An overview of the insurance of nuclear power plants

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Insurance is the transfer of financial risk. It is used to offset losses on the happening of a contingent and uncertain event. It is, in effect, the transfer of the financial risk of a loss, from one entity to another, in exchange for the payment of a premium. In the interest of brevity, this paper does not address the issue of civil liabilities applying to the operation of nuclear power plants and arising out of the Paris or Vienna Conventions or any of the protocols thereto. For detailed information on these, please refer to the IAEA or WNA websites.

El seguro es la transferencia del riesgo financiero. Se emplea para compensar las pérdidas cuando se produzca un suceso contingente e incierto. En efecto, es la transferencia del riesgo financiero de una pérdida, desde una entidad a otra, a cambio del pago de una prima. Por motivos de brevedad, en este artículo no se aborda el tema de las responsabilidades civiles aplicables a la operación de las centrales nucleares, y que surgen de las Convenciones de París o Viena o de cualquiera de los protocolos de las mismas. Para una información más detallada, consulten las páginas web del OIEA o de la ANM.

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BRIEF HISTORY

When the first civilian nuclear power plants were built, there was no historical data for any form of damage resulting from an accident. Accurate estimates of potential frequency or severity of loss could not be established. The size and complexity of the risks involved were considered too extreme to be carried by one commercial insurer. Risks did not meet the standard insurance criteria of 'the law of large numbers'. Consequently, in order to be able to provide insurance, commercial insurers in each country formed national associations to which they allocated insurance capacity. Nuclear insurance Pools were established by the major insurance markets of the world during the mid to late 1950's in response to pressure from both Governments and the nuclear industry. So, for example, if ten companies in a country each allocated a dedicated capacity of €10million, the capacity of that local association (pool) to provide insurance would be €100million. If more capacity was required by a utility, the local pool would seek additional capacity from other national pools. In very simple terms, this is how the pooling system evolved and still operates today.

The late 1960's marked a growing interest in the formation of insurance companies owned by the companies they insured. Those seeking insurance for large or unusual risks, for example in aviation and the oil business, increasingly encountered scarce market capacity or felt premiums to be unreasonably high. Insurers were not prepared to subsidize one industry's losses with profits from other lines of business. Each industry, or even subgroup, was expected to "pay for its own losses". The insurance markets reacted with swift premium increases when large losses were suffered within an industry. So large were some of the resulting increases that the insurance arrangement appeared to be more in the nature of a financing transaction than classic insurance.

To deal with this problem, insurance companies operating on a mutual basis appeared an attractive alternative. Companies within an industry could come together in such a risk sharing joint venture in an insurance company formed by them. They would share the risk of loss among themselves. They would pay for their own losses, but no more than that. Acting on this premise, the world's airlines and then the large oil companies began to explore the feasibility of establishing an industry-owned "captive" insurance company.

In 1973, a group of fourteen US based utilities formed a Bermuda insurance company to issue nuclear property insurance policies with a limit of $100 million for operating plants and those under construction. The policy forms were based on those then in use, while premiums were set at approximately the level being charged by the pools, with discount for the fact that brokers would not be used to place the insurance. The company operated as a mutual insurance company without capital stock. A Board of Directors composed exclusively of utility executives was appointed. Member insureds were entitled to vote on the basis of premiums paid to the company, with no Member being allowed to have 10 percent or more of the outstanding votes. Financial resources were provided by having each Member insured pay its first year premium in advance. In addition, each Member undertook to pay up to fourteen times its annual premium should losses require additional funds. It was calculated that the company could start business if commitments to participate were received from utilities generating first year premium of $7 million. This, with a retrospective premium call of fourteen times $7 million, would provide total resources of just over $100 million. Interestingly, in terms of the conservatism of this calculation, the maximum probable loss the engineers could then envision was a partial core melt down, with an estimated repair cost of $30 million!

