NUCLEAR POWER PLANT EXPORTERS'

PRINCIPLES OF CONDUCT

The Nuclear Power Plant Exporters' Principles of Conduct are an industry code of conduct resulting from a three-year initiative to develop norms of corporate self-management in the exportation of nuclear power plants. In developing and adopting the Principles of Conduct, the world's leading nuclear power plant vendors have articulated and consolidated a set of principles that reaffirm and enhance national and international governance and oversight, and incorporate recommended best practices in the areas of safety, security, environmental protection and spent fuel management, nonproliferation, business ethics and internationally recognized systems for compensation in the unlikely event of nuclear-related damage.

A number of nations are continuing to expand their nuclear energy programs and/or extend the lives of their existing nuclear power plants in pursuit of a reliable supply of electricity amid concerns about climate change and energy security. Other nations are seeking to develop nuclear power for the first time. New vendors of nuclear power plants are entering the market while established vendors are reinvigorating their teams and supply chains to meet expected demand. New technologies are emerging that offer even safer, more efficient, and proliferation-resistant designs as well as lower levels of waste.

Looking ahead, it is widely expected that nuclear energy will continue to develop throughout the world. The nuclear industry will continue to evaluate and incorporate the lessons to be learned from the nuclear accident at Fukushima, as well as the experiences of over half a century of commercial nuclear energy across the globe in preparing for the future development of nuclear power. Although nuclear energy is already among the most well-regulated industries in the world, the Principles of Conduct are inspired by the conviction that a global common high standard is necessary to help minimize both the occurrence and harmful consequences of serious incidents involving nuclear materials and technology. The Principles also represent a recognition that new global norms and requirements are emerging, such as the growing global awareness of the need for environmental sustainability, energy security, and enhanced nuclear security. Continuing improvements in nuclear power plants enable existing norms to be updated as well.

Facilitated by the Carnegie Endowment for International Peace, these six principles incorporate decades of cumulative experience with nuclear technology among the participating global nuclear power plant vendors. The

Principles were developed in consultation with leading experts in each field and from the input of the World Association of Nuclear Operators (WANO), drawing where appropriate on International Atomic Energy Agency (IAEA) and related norms.

All the leading nuclear power plant vendors have taken part in the development of these voluntary Principles of Conduct. The Principles will guide their independent approaches to designing their products and interacting with operators and customer states.

No such voluntary, comprehensive, export-oriented set of norms has been published previously in the nuclear industry.

Although the burden of responsibly applying nuclear power is shared by many actors—including plant operators, governments, and regulators in exporting and recipient states—nuclear power plant vendors in particular have a strong interest in maintaining and enhancing confidence that nuclear energy will be applied responsibly. Vendors possess the unique expertise and experience to encourage and promote sound practices through their own work and their interactions with customers, regulators, and operators.

The Principles of Conduct are intended to promote free and fair competition in the market for nuclear power plants and to enhance the likelihood that the global development of nuclear energy will proceed safely, securely, and in an environmentally sustainable manner. They are designed to inform the practices of current and future vendors operating in this domain and to encourage other nuclear stakeholders, including market entrants (both suppliers and customers), to uphold these important standards in the public interest. The Principles help assure the global public and key industry stakeholders alike that the vibrant competition within the nuclear industry is channeled at upholding high standards of practice in the areas addressed by the Principles.

Although the Principles are not legally binding, the companies have undertaken, at the highest levels, to implement the Principles in the course of their business activities. Each vendor will apply its own internal implementation mechanisms, and to buttress public confidence in the Principles' thorough implementation, they will engage in periodic reviews of the experience and its challenges. The Principles are widely available to enable public scrutiny of their application.

Through this planned review process, the companies will also refine the Principles as warranted and engage new exporters and explore outreach to other nuclear industry stakeholders about the further development of these Principles.

Each company will inform its employees about the adoption of the Principles to further integrate the Principles into its business activities. The companies will also inform their customers, suppliers, and other participants in the nuclear power industry about the Principles and welcome their participation in advancing its goals. In the interest of transparency each company has designated a point of contact for queries about the Principles and their implementation.

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HISTORY

In October 2008, the Carnegie Endowment for International Peace convened a meeting of the world's major civilian nuclear power plant vendors and a group of world-class nuclear experts (see below) with the goal of developing a common understanding of the parameters that should guide the exporters of nuclear power plants. What resulted is a voluntary industry code of conduct that complements and often exceeds national laws and regulations, thus raising the bar globally on the standards of responsible nuclear conduct. The endeavor was inspired by the conviction that nuclear power could have an important role to play in meeting the future energy requirements of many countries, provided it is handled responsibly, and that nuclear power plant exporters share a common interest to that effect.

