Nuclear Insurance Pools: Worldwide Practice and Development

Sebastiaan M.S. Reitsma, Dr. jur.

Manager, Swiss Nuclear Insurance Pool

Abstract

The development of nuclear installations to produce electricity led to the establishment of Nuclear Insurance Pools and the introduction of international Conventions on Third Party Liability. Nuclear Pools offer both Third Party Liability insurance, reflecting the Conventions' principles, and other insurance products. They are market-wide, providing a facility for participation by insurers who could not otherwise write the insurance for the particularly sensitive nuclear risk. All acceptances are for the net retention of each Member without recourse to individual reinsurance protection. Common account reinsurance is arranged with other Nuclear Pools all over the world. Thus, a transparency is created, which ensures the highest degree of reinsurance security and imposes a known finite limit to each participating insurer's commitment. Therefore, Pool-members are prepared to make a greater commitment to nuclear risks than would be the case where they felt uncertain as regards their total exposure following a significant loss.

1 Introduction

In the 1950's, when the first commercial nuclear reactors were built to produce electricity, the industry, national authorities and also insurers were presented with the potential perils of nuclear fission. The risk involved related to the possibility of failure to control the nuclear chain reaction, causing damage to the nuclear installation itself, and of radioactive contamination of both third parties and the installation. Although the subsequent effects could not be quantified nor the frequency of losses forecast, it was clear that the damage, following a serious release of radioactive material, would result in a devastating exposure tho claims over a wide geographical area, which has been proven in the Chernobyl case.

2 Nuclear Liability Conventions, Insurance related principles

Authorities in many countries realised that a special liability regime was required, that could offer the public sound financial protection against the results of nuclear accidents. At the same time it should not prevent the development of the nuclear industry, still in its infantry, because of an unbearable liability. The deliberations resulted in the Paris and Brussels Nuclear Liability Conventions on the one hand and the Vienna Nuclear Liability Convention on the other. I shall not extend this paper to include later changes in the international nuclear liability convention structure. Firstly, they do not basically influence the insurance related principles as set out here and, secondly, they will be explained by others in the course of this Seminar. Although the countries which have ratified the Conventions differ, as do the amounts of liability ensuing from them, the two main principles underlying both are the same.

In the first place, so as to assure a greater protection for the public, the operator of a nuclear installation is subject to a ***strict liability***. This means that he is liable for damage resulting from a nuclear incident, in principle irrespective of its cause. However, the operator is protected by a ***limitation of that liability*** in both time and amount. Protection is also given by fixing the operator's obligation in the Conventions to affect private insurance cover or some other form of acceptable financial security to amounts obtainable in practice. To this end the views of insurers were sought and so limits of liability in the Conventions were fixed, taking into account the maximum insurance capacity available in the worldwide insurance market. In this respect I add that the advice of insurers as to the growth of insurance capacity, underlies later increases of liability limits in both national and international nuclear liability legislation.

The second main principle of Conventions and insurance cover regards the provision for ***channelling of all liability*** for a nuclear incident back to the installation operator. Without channelling of liability insurers would have to make available separate sums for nuclear liability incurred by parties other than the operator, such as designers and contractors engaged in the production or installation of equipments at the nuclear power plant. This would not only detract from the transparency needed to enable insurance markets worldwide to deploy as much capacity as possible, but would diffuse that capacity among many policy holders. It should be added in this respect that the United States, which does not adhere to the Paris or Vienna Convention, took a slightly different tack under the Price-Anderson Act: there, other parties besides the installation operator may be liable, but they are automatically covered under the financial protection and available government indemnification afforded the operator. So in the United States the economic instead of the legal consequences of liability for a nuclear incident are channelled back to the operator. However, the practical consequences of both systems are the same.

3 Insurance

Now, let us go a little further into the position of insurers. For them the problem of how to provide cover for the nuclear industry was difficult indeed. Although no accurate statistical data was available it was obvious that they were being asked to insure an unknown risk, with a low frequency outlook but a catastrophe potential up to very high limits. The number

of insured installations would be very small, which meant that even worldwide a balanced portfolio would be out of the question. Furthermore, insurers realised that, should a nuclear catastrophe occur, claims would most probably be submitted under many individual policies, resulting in an unacceptable accumulation and a catastrophic exposure to insurers' solvency margins. In short, it was, and still is, clear that no individual insurer could cover the risk alone and that not even national markets could do so.