Today, national pools of commercial insurers exist in most countries. They have little by way of assets. In the event of a loss, they would make 'calls' on their subscribing insurance company members and other pools with whom they will have made arrangements. The cover they provide include property, liability for damage to third party property and persons as well as transit insurance. Details about Pools can be found at http://www.nuclearpools.com/home.asp

Globally, there are three mutual insurance entities in operation. EMANI and ELINI based in Brussels and insure property and liability risks of a number of nuclear generators, research facilities and nuclear processing entities around the world. Details can be found at

http://www.emani.be/
http://www.elini.net/

The third mutual is Nuclear Electric Insurance Ltd (NEIL) which insures nuclear generators around the world and has insureds based in Belgium,

www.nuclearpools.com/home.asp

Spain and the US who meet Membership criteria. Details can be found at www.nmlneil.com.

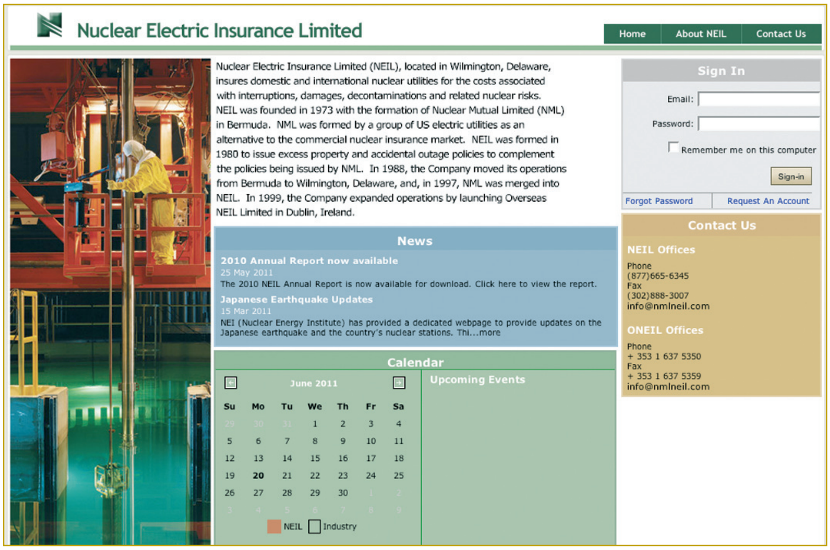
NEIL

A significant difference between Nuclear Electric Insurance Limited ("NEIL") and other commercial carriers is that each Member of NEIL has multiple opportunities to participate in the activities and decisions of the mutual enterprise. NEIL encourages such participation. All Members are permitted to vote on a variety of corporate matters, as discussed in NEIL's Bye-Laws. The individual each Member designates as its Members' Representative participates in these decisions at the Annual (and any Special) General Meetings. Membership on NEIL's Board of Directors changes on a regular basis with at least ten Members being represented at any one time.

Members also have the opportunity to participate in the activities of NEIL through representation on the three NEIL Advisory Committees – the Insurance Advisory Committee ("IAC"), Engineering Advisory Committee ("EAC"), and Legal Advisory Committee ("LAC"). As at the corporate level, NEIL encourages its Members to participate in the activities of the Advisory Committees and any Task Forces that may be formed by the Committees.

The IAC is generally comprised of risk management personnel from NEIL's Members. Its responsibilities include reviewing the provisions of NEIL's policies, and other insurance related matters, and recommend changes to NEIL's Board. Through the IAC, the mutual receives input on matters such as adequacy of the limits of insurance provided and will also determine ways to improve policy coverage. All recommendations from the IAC

www.emani.be



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are put to the Board for approval before implementation.

The EAC is generally comprised of plant engineers from NEIL's Members and its responsibilities include maintaining and updating NEIL's Loss Control Standards. These standards have been developed by the Members and seek to ensure relative equity of insurance exposure and to encourage industry best practice in terms of loss prevention. The Standards are applied to all NEIL Member insured facilities regardless of location. Uniquely, periodic in-plant evaluations are conducted at all insured Member plants to verify continuing compliance with the NEIL Standards. Findings are discussed with site personnel at an exit meeting and any recommendations are confirmed in a written report.