Over the past three years and seven rounds of discussion (in Brussels, Tokyo, Washington, D.C., Paris, Toronto, Seoul, and once again in Brussels), representatives from eleven companies worked alongside industry experts to craft consensus on the text of each of the six Principles.

Development of the Principles of Conduct had concluded by the fall of 2010, and a public announcement was planned for the early spring of 2011. But the public announcement was delayed in the immediate aftermath of the earthquake and tsunami affecting Japan. The participating vendors used the intervening period to reflect on the initial lessons learned from the Fukushima nuclear accident and incorporate these, as well as new safety norms that have come into existence over the past year, into the Principles of Conduct text. The participating vendors will continue to review the Principles periodically to incorporate new insights from the Fukushima nuclear accident, as well as any other best practices and updated norms that are developed in the coming months and years.

The companies involved in the drafting of the Principles of Conduct were:

- AREVA
- Atomic Energy of Canada Limited[1]
- Atomstroyexport
- China National Nuclear Corporation (CNNC)
- Doosan Heavy Industries[2]
- GE-Hitachi Nuclear Energy
- Hitachi-GE Nuclear Energy
- Korea Electric Power Company (KEPCO)
- Mitsubishi Heavy Industries
- Toshiba
- Westinghouse Electric Company

The diversity of experience, language, and culture represented in this group made the undertaking both exceptionally worthwhile and challenging. All participants learned a great deal from the exchanges. The initiative's experts and senior executives from the companies dedicated a significant amount of time and attention to the endeavor. All found it necessary to adjust preferred approaches and

1 Candu Energy, a subsidiary of SNC-Lavalin, is the successor company to the export division of Atomic Energy of Canada Limited.

2 Various entities within the South Korean nuclear industry, including Doosan Heavy Industries and KEPCO, actively and constructively participated in the development of the Principles and support its aims. Yet KEPCO has been designated to lead the South Korean consortium exporting nuclear power plants and has gone to great lengths to bring its supply chain into the loop. By adopting the Principles of Conduct, KEPCO has committed the entire South Korean consortium to these Principles.

language in search of consensus. The resulting Principles reflect this unprecedented process of mutual learning and compromise, as well as an understanding that the Principles may be updated in the future as experience warrants.

The participation of the industry's leading companies highlighted the importance of ensuring that competition laws and regulations were respected. Special guidelines were developed and implemented to ensure that discussions centered on subjects relating to the broad public interest and did not involve commercially sensitive information. Legal counsel participated in all exchanges between the vendors to ensure compliance with competition laws.

All of the current exporters of nuclear power plants participated actively and intensively in the drafting of the Principles.

The following companies have adopted the Principles of Conduct:

- AREVA
- ATMEA (an AREVA-Mitsubishi joint venture)
- Atomstroyexport
- Candu Energy (the successor company to Atomic Energy of Canada Limited)
- GE Hitachi Nuclear Energy
- Hitachi-GE Nuclear Energy
- Korea Electric Power Company (KEPCO)
- Mitsubishi Heavy Industries (including Mitsubishi Nuclear Energy Systems, a subsidiary)
- Toshiba
- Westinghouse Electric Company

Adoption of the Principles of Conduct is open to other vendor companies; through a planned review process there is a means for new entrants into the export market to adopt the Principles in the future. The experts who have volunteered their service to the Carnegie Endowment to support the development of the Principles of Conduct include:

- **Omer F. Brown, II**, Attorney-at-Law, Omer F. Brown, II Law Office;
- **Jacques Bouchard**, Adviser to the Chairman, CEA (Commissariat à l'énergie atomique); former Chairman, Generation IV International Forum; Chairman, IAEA Standing Advisory Group for Nuclear Energy (SAGNE);
- **Pierre Goldschmidt**, Nonresident Senior Associate, Carnegie Endowment; former Deputy Director General-Safeguards, IAEA;
- **Jukka Laaksonen**, Director General, STUK (Finnish Radiation and Nuclear Safety Authority); Chairman, Western European Nuclear Regulators Association (WENRA); Vice Chairman, IAEA International Nuclear Safety Group (INSAG);
- **Richard Meserve**, President, Carnegie Institution of Science; former Chairman, Nuclear Regulatory Commission; Commissioner, U.S. Department of Energy Blue Ribbon Committee on America's Nuclear Future; Chairman, IAEA INSAG;
- **Nathalie Horbach**, Independent Nuclear Law Consultant, Dundee University;
- **Irving Rotter**, Partner, Sidley Austin, LLP;
- **Frank Saunders**, Vice President-Nuclear Oversight and Regulatory Affairs, Bruce Power; and
- **Gare Smith**, Partner, Foley Hoag LLP.

