

## **International Nuclear Third Party Liability Law: The Response to Chernobyl**

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### **I. Introduction**

Twenty years ago a nuclear accident occurred at the Chernobyl Nuclear Power Plant in Ukraine that would have a profound impact on the evolution of international nuclear liability law. The accident had serious detrimental effects upon human health, property and the natural environment and damage was suffered not only in Ukraine itself, but in several neighbouring countries and in some cases, far beyond.<sup>1</sup>

The accident resulted in a prolonged release to the atmosphere of large quantities of radioactive substances with widespread distribution of radioactivity throughout the northern hemisphere. The most serious radiological, health, and socio-economic consequences were experienced by the populations of Belarus, Ukraine and Russia and they still suffer from many of those consequences to this day. Approximately five million people still live in areas in these three countries that are contaminated with radionuclides from the Chernobyl disaster.

Acute health effects were experienced first by the fire fighters and other emergency clean-up workers who intervened immediately following the explosions. A total of 31 people died as a consequence of the accident, and about 140 people suffered various degrees of radiation sickness and radiation-related health impairment. Longer term health effects are evidenced by a significant increase of carcinomas of the thyroid amongst infants and children exposed at the time of the accident in the contaminated regions of the former Soviet Union.

The town of Pripjat, located 4 kilometres from the plant, was evacuated within hours of the accident, and the town remains uninhabited to this day. More than 100 000 people were evacuated from their homes, mostly from the 30-km radius area around the accident site, during the first few weeks following the accident.

The impact of the accident on the environment, particularly on agricultural production, was and continues to be widespread. Tens of thousands of square kilometres of agricultural land were contaminated with radiation and large quantities of food products, particularly dairy products, had to be destroyed. Bans or restrictions were placed on the production and sale of certain other agricultural products and even today there are several thousand square kilometres of land on which agricultural activities are prohibited.

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\* Head of Legal Affairs, OECD Nuclear Energy Agency. The facts contained and ideas expressed in this paper are the responsibility of the author alone.

1. There are numerous publications describing the radiological, health and socio-economic consequences of the Chernobyl accident. The information contained in the following paragraphs has been largely taken from, "Chernobyl: Assessment of Radiological and Health Impacts, 2002 Update of Chernobyl: Ten Years On", OECD Nuclear Energy Agency, 2002.

The activity transported by the multiple plumes from Chernobyl was not only measured across Europe, but as well in Canada, Japan and the United States, although the radiological impact of the accident in these other countries was generally very low or even insignificant. What *was* significant, however, was the sobering realisation of the extent to which a major nuclear accident could have trans-boundary implications, affecting countries that were a considerable distance from the accident site.

Equally sobering was the realisation of the costs of the damage incurred, both on individual and societal levels – costs which resulted from loss of life, personal injury and illness including the effects of psychological stress and other mental health problems, property damage, economic loss, damage to the environment and other socio-economic disruptions. The range of damage suffered seems almost limitless. No precise figures are available, but the costs of the accident over the last two decades are estimated to have risen to the level of hundreds of billions of dollars.

While much has been written about the extent of the damage caused by Chernobyl, relatively little attention has been focused, by comparison, on the ability of individuals who did suffer damage to obtain compensation for it, wherever they were or are geographically situated. This is not actually surprising, given the magnitude of the accident's consequences, which would have been beyond the financial capacity of any legal entity or entities that may eventually have been held liable for the resulting damage.

One also has to take into account the fact that in 1986 there was no special legislation in place in the former Soviet Union which would have entitled victims in the most severely affected successor countries of Ukraine, Belarus and Russia to claim compensation for nuclear damage suffered. Nor was there any international liability and compensation regime to which the former Soviet Union was Party and under which victims in neighbouring countries would have had a right to claim compensation in respect of nuclear damage incurred as a result of the accident. The absence of both made it very difficult for victims, both within and outside of the Soviet Union, to be compensated for the damage they suffered. Victims within the Soviet Union were obliged to trust in the political will of their government to provide compensation, in one form or another, for the damages they suffered, whilst victims outside the Soviet Union fell back on either common or civil law principles if applicable, or the political will of their own governments to compensate their losses.<sup>2</sup>

The 20<sup>th</sup> anniversary of the Chernobyl accident stirs painful memories of this tragic event, but it is also a time to reflect on the ways in which the international nuclear community has responded, since that accident, to the need to protect victims of nuclear damage through a viable and effective international liability and compensation regime. To assess the extent and value of that response, we need to go back and look at what protections were available to victims on an international level *before* Chernobyl.

## II. The Evolution of the Fundamental Principles

In the early days of the development of the nuclear industry, the governments of many industrialised countries viewed nuclear power as a possibly limitless source of indigenously produced energy that would enable their economies to grow and prosper rapidly. There were, however, a number of important barriers to this development.

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2. A good example of this is found in Dr. Werner Eich, "The Compensation of Damage in Germany Following the Chernobyl Accident" together with the Documentation of the German Federal Office of Administration, "Compensation for Damage Following the Accident at the Chernobyl Nuclear Power Plant", in Workshop Proceedings of Indemnification of Damage in the Event of a Nuclear Accident, OECD 2003, p. 89-92 and p. 99-116.

## International Nuclear Law in the Post-Chernobyl Period

First, it was recognised that the public needed to be assured of sufficient protection against the potential magnitude and peculiarity of risks arising from nuclear energy production. These risks are not only associated with the operation of nuclear reactors, but with the production, carriage, storage and disposal of nuclear fuel capable of spontaneous criticality. They could lead to far greater damage than that normally associated with conventional industries and in addition, that damage might not manifest itself until many years after the incident which caused it. While governments at the time may not have envisaged a “Chernobyl” type accident, they were very much aware that in the case of a nuclear catastrophe involving a large scale emission of ionising radiation, hundreds or even thousands of people could suffer radiation related illness, incur damage to their property and suffer various other forms of economic loss.

Secondly, it was recognised that the public was not the only entity in need of protection. Fear of financially debilitating liability claims that might be instituted by innocent victims following a nuclear accident was inhibiting investment in the construction of new power plants by potential owners, builders, and suppliers of equipment, services and technology. All were concerned that such claims, if successful, could place them in bankruptcy. With no protection against a liability that was potentially unlimited both in time and amount, nuclear plant owners/operators, builders and suppliers were understandably hesitant to commit to the development of the industry.

Governments realised that a solution to these conflicting interests was essential; the need to protect the public from the exceptional risks posed by the production of nuclear energy, the economic benefits of a developed nuclear power industry, and the need to protect investors and suppliers from ruinous claims for damages all had to be reconciled. It quickly became obvious that the answer lay in removing the legal and financial impediments to industrial development while at the same time ensuring adequate compensation for any damage that might be suffered by innocent third parties.

Accomplishing these objectives meant setting aside the application of the rules of ordinary tort law to nuclear accidents. Those rules, while appropriate for conventional industrial risks, were not deemed compatible with nuclear ones. They were seen to inhibit, rather than facilitate victims from demonstrating which of the many potential parties involved in a nuclear incident was legally liable therefor, particularly given the overwhelming technical complexities of such a task. They were also seen to expose nuclear owners/operators, builders and suppliers to unlimited liability amounts, and for unlimited periods of time, in respect of which they would never have been able to obtain adequate insurance coverage in the normal course of business.

States promoting the peaceful uses of nuclear energy thus developed a number of basic principles to replace the rules of ordinary tort law, principles which form the basis of nuclear liability law in most industrialised countries of the world today. Those basic principles include:

*Strict Liability:* The operator of a nuclear installation is strictly liable for damage to third parties<sup>3</sup> resulting from a nuclear incident occurring at its installation or during the course of transport of nuclear substances to or from that installation. Due to the unusual risks associated with the operation of nuclear installations or the transport of nuclear substances, it was clear that those who carried out those activities should be fully responsible for any injurious consequences

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3. A third party is anyone other than the nuclear operator itself and other than a supplier of goods, services or technology for use in connection with a nuclear installation. A third party may be inside or outside of the nuclear installation and as such the term includes employees of the operator of the nuclear installation at which an accident occurs. In most countries, employees of the nuclear operator will also have a right to claim compensation under a system of public health insurance, social security, workers or occupational disease compensation.

resulting therefrom. Strict liability relieves a claimant of the burden of proving fault or negligence, and imposes liability, together with the obligation to compensate the damage suffered, merely on proof of a causal link between the damage and the nuclear accident in issue.<sup>4</sup> Since it would be virtually impossible for a claimant to have the necessary knowledge of what had taken place in a nuclear installation or in the course of carriage when the accident occurred, strict liability provides a large measure of equity that would not otherwise be available to victims of a nuclear accident.

*Exclusive Liability:* The operator of a nuclear installation is exclusively liable for damage to third parties resulting from a nuclear incident occurring at its installation or during the course of transport of nuclear substances to or from that installation. The operator is legally liable regardless of whose acts or omissions were the actual cause of the accident. For the victim, this principle obviates the need to identify and pursue those who actually caused the accident, a task which, due to the difficulty of obtaining the necessary evidence after an accident has occurred, would be virtually impossible. In addition, suppliers of nuclear goods, services and technology are spared the considerable expense of defending complicated liability actions instituted by those suffering damage. They are also relieved of the need to purchase costly third party liability insurance, an expense which would need to be incurred by each and every entity supplying goods, services or technology to the nuclear installation or for the transport of nuclear substances. The advantages enjoyed by suppliers are extended to carriers who are not responsible for the packaging of the nuclear substances being transported, who do not necessarily have the specialised knowledge of how to handle them and who would otherwise also be required to purchase costly third party liability insurance to cover their liability exposure.

*Liability is Limited in Amount:* Governments' desire to encourage the development of the nuclear industry by relieving nuclear operators of the burden of potentially ruinous liability claims in the event of a nuclear accident, led them to adopt a principle which limits the amount of compensation payable to victims by a nuclear operator in the event of an accident for which it is liable. Without it, nuclear operators would be exposed to unlimited liability, meaning that once their available insurance coverage for this risk is exhausted, they would have to resort to their own assets to pay nuclear damage compensation which could, in turn, lead them into bankruptcy.<sup>5</sup> This principle is, so to speak, the *quid pro quo* for the benefits to victims of the imposition of strict and exclusive liability upon a nuclear operator. Thus, even if the amount of damage suffered as a result of a nuclear accident exceeds the specified amount of liability imposed upon an operator, that operator will not be required to provide any further compensation.<sup>6</sup>

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4. This is contrary to the rules of ordinary tort law which require a claimant to prove the fault or negligence of the entity from whom it is seeking compensation. There are usually a few exceptions to this rule however; a nuclear operator is generally exonerated from liability, for example, where the damage results from a nuclear accident caused directly by an act of war or other similar hostilities which are deemed to be the responsibility of the state. In cases where the operator is exonerated from liability, it is expected that the state itself will assume responsibility for compensating any nuclear damage incurred.
  5. Even if a nuclear operator were required to liquidate its assets to pay compensation claims over and above its available insurance, there is no guarantee that victims would necessarily benefit, especially where the nuclear accident destroys the operator's major asset, the nuclear installation itself.
  6. Most governments recognise that in the case of a major accident the nuclear operator's liability insurance may not be sufficient to compensate all damage suffered, and they are usually prepared therefore to provide some form of additional or supplementary compensation. State intervention is based on the

*Liability must be Financially Secured:* Nuclear operators are obliged to obtain and maintain financial security in respect of their liability to third parties in an amount corresponding to their imposed liability amount. Compulsory financial security ensures that, if and when the time ever comes, funds will actually be available to pay compensation to claimants. Insurance provided by the private sector is the most frequent type of security obtained by nuclear operators but other forms are possible as well, such as a state or bank provided guarantee, operator pooling system or even self-insurance.<sup>7</sup> The nuclear insurance market capacity has always been limited and it remains so to this day, even though it has increased significantly from what it was in the early days of the industry. It is this capacity which largely determines the amount of liability imposed on nuclear operators, as well as the ability of nuclear operators to pay not unreasonably priced premiums for that insurance.

