/wp-content/uploads/2019/01/prpp\\_position\\_paper\\_final.pdf](https://www.nnl.co.uk/wp-content/uploads/2019/01/prpp_position_paper_final.pdf)

## 4.9 United States

### 2002

Denning, R., Bari, R.A., Eagle, J., Mladineo, S., Olinger, C., Rochau, G., Roglans-Ribas, J., and Schock, R., "Guidelines for the Performance of Non-Proliferation Analysis," in *Transactions of the American Nuclear Society Winter Meeting, Washington, DC, USA, November 17-21, 2002.*

### 2003

Bari, R.A., Roglans-Ribas, J., Denning, R., and Mladineo, S., "Assessing the Proliferation Resistance of Innovative Nuclear Fuel Cycles," in *proceedings of the IAEA International*

*Conference on Innovative Technologies for Nuclear Fuel Cycles and Nuclear Power*, Vienna, Austria, June 23-26, 2003.

Bari, R.A., Roglans-Ribas, J., Denning, R., and Mladineo, S., "Assessing the Proliferation Resistance of Innovative Nuclear Fuel Cycles," *Ibid*.

Bari, R.A., Peterson, P., Roglans-Ribas, J., and Mladineo, S., "Proliferation Resistance Modeling," in *proceedings of the ESARDA/INMM Workshop on Safeguards Perspectives for a Future Nuclear Environment*, Como, Italy, October 14-16, 2003.

Bari, R.A., Roglans-Ribas, J., Denning, R., Mladineo, S. and Bley, D., "Assessing Comparative Risks of Nuclear Proliferation from Various Systems," in *proceedings of the ISTC/ENCI/ESARDA Seminar: A Fresh Look at Nuclear Safeguards*, Como, Italy, October 17-18, 2003.

Denning, R., Bari, R.A., Eagle, J., Mladineo, S., Olinger, G., Rochau, G., Roglans-Ribas, J., and Schock, R., "Guidelines for the Performance of Nonproliferation Assessments," Pacific Northwest National Laboratory Report, PNNL-14294, 2003.

## 2004

Bari, R.A., Roglans-Ribas, J., Denning, R., and Mladineo, S., "Methods for Proliferation Resistance of Nuclear Fuel Cycles," in *proceedings of the Seventh International Conference on Probabilistic Safety Assessment and Management*, Berlin, Germany, June 14-18, 2004.

Papazoglou, I.A., and Bari, R. A., "A Decision Analysis Based Methodology for the Assessment of the Proliferation Resistance of Nuclear Power Systems". *Ibid*.

## 2007

DeMuth, S., Thomas, K., Wallace, R., Tobin, S., Dixon, E. T., and Boyer, B., "Increased Proliferation Resistance for 21st Century Nuclear Power," in *proceedings of 20th World Energy Congress*, Rome, Italy, November 11-15, 2007.

Durst, P.C., Therios, I., Bean, R., Dougan, A., Boyer, B., Wallace, R., Ehinger, M., Kovacic, D., and Tolk, K., "Advanced Safeguards Approaches for New Reprocessing Facilities," PNNL-16674, June 2007.

Durst, P.C., Ehinger, M., Boyer, B., Therios, I., Bean, R., Dougan, A., and Tolk, K., "Advanced Safeguards Approaches for New TRU Fuel Fabrication Facilities," PNNL-17151, November 2007.

## 2008

Goodman, M., Bari, R.A., Heine, P., Phillips, J., Regalbuto, M., Rosenthal, M., Sprinkle, J., Wallace R., Wigeland, R., Wood, T., and Yates, M., "A Nonproliferation Impact Assessment of the GNEP Programmatic Alternatives," in *proceedings of the INMM 49th Annual Meeting*, Nashville, TN, July 13-17, 2008.

Boyer, B. and Schanfein, M., "International Safeguards Inspection: An Inside Look," James E. Doyle, ed., *Nuclear Safeguards, Security, and Nonproliferation: Achieving Security with Technology and Policy*, Burlington, MA, Butterworth-Heinemann, pp. 97-112, 2008.