4 Nuclear Insurance Pools

Because of these circumstances insurance industries all over the world have decided to protect their solvency by the exclusion of radioactive contamination from those classes where the risk was considered uninsurable. However, in order to provide for alternative cover to the nuclear industry, in many countries insurers agreed to join their operations for this particular risk by forming pools. For those of you, who are not familiar with this concept: a pool is essentially a group of insurance companies, jointly participating up to fixed percentages in the insurance of a particular risk or class of business. Pools are commonly formed where the risks concerned are few in number or require a capacity which could not possibly be provided by the individual means of the members. The pooling mechanism is also employed where the risk in question presents some particularly hazardous aspect, which would render acceptance by conventional methods difficult if not impossible. Since I have named all these characteristics as problems underlying the insurance of nuclear risks, it will be clear that the pooling mechanism is very suitable to serve the insurance of this particularly sensitive insurance product.

5 Fundamental Principles

Many nuclear insurance pools have been formed both to insure nuclear risks on their national markets and at the same time to provide reinsurance cover to their counterparts in other countries, thus deploying the maximum insurance capacity for nuclear risks on a ***market wide*** basis. In other countries pools were formed merely to provide capacity to enhance the worldwide market by the reinsurance of nuclear risks in other territories.

The aim of concentrating nuclear risks in the pools was achieved by keeping all acceptances for the ***net retention*** of each Pool-member without recourse to individual reinsurance protection, whereas ***common account reinsurance*** was arranged with the other Nuclear Pools throughout the world. Because of this mechanism, insurers participating in national pools can be certain, that their commitment is limited to the amount of their participation in the Pool and that, following the same nuclear incident, no accumulation via other channels can occur. These factors have resulted in a greater commitment of individual Pool-members to nuclear risks than would be the case where they felt a substantial uncertainty as regards their total exposure following a significant loss. Moreover, the pooling mechanism has induced many individual Pool-members to make a greater commitment to nuclear insurance than they normally make in respect of other first-class industrial risks.

The mechanism has also resulted in ***cost efficiency***, both on the national and the international level. Nationally the concentration of knowledge and experience in the field of the insurance of nuclear business in one body has, of course, lead to an economy of costs.

On the international level reinsurance between national markets is conducted on a ***direct basis***, which means that there is no intervention of intermediaries. Within the international pooling mechanism both the relevant reinsurance market and the insurance product are well known and easily accessible. This obviates the intervention of brokers and facilitates the rapid deployment of the maximum available secure capacity worldwide. As a result expenses are kept to a minimum. Between Pools themselves only a proportion of expenses - typically 7.5% - is remunerated instead of the commissions which are paid in the open reinsurance and retrocession market and which can be as high as 30%. Ultimately the resultant savings are reflected in the premiums, paid by the policy holders.

6 Modes and Areas of Operation

Up to now I have explained a number of fundamental principles, common to nuclear insurance in all countries, where nuclear pools operate.

However, these do not preclude the present 35 pools throughout the world from operating on the basis of differing constitutions and procedures reflecting the various legal, economic and market conditions and practices in their domestic territory. In some countries, for instance, individual Pool-members have decided to abstain from direct acceptance of nuclear risks and leave it to a third party to act, in effect, as their joint agent. In other countries, a Member Company may be empowered to accept nuclear business, within clearly defined parameters, on behalf of all Members of the Pool, reflecting a different ***mode of operation***.

Another example of operational differences between pools is that most of them do not insure radioisotopes or nuclides, which are used for industrial, agricultural and medical purposes. They argue that it is not necessary to insure the risk involved in the pooling system, as it cannot entail an unforeseeable catastrophe; a few, however, do include such risks on the grounds that all nuclear risks, however insignificant, should be treated the same way. So, differences between pools exist as regards the ***areas of operation***, in which they are active. However, it is common to all pools that they provide cover for the risks of nuclear power stations and to many of them for other installations from the fuel cycle too.