In addition, the law firms of Sidley Austin LLP and Foley Hoag LLP, as well as Bruce Power, have all made generous contributions of their expertise and services in support of the process, with the law firm of Foley Hoag LLP serving as antitrust/competition law counsel to the process and attending all meetings of the vendors.

The project was funded by the Carnegie Endowment's own resources as well as generous support from the William and Flora Hewlett Foundation and the Alfred P. Sloan Foundation. The vendor companies each paid for their own expenses incurred in the course of their participation in the process.

THE PRINCIPLES AS CORPORATE SOCIAL RESPONSIBILITY

The Principles of Conduct reflect a recent trend in the management of global challenges. Leading industries, including those in the oil and gas, apparel, and pharmaceutical sectors, increasingly have recognized the value of their reputations as socially responsible actors to their long-term business success. Growing awareness of the business risks that can arise when global companies do not meet society's expectations regarding their environmental and social performance led these major industries to establish shared norms of self-regulation. These industries have committed to apply such norms even when not legally required to do so, because the industry participants do well by doing the right thing.

The Principles of Conduct represent the first initiative to develop norms of corporate self-management to govern the exportation of nuclear power plants.

Voluntary self-governance by participants in an industry, often developed in consultation with (but without the direct participation of) national governments, fuses economic self-interest with social responsibility. This is beneficial for the corporations themselves as well as the people and places in states where these corporations conduct business. Such industry efforts acknowledge the sovereignty of governments and are consistent with national laws, but build on these minimal requirements to do more for the public good and the long-term well-being of the industries they serve.

Although such norms of Corporate Social Responsibility have largely been national in scope, in recent years they have grown considerably both in importance and reach as the machinery of intergovernmental arrangements lags farther behind an increasingly globalized business environment and an increasingly interdependent world.

The Principles of Conduct represent the first such initiative to develop norms of corporate self-management to govern the exportation of nuclear power plants. Assisted by a team of leading international experts, this unique initiative places companies from six countries on three continents within a single framework of corporate social responsibility. The nuclear industry is much more heavily and effectively regulated by states than many other industries. The IAEA also produces invaluable recommendations and guidelines for nuclear energy development. Yet at their core, these guidelines and regulations, as well as those that govern the exportation of nuclear power plants, are implemented through national legislation and regula-

The Principles of Conduct demonstrate how a global nongovernmental organization such as the Carnegie Endowment, top experts in various aspects of the nuclear industry and key companies with global reach could partner to develop norms of corporate self-management in a globalizing world.

tion, while the implications of nuclear power can be more far-reaching. Moreover, current state-based and inter-governmental norms and regulations governing the exportation of nuclear technology have been previously focused mainly on preventing the proliferation of nuclear weapons. (Although commercial nuclear power plants of the types exported by the participating vendors are not sources of nuclear weapons proliferation, the Principles of Conduct emphasize the participating vendors' continuing vigilance over the application of international nonproliferation safeguards.)

By adopting the Principles, the participating vendor companies commit to also apply less well-known norms related to the exportation of nuclear power plants, such as safety, nuclear security, and environmental protection. With interest in nuclear energy spreading rapidly, new vendors and buyers are contemplating entering the marketplace, some of whom have limited to no previous experience with nuclear power.

The participants in this initiative recognized the opportunity and value of a voluntary initiative informed by world-class expertise to collect, identify and widely promote global norms and practices that encourage the socially responsible expansion of nuclear power. The Principles of Conduct demonstrate how a global nongovernmental organization such as the Carnegie Endowment, top experts in various aspects of the nuclear industry and key companies with global reach could partner to develop norms of corporate self-management in a globalizing world. Every participant in the Principles has committed voluntarily to fulfill these obligations and to periodically update this document in response to changing circumstances, new norms and technological change.

Although the Principles of Conduct are not legally binding, the companies adopting the Principles have independently committed to implementing them in word and deed. All of the elements of these Principles conform to national laws and international rules, guidelines, and norms. But the companies adhering to the Principles recognize that the social and economic value of nuclear power is maximized by voluntarily adhering to norms that exceed legal and regulatory requirements, such as those set forth in these Principles.