Boyer, B., and Scott, S., "Expansion of Nuclear Energy: Demand, Domestic and International Initiatives and Nonproliferation and Safeguards Challenges," *Journal of Nuclear Material Management*, Summer 2008, vol. XXXVI, Number 4, Deerfield, IL, pp.31-35, 2008.

## 2009

Durst, P.C., Beddingfield, D., Boyer, B., Bean, R., Collins, M., Ehinger, M., Hanks, D., Moses, D.L., and Refalo, L., "Nuclear Safeguards Considerations for the Pebble Bed Modular Reactor (PBMR)," INL/EXT-09-16782, October 2009.

## 2010

Moses, D.L., and Ehinger, M.H., "Supplemental Report on Nuclear Safeguards Considerations for the Pebble Bed Modular Reactor (PBMR)," ORNL/TM-2010/244, May 2010.

Wonder, E.F., Durst, P.C., Hockert, J., Zentner, M.D., Bari, R.A., and Wigeland, R., "Facility Safeguardability Analysis in Support of Safeguards by Design," in *proceedings of the IAEA Symposium on International Safeguards: Preparing for Future Verification Challenges*, Vienna, Austria, November 1-5, 2010.

US Department Of Energy (DOE)/National Nuclear Security Administration (NNSA) Office of Nonproliferation and International Security, *Third International Meeting on Next Generation Safeguards – Safeguards by Design*, Washington, DC, USA, 14-15 December 2010.

<https://www.regonline.com/custImages/230000/238429/Conference/NGS3FinalReportFINAL.pdf>

Moses, D.L., "Very High-Temperature Reactor (VHTR) Proliferation Resistance and Physical Protection (PR&PP)," ORNL/TM-2010/163, August 2010.

Demuth, S., Chapter Ed., Bari, R., Bathke, C., Boyer, B., Burr, T., Ehinger, M., Hedberg, M., Howell, J., Luetzenkirchen, K., Mayer, K., Schanfein, M., Stevens, R., Wallace, R., and Wallenius, M., "Chapter 29: Proliferation Resistance and Safeguards," Dan Gabriel Cacuci (ed.), *Handbook of Nuclear Engineering*, New York, NY, Springer Science+Business Media, 2010, pp.-3421-3538.

Boyer, B., Beddingfield, D., Durst, P.C., and Bean, R., "Pebble Bed Modular Reactor Safeguards: Developing New Approaches and Implementing Safeguards by Design," in *proceedings of Pacific Northwest International Conference on Global Nuclear Security—the Decade Ahead*, Portland, OR, April 2010.

## 2011

Boyer, B., Durst, P.C., Budlong-Sylvester, K., DeMuth, S., and Pan, P.Y., "Third International Meeting on Next Generation Safeguards (NGS3): Synopsis of the Safeguards-By-Design

Reactor Working Group Conclusions,” in *proceedings of INMM 52nd Annual Meeting*, Palm Desert, CA, July 2011.

## 2012

Bari, R.A., Durbin, K., Johnson, S.J., Gitau, E., Hockert, J., Wonder, E.F., and Zentner, M.D., “Facility Safeguardability Assessment: A Toolkit for Safeguards by Design,” in *proceedings of the INMM 53<sup>rd</sup> Annual Meeting*, Orlando, FL , USA, July 15-19, 2012.

## 2014

Boyer, B., Budlong Sylvester, K., Murphy, C.L., and Doyle, J.E., “Developing a State-level Approach for a Hypothetical State with Advanced Fuel Cycle Capabilities,” in *proceedings of INMM 55th Annual Meeting*, Atlanta, GA, July 2014.

Budlong Sylvester, K., Pilat, J.F., Anzelon, G., Murphy, C.L., Reynolds, C., Boyer, B., “Use of Performance Targets in the State Level Concept,” in *proceedings of INMM 55th Annual Meeting*, Atlanta, GA, July 2014.

## 2015

Sprinkle, J., Boyer, B., Dale, D., Stevens, R., Hanks, D., Schanfein, M., Johnson, S., Scholz, M., Lockwood, D., and Alwin, J., “Improving Safeguards Implementation in Nuclear Facility Design and Construction,” in *proceedings of INMM 56th Annual Meeting*, Indian Wells, CA, July 2015.

