



ANI Perspectives

May 2009

Online version: <http://www.amnucins.com/Perspectives.html>

Nuclear Insurance: Where Does It Fit in the Green Generation?

By Richard D. Jones

Abstract: Nuclear power is an important source of electricity in the United States and around the world. Energy demand and global warming have given this technology a new relevance. American Nuclear Insurers has provided insurance products to this industry for more than 50 years.

Also published in the Journal of Reinsurance, Spring 2009.

Nuclear power plants have generated electricity throughout the world for more than 50 years. About 17% of the world's electricity comes from nuclear power and in some countries that percentage is considerably higher. France and Belgium both receive the majority of their electricity from nuclear power plants – 77% and 54% respectively. Other industrialized nations like Sweden (46%) and Japan (28%) also have a nuclear presence in their national energy mix that exceeds the world average. Additionally, China is embarking on an ambitious plan to build as many as 75 new nuclear power reactors by mid-century.

While France is perhaps the best known nuclear country, the biggest generator of nuclear power generator in the world is, by far, the United States of America. The U.S. produces more nuclear-generated electricity than the next largest producers (France and Japan) combined. About 1 in 5 homes and businesses in the U.S. obtain their electricity from nuclear power plants.

While nuclear plays a important role in meeting America's electricity needs, no new nuclear power plants have been ordered in the U.S. for more than 30 years. This long period of dormancy appears about to change as some 20 companies and consortia are pursuing licenses for 34 new U.S. nuclear power plants. After many years, America appears to be on the verge of a nuclear renaissance.

How this once promising industry fell into disfavor, how it revived itself, and the role that American Nuclear Insurers plays in all this makes for an interesting story.

American Nuclear Insurers

In late 1953, President Dwight Eisenhower addressed the United Nations General Assembly in New York with a speech entitled “Atoms for Peace.” This event is seen as the starting point of the commercialization of nuclear energy in the United States and around the world. The next year, the United States Congress enacted the Atomic Energy Act of 1954 which laid the groundwork for the private use of nuclear fission technology.

As utilities began plans to build and operate nuclear power plants, concerns arose about liability issues associated with running these plants. Recognizing these concerns, and seeking to further promote the peaceful uses of nuclear power, Congress in 1957 passed the Price-Anderson Act as an amendment to the Atomic Energy Act of 1954.

The intent of the Act was to establish a financial protection framework to address public risk related to the commercial use of nuclear power and make sure that adequate funding is in place for the potential victims of a nuclear accident.

The Act requires operators of nuclear plants to provide financial protection against public liability caused by a nuclear accident. The amount of financial protection required by the Act is equal to the maximum available from private insurance sources.

At the same time, Congress encouraged the insurance industry to develop a means by which power plant operators could meet their financial protection responsibilities.

Insurers responded by establishing what became American Nuclear Insurers (ANI) to provide nuclear third party liability insurance for the then fledgling nuclear industry. American Nuclear Insurers was chartered as voluntary insurance pool and, interestingly enough, the Insurance Information Institute definition of “insurance pool” actually alludes to ANI:

[An insurance pool is a] group of insurance companies that pool assets, enabling them to provide an amount of insurance substantially more than can be provided by individual companies to insure large risks such as nuclear power reactors.

The amount of third party nuclear liability initially provided by the new pool was indeed “substantially more” than could be provided by an individual company. That 1957 limit of liability was \$60 million – a considerable sum for the time. Even more remarkable is that insurers committed this amount to what, for all purposes, was an unknown risk. Commercial nuclear power had no meaningful operating experience while at the same time contained a catastrophic exposure. ANI’s current domestic liability limit is \$300 million.