7 Classes of Business

So far, I have referred to nuclear ***Third Party Liability*** insurance only. The reason is, that this class of insurance business responds directly to nuclear legislation, to which the formation of nuclear insurance pools was so closely related. Practically all pools provide Third Party Liability insurance for operators of nuclear installations. Furthermore, several pools also insure Third Party Liability for transportation risks and some cover Workers Compensation and Employers Liability as well.

However, apart from third party liability insurance, also other classes of business have been developed since the pools came into existence.

Material Damage to the operator's installation is covered by the vast majority of pools.

Cover is based on the conditions, normally used for Industrial Fire Business in the market in question, with the addition of the two perils, peculiar to the nuclear fuel cycle, namely

- damage, due to uncontrolled reactivity like accidental chain reactions and overheating of a reactor
- accidental contamination by radioactive materials.

Cover for Cleanup Expenses in excess of property value often is available and some pools offer Machinery Breakdown cover, either under a separate policy or included with the Material Damage cover proper. Also cover for Business Interruption and Additional Expenses are covered by some pools and have a tendency to be included, for a sub-limit, within the scope and overall limit of the Material Damage policy.

Furthermore, a limited number of pools provide cover for risks, related to the building or rebuilding of nuclear property by offering ***Construction/Erection All Risk*** cover.

As regards all classes of business the international pooling mechanism provides a forum for the interchange of information in respect of policy wordings and risk improvement intelligence so as to standardise and improve nuclear risks worldwide.

8 Risk monitoring

An insurance risk, as high in potential as the nuclear one, requires a particular degree of risk monitoring. Over the years, pools have built up a concentration of scarce specialist engineering skills, both for the assessment of risks for nuclear underwriters and the provision of allied risk management information. Numerous inspection visits of both new and operating power stations underlie these engineering skills. Visits have been carried out by Pool-engineers of various specializations.

Most other international technical missions to nuclear power plants, for example by the international Atomic Energy Agency and the World Association of Nuclear Operators, concentrate on nuclear safety. The Pools have a wider brief. Their inspections, wherever they may take place and independent of the type of nuclear plant being built or operated, focus on minimising the insurance risk. The Pools' concerns are not only nuclear safety, but all incidents and losses that can prejudice a utility's financial status. That means that the purpose of an insurance inspection report is to present an assessment of a risk to the underwriter as a basis for equitable policy conditions.

Generally, nuclear power plants worldwide employ high caliber staff and operate to very high standards. Thus, all recommendations in Pool engineers' reports are to be seen in this context. Any improvements, made by a Utility, based on the report's recommendations will be measures that increase the already high degree of safety that is in place.

Once having written an insurance cover, it is in the Pools' interest to be informed of progress with the implementation of any recommendations. Thus, they become a means of assessing improvements in an insured risk without constant attendance at a plant. Improvements in risks, when communicated to the underwriters, can become reflected in

adjustments of the policy conditions. Also, the engineers are better informed when they return to a plant for subsequent inspections, making for a much more efficient use of their time and that of the utility's staff involved in the discussions on the status of the insured risk. So, an inspection report with its recommendations is viewed as the start of a technical relationship between a utility and his insurer.

Let me finalize this section on risk monitoring by referring to the nature of quite a number of technical recommendations. Consistently, the largest number of them has related to the area of Fire Protection. Exposure to a major fire is, in terms of frequency, the greatest threat to which an Operator, and hence his insurer, is exposed. Therefore, the Pools have paid a lot of attention to and gained considerable experience in this field. This experience has been laid down in the so called "Fire Protection Guidelines", which have also become widely used for fire risk assessment -and improvement outside the insurance market.

9 Conclusion

Fortunately, nuclear losses do not frequently occur. Therefore, insufficient accurate statistical data is available and a balanced underwriting is impossible. On the other hand it is obvious that, once a nuclear accident occurs, its catastrophe potential and the costs involved will be enormous. Because of this factor, a capacity is required beyond any limit known in other classes of insurance business.

These characteristics of the nuclear risk make coverage unattractive to individual insurers in the open insurance and reinsurance markets. In order to, nevertheless, amass the maximum available capacity for this type of business, insurance industries all over the world have successfully formed net-line Pools. They will certainly continue to accumulate as much capacity as possible so as to answer continuing demands of the nuclear industry.