*Liability is Limited in Time:* The providers of required financial security, primarily private insurers, have made it clear that the coverage which they provide must be limited in time, usually to not more than ten years from the date of the nuclear accident for both personal injury and property damage claims. Neither insurance companies nor nuclear operators can accept the prospect of remaining liable to pay compensation for nuclear damage for an indefinite or even an extended period of time after a nuclear accident. In addition, in most jurisdictions there is a “discovery rule” which, in addition to the time limit for instituting claims, requires claims to be filed within two or three years of the date upon which the victims discovered the damage for which compensation is claimed. In some cases, the state will assume the responsibility of paying compensation for damage suffered where claims are instituted beyond the specified limitation period.

These principles form the basis of many national legislative regimes adopted to address liability and compensation for damage suffered by a third party. They also form the basis of the existing international regimes established to address third party nuclear liability and compensation issues as will be seen below.

### **III. The International Nuclear Liability Regimes before Chernobyl**

Even before the Chernobyl accident took place, states promoting the peaceful uses of nuclear energy also recognised that the repercussions of a nuclear accident would not stop at political or geographical borders, and that it would be highly desirable to establish an international regime to provide for a harmonised liability system for all neighbouring countries – this was especially true for Western Europe. It was decided to establish such a regime by means of an international agreement which would set out rules for instituting cross-border legal actions where victims in one state wished to claim compensation for damage against a nuclear operator in another state, for addressing liability for damage arising out of the transport of nuclear substances from one country to another, and for resolving the often complicated questions of which state’s courts should have jurisdiction to hear victims’ claims for compensation and which state’s laws should apply to the adjudication of such claims.

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recognition of state responsibility for the protection and welfare of its citizens and the principle of national solidarity.

7. Self-insurance is usually only permitted in respect of nuclear installations that are owned or operated by a state.

## International Nuclear Law in the Post-Chernobyl Period

It was recognised that such a harmonised liability system would contribute to legal certainty, eliminate the possibility of discrimination and ensure that claimants in states party to the convention would have their actions adjudged by similar laws, regardless of where the accident took place and where the damage was suffered.

Furthermore, governments realised that the potential magnitude of a nuclear incident would require international collaboration between national insurers. Only by marshalling the resources of the international insurance market by coinsurance and reinsurance could sufficient financial security be made available to meet possible compensation claims.<sup>8</sup> Such collaboration could only be achieved if there were a uniform third party liability regime at the international level.

That international regime was initially founded in 1960, under the auspices of the Organisation for European Economic Co-operation (now the Organisation for Economic Co-operation and Development – OECD), with the adoption by its Western European member countries of a regional convention known as the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention).<sup>9</sup> The principles described above form the basis of that Convention, thus allowing its Contracting Parties to achieve their desired objectives at both national and international levels.

But it was not only the states of Western Europe who foresaw the need for an international regime establishing liability and compensation for nuclear damage. The year 1963 also witnessed the adoption, by a number of IAEA<sup>10</sup> member states from Central and South America, Africa, Asia Pacific and Eastern Europe, of a second international nuclear liability convention, incorporating the same fundamental principles as those set out in the Paris Convention, but intended to have a wider geographic scope of application, the 1963 Vienna Convention on Civil Liability for Nuclear Damage (Vienna Convention).<sup>11</sup>

The provisions of the two conventions are very similar, if not, in fact, identical but there are some differences, particularly in respect of the liability amounts imposed on nuclear operators, the level of financial security required, states' obligations where that security fails, and the types of damage for which compensation may be awarded, none of which should be overlooked. Nevertheless, this is not the place to compare these two instruments, given that each of them has recently undergone a major amendment<sup>12</sup> and so a very brief description will have to suffice.

A look at their most important features confirms that under each convention, a nuclear operator is both strictly and exclusively liable for damage resulting from a nuclear incident occurring at its installation, or in the course of carriage of nuclear substances to or from its installation. The operator is liable, generally speaking, only for personal injury (including death) and loss of, or damage to

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8. "Coinsurance" means that a number of insurers collectively insure a certain risk with the sum of their individual shares totalling 100%. "Reinsurance" is where an insurer or co-insurer cedes part of the risk it has assumed to another insurer for which it pays a premium, essentially insuring the risk it has insured.
  9. The full title of this instrument is: Convention on Third Party Liability in the Field of Nuclear Energy of 29<sup>th</sup> July 1960, as amended by the Additional Protocol of 28th January 1964 and by the Protocol of 16<sup>th</sup> November 1982. A further Protocol to amend the Paris Convention was adopted on 12 February 2004 but it has not yet come into force. A list of the 15 Contracting Parties to the Paris Convention is set out in Annex 1.
  10. International Atomic Energy Agency.
  11. A list of the 33 Contracting Parties to the Vienna Convention is set out in Annex 2.
  12. See the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage and the 2004 Protocol to Amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy.

property, other than property on the site of the installation. The conventions do not apply to nuclear incidents occurring in the territory of non-contracting states or to damage suffered in such territory.

The operator's liability is limited both in time and amount. Under both conventions, claims for compensation of damage must be instituted within ten years from the date of the accident. Contracting Parties may establish a "discovery rule" under which claims must be made within at least two years from the time the victim discovered the damage and the identity of the operator, and most if not all have done so. Under the Paris Convention, the *maximum* liability of the operator is set at 15 million SDRs,<sup>13</sup> and the minimum is fixed at 5 million SDRs<sup>14</sup> while under the Vienna Convention, only a minimum amount of 5 million US dollars (USD)<sup>15</sup> is established. The nature, form and extent of compensation are matters to be governed by national law. The operator must obtain and maintain financial security to cover the amount of its liability.

In addition, the two conventions contain provisions based upon two important additional principles, both designed to address the complexities raised by the transboundary scope of nuclear damage and the institution of cross-border compensation claims: first, jurisdiction over nuclear damage compensation claims lies only with the Contracting Party in whose territory the accident occurred, or, where it occurs in the territory of a non-Contracting State, with the courts of the Contracting Party where the liable operator's nuclear installation is situated;<sup>16</sup> secondly, those courts are to apply the convention, and their own national law for all matters not covered by the convention, without discrimination based on nationality, domicile or residence. Judgements are to be enforceable in any Contracting Party.

At about the time of the adoption of the Vienna Convention, the Paris Convention states recognised that the liability amount fixed under their own convention would not be adequate to cover the damage suffered in the event of a serious nuclear accident. To remedy that deficiency, most of the Paris Convention states adopted a third international instrument, the 1963 Brussels Convention Supplementary to the Paris Convention (Brussels Supplementary Convention),<sup>17</sup> created to provide *additional* compensation to victims through the establishment of a 3-tier system of supplementary

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13. The Special Drawing Right is a unit of account defined by the International Monetary Fund (IMF) based upon the US dollar, the Euro, the Japanese Yen and the Pound Sterling. The IMF Treasury Department exchange rate between the SDR and the EUR on 31 March 2006 was SDR 1= EUR 1.19 and between the SDR and the USD on that same date was SDR 1=USD 1.44. All SDR-EUR/USD conversions in this paper are based on these exchange rates. 15 million SDRs is approximately EUR 17.8 million or USD 21.6 million.
  14. Approximately EUR 5.9 million or USD 7.2 million.
  15. This amount is defined by reference to its value in gold on 29 April 1963. That value is USD 35 per one troy ounce of fine gold. The liability amount is generally considered to have a value of approximately USD 50 million today.
  16. In the absence of a "unity of jurisdiction" principle, it would be almost impossible to respect a limitation upon the operator's liability. A court hearing nuclear damage claims or granting compensation awards in one jurisdiction, for example, would have no knowledge of or control over a court in another jurisdiction performing the same functions.
  17. The full title of this instrument is: Convention of 31<sup>st</sup> January 1963 Supplementary to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982. A further Protocol to amend the Brussels Supplementary Convention was adopted 12 February 2004 but it has not yet come into force. A list of the 12 Contracting Parties to the Brussels Supplementary Convention is set out in Annex 3.

compensation.<sup>18</sup> The convention applies only to incidents occurring within one of its states and only to damage for which a Paris Convention state operator is liable. The system in effect at the time of the Chernobyl accident, and still in effect today, calls for the distribution of operator funds in the amount set under the Paris Convention, followed by the distribution of Installation State<sup>19</sup> funds up to 175 million SDRs<sup>20</sup> and finally, by the distribution of funds provided by the combined contributions of all Contracting Parties, up to 300 million SDRs.<sup>21</sup>

#### **IV. The First Response to Chernobyl: The 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention**

The international nuclear liability regimes established by the Paris and Vienna Conventions retained most of their original features until the late 1980s. Victims in States Party to the Paris Convention would receive the benefits available under its provisions if a nuclear incident occurred in a Paris Convention state, supplemented by the additional compensation provided for under the Brussels Supplementary Convention if the victim's state and that of the liable operator were Parties to that convention as well. Likewise, victims in States Party to the Vienna Convention were entitled to the benefits available under that convention in the event a nuclear incident occurred in one of its Contracting Parties.

Neither the Paris nor Vienna Convention applied to nuclear damage suffered in the territory of a Party to the other. Even the idea that Parties to one convention could adhere to the other never received much support, as this would have led to conflicting obligations under the two conventions. Nevertheless during the 1970s and early 1980s several attempts were made to find a means of connecting the two conventions,<sup>22</sup> particularly in light of the continuing growth of international trade in nuclear materials, which, in turn, led to continuing concerns with both improving protection for victims and serving the interests of nuclear operators and their suppliers.

It was, however, the 1986 accident at Chernobyl which proved to be the final impetus motivating both Paris and Vienna Convention states to establish a formal relationship between the two instruments. That incident propelled the entire international nuclear community into taking a very close look at whether the existing liability and compensation regimes were effectively protecting victims of a nuclear incident, particularly in light of the detrimental effects which a nuclear incident in one country could have upon the people, property and natural resources in a neighbouring country. Legislators became painfully aware of the need to expand the geographical coverage of the liability

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18. A comprehensive commentary on the system created by the Brussels Convention Supplementary to the Paris Convention is to be found in, Bette, Didier, Fornasier and Stein, "Compensation of Nuclear Damage in Europe", Brussels, 1965.
  19. The Installation State is the state in which the nuclear installation of the liable operator is situated.
  20. Approximately EUR 295 million or USD 252 million.
  21. Approximately EUR 357 million or USD 432 million.
  22. The idea of a "joint protocol" open to both Paris and Vienna Convention States was first promoted in 1974 by the OECD Nuclear Energy Agency's (NEA) Group of Governmental Experts on Third Party Liability in the Field of Nuclear Energy, now called the Nuclear Law Committee. The aim of this mechanism was to remove conflicts resulting from the simultaneous application of both Conventions while promoting broader adherence to the basic principles underlying those Conventions. The idea received only limited acceptance at the time, but it was revived in 1984, at the suggestion of the IAEA's Standing Committee on Civil Liability for Nuclear Damage (SCNL) which was concerned with a potential increase in the number of 1963 Vienna Convention adherents and a real increase in the number of bilateral nuclear trade arrangements.

conventions as much as possible. Many believed that creating a link between the Paris and Vienna Conventions would induce a number of countries, especially those of Central and Eastern Europe, to join the latter, thereby extending the application of the existing international nuclear liability conventions throughout all or most of Europe.

In September 1986, less than six months after the tragedy at Chernobyl, experts from both the OECD/NEA and the IAEA concluded that a joint protocol uniting the Paris and Vienna Conventions would be the most practical and effective solution, and in October 1987, a joint Working Group of Governmental Experts from both organisations was established to pursue that solution. The result was the adoption, in September 1988, of the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Joint Protocol).