ANI Structure and Organization

Member companies of American Nuclear Insurers must meet the following membership requirements:

- A.M. Best Rating of “A-“ or better
- A policyholder surplus (PHS) of at least \$100 million
- Unqualified, audited financial statements for the latest financial reporting period

ANI’s 2009 Member Companies are:

- Ace American Insurance Company
- SCOR Re
- American Commerce Insurance Company
- National Union Fire Ins Co of Pittsburgh (AIG)
- Employers Mutual Casualty Company
- Munich Reinsurance America Inc
- AXIS Reinsurance Company
- Commerce Insurance Company
- Essex Insurance Company
- Federal Insurance Company (Chubb)
- Farmers Insurance Exchange
- Motors Insurance Corporation
- National Ind. Co (Berkshire Hathaway)
- New York Marine & General Insurance Co.
- Swiss Re America
- Ohio Farmers Insurance Company
- Everest Reinsurance Company
- State Farm Mutual Auto Insurance Co Company
- Transatlantic Reinsurance Company
- United Fire & Casualty Company
- Zurich American Insurance Company

ANI is legally organized as an unincorporated voluntary joint underwriting association that acts on behalf of its member companies. It is authorized to do business in all states and the District of Columbia. ANI is located in Glastonbury, Connecticut near Hartford, and has 28 staff members, nine of whom are nuclear engineers.

ANI Operations

American Nuclear Insurers directly writes nuclear liability insurance for nuclear facilities in the United States, and assumes reinsurance shares on nuclear business written by other nuclear pools and mutual insurers around the world.

The pool operates two underwriting syndicates, domestic and foreign. These syndicates are, in a sense, ANI’s two business units. Member companies subscribe to ANI’s syndicates on an annual basis.

Through the domestic syndicate, ANI provides third party nuclear liability insurance to every commercial nuclear power plant in the United States. Also insured are entities that support the operation of nuclear power plants such as fabricators of nuclear fuel, nuclear test and research facilities, low-level waste management and disposal facilities, shippers and transporters of nuclear waste as well as companies that supply the commercial nuclear industry with goods and services.

ANI also utilizes its domestic syndicate to participate in a high excess property reinsurance program managed by a utility mutual property insurer. Through its foreign syndicate, ANI participates in reinsurance programs in 18 foreign countries and ANI engineers participate in inspection programs for nuclear risks around the world.

ANI Coverage

ANI provides the domestic nuclear power industry with a variety of nuclear liability insurance products, the most fundamental being the ANI Facility Form policy. The Facility Form policy is issued to owners or operators of nuclear facilities. Coverage is strictly limited to liability for bodily injury or offsite property damage caused by nuclear material at the defined location, or while in transit to or from the defined location.

The policy excludes coverage for workers compensation and employers liability. These exclusions are intended to dovetail with the coverage available in the conventional insurance market for WC and EL exposures. The Facility Form also excludes coverage for radiation-related tort claims of workers because coverage for this exposure is provided under a separate ANI program.

ANI Facility Form Policy

- [Continuous Term](#)
- [Omnibus Definition of Insured](#)
- [No Deductibles](#)
- [Defense Costs Within Limits](#)

All ANI Facility Form policies contain two unique provisions related to the special nature of the liability risk. First, policies are written on a continuous basis and contain no expiration date. ANI liability policies remain in force until cancelled either by the policyholder or ANI. Policy terms are written in this manner because nuclear exposure is long-tail and nuclear injuries are usually latent in nature.

All indemnity payments and claims expense made under an ANI domestic liability policy reduce the policy's limit of liability. The limit can be reinstated if agreed to by ANI. Once a policy is cancelled, a ten-year Discovery Period begins to run that responds to claims emanating from occurrences during the active policy period.

The second unique provision is the definition of named insured. Any policy issued to an owner or operator of a nuclear power plant provides coverage for all interests connected with the plant (except the U.S. government). In other words, any entity connected with the plant whether they designed the plant, built the plant, own or operate the plant, or supply it with goods and services are automatically insureds under the terms of the Facility Form policy. This omnibus definition of insured assures that there will be no gaps in the coverage and channels all third party nuclear liability claims back to one source of coverage. This underwriting method also prevents possible stacking of limits.

ANI policies are written without deductibles or self-insured retention programs. Coverage is intended to be “first dollar” and, under the terms of coverage, ANI reserves the right to settle and defend all claims. Unlike most liability policies, defense costs are included within the ANI policy form.

As a single industry insurer, the growth, development, and business results of American Nuclear Insurers are tied to the nuclear power industry that ANI was created to insure. In its more than 50 years of operation, the nuclear power industry has undergone its share of ups and downs. After starting with great promise, the industry ran into troubled times, and just ten years ago nuclear power was virtually written off as a future U.S. energy source. Today, energy demand and concern with global warming are making nuclear power once again an important and relevant energy source.

