

Nuclear Non-Proliferation in International  
Law—Volume III

Jonathan L. Black-Branch · Dieter Fleck  
Editors

# Nuclear Non-Proliferation in International Law—Volume III

Legal Aspects of the Use of Nuclear Energy  
for Peaceful Purposes



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*Editors*

Jonathan L. Black-Branch  
Faculty of Law  
University of Manitoba  
Winnipeg, MB  
Canada

Dieter Fleck  
Cologne  
Germany

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# Preface

Nuclear non-proliferation remains firmly in the focus of public debate, nationally, regionally and on a global level. While some issues are highly disputed and the role of law may be seen as ineffective and weak in relation to the questions to be solved, international law continues to play a distinct role and makes a relevant contribution in providing an enforceable regulatory framework for securing safety and security in this important area. Treaty law and evolving customary principles and rules may be used to balance diverging interests and protect the needs of peoples and individuals that would otherwise remain subject to arbitrary authority and decision-making. The important task of securing non-proliferation of nuclear weapons, to ensure the safety and security of peaceful uses of nuclear energy and to achieve nuclear disarmament under strict and effective international control, calls for the interpretation and application of international legal rules in their relevant context, a task that this book series endeavours to facilitate. Volume I,<sup>1</sup> which started with an exposé of relevant legal issues and international concerns, addressed a variety of critical questions that require strict and full application of rules stemming from more than one field of international law. Volume II<sup>2</sup> was dedicated to an in-depth review of controversial aspects of verification and compliance. It assisted to further develop international consensus on critical issues of law application that remains essential, both from a theoretical perspective and from the practices of States and international organizations. The positive reception of both Volumes underlines the need for continued efforts in this field, in order to explore such issues further.

The present Volume focuses on *Legal Aspects of the Use of Nuclear Energy for Peaceful Purposes*. The main body of contributions presented are the results of a research conference held in Cologne from 19 to 20 November 2015. This follows

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<sup>1</sup>Black-Branch J and Fleck D (Eds), *Nuclear Non-Proliferation in International Law, Vol I* with Preface by Mohamed ElBaradei. Springer/Asser Press, 2014.

<sup>2</sup>Black-Branch J and Fleck D (Eds), *Nuclear Non-Proliferation in International Law, Vol II Verification and Compliance*. Springer/Asser Press, 2015.

in the tradition of gathering relevant experts to discuss areas pertinent to nuclear weapons, non-proliferation and contemporary international law through the Nuclear Round Table series, which have already led to two comprehensive Reports, presented at the last two conferences of the International Law Association (Washington 2014<sup>3</sup> and Johannesburg 2016<sup>4</sup>). The Cologne conference provided an excellent forum for exchange of expertise and in-depth discussion of controversial issues of nuclear safety and security. It also offered an opportunity for a comprehensive legal evaluation of the 2015 Nuclear Accord with Iran and its implementation, a vital topic that is also reflected in this Volume.

We would like to express our sincere gratitude to Prof. Kerstin Odendahl, Executive Director of the Walther Schücking Institute of International Law at the University of Kiel, for co-organizing this event in conjunction with the ILA Committee on Nuclear Weapons, Non-Proliferation and Contemporary International Law and the Nuclear Round Table series. We are particularly indebted to the Fritz Thyssen Foundation for again supporting the event, and in particular to Dr. Thomas Suermann and his team for hosting our conference in a highly professional and forthcoming manner that has greatly supported our activities.

Special acknowledgement is again due to our peer reviewers who have offered their critical advice, encouragement and invaluable suggestions. As all co-authors appreciated the double anonymous review process, we may express our sincere gratitude on behalf of all of them.

TMC Asser Press/Springer has helped to secure the publication of this book series in a very diligent and effective manner. We would like to thank Philip van Tongeren, Frank Bakker and their team for their interest, outstanding diligence and encouragement.

Oxford, UK  
Cologne, Germany  
April 2016

Jonathan L. Black-Branch  
Dieter Fleck

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<sup>3</sup>*Legal Aspects of Nuclear Disarmament*, <http://www.ila-hq.org/en/committees/index.cfm/cid/1025>.