## 2016

Cipiti, B.B., “Safeguards Performance Modeling: New Approaches for Safeguards by Design,” in *proceedings of the INMM 57<sup>th</sup> Annual Meeting*, Atlanta, GA, July 2016.

Moran, B., Stern, W., Cooley, J., Marzo, M., “Enhancing Efficiency of Safeguards at Facilities that are Shutdown or Closed-Down, including Those being Decommissioned,” BNL-113347-2016, Brookhaven National Laboratory, December 2016. <https://www.bnl.gov/isd/documents/94300.pdf>

## 2017

Thomas, M., Williams, A. D., Osborn, D. M., Jones, K. A., Kalinina, E. A., Parks, M. J. and Mohagheghi, A.H., “An Integrated 3S Model for Safeguards for International Transport of Spent Nuclear Fuel,” in *proceedings of the ESARDA 39th Annual Meeting*, Dusseldorf, Germany, 2017.

Williams, A.D., Osborn, D.M., Jones, K.A., Kalinina, E.A., Cohn, B., Parks, M.J., Parks, E., Jeantete, B., Thomas, M.A. and Mohagheghi, A.H., “Intermediate Results from a System-Theoretic Framework for Mitigating Complex Risks in International Transport of Spent Nuclear Fuel,” *Institute of Nuclear Materials Management (INMM) 58th Annual Meeting Indian Wells, CA, 16-20 July 2017.*

Williams, A.D., Osborn, D.M., Jones, K.A., Kalinina, E.A., Cohn, B., Mohagheghi, A.H., De Menno, M., Thomas, M., Parks, M.J., Parks, E. and Jeantete, B., “System Theoretic

Frameworks for Mitigating Risk Complexity in the Nuclear Fuel Cycle,” Sandia Report, SAND2017-10243, September 2017.

## 2018

Williams, A.D., Osborn, D.M., and Kalinina, E.A., “System Theoretic Frameworks for Mitigating Risk Complexity in the International Transportation of Spent Nuclear Fuel,” *Probabilistic Safety Assessment and Management PSAM 14*, September 2018, Los Angeles, CA.

## 2019

Cipiti, B., Browne, M., and Reim, M. “Demonstration of Safeguards and Security by Design through the Virtual Facility Distributed Test Bed,” In: 9<sup>th</sup> INMM/ESARDA/INMMJ Joint Workshop, 7-10 October 2019, Plaza HEISEI, Tokyo, Japan.

Shoman, N., and Cipiti, B., “Development of a Liquid-Fueled Molten Salt Reactor Safeguards Model,” SAND2019-7415, Sandia National Laboratories, June 2019.

Shoman, N, Cipiti, B., and Betzler, B. “Safeguards and Process Modeling for Molten Salt Reactors,” In: *Global and Top Fuel 2019*, Seattle, Washington, USA, 22-26 September, 2019.

Rosenthal, M., et al., “Deterring Nuclear Proliferation: The Importance of IAEA Safeguards,” Brookhaven Science Associates, LLC, February 2019.  
(<https://www.bnl.gov/NNS/IAEAtextbook.php>)

Boyer, B., “International Safeguards Inspections,” James E. Doyle, ed., *Nuclear Safeguards, Security, and Nonproliferation: Achieving Security with Technology and Policy*, 2nd Edition, Chapter 9, 2019, Elsevier, Amsterdam, The Netherlands.

## 2020

Cipiti B., Parks, M.J., and Shoman, N., “The Role of Modeling and Simulation in the MPACT 2020 Milestone”, in *proceedings from the INMM 61st Annual Meeting, Virtual Meeting*, July 12-16, 2020.

Parks, M.J., Knudsen, R., Noel, T.G., Stromberg, B. and Cipiti, B., “Physical Security Modeling Development of an Electrochemical Facility”, SAND2020-10051R, Sandia National Laboratories, September 2020.

## 2021

Cipiti, B., Browne, M., and Reim, M. “The MPACT 2020 Milestone: Safeguards and Security by Design of Future Nuclear Fuel Cycle Facilities,” *Journal of Nuclear Materials Management*, Vol. 49, No. 1, 2021.