Nuclear Industry—Promise, Setbacks and Revival

One of the more famous statements associated with the nuclear industry was made by Lewis L. Strauss, Chairman of the U.S. Atomic Energy Commission (AEC) to a group of science journalists in 1954: “Our children will enjoy in their homes electrical energy too cheap to meter”. This statement has, over the years, been used by the anti-nuclear movement to demonstrate the “failure” of nuclear power.

Notably, Strauss never actually connected nuclear power to this statement. His position as Chairman of the AEC implied, of course, that he was somehow referring to nuclear power. More accurately, the statement reflects the confidence of post-World War II America that advances in science and technology could produce a near utopian society. By the middle 1960’s, U.S. utilities had ordered more than 50 nuclear power reactors. From 1967 through 1974 orders were placed for an additional 196 units. The United States Atomic Energy Commission forecasted that 1000 nuclear power reactors would be on-line in the U.S. by 2000.

In fact, at the end of 2000, 103 nuclear power reactors were actually operating in the United States. This is certainly not insignificant since then, as now, they produce about 20% of America’s electricity. The reasons for the shortfall from previous expectations are varied and complex.

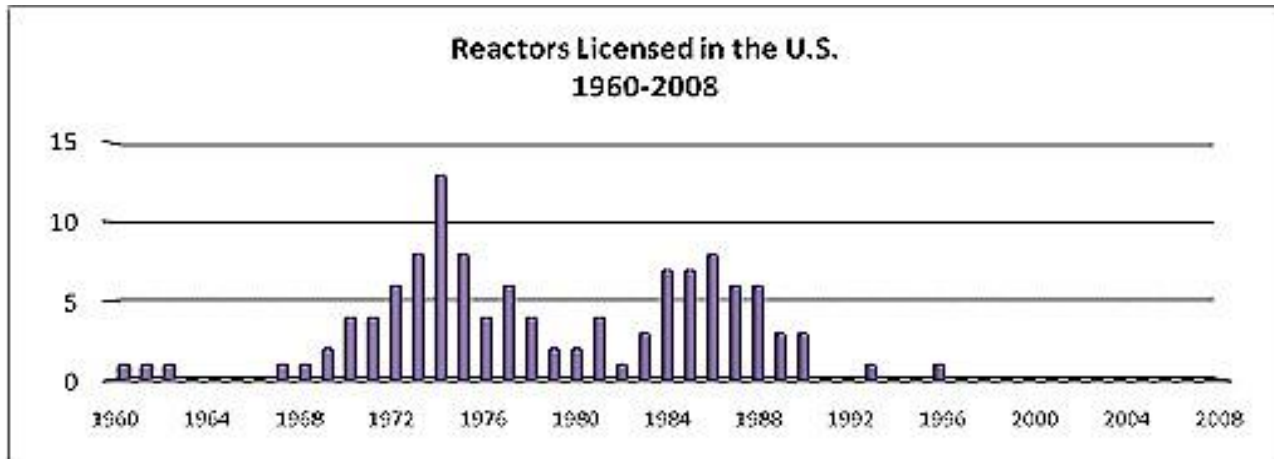
Utilities, of course, did not order this first generation of nuclear plants because of utopian visions. Nuclear power represented good business opportunities. Early costs of nuclear plants were very competitive with comparable coal and oil fired plants, and it made sense to put diversity into the energy mix. Also, in a foreshadowing of today’s environmental concerns, utility decision makers wanted to supplement smog-producing coal plants with non-polluting nuclear plants.

Nuclear power was off to a good start as a number of plants started to come on-line by the late 1960s. Then, three developments caused the nuclear power industry to come to a virtual halt by 1980.

The U.S. Environmental Policy Act was passed in 1969 which, among other provisions, created the requirement for “environmental impact statements” for new construction projects. This was followed by the first celebration of Earth Day in 1970 and the creation of the U.S. Environmental Protection Agency later that year.

