

SPECIAL ISSUE ON SAFEGUARDS

- 1 Dedication
- 3 Foreword: Special Issue on Safeguards / *Ike U. Therios*

TECHNICAL PAPERS

- 5 The Attractiveness of Materials in Advanced Nuclear Fuel Cycles for Various Proliferation and Theft Scenarios / *Charles G. Bathke, Bartley B. Ebbinghaus, Brian A. Collins, Brad W. Sleaford, Kevin R. Hase, Martin Robel, Richard K. Wallace, Keith S. Bradley, John R. Ireland, Gordon D. Jarvinen, M. W. Johnson, Andrew W. Prichard, Brian W. Smith*
- 31 The Proliferation Resistance Debate and the Proliferation Resistance and Physical Protection Evaluation Methodology / *Joseph F. Pilat*
- 35 Proliferation Resistance and Physical Protection Evaluation Methodology: Objectives, Accomplishments, and Future Directions / *Robert A. Bari*
- 45 Elements of the Proliferation Resistance and Physical Protection Evaluation Methodology / *Per F. Peterson*
- 52 Implementation of the PR&PP Methodology: The Role of Formal Expert Elicitations / *Joseph F. Pilat*
- 61 Implications for Advanced Safeguards Derived from a Proliferation Resistance and Physical Protection Case Study for a Generation IV Nuclear Energy System / *Brian D. Boyer, Heather H. Erpenbeck,Carolynn P. Scherer*
- 70 A Qualitative Assessment of Diversion Scenarios for an Example Sodium Fast Reactor Using the Generation IV PR&PP Methodology / *Michael D. Zentner, Garill A. Coles, Ike U. Therios*
- 76 Applying the GIF PR&PP Methodology for a Qualitative Analysis of a Misuse Scenario in a Notional Generation IV Example Sodium Fast Reactor / *Giacomo G. M. Cojazzi, Guido Renda, Jor Shan Choi, Jim Hassberger*
- 91 Proliferation Resistance of a Hypothetical Sodium Fast Reactor Under an Assumed Breakout Scenario / *Jeremy J. Whitlock, Naoko Inoue, Masao Senzaki, Dennis Bley, Ed Wonder*
- 97 INPRO Studies of Proliferation Resistance for DUPIC Fuel Cycle / *Yongdeok Lee, Jung Won Lee, Joo-Hwan Park*
- 106 Interpretation and Use of the Results of Proliferation Resistance Studies / *Michael D. Zentner, George Pomeroy, Robert A. Bari, Giacomo G. M. Cojazzi, Eckhart Haas, Thomas Killeen, P. Peterson, Jeremy J. Whitlock, Edward F. Wonder*

CONTENTS / JULY 2012—VOL. 179, NO. 1

(Continued)

- 112 Challenges to Integration of Safety and Reliability with Proliferation Resistance and Physical Protection for Generation IV Nuclear Energy Systems / *H. Khalil, P. F. Peterson, R. Bari, G.-L. Fiorini, T. Leahy, R. Versluis*
- 117 Strengthening the Nonproliferation Regime with Risk Acceptance Criteria / *Edoardo Cavalieri d'Oro, Michael W. Golay*
- 129 Informing Nuclear Energy Systems with Proliferation Risk / *Edoardo Cavalieri d'Oro, Michael W. Golay*
- 143 Integrating Safeguards and Security into Nuclear Facility Design / *T. Bjornard, J. Morgan*
- 150 Safety, Security, and Safeguards by Design: An Industrial Approach / *Marius Stein, Massimo Morichi*
- 156 Open Source Information Acquisition and Analysis in the International Atomic Energy Agency Department of Safeguards / *Michael Barletta, Nicholas Zarimpas, Ryszard Zarucki*
- 160 Benchmarked, Three-Dimensional Antineutrino Source Term Calculations of Light Water Reactors for Nonproliferation Applications / *Elanchezhian Somasundaram, Todd S. Palmer, Alexey I. Soldatov*