Evans A.S., et al., “U.S. Domestic Small Modular Reactor Security by Design,” SAND2021-0768, Sandia National Laboratories, March 2021.

- Cheng, L.-Y., Bari, R.A., “Non-Proliferation Aspects of Nuclear Energy,” in *Encyclopedia of Nuclear Energy*, Editor-in-Chief E. Greenspan, Elsevier Science, June 2021. <https://doi.org/10.1016/B978-0-12-819725-7.00120-3>
- Cipiti, B. “Advanced Reactor Deployment: U.S. Safeguards and Security Challenges,” *Institute of Nuclear Materials Management/ESARDA 2021 Meeting (Virtual)*, August 2021.
- Williams, A.D., Cipiti, B., and Evans, A. “A Systems-Theoretic Framing for an Integrated Nuclear Energy Safety, Safeguards, and Security (3S) Approach,” *Institute of Nuclear Materials Management/ESARDA 2021 Meeting (Virtual)*, August 2021.
- Dion, M.P., et al., “MC&A for MSRs: FY2021 Report,” ORNL/SPR-2021/2305, Oak Ridge National Laboratory, September 2021.
- Garrett, A.G., et al., “Advanced Reactor Safeguards: Lessons from the IAEA Safeguards Domain,” PNNL-21977, Pacific Northwest National Laboratory, September 2021.
- Evans, A.S., et al., “U.S. Domestic Pebble Bed Reactor: Security by Design,” SAND2021-13122R, Sandia National Laboratories, October 2021.
- Evans, A.S., et al., “U.S. Domestic Microreactor: Security by Design,” SAND2021-13779R, Sandia National Laboratories, October 2021.
- Gibbs, P., et al., “Pebble Bed Reactor Domestic Safeguards,” ORNL/SPR-2021/170396, Oak Ridge National Laboratory, November 2021.
- Weinmann-Smith, R., et al., “Material Control and Accounting Regulatory and Technical Considerations for Microreactors,” LA-UR-22-21265, Los Alamos National Laboratory, December 2021.
- 2022**
- Bari, R. A., Cheng, L.-Y., and Boyer, B., “Outreach to Industry on Safeguards by Design Concept for Small Modular Reactors – Introduction of the Facility Safeguardability Assessment Process to Westinghouse Electric Company LLC,” BNL-222920-2022-FORE, Brookhaven National Laboratory, January 12 (2022)
- Mulyana D., Chirayath S.S., “Proliferation resistance assessment of a typical pebble bed reactor fuel”, *Annals of Nuclear Energy*, Volume 165, January 2022, 108769, <https://doi.org/10.1016/j.anucene.2021.108769>
- Mulyana D., Chirayath S.S., “The impact of refueling schemes on the proliferation resistance of a pebble bed reactor”, *Annals of Nuclear Energy*, Volume 170, 1 June 2022, 109010, <https://doi.org/10.1016/j.anucene.2022.109010>
- Gibbs, P., “FY 2022 Pebble Bed Reactor Domestic Safeguards: Material Control and Accounting Systems-Requirements and Concepts,” ORNL/SPR-2022/2660, Oak Ridge National Laboratory, September 2022.
- Dion, M.P., and Hogue, K.K., “Domestic MC&A Recommendations for Liquid-Fueled MSRs,” ORNL/SPR-2022/2673, Oak Ridge National Laboratory, September 2022.

Ritter, C., Hays, R., Browning, J., Stewart, R., Bays, S., Reyes, G., Schanfein, M., Pluth, A., Sabharwall, P., Kunz, R., Shields, A., Koudelka, J., Zohner, P., “Digital Twin to Detect Nuclear Proliferation: A Case Study”, *J. Energy Resour. Technol.* Oct 2022, 144(10): 102108, <https://doi.org/10.1115/1.4053979>

Kovacic, D., et al., “FY 2022 Summary Report - Pebble Bed Reactor Domestic Safeguards: Fuel Burnup and Fissile Material Loss and Production for Pebble Bed Reactor Nuclear Material Accounting,” ORNL/SPR-2022/2635, Oak Ridge National Laboratory, November 2022.