The Joint Protocol generally extends to states adhering to it the coverage that is provided under the convention (either Paris or Vienna) to which it is not already a Contracting Party.<sup>23</sup> It thus creates a “bridge” between the two conventions. In doing so, it ensures that only one of the two conventions will be exclusively applicable to a nuclear incident.<sup>24</sup> The Joint Protocol entered into force in April 1992.

As noted above, at the time it was believed that such a link would induce a greater number of Central and Eastern European countries to join the Vienna Convention, particular those which had formed part of the former Soviet Union. To some extent this has proved to be true. Some 18 countries from those parts of Europe have ratified or acceded to that convention, more than half the total number of Contracting Parties thereto. Yet only 11 of those 18 countries have ratified or acceded to the Joint Protocol, the instrument which would link them to the regime established by the Paris Convention, a disappointing development for those who had hoped to link all of Europe with one single nuclear liability and compensation regime.

The international community soon recognised, however, that the Joint Protocol was not enough to redress the liability and compensation problems brought to harsh light by the Chernobyl accident. To attract broad adherence to the international nuclear liability conventions and to make them really effective, reform had to be more far reaching. In short, it had to ensure that in the case of a nuclear accident, much greater financial compensation would be made available to a much larger number of victims in respect of a much broader scope of nuclear damage than ever before. The Joint Protocol could only target the second of these goals, enabling compensation to be made available to a larger number of victims, and it could only do so to the extent that Paris and Vienna Convention states were prepared to adhere to it.<sup>25</sup>

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23. For example, where a nuclear incident occurs for which an operator in a Paris Convention/Joint Protocol state is liable and damage is suffered by victims in a Vienna Convention/Joint Protocol state, those victims will be able to claim compensation for damage suffered against the liable operator as if they were victims in a Paris Convention state.
  24. The exclusive application to a nuclear incident of only one of the two conventions is accomplished by means of the conflict rule contained in Article III of the Joint Protocol.
  25. A list of the Contracting Parties to the Joint Protocol is set out in Annex 4.

**V. The Second Response to Chernobyl: The 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (VC Protocol)**

During the 1988 Diplomatic Conference to adopt the Joint Protocol, the complementary nature of the civil nuclear liability regime established by the Paris and Vienna Conventions and a system of state liability for nuclear incidents was strongly emphasised. Not long afterwards, the IAEA adopted a resolution stating that “further strengthening of the liability regime for nuclear damage is essential to the development and use of nuclear energy for peaceful purposes”.<sup>26</sup> In February 1990 an IAEA open-ended Standing Committee on Nuclear Liability (SCNL) was established with a mandate to study those very issues.<sup>27</sup>

It was clear that if the IAEA Resolution were to be implemented, then one or both of the two founding nuclear liability conventions would have to be modernised. As Professor Vanda Lamm has succinctly pointed out,<sup>28</sup> the Vienna Convention was selected first, simply because the Paris Convention had already been amended twice (in 1964 and in 1982), its liability amount had already been raised, its compensation provisions were already supplemented by those of the Brussels Supplementary Convention and most Western European States were already Party to it. By contrast, a number of Vienna Convention provisions were already considered outdated by the time that convention came into force in 1977, it had never been amended, and by the end of the 1980s it could only count 11 States Party.

Perhaps more importantly, as Professor Lamm has remarked, “...after the Chernobyl accident, the then Soviet Union refused to pay compensation to any foreign victims (and) some people believed that if the Soviet Union had been a party to the Vienna Convention, foreign victims would at least have had a chance to receive some compensation”.<sup>29</sup> Revising the Vienna Convention was viewed as a means of attracting new members, thereby extending the convention’s benefits to victims of any future accident with transboundary consequences such as those of Chernobyl.

The Chernobyl accident caused damage which went much further than anyone could have imagined up to that point. As noted earlier in this paper, apart from the tragic incidents of personal injury and death, the accident resulted in extensive environmental damage. Thousands of square kilometres of agricultural land were contaminated with radiation and a wide range of food products could no longer be sold because of a contaminated food chain. Towns had to be evacuated and some are still uninhabited today. The tourist industry collapsed. The Chernobyl accident encouraged the negotiators who were undertaking the revision of the Vienna Convention to institute significant reform in this area, both to better protect victims and to attract broader adherence to an international nuclear liability regime.

During the SCNL negotiations, there was general agreement that the minimum level of a nuclear operator’s liability under the Vienna Convention needed to be significantly increased. On the other hand, it was also acknowledged that the capacity of the nuclear risk insurance market available

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26. See Resolution GC(XXXII)/RES/491 entitled “Liability for nuclear damage”.

27. The SCNL’s principle mandate was to: (i) consider international liability for nuclear damage, including international civil liability, international state liability, and the relationship between the two, and (ii) keep under review problems relating to the Vienna Convention on Civil Liability and advise States Party to that Convention on any such problems.

28. Lamm, V., “The Protocol amending the 1963 Vienna Convention” in *Nuclear Law Bulletin*, No. 61, June 1998, p. 7-8.

29. Lamm, V., *op. cit.*, p. 8.

to such operators was itself limited. This fact, amongst others, led to considerable debate on the need to adopt a regime of state liability to either replace or supplement the civil liability regime established by the convention, with supporting states taking the position that in the case of a “Chernobyl” type accident, only the financial resources of the state would be sufficient to compensate victims. As will be seen later, it was eventually decided to retain a civil liability regime, albeit with provisions allowing for nuclear damage compensation with public funds.

It was also agreed that a mechanism for mobilising supplementary funds to compensate nuclear damage, over and above those to be provided by nuclear operators through insurance or other form of financial security, should be established. The mechanism eventually selected is set out in an entirely separate instrument, the Convention on Supplementary Compensation for Nuclear Damage, an instrument which is described further on in this paper.

The SCNL negotiations resulted in the adoption of the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (VC Protocol), an instrument clearly designed to ensure that more money will be available to compensate more people for a broader range of nuclear damage suffered than ever before, and equally clearly designed to attract broad adherence from both nuclear and non-nuclear power generating states. The following are its major features:

*More Money Available to Compensate Victims:* Nuclear operator liability amounts are increased from a USD 5 million minimum to a 300 million SDRs<sup>30</sup> minimum. The operator may provide as little as 150 million SDRs,<sup>31</sup> but in that case the Installation State is obliged to make available an additional, equal amount. Contracting Parties may fix a liability amount as low as 5 million SDRs where the nature of the nuclear installation or nuclear substances involved so justifies,<sup>32</sup> but should the nuclear damage incurred exceed that lower amount, the Installation State must ensure that public funds are available to make up the difference to 300 million SDRs. States are free to impose unlimited liability on their nuclear operators if they wish. Financial security limits must match liability amounts and where unlimited liability is imposed, the financial security requirement for operators is fixed at 300 million SDRs.<sup>33</sup> During a 15-year transitional period following the Protocol’s entry into force, Contracting Parties may fix their operators’ minimum liability amount at only 100 million SDRs, or an even lower amount, if the State makes up the difference to 100 million SDRs.

*More People Entitled to Compensation:* The Vienna Convention is generally viewed as only applying to damage suffered within the territory of a Contracting Party and on or over the high seas. The VC Protocol significantly extends that geographic scope so that the revised convention will apply to nuclear damage wherever suffered,<sup>34</sup> subject to a permitted exclusion for a non-Contracting State which has a nuclear installation on its territory and does not provide equivalent reciprocal benefits. In addition, claims for personal injury or death may now be brought within 30 years from the date of the nuclear incident rather than the 10-year period provided for under the Vienna Convention. Where the funds are likely to be insufficient to

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30. See Article 7 of the VC Protocol.

31. Approximately EUR 179 million or USD 216 million.

32. Generally this applies to lower risk activities, such as nuclear substance transport and research installations.

33. Approximately EUR 357 million or USD 432 million.

34. See Article 3 of the VC Protocol. Technically, this means damage suffered anywhere in the world, including in non-Contracting States.

compensate all damage suffered, priority must be given to such claims as long as they are brought within 10 years of the date of the incident.

*More Damage to be Compensated:* The Vienna Convention covers personal injury (including death), loss of or damage to property, and other damage compensable under the “law of the competent court.”<sup>35</sup> Under the VC Protocol, and largely in response to what occurred following the Chernobyl accident, several additional heads of damage will now be covered although to what extent will depend on the law of the competent court: damage to the environment, economic losses resulting from that damage and the cost of environmental re-instatement, other economic losses consequent upon personal injury or property damage, the cost of preventive measures taken to minimise damage and any losses suffered as a result thereof, as well as other types of loss or damage recoverable under a Contracting Party’s civil liability law.<sup>36</sup> Furthermore, a “nuclear incident” will now include the concept of an occurrence which creates a grave and imminent threat of causing nuclear damage,<sup>37</sup> an amendment permitting compensation to be paid for costs incurred in taking preventive measures.

The adoption of the VC Protocol was one of the most significant developments to have taken place in nuclear liability law for several decades.<sup>38</sup> It was hoped that this new instrument would attract broad adherence by both nuclear power generating states and non-nuclear power generating states, whether Party to the Vienna Convention or not.

Yet despite the many years of difficult negotiations required to reach agreement on this instrument, the keen interest it elicited from a broad range of interested states, and the many provisions it contains to encourage and facilitate adherence to it, the VC Protocol has not drawn the wide support originally hoped for or expected. Some 80 states participated in its negotiation and in the Diplomatic Conference which culminated in its adoption. Yet only 15 countries have actually signed the Protocol, and 14 of those did so within one year of its adoption, when motivation and impetus were both still strong. The Protocol entered into force on 4 October 2003, some six years after it had been adopted, having been ratified by the number of states required for that purpose.<sup>39</sup>

While its entry into force is to be applauded, one might wonder whether this Protocol will have any real effect, given both the number and nature of countries that have agreed to be bound by it. Of the 33 Contracting Parties to the Vienna Convention, only 13 of them have signed the VC Protocol and of those, only five have ratified the instrument: Argentina, Belarus, Latvia, Morocco and Romania. Looking at the statistics a little more closely, one cannot help but notice that none of these

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35. The “law of the competent court” is defined in Article I.1(e) of the convention to mean the law of the court which has jurisdiction under that convention, including any rules of such law relating to conflict of laws.

36. See Articles 2.2 and 2.4 of the VC Protocol for the new definition of “nuclear damage”.

37. During the negotiations to adopt the VC Protocol, the delegation from Ukraine expressed particular concern with the inclusion of this new concept, fearing that the existence of the Chernobyl “sarcophagus” would be regarded by neighbouring countries as constituting a continual “grave and imminent threat of causing nuclear damage”.

38. For a comprehensive study of the VC Protocol, see “The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage, Explanatory Texts”, International Atomic Energy Agency, July 2004.

39. Pursuant to Article 21, the Protocol is to enter into force three months after the date of deposit of the fifth instrument of ratification, acceptance or approval. See Annex 5 for a list of Signatories and Parties thereto.

five states have significant nuclear generating capacity; in fact only two have any nuclear generating capacity at all, these being Argentina and Romania and their levels of generation are quite low.<sup>40</sup>

Furthermore, of the Protocol's remaining ten Signatories, only four can be categorised as nuclear power generating states, the Czech Republic, Hungary, Lithuania and Ukraine. Apart from Ukraine, which has significant nuclear power generating capacity, each of these countries is a relatively low generator of nuclear power compared to other major nuclear power generating countries in the world today.<sup>41</sup>

Other countries with significant nuclear power programmes, such as the Russian Federation, have not yet taken any steps towards acceding to the VC Protocol, a development which would provide considerably increased protection to victims of an accident occurring in its territory. For many of these countries, the minimum liability requirement is seen as too steep notwithstanding the benefits of the phasing-in provisions. Others may find that the expanded geographical scope provisions or the extended definition of nuclear damage are so broad as to be politically unacceptable.

Even more remarkable, perhaps, is the fact that none of the important "non-convention" nuclear power generating countries have joined the VC Protocol notwithstanding that it is easily open to them to do so, countries such as Canada, China, India, Japan, Korea and the United States. The position of these "non-convention" countries will be addressed fully later on in this paper.