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PREAMBLE

Considering that responsible use of nuclear power plant technology is vital to help meet global energy requirements and address climate change in a sustainable manner;

Desiring to continuously improve safety, security, and environmental protection;

Conscious of the sensitive nature of nuclear materials and technology, and thus the necessity of using nuclear power plant technology exclusively for peaceful purposes;

Inspired by and seeking to complement national laws and regulations, international laws and norms, and the recommendations of vital institutions such as the International Atomic Energy Agency that promote the peaceful use of nuclear technology as a safe, secure, reliable, and efficient source of energy;[1]

Committing to export strictly in compliance with **Nuclear Suppliers Group guidelines** and with the laws and policies of Vendor and Customer States;

Recognizing that the establishment of any nuclear power program requires an effective legal and regulatory framework and technological and industrial infrastructure, and qualified personnel;

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1 These Principles cite documents in Appendix B, which will be reviewed by the participants as they evolve. Documents are highlighted in **boldface text.**

Mindful that a harmful event at a nuclear power plant anywhere can be considered to be a harmful event everywhere, and limit the contributions of nuclear energy;

Seeking to enhance public confidence by upholding high standards of transparency, integrity, ethical behavior, and social responsibility and to promote continuous improvement toward the implementation of global best practices;

Acknowledging that Customer States have the ultimate responsibility to regulate the construction, operation, and decommissioning of nuclear power plants in their jurisdictions;

Vendors adopting these Principles of Conduct will undertake good faith efforts to implement the best practices described in six principles: Safety, Security, Environmental Protection, Compensation for Nuclear Damage, Nonproliferation, and Ethics.

These principles are based upon best practices derived from the experience of nuclear power plant vendors and operators and the guidelines of the International Atomic Energy Agency. They were developed for the public good over several years through a nongovernmental consensus process facilitated by the Carnegie Endowment for International Peace, with input and advice from regulators, operators, and internationally recognized experts.

These Principles have been and will be reviewed and revised as appropriate, including to reflect the lessons learned from the Fukushima nuclear accident following the earthquake and tsunami.

Participating Vendors express their intention to follow these principles in designing nuclear power plants and in performing their activities. Participating Vendors will inform their customers, suppliers, subcontractors, and other participants in the nuclear power plant industry about the nature, purposes, and benefits of these Principles of Conduct, and welcome their cooperation in applying them.

These Principles are voluntary, create no legal duty, and are not legally binding, but nevertheless reflect the genuine aspiration of the participants to apply these principles and make a good faith effort to achieve these goals. The reference language of these Principles of Conduct is English.

PRINCIPLE 1: SAFETY, HEALTH, AND RADIOLOGICAL PROTECTION

Before entering into a contract to supply a nuclear power plant to a Customer, Vendors expect that the Customer State:

1.1 Is a party to the IAEA's **Convention on Nuclear Safety**, or has indicated its intention to become a party before operation of the plant begins.

Before entering into a contract to supply a nuclear power plant to a Customer, Vendors will have made a reasonable judgment that the Customer State has:

1.2 A legislative, regulatory, and organizational infrastructure needed for implementing a safe nuclear power program with due attention to safety either in place or under development following the guidance provided in the **IAEA Safety Standard "Establishing the Safety Infrastructure for a Nuclear Power Programme"** (The information on infrastructure and the plans concerning its development should be

provided by the Customer State based on its self-assessment or an independent external assessment such as a peer review conducted under the auspices of the IAEA);

1.3 Either an existing industrial infrastructure to support safe long-term operation, or a credible plan to develop such an infrastructure before operation of the nuclear power plant begins; and[2]

1.4 Taken into account international operating experience and severe accident considerations.

Vendors commit to:

1.5 Export nuclear power plants that:

1.5.1 Apply consistent, high safety standards, reflecting the Vendors' safety goals;

1.5.2 Reflect the uncompromising application of recognized safety principles, including the **IAEA Fundamental Safety Principles**;

1.5.3 Are based on reliable technology, which is proven either a) in operation or b) by a test program or analysis consistent with internationally recognized safety principles, before operation of the plant begins;

1.5.4 Are designed in accordance with the **IAEA Safety Requirements**,[3] giving due consideration to relevant **IAEA Safety Guides**, and meeting regulatory requirements of the Customer State;

1.5.5 Use components manufactured in accordance with appropriate nuclear standards; and

1.5.6 Incorporate design provisions to address emergency response requirements.

1.6 Exchange information with the scientists and experts of the Customer State, as needed, to assist plant designers in adequately understanding the site-specific environmental and other circumstances affecting nuclear safety so as to be able to adapt the design as necessary to local conditions.

When contracting to supply a nuclear power plant, Vendors will address the tasks and issues that require due attention during project implementation for achieving and demonstrating a high level of safety and quality. The responsibility for these tasks and issues should be clearly assigned in the contractual arrangements between the Vendor and the Customer.