## 2023

Mulyana D., Chirayath S.S., “Proliferation resistance of light water reactor versus pebble bed reactor”, *Annals of Nuclear Energy*, Volume 188, August 2023, 109797, <https://doi.org/10.1016/j.anucene.2023.109797>

## 4.10 IAEA

### 2001

International Atomic Energy Agency, “IAEA Safeguards Glossary 2001 Edition,” International Nuclear Verification Series No. 3, IAEA, Vienna, 2001.

### 2002

International Atomic Energy Agency, “Proliferation Resistance Fundamentals for Future Nuclear Energy Systems,” STR-332, IAEA, Vienna, 2002.

### 2007

International Atomic Energy Agency, “Combating Illicit Trafficking in Nuclear and Other Radioactive Material,” Technical Guidance No. 6, IAEA, Vienna, 2007

### 2010

International Atomic Energy Agency, “Status of Minor Actinide Fuel Development,” IAEA Nuclear Energy Series, NF-T-4.6, IAEA, Vienna, 2010.

### 2011

International Atomic Energy Agency, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), IAEA, Vienna, 2011.

### 2012

Sprinkle, J.K., Ciuculescu, C., Smith, L.E., Stevens, R., Wishard, B., Honkamaa, T., Martikka, E., Koutsoyannopoulos, C., and Schwalbach, P., “Safeguards by Design Experience in Finland,” in *proceedings of the 9th International Conference on Facility-Safeguards Interface*, Savannah, GA, USA, September 23-28, 2012.

Whitlock, J.J., Sprinkle, J. K., Proliferation Resistance Considerations for Remote Small Modular Reactors, *AECL Nuclear Review*, Vol. 1, Number 2, 2012.



**2013**

Cooley, J., Catton, A., Ciuculescu, C., Poirier, S., Sprinkle, J.K., Stevens, R., and Tuley, N., "IAEA Safeguards in New Nuclear Facilities," in *proceedings of the INMM 54th Annual Meeting*, Atlanta, GA, USA, July 20-24, 2013.

International Atomic Energy Agency, "Legal and Institutional Issues of Transportable Nuclear Power Plants: A Preliminary Study," IAEA Nuclear Energy Series, NP-T-3.5, IAEA, Vienna, 2013.

**2015**

International Atomic Energy Agency, "Nuclear Security Series Glossary Version 1.3," IAEA, Vienna, November 2015.

**2017**

Poirier, S., "Lessons Learned from Safeguards Implementation for Facilities under Construction," in *proceedings of the Fourth International Conference on Nuclear Power Plant Life Management*, 23–27 October 2017, Lyon, France.

Poirier, S., Whitlock, J., and Boyer, B., "Safeguards Considerations in the Design of Nuclear Facilities," in *proceedings of the Fourth International Conference on Nuclear Power Plant Life Management*, 23–27 October 2017, Lyon, France.

**2018**

Boyer, B., Disser, J., Moldovan, B., and Fairclough, M., "Application of IAEA Safeguards to Uranium Mining and Processing Activities," in *proceedings of the International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle: Exploration, Mining, Production, Supply and Demand, Economics and Environmental Issues (URAM-2018)*, Vienna, 2018

**2019**

International Atomic Energy Agency, "Waste from Innovative Types of Reactors and Fuel Cycles," IAEA Nuclear Energy Series, NW-T-1.7, IAEA, Vienna, 2019.

International Atomic Energy Agency, "Waste from Innovative Types of Reactors and Fuel Cycles," IAEA Implementing Guides No. 11-G (Rev.1), IAEA, Vienna, 2019.

Poirier, S., Whitlock, J., Boyer, B., and Baird, K., "Supporting Nuclear Growth Through Safeguards By Design," in *proceedings of the 39th Annual Conference of the Canadian Nuclear Society* Ottawa, ON, Canada, 2019.