### **VI. The Third Response to Chernobyl: The 1997 Convention on Supplementary Compensation for Nuclear Damage (Supplementary Compensation Convention)**

As noted previously, in the early stages of the SCNL's deliberations, negotiating states decided to establish a mechanism for mobilising supplementary funds to compensate nuclear damage, in addition to the funds to be provided by the operator under the Paris and Vienna Conventions. One of the two favoured approaches to this idea was to establish a system of supplementary state funding on both national and international levels in respect of which the Brussels Supplementary Convention proved to be a very useful model.

In searching for the most effective type of supplementary fund, the SCNL delegates considered whether it should be part of the VC Protocol or be provided for in a separate instrument, whether the system of contributions should be voluntary or mandatory, and whether the fund should apply only to transboundary damage, or to both transboundary damage as well as that suffered within the Installation State. The system eventually selected reflected the choice of the second alternative for each of these considerations, and the result was the adoption, in September 1997, of the Convention on Supplementary Compensation for Nuclear Damage (Supplementary Compensation Convention), a development which "open(ed) a new chapter in international nuclear liability law (by providing) the world community with the opportunity to deal with legal liability and compensation for nuclear

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40. According to the IAEA's Power Reactor Information System (PRIS) data, as of 10 March 2006 the net nuclear power generating capacity of Argentina is 935 MWe and that of Romania is 655 MWe.

41. According to PRIS data, as of 10 March 2006 the net nuclear power generating capacity of the Czech Republic is 3 368 MWe while that of Hungary is 1 755 MWe, that of Lithuania is 1 185 MWe and that of Ukraine is 13 107 MWe.

damage through a global regime that includes all countries that operate nuclear power plants...and most countries that do not...”.<sup>42</sup>

The Supplementary Compensation Convention maintains the essential principles established under the Paris and Vienna Conventions, while at the same time creating an instrument by which states can ensure that more money will be made available to compensate more victims for a broader range of damage than ever before. What follows is a brief description of how the Convention sets out to accomplish just that.<sup>43</sup>

### *More Money Available to Compensate Victims*

The new convention envisages a first tier of compensation consisting of at least 300 million SDRs,<sup>44</sup> the new minimum amount required under the VC Protocol, to be provided by the liable nuclear operator, by the Installation State or by a combination of the two. It is to be distributed on a non-discriminatory basis to victims both inside and outside of the Installation State. A second tier of compensation consists of an international fund to which all Contracting Parties will contribute when it appears that the damage to be compensated exceeds the first tier amount, and whose size will be determined by the number and type of states adhering to the convention.<sup>45</sup> Half of the fund is to be allocated to victims both inside and outside of the Installation State, and the other half to trans-boundary victims only. This 50-50 division is an important innovation in nuclear liability law; the only exception to it is where a Contracting Party makes available at least 600 million SDRs under the first tier, in which case the entire fund is to be distributed on a non-discriminatory basis.

### *More People Entitled to Compensation*

In order to attract as many nuclear power generating states as possible to participate in this new regime, the Supplementary Compensation Convention is specially designed as a free-standing convention, open to any state, with no requirement for previous adherence to either the Paris or Vienna Convention.<sup>46</sup> States which are not party to either of those conventions, however, must have national legislation in place that reflects the principles of those conventions.<sup>47</sup> Special provisions are included in the convention to permit the United States, with its legal system of “economic” rather than “legal” channelling of liability, to participate in the regime; given its extremely important nuclear power generating capacity, the convention would likely have little impact if the United States were not a

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42. McRae, B., “The Compensation Convention: Path to a Global Regime for Dealing with Legal Liability and Compensation for Nuclear Damage” in *Nuclear Law Bulletin*, No. 61, June 1998, p. 25.
  43. For a comprehensive study of the Supplementary Compensation Convention, see “The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage, Explanatory Texts”, International Atomic Energy Agency, July 2004.
  44. Approximately EUR 357 million or USD 432 million.
  45. The fund is expected to reach 300 million SDRs if all major nuclear power generating states join the Convention.
  46. Many of the world’s largest nuclear power generating states were not party to either the Paris or Vienna Conventions in 1997, nor are they today. As B. McRae points out in his article cited above, at page 26 “...those nuclear power generating countries that do not belong to the Paris Convention or the Vienna Convention account for more than half of worldwide installed capacity”.
  47. The relevant requirements are set out in the Annex to the convention.

Party to it.<sup>48</sup> The scope of application of the convention is determined by reference to the two different compensation tiers. As to the 1<sup>st</sup> tier, the law of the Installation State determines to what extent nuclear damage suffered in non-Contracting States will be covered; as to the 2<sup>nd</sup> tier, the convention prohibits its distribution to compensate nuclear damage suffered in non-Contracting States, a restriction which is also found in the Brussels Supplementary Convention and is in keeping with the philosophy that a fund comprising “public” money should be distributed only to victims in states which contribute to that fund.

### *More Damage to be Compensated*

Both “nuclear damage” and a “nuclear incident” are defined in the same broad fashion as they are under the VC Protocol (see the discussion under Part V of this paper). These expanded definitions are important in terms of attracting states who have historically viewed the Paris and Vienna Conventions as too narrowly restricting the types of damage for which compensation will be given.

The Supplementary Compensation Convention was adopted at the same time as the VC Protocol and only time will tell to what degree it will be supported by the international community. The intent of this free-standing convention was, and still is, to attract as many countries as possible to participate in a global liability and compensation regime. Yet it is likely that widespread adherence, or even its entry into force, will be a challenge.

Almost ten years following its adoption, the Supplementary Compensation Convention has not yet shown itself to be a central focus for many governments. To date, only 13 states are Signatories to the convention and all of them signed within nine months of the convention’s adoption in September 1997; only three states have ratified it, the last ratification having taken place in the year 2000.<sup>49</sup> Of those three states, only two, Argentina and Romania, have any nuclear power generating capacity and as has already been seen, neither of their generating capacity levels is significant.

The statistics are not much more encouraging when it comes to those nuclear power generating countries which *do* have significant capacity. No country with more than two operating nuclear reactors has yet joined the convention; in fact none of the world’s countries with the highest nuclear power generating capacities has joined the Convention – neither Canada, France, Germany, Japan, Korea, the Russian Federation, Spain, Sweden, Ukraine, the United Kingdom nor the United States.<sup>50</sup>

While past performance is not necessarily an indicator of future trends, the entry into force requirements of this convention are rather strict compared to those of other international nuclear liability instruments and this, in itself, could delay or even prevent the convention’s eventual coming into effect. The convention must be ratified, accepted or approved by least five states with a combined

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48. Legal channelling means that all liability is channelled to the nuclear operator; no other entity may be held liable for nuclear damage. Economic channelling means that any entity may be held legally liable, but the economic consequences of that liability are channelled to the liable nuclear operator. Thus, any person who is held legally liable will be indemnified in respect of that liability.

49. See Annex 6 for a list of Signatories and Parties to the Supplementary Compensation Convention.

50. According to PRIS data, as of 10 March 2006 the net nuclear power generating capacity of these countries is as follows: Canada (12 599 MWe); France (63 363 MWe); Germany (20 339 MWe); Japan (47 839 MWe); Korea (16 810 MWe); the Russian Federation (21 743 MWe); Spain (7 588 MWe); Sweden (8 910 MWe); Ukraine (13107 MWe); the United Kingdom (11 852 MWe) and the United States (99 210 MWe).

minimum of 400 000 units of installed nuclear capacity<sup>51</sup> before it may enter into force. The reason for this requirement is clearly to encourage the participation of “major nuclear power generating states” whose adherence was thought necessary to ensure the global character of the convention.<sup>52</sup>

One of those “major nuclear power generating states” is the United States,<sup>53</sup> and it appears that a number of potential parties to the convention are unlikely to join until after the United States has become a Party to it.<sup>54</sup> Other major nuclear power generating states, such as those referred to in the previous paragraphs do not yet seem to have taken any steps towards signing or ratifying the CSC, a matter which would help immeasurably in meeting that convention’s entry into force requirements.

One reason for the hesitation shown by certain nuclear power generating countries is the preferential treatment given to victims who suffer damage and who are outside of the Installation State’s borders, a treatment that is seen by those countries as discriminatory and thus difficult to justify.

Another reason is simply that “most of the Parties to the (Brussels Supplementary Convention have) claimed...it hard to envisage signing two complementary conventions with different mechanisms, allocation rules and beneficiaries”,<sup>55</sup> even though they do not want to exclude that possibility. The supplementary regime established under the Brussels Supplementary Convention is designed to benefit its Contracting Parties alone and allowing its third (international) tier to be allocated in satisfaction of an obligation under another supplementary funding regime would only be workable, in practice, if all of the Contracting Parties were to agree. Under the newly revised Brussels Supplementary Convention, a provision is included which would require all of its Contracting Parties to simultaneously ratify any other such regime, a provision which applies equally to the Supplementary Compensation Convention. Joining that new convention at a time when there are no, or very few major nuclear power generating states Party to it would result in the Brussels Supplementary Convention states being called upon to make major contributions to its second tier fund without having the benefit of substantial contributions made by other second tier fund contributors available should a nuclear incident occur in a Brussels Supplementary Convention state.

### **VII. The Fourth Response to Chernobyl: The 2004 Protocols to Amend the Paris Convention and the Brussels Supplementary Convention (PC Protocol and BSC Protocol)**

The Paris Convention states began their revision negotiations in April 1998, less than a year after the adoption of the VC Protocol and the Supplementary Compensation Convention. This was not

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51. See Article XX.1 concerning entry into force. The term “installed nuclear capacity”, defined in Article 1(j) of the Convention, is the total number of megawatts of thermal power authorised by the competent national authority.
  52. “The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage, Explanatory Texts”, *op.cit.*, p. 86.
  53. See footnote 51 for the nuclear power generating capacity of the United States.
  54. As of the writing of this paper, it was expected that the U.S. Senate Foreign Relations Committee would provide its consent to the ratification and pass the matter to the full Senate within a few months. Assuming a positive vote in the Senate, the ratification process will essentially be complete and the formalities for depositing the U.S. instrument of ratification with the Convention’s depositary can then be instituted.
  55. Dussart Desart, R., “The Reform of the Paris Convention on Third Party Liability in the Field of Nuclear Energy and of the Brussels Supplementary Convention”, *Nuclear Law Bulletin* No. 75 (2005) p. 24.

surprising – in view of the Joint Protocol, the significant amendments made to the Vienna Convention would invariably have an impact upon the Paris Convention.

Approximately two years after the start of those negotiations, the Contracting Parties to the Brussels Supplementary Convention undertook to revise that convention as well. They fully recognised that such a revision was necessary to ensure that convention's compatibility with the revised Paris Convention and to increase the amount of "supplementary" funds to be made available thereunder.

Unlike the procedure which had been used for previous revisions of the Paris and Brussels Supplementary Conventions,<sup>56</sup> the representatives of the Contracting Parties to both conventions decided that it would be more efficient to carry out the revision work as an "ad hoc" group of Contracting Parties within the NEA. They agreed, however, to keep the NEA's Nuclear Law Committee regularly informed of the progress of the negotiations in order to give the Committee's members an opportunity to express their views on the orientation of the revision work, and to provide periodic progress reports to the NEA Steering Committee.

As with the VC Protocol and the Supplementary Compensation Convention, the Protocol to amend the Paris Convention (PC Protocol) and its companion Protocol to amend the Brussels Supplementary Convention (BSC Protocol) both aim to make more money available to compensate more victims for a broader range of nuclear damage than ever before. They will accomplish these goals when the two Protocols, containing the important provisions described below, come into effect. At the same time the Paris and Brussels Supplementary Convention states conducted their revision work so as to ensure their revised conventions would be aligned and compatible with the new Supplementary Compensation Convention.