1.7 Among the tasks which the parties should seek to address in contracting are:

1.7.1 Provision of safety documentation and validated safety analysis reports that are at least as rigorous as what one would provide if the nuclear power plant was built in the Vendor State;

1.7.2 Promotion of a high safety culture as defined in the IAEA International Nuclear Safety Group report "**Key Practical Issues in Strengthening Safety Culture**," in all work on the nuclear power plant site throughout the construction project;

1.7.3 Assurance of competent construction management;

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2 An essential part of this industrial infrastructure is a power transmission grid suitable to provide reliable external power supply to the nuclear power plant.

3 See entry in Appendix B under **IAEA Safety Standards**.

1.7.4 Assurance that the systems, structures, and components of the plant are constructed or manufactured and installed to meet the requirements in the specified standards;

1.7.5 Making possible subcontracts on design, construction, manufacturing, installation, and quality control only with companies that have proven their qualifications and competence or have been evaluated and found to meet the requirements by the Vendor;

1.7.6 Managing the work of the subcontractors as needed to ensure their performance in compliance with the specified standards and requirements;

1.7.7 Development of the Customer's human resources and competencies for safe, long-term operation; and

1.7.8 Development of written work procedures, and other guidance needed for safe operation, including emergency operating procedures and accident management procedures.

Recognizing their unique expertise, Vendors may provide, if requested by the Customer and separately agreed, relevant information and guidance to the Customer's State and the Customer to help:

1.8 Improve the elements of the Customer State's national infrastructure that influence safe nuclear power plant operation, for example:

1.8.1 Safety aspects of the site selection process;

1.8.2 Development of local skills needed to maintain the nuclear plant in safe operational conditions;

1.8.3 Development of comprehensive plans to support emergency management requirements;

1.8.4 Transparent and public communication, including timely provision of information in emergency situations.[4]

Before operation of the nuclear power plant begins, the Vendors will inform Customers of the benefits of establishing connections with other operators of nuclear power plants, including pre-start-up reviews by the IAEA and World Association of Nuclear Operators, for the purpose of learning from others' experiences and safety practices.[5]

PRINCIPLE 2: PHYSICAL SECURITY

In designing nuclear power plants, Vendors will:

2.1 Incorporate design provisions made for security;

2.2 Ensure security design provisions are compatible with safety and emergency response requirements;[6]

2.3 Cooperate with the Customer to incorporate the Customer State's Design Basis Threat;

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4 As specified by the **Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.**

5 For more information, see the **Charter of the World Association of Nuclear Operators**.

6 As discussed in the International Nuclear Safety Group's report on the **Interface between Safety and Security at Nuclear Power Plants**.

2.4 Incorporate within design provisions the potential for damage from security threats in accordance with the Customer State's Design Basis Threat.

Before entering into a contract to supply a nuclear power plant to a Customer, Vendors will have made a reasonable judgment that the Customer State has or in a timely fashion will have:

2.5 Provided information to the Vendor on the results of the Customer State's Design Basis Threat analysis sufficient to allow the Vendor to complete the design. The threat and risk analysis should take into account plant location and conditions in the region as well as internationally accepted standards;

2.6 Become a party to the IAEA's **Convention on the Physical Protection of Nuclear Materials**;

2.7 Participated in the United Nations **International Convention for the Suppression of Acts of Nuclear Terrorism**; and

2.8 Developed a national legislative and regulatory infrastructure for nuclear security, including adequate policies and procedures governing:

2.8.1 Allocation of responsibility for security among government and plant management;

2.8.2 Implementation of a security response capability appropriate to the Design Basis Threat; and

2.8.3 The interests of the population at large with respect to physical security provisions.

Recognizing their unique expertise in support of effective security provisions, Vendors may provide, if requested by the Customer and separately agreed, relevant information and guidance to the Customer State and the Customer to help establish in a timely fashion that:

2.9 Plant physical security provisions have been undertaken based on a well-established standard, such as the IAEA's **Convention on the Physical Protection of Nuclear Materials**, which typically:

2.9.1 Use the Design Basis Threat to determine how to appropriately equip security staff and to limit the potential use of force to only that necessary;

2.9.2 Establish appropriate standards for the selection, training, and testing of security staff and provisions to enforce them;

2.9.3 Incorporate and address plant design sensitivities;

2.9.4 Take into account provisions for efficient plant operation, safety, and emergency response in security planning; and

2.9.5 Ensure physical plant security and acknowledge respect for human rights;

2.10 Routine evaluations of the sufficiency of security response capabilities are undertaken.

2.11 An integrated safety and security oversight organization is established with responsibility for establishing, monitoring, and continuously adjusting the balance among security, safety, emergency response, and efficient plant operation; and

2.12 Continuous improvement and coordination between law enforcement, other Customer State agencies, and plant security are undertaken through follow-up, support, and joint training.