Boyer, B., Disser, J., Sebastien R., Gagne, D., Poirier, S., Whitlock, J., Walczak-Typke, A., and Norman, C., "The IAEA's Physical Model: Fine-Tuning Nuclear Fuel Cycle Understanding for Robust State-Level Safeguards," *Journal of Nuclear Material Management*, vol. XLVI, Number 3, Mt. Laurel, NJ, pp.107-116, 2019.

- B. Boyer, B., Poirier, S., Whitlock, J., “International Atomic Energy Agency Safeguards Challenges in Research Reactors and Critical Assemblies,” *Proceedings of RRFM/IGORR 2019 Conference*, Dead Sea Resort, Jordan, 2019.

## Appendix A: Selected IAEA and IAEA-INPRO publications

### IAEA

#### 2009

International Atomic Energy Agency, "Facility Design and Plant Operation Features that Facilitate the Implementation of IAEA Safeguards," IAEA-STR-360, IAEA, Vienna, 2009.  
[http://www.iaea.org/OurWork/SV/Safeguards/documents/STR\\_360\\_external\\_version.pdf](http://www.iaea.org/OurWork/SV/Safeguards/documents/STR_360_external_version.pdf)

#### 2010

International Atomic Energy Agency, "Technical Features to Enhance Proliferation Resistance of Nuclear Energy Systems," IAEA Nuclear Energy Series No. NF-T-4.5, IAEA, Vienna, 2010.

#### 2013

International Atomic Energy Agency, "International Safeguards in Nuclear Facility Design and Construction," IAEA Nuclear Energy Series No. NP-T-2.8, IAEA, Vienna, 2013.  
[http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1600\\_web.pdf](http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1600_web.pdf)

#### 2014

International Atomic Energy Agency, "Options to Enhance Proliferation Resistance of Innovative Small and Medium Sized Reactors (NP-T-1.11)," IAEA, Vienna, Austria, 2014.

International Atomic Energy Agency, "International Safeguards in the Design of Nuclear Reactors," IAEA Nuclear Energy Series, No. NP-T-2.9, IAEA, 2014.

#### 2017

International Atomic Energy Agency, "International Safeguards in the Design of Fuel Fabrication Plants," IAEA Nuclear Energy Series, NF-T-4.7, Vienna, 2017.\*

International Atomic Energy Agency, "International Safeguards in the Design of Uranium Conversion Plants," IAEA Nuclear Energy Series, NF-T-4.8, Vienna, 2017.\*

#### 2018

International Atomic Energy Agency, "International Safeguards in the Facilities for Long Term Spent Fuel Management," IAEA Nuclear Energy Series, NF-T-3, Vienna, 2018.\*

**2019**

International Atomic Energy Agency, “International Safeguards in the Design of Reprocessing Plants,” IAEA Nuclear Energy Series, NF-T-3.2, Vienna, 2019.\*

International Atomic Energy Agency, “International Safeguards in the Design of Enrichment Plants,” IAEA Nuclear Energy Series, NF-T-4.10, Vienna, 2019.\*

The publications above marked with an \* do not refer explicitly to PR&PP methodology, but are added for completeness as they belong to the same technical series on Safeguards by Design.

For safeguards by design refer to the dedicated web pages:  
<https://www.iaea.org/topics/assistance-for-states/safeguards-by-design-guidance>

The IAEA web sites present a variety of publications on nuclear security, including courses and webinars. They are not reported here. They can be easily accessed from the related web sites. <https://www.iaea.org/resources/nuclear-security-series>

**IAEA-INPRO****2007**

International Atomic Energy Agency, “Guidance for the Application of an Assessment Methodology for Innovative Nuclear Energy Systems,” INPRO Manual – Physical Protection, Volume 6 of the Final Report of Phase 1 of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), IAEA-TECDOC-1575/Vol. 6, Vienna July, 2007.

**2008**

International Atomic Energy Agency, “Guidance for the Application of an Assessment Methodology for Innovative Nuclear Energy Systems”, INPRO Manual – Proliferation Resistance, Volume 5 of the Final Report of Phase 1 of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), IAEA-TECDOC-1575 Rev. 1, IAEA, Vienna, November 2008.