### ***The Protocol to Amend the Paris Convention***

#### *More Money Available to Compensate Victims*

The Protocol will effect an important increase in the nuclear operator's liability amount, raising its current *maximum* level of 15 million SDRs<sup>57</sup> to a new *minimum* amount of EUR 700 million.<sup>58</sup> This is very significant, even if one takes into account the 1990 NEA Steering Committee Recommendation<sup>59</sup> pursuant to which Contracting Parties were encouraged to raise their operator liability amount to not less than 150 million SDRs.<sup>60</sup> While reduced liability amounts for low risk installations and transport will still be permitted, the revised convention imposes minimum amounts of EUR 70 million<sup>61</sup> for low risk installations and EUR 80 million<sup>62</sup> for transport activities. In fixing the

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56. The negotiations for the 1964 and 1982 revisions were carried out within the NEA's Group of Governmental Experts on Third Party Liability in the Field of Nuclear Energy (now the Nuclear Law Committee).

57. Approximately EUR 17.8 million or USD 21.6 million.

58. Revised Article 7 of the Paris Convention. The new amount is approximately USD 845.5 million or 586.9 million SDRs and it betters by 65% the 300 million SDRs liability amount called for under the VC Protocol.

59. Recommendation of the NEA Steering Committee of 20 April 1990 [NE/M(90)1].

60. Approximately EUR 178.5 million or USD 216 million.

61. Approximately USD 100.8 million or 58.7 million SDRs.

liability amount as a minimum, states which impose either limited or unlimited liability upon their nuclear operators are welcome to participate in the regime.<sup>63</sup> Operators will still be required to provide financial security in the amount for which they are liable, but for those which are subject to unlimited liability, their financial security obligations will be limited to either the full minimum or one of the reduced minimum liability amounts, whichever is applicable. Paris Convention states will also be required to ensure the payment of nuclear damage claims where the operator's financial security is unavailable or insufficient to satisfy such claims, up to the amount specified in the convention.

### *More People Entitled to Compensation*

Under the existing convention, a nuclear incident must occur in the territory of a Contracting Party and damage must be suffered there before the convention will apply.<sup>64</sup> The PC Protocol relaxes that rule considerably. The revised convention will not only apply to nuclear damage suffered in the territory of a Contracting Party or in any of its maritime zones or on board a ship or aircraft registered in that Contracting Party. It will, as well, apply to any nuclear damage suffered in a non-Contracting State (both territories and maritime zones) if that state is a Party to the Vienna Convention and the Joint Protocol, or it has no nuclear installations, or it has a nuclear installation and its nuclear liability legislation provides for equivalent reciprocal benefits and is based on Paris Convention principles. In addition, prescription and extinction periods for nuclear damage claims will be extended to 30 years for actions respecting loss of life and personal injury. Unlike the VC Protocol however, no "priority" rule will be included in the revised Paris Convention for such claims. Where the compensation is, or is likely to be insufficient to cover all of the damage suffered, the competent court will determine whether, and to what degree priority will be given to claims for loss of life and personal injury.

### *More Damage to be Compensated*

For the first time ever, the Paris Convention will contain a definition of "nuclear damage", and it will permit compensation for a broader range of damage than is the case under the existing convention.<sup>65</sup> The new definition is almost identical to that found in the VC Protocol and the Supplementary Compensation Convention, with specific references to economic loss, the cost of measures of reinstatement of a significantly impaired environment, loss of income resulting from that impaired environment and the cost of preventive measures. Measures of reinstatement and preventive measures are defined as in those other two instruments. The only major difference is that the PC Protocol does not include a reference to other economic loss permitted by the civil liability law of the

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62. Approximately USD 115.2 million or 67.1 million SDRs.

63. Germany adopted a regime of unlimited liability in the mid-1980s despite the Paris Convention's fundamental principle that a nuclear operator's liability is limited in amount. While its participation in the Paris Convention has never been refuted on that ground, some rather creative thinking had to be done in order to interpret the convention in a manner compatible with Germany's new regime.

64. See Article 2 of the Paris Convention. The effect of this provision was softened by two NEA Steering Committee Recommendations made in 1968 and 1971 respectively, the first recommending that the convention cover nuclear incidents occurring or nuclear damage suffered on the high seas, and the second recommending that the convention apply (by national legislation) to damage suffered in a Contracting State (or on the high seas on board a ship registered in the territory of a Contracting State) even if the nuclear incident occurs in a non-Contracting State.

65. See revised Article 1(a) of the Paris Convention.

competent court, a head of damage whose specific meaning was never very clear or which was thought to be covered under other specified categories of damage.<sup>66</sup>

### *The Protocol to Amend the Brussels Supplementary Convention*

#### *More Money Available to Compensate Victims*

The BSC Protocol maintains the existing three-tier compensation system found in the original convention but the amounts of those tiers are increased significantly: the first tier of compensation continues to come from the nuclear operator's financial security and will continue to be distributed in accordance with the revised Paris Convention, but the amount of that tier rises from a minimum of 5 million SDRs to not less than EUR 700 million; the second tier will continue to be provided by the Installation State but will increase from 175 million SDRs<sup>67</sup> to EUR 500 million;<sup>68</sup> and the third tier will continue to come from public funds made available by all of the Contracting Parties, increasing from 125 million SDRs<sup>69</sup> to EUR 300 million.<sup>70</sup> The total amount of compensation available to victims of a nuclear incident under the revised Paris-Brussels regime therefore rises from the current 300 million SDRs to EUR 1.5 billion.<sup>71</sup> Following the example of the Supplementary Compensation Convention which imposes greater responsibility upon nuclear power generating states to provide compensation, the formula for calculating contributions to the international tier under the BSC Protocol moves from one based equally on gross national product and installed nuclear capacity to one based 35% on gross domestic product and 65% on installed nuclear capacity. This new formula, which takes into account, at least partially, the "polluter pays" principle, is deemed to be much more acceptable from both the political and public standpoints.

#### *More People Entitled to Compensation*

The revised Brussels Supplementary Convention will not reflect the new geographic scope provisions of the revised Paris Convention which permits compensation to be paid to victims in certain non-Contracting States. Compensation will continue to be made available only to victims in the territory of Brussels Supplementary Convention states, although that territory has been extended to include a Contracting Party's exclusive economic zone and its continental shelf with respect to exploration or exploitation of natural resources within those areas. The rationale behind this distinction is simply that since the supplementary compensation established by the 2<sup>nd</sup> and 3<sup>rd</sup> tiers is essentially "public" money, it should only be used to compensate victims in states who have agreed to participate in that supplementary regime. The rationale appears logical to some, unjust to others, but that's what it is.

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66. Excluding this head of damage from the PC Protocol means, in relation to the operation of the Joint Protocol, that no liable Paris Convention state operator is obliged to compensate victims for such damage, regardless of whether those victims are in a Paris Convention state or in a revised Vienna Convention/Joint Protocol state. Similarly, no liable Paris Convention state operator would be obliged to compensate such damage under the Supplementary Compensation Convention as the latter would only apply to damage for which the operator is liable under the Paris Convention.

67. Approximately EUR 208.2 million or USD 252 million.

68. Approximately USD 605.8 million or 420.6 million SDRs.

69. Approximately EUR 148.7 million or USD 180 million.

70. Approximately USD 363.7 million or 252.4 million SDRs.

71. Approximately USD 1.8 billion or 1.3 billion SDRs.

### *More Damage to be Compensated*

The BSC Protocol is a mechanism by which supplementary funding is distributed in accordance with the provisions of the Paris Convention. It contains no definition of nuclear damage itself, but the funding to be made available under this Protocol will be allocated to the broader range of compensable damage called for under the PC Protocol.

The PC Protocol has been signed by 16 states and the BSC Protocol has been signed by 13 of those same states. In both cases all Signatories are members of the OECD except for Slovenia.<sup>72</sup> Each Protocol may count one additional Signatory to the number of existing Contracting Parties to its corresponding Convention, this being Switzerland. In order for the PC Protocol to enter into force, it must be ratified, accepted or approved by two-thirds of the Contracting Parties.<sup>73</sup> In the case of the BSC Protocol, it shall come into force only when all Contracting Parties have ratified, accepted or approved it.<sup>74</sup> There have been no ratifications, as yet, of the PC Protocol, but Spain deposited its instrument of ratification of the BSC Protocol on 12 January 2006.

Although neither Protocol has yet entered into force, it is reasonably safe to predict that they will both do so in the relatively near future. Historically, the Paris and Brussels Supplementary Convention states have always negotiated their conventions and their various amending Protocols on the understanding and with the intent that all states that sign the convention or an amending Protocol will also ratify it, and will do so as expediently as possible.<sup>75</sup> And no country can accede to either convention unless it joins the Protocol amending that convention at the same time.<sup>76</sup> Such a goal is always much easier to achieve when the number of Signatories involved is relatively small as is the case with both these conventions.

Contrary to the VC Protocol which is open to every state, the PC Protocol is only open to OECD member countries by automatic right, although OECD non-member countries having previously obtained the unanimous consent of all Paris Convention states may accede to it, as Slovenia did in 2001. The BSC Protocol is only open to states which are already Party to the Paris Convention.

The Signatories to both the PC Protocol and BSC Protocol are progressing rapidly towards ratification, acceptance or approval of those instruments and their implementation into national law. In Finland for example, the Nuclear Liability Bill implementing the provisions of both the Protocols was enacted in 2005 and will enter into force on a date to be determined by government decree. France submitted its proposed legislation implementing the both Protocols to the National Assembly in late March of this year.

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72. See Annex 7 for a list of the Signatories to both the PC Protocol and the BSC Protocol. Greece, Portugal and Turkey are the only Paris Convention states which are not Contracting Parties to the Brussels Supplementary Convention and did not sign the BSC Protocol.

73. See Part II, paragraph e) of the PC Protocol and Article 20 of the Paris Convention.

74. See Part II, paragraph e) of the BSC Protocol and Article 21 of the Brussels Supplementary Convention.

75. Paragraph c) of Part II of the PC Protocol and of the BSC Protocol each reads as follows: "The Signatories of this Protocol who have already ratified or acceded to the Convention express their intention to ratify, accept or approve this Protocol as soon as possible. The other Signatories of this Protocol undertake to ratify, accept or approve it at the same time as they ratify the Convention."

76. See Part II, paragraph d) of the PC Protocol and Part II, paragraph d) of the BSC Protocol.

The Council of the European Union has urged those of its Member States that are Parties to the Paris Convention<sup>77</sup> to deposit simultaneously their instruments of ratification of, or accession to, the PC Protocol within a reasonable time, and if possible, before 31 December 2006.<sup>78</sup> Although it is not likely that this deadline will be met by all of those states, one can safely say that most of the Signatories to the Paris and BSC Protocols are well on their way of ratification, acceptance or approval of those instruments and their implementation into national law.

### VIII. The Position of “Non-Convention” States

But what of the many countries which are not yet party to any international nuclear liability convention? So many of the world’s important nuclear power generating nations have not yet joined any of these instruments, and perhaps more significantly, the majority of nuclear power plants in operation in the world today are not covered by the liability and compensation regimes which those conventions establish.

According to IAEA figures, as of 10 March 2006 there were 443 nuclear power plants in operation in 30 countries around the world and another 26 units under construction in those same countries.<sup>79</sup> Construction of a first nuclear power plant has also begun in the Islamic Republic of Iran. Of those 443 operating plants, 231 units or 52% of the total, are located in countries that are not currently party to any international nuclear liability convention – Canada, China, India, Japan, Korea, Switzerland and the United States – to name those which are most important in terms of their nuclear generating capacity. In addition, 14 of the 26 units under construction (54%) are being built in those same non-convention countries.<sup>80</sup>

What is particularly striking is that the majority of these same non-convention countries are amongst the most populated in the world. The statistics are quite revealing. Looking at the 10 most populous countries in the world in 2005, one finds China at the top of the list with 1.31 billion people, India next with 1.08 billion people and the United States as the third most populous country with 295 million people. These are followed by Pakistan in sixth place with 162 million people and Japan in tenth place with 127 million people.<sup>81</sup> The total population of these 6 non-convention countries

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77. EU Member States Party to the Paris Convention are: Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, Slovenia, Spain, Sweden and the United Kingdom.