PRINCIPLE 3: ENVIRONMENTAL PROTECTION AND THE HANDLING OF SPENT FUEL AND NUCLEAR WASTE

Before entering into a contract to supply a nuclear power plant to a Customer, the Vendor will have made a reasonable judgment that the Customer State either has or will have in a timely manner:

3.1 Enacted national nuclear laws or developed a regulatory framework that:

3.1.1 Formalizes and keeps current a credible national strategy and/or a plan to, in a safe, secure and environmentally sound manner:

3.1.1.1 Store, treat/recycle, or otherwise manage spent fuel and radioactive waste;

3.1.1.2. Decommission closed-down nuclear facilities; and

3.1.1.3. Dispose of all radioactive wastes;

3.1.2 Addresses safeguards obligations, safety, national and international security, human health, effective management of radioactive releases at all times, and environmental stewardship; and

3.2 Ratified, accepted, or otherwise applied the principles of the IAEA's **Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management**.

Vendors will seek to design plants that:

3.3 Enhance environmental benefits and minimize environmental impact in operations, including waste production, by applying relevant best practices such as those defined by International Standards Organization and the IAEA;[7]

3.4 Provide for safe and secure on-site storage of spent fuel; and

3.5 Facilitate ultimate plant decommissioning.

In contracting to sell nuclear power plants, Vendors will seek to:

3.6 Address the responsible management by Customers of spent fuel and other radioactive materials and waste.

Recognizing their unique expertise, Vendors will undertake, as specifically agreed, to cooperate with and provide relevant information to pertinent governments and Customers to help promote:

3.7 Protection of the environment through the responsible use of natural resources, the reduction of waste and emissions, and the minimization of harmful impacts to the environment, in accordance with the best technically and economically sound practices of the worldwide nuclear power industry;

3.8 A precautionary approach to the environment consistent with the definition provided in the **United Nations Global Compact and the Rio Declaration**; and

3.9 Development in Customer States of systems for the long-term management of spent fuel and/or radioactive waste that are rational, economic, safe, secure, and consistent with Customer States' safeguards obligations.

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7 Including the ALARA principle.

PRINCIPLE 4: COMPENSATION FOR NUCLEAR DAMAGE

Before entering into a contract to supply a nuclear power plant to a Customer, the Vendor will independently make a reasonable judgment that the Customer State has in force, or will have in force before fuel is delivered in the Customer State's territory, a legal regime providing adequate and prompt compensation for the public in the unlikely event of an accident, with protection in effect equivalent to one or more of the following best practices:

4.1 A legal regime for compensation and nuclear liability that, *inter alia*:

4.1.1 Contains adequate liability limits and financial protection consistent with current international standards;

4.1.2 Is backed by Customer State guarantees;

4.1.3 Ensures that claims for compensation by possible victims will be channeled to the operator of the nuclear power plant(s) that would be strictly and exclusively liable and will be channeled to one single competent court;

4.1.4 Includes compensation for personal injury, property damage, environmental damage, loss of income, economic loss, and preventive measures;

4.1.5 Does not allow compensation amounts to be set aside or reduced by unilateral strict reciprocity requirements; and/or

4.2 A treaty relationship with the Vendor State under either the IAEA's **Vienna Convention on Civil Liability for Nuclear Damage**, as amended or, if eligible, the Organisation for Economic Cooperation and Development's **Paris Convention on Third Party Liability in the Field of Nuclear Energy**, as amended; and/or

4.3 The IAEA's **Convention on Supplementary Compensation for Nuclear Damage** (CSC)—which is the IAEA's unified global nuclear liability regime that any State can join if it is a Party to the Vienna Convention or Paris Convention or has a domestic law that is consistent with the CSC Annex. Such action would enable global treaty relations crucial to assure worldwide compensation and liability protection during plant operation and transnational transport.

PRINCIPLE 5: NONPROLIFERATION AND SAFEGUARDS

The Vendors are committed to the peaceful use of nuclear energy.

Each Vendor recognizes that its Vendor State is committed to a policy that nuclear power plants and related materials, equipment, and technology[8] *shall be provided to and used by Customer States exclusively for peaceful purposes, consistent with the* **Treaty on the Non-Proliferation of Nuclear Weapons**, *and in conformity with* **Nuclear Suppliers Group Guidelines** *and pertinent* **United Nations Security Council Resolutions**.

8 As defined in the latest revision of IAEA INFCIRC/254/Part 1.

Each Vendor further recognizes that its Vendor State has enacted export laws and/or regulations intended to implement that policy, declares that it is bound by and fully committed to implementing that policy, and supports a strong nonproliferation regime.