**2009**

Yoo, H., Kwak, S-W., Chang, S-S., Kim, J-S., and Yoon W-K., “Development of an evaluation parameter for physical protection in INPRO and its case study on Republic of Korea’s PWRs,” *Annals of Nuclear Energy*, vol.36, Issue 6, , pp. 844-848, June 2009.

**2010**

Chang, H.L., Ko, W.I., Whitlock, J., Zhou, K., Cojazzi, G.G.M., Sevini, F., Haas, E., and Zentner, M., “Update of the INPRO Methodology for Evaluating Proliferation Resistance,” in *proceedings of the INMM51th Annual Meeting*, July 11-15, 2010, Baltimore, USA.

**2011**

Chang, H.L., Bari, R., Chayama, H., Cojazzi, G.G.M., Haas, E., Killeen, T., Ko, W.I., Park, J.H., Pomeroy, G., Pshakin, G., Qian, H., Sevini, F., Sprinkle, J.K., Whitlock, J., and Zentner,

M.D., "PRADA – Next Steps," INMM 52nd Annual Meeting, July 17-21 2011, Palm desert, California, USA.

International Atomic Energy Agency, "Introduction to the Use of the INPRO Methodology in a Nuclear Energy System Assessment," IAEA Nuclear Energy Series, NP-T-1.12, IAEA, Vienna, 2011.

## 2012

Lee, Y., Lee, J.W., and Park, J-H., "INPRO Studies of proliferation resistance for DUPIC Fuel Cycle," *Nuclear Technology*, vol.179, Number 1, pp. 97-105, July 2012.

International Atomic Energy Agency, "INPRO Collaborative Project: Proliferation Resistance: Acquisition/diversion Pathways Analysis (PRADA)," International Atomic Energy Agency, IAEA-TECDOC-1684, IAEA, Vienna, 2012.

## 2016

International Atomic Energy Agency, "INPRO Methodology for Sustainability Assessment of Nuclear Energy Systems: Environmental Impact of Stressors," IAEA Nuclear Energy Series, NF-T-3.15, IAEA, Vienna, 2016.

## 2020

Boyer, B., Kuznetsov, V., Khartabil, H., Korinny, A., and Gladyshev, M., "20 Years of INPRO: An Integrated Forward Looking Activity Building a Framework for Sustainable Nuclear Power in the 21st Century," in *proceedings of INMM 61st Annual Meeting*, Baltimore, MD, July 2020.

## 2021

International Atomic Energy Agency, "INPRO Collaborative Project: Proliferation Resistance and Safeguardability Assessment Tools (PROSA)", International Atomic Energy Agency, IAEA-TECDOC-1966, IAEA, Vienna, 2021.  
<https://www.iaea.org/publications/14895/inpro-collaborative-project-proliferation-resistance-and-safeguardability-assessment-tools-prosa>

Boyer, B., Ganda, F., Gladyshev, M., Khartabil, H., Korinny, A., Kuznetsov, V., "INPRO – Moving into a Third Decade of Innovation Relevant to Nuclear Materials Handling," *Proceedings INMM 62nd Annual Meeting*, Virtual, August 2021.

Ganda, F., Boyer, B., Haas, E., "INPRO Collaborative Project: Proliferation Resistance and Safeguardability Assessment Tools (PROSA)," *Proceedings of the INMM 62nd Annual Meeting*, Virtual, August 2021.

Scherer, C., Ardhammar, M., Boyer, B., Lee, J.-S., Poirier, S., Adams, S., Bathke, C., Chirayath, S., Cojazzi, G.G.M., Renda, G., Reyes, G., van der Ende, B., Updating and Enhancing the INPRO Proliferation Resistance Methodology for Better Sustainability, *INMM & ESARDA Joint Annual Meeting*, 22-25 May 2023 - Vienna, Austria.

Not all the above INPRO Publications refer to the PR&PP evaluation methodology, they are however included here as suggested by the IAEA for the relevance of the related topics. See also the dedicated web pages:

<https://www.iaea.org/services/key-programmes/international-project-on-innovative-nuclear-reactors-and-fuel-cycles-inpro>

A report produced by

**GENIV** International  
Forum

Expertise | Collaboration | Excellence



[www.gen-4.org](http://www.gen-4.org)