78. Council Decision 2004/294/EC of 8 March 2004 authorizing the Member States which are Contracting Parties to the Paris Convention to ratify the Protocol amending that convention, or to accede to it. Article 2 of that Decision reads as follows:

“1. Member States which are Contracting Parties to the Paris Convention shall take the necessary steps to deposit simultaneously their instruments of ratification of the Protocol, or accession to it, with the Secretary-General of the Organisation for Economic Cooperation and Development within a reasonable time and, if possible, before 31 December 2006.

2. Member States which are Contracting Parties to the Paris Convention shall exchange information with the Commission within the Council before 1 July 2006 on the date on which they expect their parliamentary procedures required for ratification or accession to be completed. The date and arrangements for simultaneous deposit shall be determined on that basis.”

79. See Annex 8 for a list of the 31 countries, and the number of nuclear power plants, both operating and under construction, in each.

80. See Annex 9 for a list of the world’s nuclear power generating countries which are Party to an international nuclear liability convention.

81. Data from the U.S. Census Bureau, online at: [www.census.gov/ipc/www/idbnew.html](http://www.census.gov/ipc/www/idbnew.html).

alone constitutes almost half the world's total population, approximately 6.4 billion people as of August 2005.<sup>82</sup> Clearly, there is still much work to do before the international nuclear liability regimes will cover the majority of the global population.

Looking at the statistics from an OECD perspective, we see that 351 of the world's 443 operating nuclear power plants are concentrated in 17 member countries of the OECD, the organisation under whose auspices the Paris Convention was adopted and whose member countries may accede to that convention simply by giving notice to the OECD Secretary-General. Of those 351 plants, 203 of them are located in OECD member countries *not party* to any international nuclear liability convention.

When it comes to IAEA member countries, the statistics are not dissimilar. 231 of the world's 443 operating nuclear power plants are located in nine IAEA member states, the organisation under whose auspices the Vienna Convention, the VC Protocol and the Supplementary Compensation Convention were all adopted, and *none* are party to any international nuclear liability convention.

Nevertheless, it is encouraging to note that an important number of these non-convention countries have already incorporated at least some, if not many, of the fundamental principles contained in these conventions into their national law, thereby making legislative implementation that much easier if and when the times comes for them to join one or more of these instruments. Canada, Korea, Switzerland, Japan and the United States all fall into this category to one degree or another.

On the other hand, there are still nuclear power generating countries which have not adopted any specific nuclear liability and compensation legislation – or which have only adopted half-measures to deal with this issue: India, Pakistan and the Islamic Republic of Iran are all examples of such countries. As for China, most of the international convention principles are to be found in the only instrument which does exist, the (1986) Reply of the Council to the Ministry of Nuclear Industry, the National Nuclear Safety Bureau and the State Council Atomic Energy Board in respect of Resolving Third Parties' Nuclear Liability.<sup>83</sup>

In the event of a nuclear incident occurring at or in connection with a nuclear installation in any one of these countries, victims who suffer injury, whether inside or outside of that country's borders, are likely to find themselves in a precarious position when it comes to claiming damages resulting from that incident – the same sort of precarious position in which Chernobyl victims found themselves. Do they have a right to sue? Who should they sue? Which courts will have jurisdiction to hear their claims? What is the burden of proof? How much money will be available to satisfy their claims? How quickly must they institute those claims? Where will the money come from to satisfy their judgments assuming they are successful? Answering these questions involves a myriad of complicated legal, political and practical problems, many of which are, of course, resolved by the international nuclear liability conventions themselves.

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82. The World Factbook, 2004, online at: [www.cia.gov/cia/publications/factbook/index.html](http://www.cia.gov/cia/publications/factbook/index.html)

83. The "Reply" is not a national law passed by the National People's Congress, the body possessing general legislative power under the Constitution of the People's Republic of China. However, since the State Council has wide subordinate legislative authority under that constitution, the Reply could be seen as an administrative statute enacted pursuant to the State Council's administrative powers. Yet the effect of the Reply is still open to legal interpretation, particularly because certain of its provisions may be in conflict with provisions of China's Civil Code, and in the case of conflict, it would seem that the provisions of the Code would prevail.

One of the reasons explaining the reluctance of certain countries to join an international nuclear liability regime is that up until recently, “limited liability” has been a foundation block of the existing regimes. These countries see no reason why victims should have their compensation rights so restricted now that the nuclear industry has matured. In fact, it is obvious to those who follow what might be deemed “trends” in nuclear liability law that this basic principle is being more and more often rejected. Such was the case in 1985 for the Federal Republic of Germany, a Contracting Party to both the Paris Convention and the Brussels Supplementary Convention, which saw that principle as contrary to the best interests of victims.

The rejection of the “limited liability” principle has already been embraced by three non-convention countries, namely Austria, Japan and Switzerland, and it is being seriously considered by Sweden, a State Party to both the Paris and Brussels Supplementary Conventions. As noted earlier, the concept of *unlimited liability* will now be incorporated into the revised Paris Convention once the PC Protocol has come into force.

The notion of “limiting the liability” of a nuclear operator is obviously losing favour. It is only logical that, following a rejection of this principle, the obligation imposed upon nuclear operators to “maintain financial security in the amount of their liability” will eventually disappear given that it is impossible to financially secure an unlimited liability. The disappearance has already occurred in Austria, Germany, Japan and Switzerland.

Equally logical would be the disappearance of the principle of “unity of jurisdiction” by which one single court is competent to rule on all nuclear damage claims, serving as it does to ensure that the “maximum” amount of liability will not be exceeded through judgments, awards and settlements which are issued or reached in several jurisdictions.

Still other states hold the view that suppliers of nuclear goods, services and technology no longer need the protection which, in the early stages of the development of the nuclear industry, was considered essential for the survival and expansion of that industry. Adherents of this view believe that the industry is now mature enough and sufficiently strong economically to assume its normal share of nuclear risks and that thus the concept of the nuclear operator’s “exclusive liability” should also fall by the wayside.

Austria’s recently adopted legislation,<sup>84</sup> for example, clearly reflects a rejection of many of the fundamental principles forming the basis of the international nuclear liability regimes. Under that legislation, liability may be imposed upon the operator of a nuclear plant, the carrier of nuclear substances and the holder of a radioisotope licence. The concept of “channelling” liability to the operator of a nuclear installation simply does not exist. In fact, victims may even assert a claim against an operator or a carrier pursuant to other liability legislation in force, such as product liability legislation. Nor are victims precluded from asserting a claim against another defendant altogether.

The liability imposed upon operators of nuclear installations, carriers of nuclear materials and upon holders of radioisotope licences is, in all cases, unlimited. In addition, there is no limitation upon the time within which compensation claims may be brought. Prescription periods are determined by the general law of civil procedure in Austria.

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84. *Federal Law on Civil Liability for Damages Caused by Radioactivity. Bundesgesetz über die zivilrechtliche Haftung für Schäden durch Radioaktivität (Atomhaftungsgesetz 1999)*, BGB1 I, No. 170/1998. For a complete analysis of this legislation, see M. Hinterregger, “The New Austrian Act on Third Party Liability for Nuclear Damage”, *Nuclear Law Bulletin* No. 62, p. 27.

Since there is no limit upon the amount of liability that may be imposed, there is little need for the concept of unity of jurisdiction, and it has thus been rejected. If radiation from a foreign territory causes nuclear damage in Austria, then Austrian courts have jurisdiction to determine claims and Austrian law is applicable, regardless of where the incident causing the damage took place, subject to certain exceptions where nuclear damage occurs in that foreign territory as well.

It remains to be seen to what extent the Austrian example will be followed.

### **IX. An Imperfect System**

The response of the international community in the post-Chernobyl period to protecting victims of a nuclear accident is not a perfect one by any means and the implementation of the VC Protocol, the Supplementary Compensation Convention, the PC Protocol and the BSC Protocol will not always be easy. A number of problems remain “unsolved” despite the best of intentions of the international community, some of which are outlined below.

During the negotiations to amend or adopt those conventions, representatives of the nuclear insurance market made it clear that some of the proposed provisions would be, to say the least, problematical.<sup>85</sup> They noted, in particular, that there may not be sufficient market capacity to insure nuclear operators against the increased liability amounts provided for under the new or revised conventions, at least not in all countries, given that insurance capacity will vary from one country to another as a reflection both of national insurance markets and the available amount of reinsurance.

They also warned that coverage would not likely apply for the full 30-year duration of the extended prescription/extinction periods under the revised conventions in respect of personal injury actions. The basic reason for this refusal to provide coverage is simply that many cancers resulting from exposures consequent upon a nuclear accident are likely to manifest themselves only decades after exposure to ionising radiation. This is exactly what has happened in Belarus, Russia and Ukraine as a result of Chernobyl. In addition, these same cancers will be indistinguishable from those suffered naturally by the population. While it may be possible to establish causality in a small number of cases, for the vast majority of cancer victims, it will be impossible.

Insurers have also made it clear that coverage might not be available to secure all of the additional heads of damage for which operators would be liable under the revised conventions. In particular, they are concerned with the lack of a precise definition for “impairment of the environment” which is not defined either in terms of minimum levels of radioactivity or the effects of radioactive contamination. Cover for environmental damage might not be universally available. Even where insurers are prepared to provide that coverage, policies would exclude damage arising from releases of radioactive materials within authorised limits as part of the day-to-day operations.<sup>86</sup>

In addition, insurers have taken the position that preventive measures would not necessarily be considered an insurable risk in many countries, even if the measures had been retroactively approved by the competent authorities. The requirement that preventive measures be reasonable under the law of the competent court involves, once again, a measure of uncertainty and leaves open the possibility of

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85. See S.M. Reitsma, “Paris and Vienna Nuclear Liability Conventions: Challenges for Insurers”, presented to the 5<sup>th</sup> International Conference on Nuclear Option in Countries with Small and Medium Electricity Grids, Dubrovnik, Croatia, 16-20 May 2004.

86. Insurers have repeatedly expressed reservations about providing coverage for liability for damage incurred as a result of a gradual build-up of contamination over a period of years.

speculative claims from people who might take any manner of “preventive” action that they viewed as reasonable, the costs of which could well be quite high.

Finally, the terrorist attacks of 11 September 2001 led the insurance industry to look much more critically at the risks to which it exposes its capital and to the extent to which it is willing to do so. As a result, insurers are now generally unwilling to provide full third party liability coverage for risks of that magnitude. They are currently exploring ways of solving the coverage problem which would enable them to maintain their responsibilities to nuclear operators while ensuring the protection of their own industry. Solutions must take into account the fact that nuclear operators are obliged by law to maintain a specific amount of financial security, whether under international nuclear liability conventions or national legislation.

The extent to which terrorism coverage will be available to an operator in the amount required by its national law depends on several factors: (i) the insurers’ perception of the risk of terrorism in the country concerned (the United States and the United Kingdom are seen as more likely targets of terrorism than are many other countries); (ii) the strength/capacity of the national insurance market in the country concerned; (iii) the willingness of the national insurance market in the country concerned to assume terrorist risks altogether; and (iv) the legally imposed amount of operator liability in the country concerned.<sup>87</sup>

It is true that in many countries today, terrorism risks are fully included in the insured limit under nuclear liability policies, but this is largely due to the fact that the operator’s liability amount is relatively modest. It can be expected that following increases in operator liability amounts pursuant to recent amendments to the international nuclear liability conventions, more insurance pools will be faced with a shortage of terrorism insurance capacity. The shortage is a matter that must be resolved by operators, insurers and governments together.

In short, insurers have pointed out that nuclear operators might simply not be able to fully comply with their financial security obligations under the revised conventions by means of private insurance coverage.