Accordingly, each Vendor exports nuclear power plants and related materials, equipment, and technology solely in accordance with relevant national export laws and/or regulations, which implement the foregoing.

As a manifestation of their strong commitment to peaceful uses of nuclear energy and nonproliferation, Vendors undertake to:

5.1 Pay special attention to and promote proliferation-resistant designs and take IAEA safeguards requirements into account in design;

5.2 Pay special attention to the exclusively peaceful use of trigger list and sensitive dual use items delivered by the Vendor, including the requirements, as applicable to Vendors, in bilateral agreements between Vendor State and Customer State, **Nuclear Suppliers Group guidelines**, **pertinent United Nations Security Council Resolutions**, and Vendor contracts;

5.3 Seek to obtain a commitment from the Customer to implement in a timely manner at the facility a System of Accounting for and Control of Nuclear Materials and a safeguards approach consistent with its IAEA obligations;

5.4 Inform in a timely manner the appropriate authority of the Vendor State and, as appropriate, other Vendors adhering to these Principles, of any serious nonproliferation concerns related to the equipment, materials, and technology provided by the Vendor to the Customer; and

5.5 Consult closely with the Vendor State and act in accordance with its instructions upon being informed by the Vendor State or becoming directly aware of actions or events that would raise serious concerns about compliance with the global nonproliferation regime.[9]

In addition to the above-mentioned provisions, Vendors welcome the inclusion by Vendor States of provisions in bilateral agreements requiring a Customer State to implement effective nuclear export controls and to have an **IAEA Additional Protocol** *in force.*

PRINCIPLE 6: ETHICS

Vendors seek in their activities to:

6.1 Comply with high ethical business standards in their interactions with Customers;

6.2 Communicate with good faith, and in the spirit of transparency, about these principles;

6.3 Promote worker safety and protect public health and the environment;

6.4 Take into account the principle of sustainable development, including the effects of projects on the environment and society;

9 Examples of such actions or events are given in the Appendix A.

6.5 Proactively cooperate with Customers to inform and consult in a participatory manner with nearby communities regarding public information about planned project activities and their potential social and environmental effects;

6.6 Have in place internal programs to discourage corruption and encourage compliance with anticorruption laws, such as those implementing the **United Nations Convention Against Corruption** and/or the OECD **Convention on Combating Bribery of Foreign Public Officials in International Business Transactions**, and seek to obtain a reciprocal commitment from Customers;

6.7 Respect through word and deed fundamental labor rights, including the prohibitions on child and forced labor, non-discrimination in employment, and the rights to freedom of association and collective bargaining;

6.8 Respect human rights pursuant to the **Universal Declaration of Human Rights**, recognizing that States bear responsibility for protecting human rights; and

6.9 Encourage their suppliers, subcontractors, and other participants in the nuclear power plant industry to demonstrate the same respect for these ethical commitments.

APPENDIX A: APPENDIX TO PRINCIPLE 5: NONPROLIFERATION AND SAFEGUARDS

Examples of actions and events that would constitute serious concerns about compliance with the global nonproliferation regime:

A.1 A State issues a withdrawal notification from the **Treaty on the Non-Proliferation of Nuclear Weapons** or has unilaterally terminated or suspended the implementation of a safeguards agreement with the IAEA;

A.2 The IAEA finds, with respect to a State's activities, that the IAEA is no longer able, because of the obstruction by or lack of transparency and cooperation from a State, to fully implement the **IAEA Comprehensive Safeguards Agreement** or the **IAEA Additional Protocol**, or verify that there has been no diversion of nuclear material required to be safeguarded;

A.3 A State is found by the IAEA to be in non-compliance with its safeguards agreement(s) under Article XII.C of the IAEA Statute; and/or

A.4 A State proceeds with the test of a nuclear explosive device.

Upon being informed by the Vendor State or becoming directly aware of any such case the Vendor will consult and act in accordance with instructions from the appropriate authorities of the Vendor State. Vendor State responses may include, among others, those indicated in **UN Security Council Resolution 1887**, in the **Final Document of the 2010 NPT Review Conference**, and consistent with Article XII.C of the IAEA Statute.

APPENDIX B: REFERENCES

INTERNATIONAL CONVENTIONS

United Nations Convention Against Corruption—Adopted by the UN General Assembly in resolution A/RES/58/4, October 31, 2003.

OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions—Adopted by the Organisation for Economic Cooperation and Development, signed December 17, 1997.

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Reproduced in IAEA INFCIRC/336, adopted September 26, 1986.

Convention on Early Notification of a Nuclear Accident, Reproduced in IAEA INFCIRC/335, adopted September 26, 1986.