The IAC and EAC each meet twice a year and membership on the Executive Committee for each changes on a regular basis. The Executive Committees meet on average four times per year. The LAC is comprised on average of 15 attorneys from the Members. It meets on an as needed basis to review significant legal issues and provide advice to the Company on those issues. NEIL also holds conferences for all Members' legal counsel about every 18 months as a way to foster relationships between Members' counsel, to provide all Member counsel with information on the activities of NEIL, and review any significant changes within the Company.

NEIL currently issues to its Members three nuclear insurance policies.

- The Primary Property and Decontamination Liability Insurance Policy, known as the NEIL Primary Policy, which has a maximum limit of $500 million. Subject to standard exclusions, this Policy provides coverage for losses caused by fire, windstorm, lightning, explosion, machinery breakdown, and the like. Certain perils such as flood and earthquake are excluded but may be added back by endorsement.
- The Decontamination Liability, Decommissioning Liability, and Excess Property Insurance Policy, known as the NEIL II Policy, has a maximum limit of $2.25 billion per site. This Policy will follow the form of the Primary Underlying Policy, and will indemnify the Insured for the expenses incurred when discharging their legal obligation to protect the public health and for the expenses incurred to remove debris and decontaminate Insured Property following Property Damage caused by an "Accident." In exchange for a reduced NEIL II premium, multiple sites may share a portion of their NEIL II limit.
- The NEIL I Accidental Outage Insurance Policy, known as the NEIL I Policy, has a maximum limit of liability of $490 million per unit insured. NEIL I provides insurance of up to $490 million to cover a prolonged accidental outage of a nuclear unit. The Policy is issued on an agreed value basis with indemnification being approved in advance

The Company is also prepared to offer Builders' Risk, Combined Primary Property and Builders' Risk, and Transit covers when requested by Members. Deductibles (self insurance), range from $500k upward with a minimum of $1million on turbines for property cover. A range of deductible periods are available under the Accidental Outage Policy. Coverage for New Build projects is already in force in the US and provides seamless cover from initial site preparation through construction to the completion of testing when the cover switches to the NEIL standard Member primary cover. Typically, new build cover is a 60 month policy and can include provision for delay in start up cover.

In Spain, all operational units insure against property damage through the international arm of NEIL, Overseas NEIL Ltd, an insurance company based in Dublin. Through this arrangement, the Spanish utilities are Members of NEIL and enjoy the same benefits of Membership as all other Members. Various limits are purchased for property and decontamination coverage. Some units also purchase Accidental Outage insurance.

Another key difference between NEIL and other nuclear insurers is the general financial proposition offered to Members that allows Members to share in the success of the venture. Since 1973 the mutual has earned $6.4 billion in Member premiums. Claims paid in that period have exceeded $2.3billion, distributions returned to Members have totaled more than $6.2 billion. During this time the surplus has grown to $3.6 billion as of December 31, 2010.

THE FUTURE

NEIL directly insures exposures on 124 operating Member units at sites in Belgium, Spain and the US, generating an annual nuclear premium income of over $210million. In addition, NEIL also provides reinsurance support to a significant proportion of the remaining insured sites around the world. Looking forward NEIL will continue to protect its financial strength and optimize risk-adjusted returns by a) managing risks within defined tolerance levels, b) measuring risk in an integrated manner across underwriting, investment and operational exposures and c) maintaining well-defined reporting and governance processes.

Evolution and growth are vital to continued success at NEIL, and as the insurance and energy industries continue to evolve around economic and technological developments, new products and services will present significant opportunities. NEIL will continue to seek appropriate potential Members whose risk profiles may benefit the mutual but there is no driver to seek growth purely for the sake of growth. What the mutual does, it does in the long term interest of its Members.