There remains, in addition, a potential problem with damage to property that is on the site of the installation and to be used in connection therewith. There is no right to compensation under the international conventions for damage to the nuclear installation itself or to any property on that same site which is used or to be used in connection with any such installation. The purpose of this exclusion is to avoid the financial security maintained by the operator from being used to compensate damage to such property to the detriment of third parties. Owners of nuclear installations are obliged to assume the risks of loss of or damage to their own property and they are able to include the cost of this risk in the cost of the installation. Similarly, contractors whose property is on the site of a nuclear installation are obliged to assume the risks of loss or damage thereto, and they too are able to include the cost of this risk in the price of their supply contracts.

The conventions, however, are unclear on the question of how to deal with damage to the nuclear installation itself and property on the site of the installation (“on-site property”) caused by a nuclear incident. The provisions which channel liability for nuclear damage to the operator provide that the operator shall be liable for all nuclear damage except damage to on-site property, but are silent on the issue of on-site property damage itself. It is thus not clear whether an operator has a right of action against a negligent supplier of goods, services or technology for damage incurred at its

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87. The higher the amount of liability imposed upon operators, the less likely it is that available insurance will cover that entire amount.

installation. In this regard, there are two opposing points of view: first, since the overriding principle of the conventions is to channel liability to the operator, on-site property damage should not be recoverable from any other person; and secondly, since the overriding purpose of the conventions is to compensate damage suffered by third parties and since damage to on-site property is not third party damage, it should fall outside the conventions' scope and be recoverable under ordinary civil law principles.

The most effective way of solving this problem is by amending the text of the conventions to make it clear that operators either do, or do not, have any such right, or at least to require Contracting Parties to include a specific provision, one way or the other, in their national legislation. During the negotiations to adopt the PC Protocol, the Paris Convention states were asked by representatives of the nuclear industry to adopt the first point of view, the latter claiming that this would lead to legal clarity and certainty, but the Paris Convention states declined to do so for a variety of reasons. The problem thus remains.

### **X. The Way Ahead**

In terms of liability and compensation issues, the response of the international community to the accident at Chernobyl has been comprehensive, aimed at modernising two outdated international regimes, linking them together and adopting a brand, new global one – all this in the hope of bettering the situation of victims of a nuclear accident, wherever they may be found. That improvement will be brought about in a number of ways once all of the relevant international instruments have entered into force.

Much more money will be available to compensate victims of a nuclear accident and that money will be more readily and easily accessible. More victims will be entitled to compensation, both in terms of the type of damage that they have suffered and where those victims were physically located at the time they suffered it; in some cases, such as under the Supplementary Compensation Convention, victims in states other than that of the liable operator will be in a privileged position as regards a portion of the available compensation. In addition, the period in which claims for compensation can be made in respect of personal injury and loss of life has been extended, in recognition of the fact that some such injuries may not manifest themselves for many years after the accident has occurred.

Yet despite the lessons learned from Chernobyl, despite the attempts to make these new or amended instruments as attractive as possible to encourage the broadest possible adherence, their acceptance by individual states has not been overwhelming. This is particularly true in the case of the VC Protocol and the CSC where the required liability amounts and financial security limits were intentionally established at levels deemed to be acceptable to the vast majority of potential parties. It is equally discouraging to see that Ukraine has not ratified either the VC Protocol or the CSC, even though it signed both shortly after their adoption in 1997. Similarly, the Russian Federation has not yet given any indication of its intent to accede to the VC Protocol or sign the CSC. And one can only hope that the United States, after repeated assurances of its intention to join the CSC, will soon become one of the first major nuclear states to ratify it.

Some countries, both nuclear generating and non-nuclear generating alike, have indicated (unofficially) that they are unlikely to make a decision on joining one or more of the conventions until they have adopted, or in some cases revised, their existing domestic legislation in this field, a position which justifies a “wait and see” attitude.

## International Nuclear Law in the Post-Chernobyl Period

On the other hand, there will always be countries which are not tempted to adhere to any of these conventions for a variety of political and legal reasons. Some governments may simply take the view that the conventions are too regional in scope, or that their countries are geographically too remote for them to be of real value. It is understandable that these states might prefer to explore the idea of concluding bilateral or multilateral regional arrangements with their neighbouring countries, be they nuclear power generating or otherwise.

It must be understood, however, that the international community's response to Chernobyl has been a compromise. All of the nuclear liability and compensation instruments adopted since that accident are the result of just that – a compromise between states which utilise nuclear energy for peaceful purposes and those which do not, states which are already Party to one of the existing international nuclear liability conventions and those which are not, states which implement the principle of legal channelling of liability and those which do not, states which have hundreds of thousands of units of installed nuclear capacity and those which have relatively few units, states which are primarily concerned with a nuclear accident occurring during transport of nuclear substances through their coastal waters and states which are major transporters of those substances, and finally, states which hold differing opinions as to the manner in which nuclear damage is to be determined – in short, like the international community's response, they are all, ultimately, a compromise.

Whatever the final outcome, it is clear that it is not sufficient to simply establish an international liability regime or to improve it – ongoing efforts are needed to attract as many states as possible to adhere to it. It is also important to accompany countries in their passage from Protocol adoption to implementation at the national legislative level. This can best be achieved through international cooperation with strong and committed support from both the OECD Nuclear Energy Agency and the International Atomic Energy Agency. Both agencies are there to encourage and to help. Let us hope that the remembrance of the Chernobyl tragedy will constitute the motivation necessary to accomplish that goal.

## ANNEX 1

**PARIS CONVENTION ON THIRD PARTY LIABILITY  
IN THE FIELD OF NUCLEAR ENERGY  
STATUS OF RATIFICATIONS AND ACCESSIONS**

**Adoption of the Convention: 29 July 1960**  
**Entry into force of the Convention and the 1964 Additional Protocol: 01 April 1968**  
**Entry into force of the 1982 Protocol: 07 October 1988**  
**Adoption of the 2004 Protocol: 12 February 2004**

| <b>Signatories</b> | <b>Convention</b> | <b>1964 Additional Protocol</b> | <b>1982 Protocol</b> |
|--------------------|-------------------|---------------------------------|----------------------|
| Austria            | ...               | ...                             | ...                  |
| Belgium            | 03 August 1966    | 03 August 1966                  | 19 September 1985    |
| Denmark            | 04 September 1974 | 04 September 1974               | 16 May 1989          |
| Finland            | 16 June 1972      | 16 June 1972                    | 22 December 1989     |
| France             | 09 March 1966     | 09 March 1966                   | 06 July 1990         |
| Germany            | 30 September 1975 | 30 September 1975               | 25 September 1985    |
| Greece             | 12 May 1970       | 12 May 1970                     | 30 May 1988          |
| Italy              | 17 September 1975 | 17 September 1975               | 28 June 1985         |
| Luxembourg         | ...               | ...                             | ...                  |
| Netherlands        | 28 December 1979  | 28 December 1979                | 01 August 1991       |
| Norway             | 02 July 1973      | 02 July 1973                    | 03 June 1986         |
| Portugal           | 29 September 1977 | 29 September 1977               | 28 May 1984          |
| Slovenia           | 16 October 2002   | 16 October 2002                 | 16 October 2002      |
| Spain              | 31 October 1961   | 30 April 1965                   | 7 October 1988       |
| Sweden             | 01 April 1968     | 01 April 1968                   | 08 March 1983        |
| Switzerland        | ...               | ...                             | ...                  |
| Turkey             | 10 October 1961   | 05 April 1968                   | 21 January 1986      |
| United Kingdom     | 23 February 1966  | 23 February 1966                | 19 August 1985       |

Note: All of the above states, with the exception of Austria and Luxembourg, are Signatories to the 2004 Protocol to Amend the Paris Convention.

## ANNEX 2

| <b>1963 VIENNA CONVENTION ON CIVIL LIABILITY FOR NUCLEAR DAMAGE</b>      |  |
|--|--|
| <i>STATUS OF RATIFICATIONS, ACCESSIONS, SUCCESSIONS</i>                  |  |
| <b>Date of Adoption: 21 May 1963; Entry into Force: 12 November 1977</b> |  |
| <b>Signatories</b>   | <b>Ratification, Accession, Succession</b> |
| Argentina  | 25 April 1967                              |
| Armenia  | 24 August 1993                             |
| Belarus  | 09 February 1998                           |
| Bolivia  | 10 April 1968                              |
| Bosnia and Herzegovina   | 30 June 1998                               |
| Brazil   | 26 March 1993                              |
| Bulgaria   | 24 August 1994                             |
| Cameroon   | 06 March 1964                              |
| Chile  | 23 November 1989                           |
| Colombia   | ...  |
| Croatia  | 29 Sept. 1992 (notif.); Oct. 1991 (effect) |
| Cuba   | 25 October 1965                            |
| Czech Republic   | 24 March 1994                              |
| Egypt  | 05 November 1965                           |
| Estonia  | 09 May 1994                                |
| Hungary  | 28 July 1989                               |
| Israel   | ...  |
| Latvia   | 15 March 1995                              |
| Lebanon  | 17 April 1997                              |
| Lithuania  | 15 September 1992                          |
| Mexico   | 25 April 1989                              |
| Morocco  | ...  |
| Niger  | 24 July 1979                               |
| Peru   | 26 August 1980                             |
| Philippines  | 15 November 1965                           |
| Poland   | 23 January 1990                            |
| Republic of Moldova  | 07 May 1998                                |
| Romania  | 29 December 1992                           |
| Russian Federation   | ...  |
| Saint Vincent & the Grenadines   | 18 September 2001                          |
| Slovak Republic  | 07 March 1995                              |
| Slovenia   | 07 July 1992 (notif.); June 1991 (effect)  |
| Spain  | ...  |
| The former Yugoslav Republic of Macedonia                                | 8 April 1994 (notif.); Sept. 1991 (effect) |
| Trinidad and Tobago  | 31 January 1966                            |
| Ukraine  | 20 September 1996                          |
| United Kingdom   | ...  |
| Uruguay  | 13 April 1999                              |
| Yugoslavia   | 12 August 1977                             |

## ANNEX 3

| <b>BRUSSELS CONVENTION SUPPLEMENTARY TO THE PARIS CONVENTION</b>                     |  |                      |
|--|--|----------------------|
| <b>Adoption of the Convention: 31 January 1963</b>                                   |  |                      |
| <b>Entry into Force of Convention and 1964 Additional Protocol: 04 December 1974</b> |  |                      |
| <b>Entry into Force of 1982 Protocol: 01 August 1991</b>                             |  |                      |
| <b>Adoption of 2004 Protocol: 12 February 2004</b>                                   |  |                      |
| <i>Dates of Ratification or Accession</i>  |  |                      |
| <b>Signatories</b>   | <b>Convention and 1964<br/>Additional Protocol</b> | <b>1982 Protocol</b> |
| Austria  | ...  | ...                  |
| Belgium  | 20 August 1985                                     | 20 August 1985       |
| Denmark  | 04 September 1974                                  | 10 May 1989          |
| Finland (accession)  | 14 January 1977                                    | 15 January 1990      |
| France   | 30 March 1966                                      | 11 July 1990         |
| Germany  | 01 October 1975                                    | 25 September 1985    |
| Italy  | 03 February 1976                                   | 14 June 1985         |
| Luxembourg   | ...  | ...                  |
| Netherlands  | 28 September 1979                                  | 01 August 1991       |
| Norway   | 07 July 1973                                       | 13 May 1986          |
| Slovenia (accession)   | 05 June 2003                                       | 05 June 2003         |
| Spain  | 27 July 1966                                       | 29 September 1988    |
| Sweden   | 03 April 1968                                      | 22 March 1983        |
| Switzerland  | ...  | ...                  |
| United Kingdom   | 24 March 1966                                      | 08 August 1985       |

Note: All of the above states, with the exception of Austria and Luxembourg, are Signatories to the 2004 Protocol to Amend the Brussels Supplementary Convention.