Convention on Nuclear Safety—"Convention on Nuclear Safety," IAEA INFCIRC/449, adopted June 17, 1994.

Convention on the Physical Protection of Nuclear Material (CPPNM)—Reproduced in IAEA INFCIRC/274/Rev.1, May 1980.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management—"Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management," Reproduced in IAEA INFCIRC/546, adopted December 1997.

Convention on Supplementary Compensation for Nuclear Damage (CSC)—"Convention on Supplementary Compensation for Nuclear Damage," IAEA INFCIRC/567, adopted September 12, 1997.

International Convention for the Suppression of Acts of Nuclear Terrorism—Adopted by the UN General Assembly in resolution A/RES/59/290, April 2005.

Paris Convention on Third Party Liability in the Field of Nuclear Energy—Adopted by the Organisation for Economic Cooperation and Development, February 12, 2004.

Vienna Convention on Civil Liability for Nuclear Damage, Reproduced in IAEA INFCIRC/566, adopted September 12, 1997.

IAEA DOCUMENTS

"Considerations to Launch a Nuclear Power Programme"—"Considerations to Launch a Nuclear Power Programme," International Atomic Energy Agency, Reproduced in IAEA GOV/INF/2007.

IAEA SAFETY STANDARDS

Standards of safety issued pursuant to Article III(A)(6)10 of the IAEA Statute. Safety standards issued since 1997 in the IAEA Safety Standards Series are designated as Safety Fundamentals, **Safety Requirements or Safety Guides**.

"Establishing the Safety Infrastructure for a Nuclear Power Programme"—"Establishing the Safety Infrastructure for a Nuclear Power Programme," IAEA Safety Guides, IAEA Safety Standards Series, October 12, 2010.

IAEA Fundamental Safety Principles— "Fundamental Safety Principles," Safety Fundamentals, IAEA Safety Standards Series No. SF-1, 2006.

IAEA Safety Requirements—Refers to "Safety of Nuclear Power Plants: Design," IAEA Safety Requirements, IAEA Safety Standards Series No. SSR 2.1, 2011.

IAEA INTERNATIONAL NUCLEAR SAFETY GROUP (INSAG) REPORTS

"Key Practical Issues in Strengthening Safety Culture"—"Key Practical Issues in Strengthening Safety Culture," Report by the IAEA International Nuclear Safety Group, INSAG-15, 2002.

"The Interface between Safety and Security at Nuclear Power Plants"—"The Interface between Safety and Security at Nuclear Power Plants," Report by the IAEA International Nuclear Safety Group, INSAG-24, 2010.

IAEA SAFEGUARDS

IAEA Additional Protocol—"Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the application of Safeguards," International Atomic Energy Agency, INFCIRC/540 (Corrected), September 1997.

IAEA Comprehensive Safeguards Agreement—"The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-proliferation of Nuclear Weapons," International Atomic Energy Agency, INFCIRC/153 (Corrected), June 1972.

State System of Accounting for and Control of Nuclear Materials—See "Systems of Accounting for and Control of Nuclear Material," *IAEA Bulletin* vol. 17, no. 2, 1975.

OTHER DOCUMENTS AND INTERNATIONAL AGREEMENTS

Charter of the World Association of Nuclear Operators—February 1, 2010.

Final Document of the 2010 NPT Review Conference—NPT/CONF.2010/L.2, May 27, 2010.

Nuclear Suppliers Group Guidelines—Refers to 1) "Guidelines for Nuclear Transfers," Reproduced in IAEA INFCIRC/254/Part 1, as amended November 7, 2007; and 2) "Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology," Reproduced as IAEA INFCIRC/254/ Part 2, as amended March 20, 2006.

Pertinent United Nations Security Council Resolutions—Refers to resolutions adopted by the United Nations Security Council under Chapter VII of the UN Charter that address issues relevant to nuclear nonproliferation and illicit trafficking. It includes UN Security Council resolutions S/RES/1540 (2004), S/RES/1810 (2009), S/RES/1887 (2009) and state-specific resolutions such as S/RES/1718 (2006) and S/RES/1929 (2010).

Rio Declaration—Rio Declaration on Environment and Development, A/CONF.151/26 (vol. I), adopted June 14, 1992.

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)—Reproduced in IAEA INFCIRC/140, March 5, 1970.

United Nations Global Compact—"Ten Principles of the United Nations Global Compact," 2000.

UN Security Council Resolution 1887—Adopted by the UN Security Council in S/RES/1887, September 24, 2009.

Universal Declaration of Human Rights—Adopted by the UN General Assembly in resolution A/RES/217(III) A, December 10, 1948.

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