<sup>4</sup>*Legal Issues of Verification of Nuclear Non-Proliferation Obligations*, <http://www.ila-hq.org/en/committees/index.cfm/cid/1025>.

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# Abbreviations

ABACC	Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials
AEOI	Atomic Energy Organization of Iran
AFCONE	African Commission on Nuclear Energy
ALARA	‘as low as reasonably achievable’
AMP	Ageing management programme
AP	Additional Protocol
ARM	Advance Reference Material
ARSIWA	Articles on Responsibility of States for Internationally Wrongful Acts (2001)
BOT	Breakout time
BSC	Brussels Supplementary Convention (31 January 1963)
CANDU	CANadian Deuterium Uranium reactors
CBRN	Chemical Biological Radiological and Nuclear Risk Mitigation
CD	Conference on Disarmament
CERCLA	United States Comprehensive Environmental Response, Compensation, and Liability Act of 11 December 1980
CERN	Conseil européen pour la recherche nucléaire
CFSP	Common Foreign and Security Policy (EU)
CMC	Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (17 December 1971)
CNS	Convention on Nuclear Security (20 September 1994)
CoCom	Coordinating Committee for Multilateral Export Controls
CPPNM	Convention on the Physical Protection of Nuclear Material (26 October 1979)
CSA	Comprehensive Safeguards Agreement
CSC	Convention on Supplementary Compensation for Nuclear Damage (29 September 1997)
CSDP	Common Security and Defence Policy (EU)
CSS	Commission on Safety Standards



CTBT	Comprehensive Nuclear Test-Ban Treaty (24 September 1996)
DEA	Drug Enforcement Administration (US)
DiD	Defence in depth
DoE	Department of Energy
DPRK	Democratic People's Republic of Korea
DRM	Dispute resolution mechanism
DS	Design safety
DSARS	Design and Safety Assessment Review Service
EAEC	European Atomic Energy Community (EURATOM)
ECHR	European Convention on Human Rights
ECSC	European Coal and Steel Community
ECtHR	European Court on Human Rights
EEC	European Economic Community
ENDC	Eighteen-Nation Committee on Disarmament
ENR	Uranium enrichment and spent fuel reprocessing
ENSREG	European Nuclear Safety Regulators Group
EPR	Nuclear off-site emergency preparedness and response
EPResc	Committee on Emergency Preparedness and Response Standards
EU	European Union
EURATOM	European Atomic Energy Community
FAO	Food and Agriculture Organization of the United Nations
FMCT	Fissile material cut-off treaty
FMT	Fissile material treaty
FORO	Ibero-American Forum of Radiological and Nuclear Regulatory Agencies
GGE	Group of Governmental Experts
GNNPV	Global nuclear non-proliferation verification
GRS	Generic Reactor Safety
HEU	Highly enriched uranium
IACHR	Inter-American Commission on Human Rights
IACRNE	Inter-Agency Committee on Radiological and Nuclear Emergencies
IAEA	International Atomic Energy Agency
ICCPR	International Covenant on Civil and Political Rights (19 December 1966)
ICJ	International Court of Justice
ICNS	Draft International Convention on Nuclear Security
ICRP	International Commission on Radiological Protection
ICSANT	International Convention for the Suppression of Acts of Nuclear Terrorism (13 April 2005)
ILA	International Law Association
ILC	International Law Commission
ILM	International Legal Materials
INES	International Nuclear and Radiological Event Scale
INFCE	International Nuclear Fuel Cycle Evaluation