## ANNEX 4

**JOINT PROTOCOL RELATING TO THE APPLICATION OF THE 1963 VIENNA  
CONVENTION AND THE PARIS CONVENTION**

*STATUS OF RATIFICATIONS, ACCESSIONS, APPROVALS*

**Date of Adoption: 21 September 1988; Date of Entry into Force: 27 April 1992**

*PC: Paris Convention; VC: Vienna Convention; \*Not Party to either Convention*

| <b>Signatories</b>                  | <b>Ratification, Accession, Approval</b> |
|-------------------------------------|--|
| Argentina (VC)                      | ...                                      |
| Belgium (PC)                        | ...                                      |
| Bulgaria (VC)                       | 24 August 1994                           |
| Cameroon (VC)                       | 28 October 1991                          |
| Chile (VC)                          | 23 November 1989                         |
| Croatia (VC)                        | 10 May 1994                              |
| Czech Republic (VC)                 | 24 March 1994                            |
| Denmark (PC)                        | 26 May 1989                              |
| Egypt (VC)                          | 10 August 1989                           |
| Estonia (VC)                        | 9 May 1994                               |
| Finland (PC)                        | 3 October 1994                           |
| France (PC)                         | ...                                      |
| Germany (PC)                        | 13 June 2001                             |
| Greece (PC)                         | 16 May 2001                              |
| Hungary (VC)                        | 26 March 1990                            |
| Italy (PC)                          | 31 July 1991                             |
| Latvia (VC)                         | 15 March 1995                            |
| Lithuania (VC)                      | 20 September 1993                        |
| Morocco*                            | ...                                      |
| Netherlands (PC)                    | 1 August 1991                            |
| Norway (PC)                         | 11 March 1991                            |
| Philippines (VC)                    | ...                                      |
| Poland (VC)                         | 23 January 1990                          |
| Portugal (PC)                       | ...                                      |
| Romania (VC)                        | 29 December 1992                         |
| Saint Vincent & the Grenadines (VC) | 18 September 2001                        |
| Slovakia (VC)                       | 7 March 1995                             |
| Slovenia (VC)                       | 27 January 1995                          |
| Spain (PC)                          | ...                                      |
| Sweden (PC)                         | 27 January 1992                          |
| Switzerland (PC)                    | ...                                      |
| Turkey (PC)                         | ...                                      |
| Ukraine (VC)                        | 24 March 2000                            |
| United Kingdom (PC)                 | ...                                      |

## ANNEX 5

**PROTOCOL TO AMEND THE VIENNA CONVENTION ON CIVIL  
LIABILITY FOR NUCLEAR DAMAGE**

*STATUS OF RATIFICATIONS OR ACCESSIONS (March 2006)*

**Date of Adoption: 12 September 1997  
Date of Entry into Force: 4 October 2003**

| <b>Country</b> | <b>Signature</b> | <b>Instrument</b> | <b>Date of deposit</b> | <b>Entry into force</b> |
|----------------|------------------|-------------------|------------------------|-------------------------|
| Argentina      | 19 Dec 1997      | Ratification      | 14 Nov 2000            | 04 Oct 2003             |
| Belarus        | 14 Sep 1998      | Ratification      | 04 Jul 2003            | 04 Oct 2003             |
| Czech Republic | 18 Jun 1998      |                   |                        |                         |
| Hungary        | 29 Sep 1997      |                   |                        |                         |
| Indonesia      | 06 Oct 1997      |                   |                        |                         |
| Italy          | 26 Jan 1998      |                   |                        |                         |
| Latvia         | 07 Mar 2001      | Ratification      | 05 Dec 2001            | 04 Oct 2003             |
| Lebanon        | 30 Sep 1997      |                   |                        |                         |
| Lithuania      | 30 Sep 1997      |                   |                        |                         |
| Morocco        | 29 Sep 1997      | Ratification      | 06 Jul 1999            | 04 Oct 2003             |
| Peru           | 04 Jun 1998      |                   |                        |                         |
| Philippines    | 10 Mar 1998      |                   |                        |                         |
| Poland         | 03 Oct 1997      |                   |                        |                         |
| Romania        | 30 Sep 1997      | Ratification      | 29 Dec 1998            | 04 Oct 2003             |
| Ukraine        | 29 Sept 1997     |                   |                        |                         |

ANNEX 6

**CONVENTION ON SUPPLEMENTARY COMPENSATION FOR  
NUCLEAR DAMAGE**

*STATUS OF RATIFICATIONS OR ACCESSIONS (March 2006)*

**Date of Adoption: 12 September 1997**  
**Not yet in Force**

| <b>Country</b>              | <b>Signature</b> | <b>Instrument</b> | <b>Date of deposit</b> |
|-----------------------------|------------------|-------------------|------------------------|
| Argentina                   | 19 Dec 1997      | Ratification      | 14 Nov 2000            |
| Australia                   | 01 Oct 1997      |                   |                        |
| Czech Republic              | 18 Jun 1998      |                   |                        |
| Indonesia                   | 06 Oct 1997      |                   |                        |
| Italy                       | 26 Jan 1998      |                   |                        |
| Lebanon                     | 30 Sep 1997      |                   |                        |
| Lithuania                   | 30 Sep 1997      |                   |                        |
| Morocco                     | 29 Sep 1997      | Ratification      | 06 Jul 1999            |
| Peru                        | 04 Jun 1998      |                   |                        |
| Philippines                 | 10 Mar 1998      |                   |                        |
| Romania                     | 30 Sep 1997      | Ratification      | 02 Mar 1999            |
| Ukraine                     | 29 Sept 1997     |                   |                        |
| United States of<br>America | 29 Sept 1997     |                   |                        |

## ANNEX 7

| <b>2004 PROTOCOL<br/>TO AMEND THE PARIS<br/>CONVENTION<br/>(March 2006)</b> |                  |
|---|------------------|
| <b>OECD countries</b>   | <b>Signature</b> |
| Australia   |                  |
| Austria   |                  |
| Belgium   | 12 Feb 2004      |
| Canada  |                  |
| Czech Republic  |                  |
| Denmark   | 12 Feb 2004      |
| Finland   | 12 Feb 2004      |
| France  | 12 Feb 2004      |
| Germany   | 12 Feb 2004      |
| Greece  | 12 Feb 2004      |
| Hungary   |                  |
| Iceland   |                  |
| Ireland   |                  |
| Italy   | 12 Feb 2004      |
| Japan   |                  |
| Korea (Rep. of)   |                  |
| Luxembourg  |                  |
| Mexico  |                  |
| Netherlands   | 12 Feb 2004      |
| New Zealand   |                  |
| Norway  | 12 Feb 2004      |
| Poland  |                  |
| Portugal  | 12 Feb 2004      |
| Slovak Republic   |                  |
| Spain   | 12 Feb 2004      |
| Sweden  | 12 Feb 2004      |
| Switzerland   | 12 Feb 2004      |
| Turkey  | 12 Feb 2004      |
| United Kingdom  | 12 Feb 2004      |
| United States   |                  |
| <b>Non-OECD</b>   |                  |
| Slovenia  | 12 Feb 2004      |

| <b>2004 PROTOCOL<br/>TO AMEND THE BRUSSELS<br/>SUPPLEMENTARY CONVENTION<br/>(March 2006)</b> |                  |
|--|------------------|
| <b>OECD countries</b>  | <b>Signature</b> |
| Australia  |                  |
| Austria  |                  |
| Belgium  | 12 Feb 2004      |
| Canada   |                  |
| Czech Republic   |                  |
| Denmark  | 12 Feb 2004      |
| Finland  | 12 Feb 2004      |
| France   | 12 Feb 2004      |
| Germany  | 12 Feb 2004      |
| Greece   |                  |
| Hungary  |                  |
| Iceland  |                  |
| Ireland  |                  |
| Italy  | 12 Feb 2004      |
| Japan  |                  |
| Korea (Rep. of)  |                  |
| Luxembourg   |                  |
| Mexico   |                  |
| Netherlands  | 12 Feb 2004      |
| New Zealand  |                  |
| Norway   | 12 Feb 2004      |
| Poland   |                  |
| Portugal   |                  |
| Slovak Republic  |                  |
| Spain*   | 12 Feb 2004      |
| Sweden   | 12 Feb 2004      |
| Switzerland  | 12 Feb 2004      |
| Turkey   |                  |
| United Kingdom   | 12 Feb 2004      |
| United States  |                  |
| <b>Non-OECD</b>  |                  |
| Slovenia   | 12 Feb 2004      |

\* Spain deposited its instrument of ratification of the Protocol to Amend the Brussels Supplementary Convention on 12 January 2006. That Protocol will come into force when all Signatories have deposited their instruments of ratification, acceptance or approval.

## ANNEX 8

## Nuclear Power Plants Worldwide: Operating and Under Construction

Data taken from IAEA Power Reactor Information System. The total figures include 6 operating NPPs and 2 NPPs under construction in Taiwan, China.

| Country            | Operating  | UC        |
|--------------------|------------|-----------|
| Argentina          | 2          | 1         |
| Armenia            | 1          | 0         |
| Belgium            | 7          | 0         |
| Brazil             | 2          | 0         |
| Bulgaria           | 4          | 1         |
| Canada             | 18         | 0         |
| China              | 9          | 3         |
| Czech Republic     | 6          | 0         |
| Finland            | 4          | 1         |
| France             | 59         | 0         |
| Germany            | 17         | 0         |
| Hungary            | 4          | 0         |
| India              | 15         | 8         |
| Iran               | 0          | 1         |
| Japan              | 56         | 1         |
| Korea              | 20         | 0         |
| Lithuania          | 1          | 0         |
| Mexico             | 2          | 0         |
| Netherlands        | 1          | 0         |
| Pakistan           | 2          | 1         |
| Romania            | 1          | 1         |
| Russian Federation | 31         | 4         |
| Slovak Republic    | 6          | 0         |
| Slovenia           | 1          | 0         |
| South Africa       | 2          | 0         |
| Spain              | 9          | 0         |
| Sweden             | 10         | 0         |
| Switzerland        | 5          | 0         |
| Ukraine            | 15         | 2         |
| United Kingdom     | 23         | 0         |
| United States      | 104        | 0         |
| <b>Total:</b>      | <b>443</b> | <b>26</b> |

## International Nuclear Law in the Post-Chernobyl Period

### ANNEX 9

World's Nuclear Power Generating Countries that are Contracting Parties/Stated to:

- Paris Convention on Nuclear Third Party Liability, amended 1964 and 1982 (PC)
- Brussels Supplementary Convention, amended 1964 and 1982 (BSC)
- 1963 Vienna Convention on Civil Liability for Nuclear Damage (VC)
- Protocol to Amend the 1963 Vienna Convention (VCP)
- Convention on Supplementary Compensation for Nuclear Damage (CSC) (not in force)

Note: The 2004 Protocol to Amend the Paris Convention has been signed by 16 countries but has not yet been ratified, approved or accepted by any of the Signatories. The 2004 Protocol to Amend the Brussels Supplementary Convention has been signed by 13 countries and has been ratified by one country (Spain).

|                |              |                    |              |
|----------------|--------------|--------------------|--------------|
| Argentina:     | VC; VCP; CSC | Mexico             | VC           |
| Armenia:       | VC           | Netherlands        | PC; BSC      |
| Belgium:       | PC; BSC      | Pakistan           |              |
| Brazil:        | VC           | Romania            | VC; VCP; CSC |
| Bulgaria       | VC           | Russian Federation | VC           |
| Canada         |              | Slovak Republic    | VC           |
| China          |              | Slovenia           | PC; BSC      |
| Czech Republic | VC           | South Africa       |              |
| Finland        | PC; BSC      | Spain              | PC; BSC      |
| France         | PC; BSC      | Sweden             | PC; BSC      |
| Germany        | PC; BSC      | Switzerland        |              |
| Hungary        | VC           | Taiwan             |              |
| India          |              | Ukraine            | VC           |
| Japan          |              | United Kingdom     | PC; BSC      |
| Korea          |              | United States      |              |
| Lithuania      | VC           |                    |              |