INFCIRC	Information Circulars, IAEA
INLA	International Nuclear Licensing Agency
INLEX	International Expert Group on Nuclear Liability
INRA	International Nuclear Regulators Association
INSAG	International Nuclear Safety Advisory Group
INSARR	Integrated Safety Assessment of Research Reactors
IPFM	International Panel on Fissile Materials
IPPNW	International Physicians for the Prevention of Nuclear War
IPSART	International Probabilistic Safety Assessment Review Team
IRENA	International Renewable Energy Agency
IRRS	Integrated Regulatory Review Service
ITDB	Illicit Trafficking Database System
ITER	International Thermonuclear Experimental Reactor
JCPOA	Joint Comprehensive Plan of Action
JP	Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (21 September 1988)
JPLAN	Joint Radiation Emergencies Management Plan
JPOA	Joint Plan of Action
LEU	Low-enriched uranium
LTO	Long-term operation
MTCR	Missile Technology Control Regime
NAM	Non-Aligned Movement
NNWS	Non-nuclear weapon States
NPP	Nuclear power plant
NPT	Treaty on the Non-Proliferation of Nuclear Weapons (1 July 1968)
NSaC	Nuclear Safety Center
NSaCoE	Nuclear Safety Center of Excellence
NSG	Nuclear Suppliers Group
NSGEG	Nuclear Security Governance Experts Group
NSS	Nuclear Security Series (IAEA)
NuPoC	Nuclear Power Plant and Reactor Exporters' Principles of Conduct
NUSS	Nuclear Safety Standards
NUSSC	Committee on Nuclear Safety Standards
NWFZ	Nuclear weapon-free zone
NWS	Nuclear weapon States
OECD/NEA	Organization for Economic Cooperation and Development, Nuclear Energy Agency
OEEC	Organization for European Economic Co-Operation
OFAC	Office of Foreign Assets Control
OP	Operative paragraph
OPANAL	Organismo para la Proscripción de las Armas Nucleares en la América Latina y el Caribe
OSART	Operational Safety Review Team
PLiM	Plant life management
PMD	Possible Military Dimensions

PP	Preambular paragraph
PRA	Probabilistic Risk Assessment
PROSPER	Peer Review of Operational Safety Performance Experience Review
PSA	Probabilistic Safety Assessment
PSI	Proliferation Security Initiative
PUI	Peaceful Uses Initiative (IAEA)
PWG	Procurement Working Group
R&D	Research & Development
RADWASS	Radioactive Waste Safety Standards
RAMP	Review of Accident Management Programmes
RASSC	Committee on Radiation Safety Standards
RevCon	Review Conference
ROpER	Regulator Operating Experience Review
SALTO	Safety Aspects of Long-Term Operation of Water Moderated Reactors
SARIS	Self-Assessment of Regulatory Infrastructure for Safety
SC	Security Council
SDGs	Sustainable Development Goals
SDN List	Specially Designated Nationals and Blocked Persons List
SDR	Special Drawing Rights as defined by the International Monetary Fund (IMF)
SEDO	Safety Evaluation of Fuel Cycle Facilities during Operation
SER	Safeguards Evaluation Report
SFAIRP	‘so far as is reasonably practicable’
SLC	State-Level Concept
SSRS	Site and Seismic Safety Review
SUA	Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (2005)
SUA Prot	Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (2005)
SWU	Separative Work Units (uranium enrichment)
TCA	Trade Cooperation Agreement
TECDOCS	Technical documents
TFEU	Treaty on the Functioning of the European Union (2012)
TRANSSC	Committee on Transport Safety Standards
UN	United Nations
UNAEC	United Nations Atomic Energy Commission
UNCIO	United Nations Conference on International Organization
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGA	United Nations General Assembly

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children’s Fund
UNIDIR	United Nations Institute for Disarmament Research
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UNTS	United Nations Treaty Series
USIE	Unified System for Information Exchange in Incidents and Emergencies
USNRC	United States Nuclear Regulatory Commission
VC	Vienna Convention on Civil Liability for Nuclear Damage (21 May 1963)
VCLT	Vienna Convention on the Law of Treaties (23 May 1969)
VOA	Voluntary offer agreement
VPF	Value of a prevented fatality
WANO	World Association of Nuclear Operators
WASSC	Committee on Waste Safety Standards
WENRA	Western European Nuclear Regulators’ Association
WHO	World Health Organization
WMD	Weapons of mass destruction
WMO	World Meteorological Organization