These developments helped give credibility to the nascent anti-nuclear movement, increased their numbers, and provided them with a platform to mount challenges to proposed new nuclear power plants as well as new plants already under construction.

Using the legal apparatus of the time, the anti-nukes were able to significantly increase the legal and licensing costs associated with building a nuclear power plant in the U.S.



During the same period, prime interest rates in the United States spiked into double digits, and this had a negative effect on all large construction projects, nuclear included. Tony Earley, President and CEO of DTE Energy Company of Detroit recently reflected back on that era and stated: “In those days the financial risks associated with nuclear plants – licensing, construction, and operations – were overwhelming.”

On top of these trends came the accident at the Three Mile Island (TMI) nuclear power plant in 1979. By strange coincidence, Columbia Pictures released the film *The China Syndrome* just 12 days before the accident at TMI. The film portrayed technical problems, conspiracy, and corruption at a fictional nuclear power plant.

Three Mile Island Accident

“What’s more important is that the reactor safety systems worked as designed and prevented injuries to people around the plant.”

TMI was a very serious accident. A series of equipment malfunctions, design-related problems and worker errors led to a partial meltdown of TMI’s Unit 2 reactor. What’s more important is that the reactor safety systems at TMI worked as designed and prevented injuries to people around the plant. Despite the considerable damage on-site, no deaths, injuries, or significant damage occurred outside of the plant.

Nevertheless, the fiction of *The China Syndrome* intermingled with the reality of TMI and, at the time, research indicated that people began to oppose nuclear power. No orders for new U.S. nuclear power plants have been placed since 1979. The Chernobyl accident seven years later (caused by Soviet management practices and experimentation that would not be tolerated anywhere else in the world) seemed to seal the fate of the nuclear power industry.

Revival

The American nuclear power industry proved to be much more resilient than expected. Deregulation and energy demand helped the industry to make a big comeback starting in the 1990s. A number of states deregulated their electricity markets and nuclear plants proved to be very competitive in these markets. There were a large number of utility mergers and acquisitions in this period of time which resulted in larger, better managed nuclear fleets.

Also, the U.S. Energy Information Administration recorded an 11% increase in American electricity consumption during the years 1995-2000. The same agency forecasts very large increases in U.S. consumption over the next twenty years (although these predictions may be tempered by the current recession). Nuclear stepped up to meet this challenge by significantly increasing the output of existing plants. Between 1990 and 2003 new efficiencies in nuclear power plant electricity production resulted in an increase of 23,000 megawatts of new electric power – the equivalent of building 23 new 1,000 megawatt plants.

Nuclear has re-emerged as a safe, reliable, and necessary power source.

Nuclear Today

As mentioned earlier, the United States is the largest generator of nuclear energy in the world. The U.S. is also the largest generator of carbon dioxide in the world and carbon dioxide emissions are thought to be the primary cause of global warming, Nuclear power is the only industrial-scale source of carbon free power. Nuclear, for example, produces 100 times more power than solar and wind power combined.

There is a growing consensus, even among some environmentalists, that nuclear must be an important part of the solution to the problem of global warming. President Obama has indicated that he wants U.S. carbon emissions reduced by 80% by 2050. For the U.S. to come anywhere near achieving that goal, new nuclear plants will have to be built. The technologies relating to renewable “green” technologies, for example, solar, wind, and geothermal, still are not developed enough to contribute on the scale necessary to cause a meaningful impact on carbon emissions.

“The reality is that the world has little chance of avoiding the worst risks of global climate change unless we build more nuclear power plants. Nuclear power has a unique place in the global climate-change debate. It is the only carbon-free energy source that is already contributing on a large scale and that is also expandable with few inherent limits.”

Professor Richard K. Lester
Massachusetts Institute of Technology

A New Build era in U.S. nuclear power is beginning with the construction of a \$100 million facility in Lake Charles, Louisiana that will produce structural, piping, and equipment modules for use in new nuclear plants. An even larger nuclear manufacturing facility is planned for Newport News, Virginia and is scheduled to begin operation in 2011. The New Build era has already created new jobs and community investment. New reactor construction should soon follow.

A new generation of reactors will create new challenges in nuclear liability insurance underwriting and engineering. American Nuclear Insurers looks forward to meeting those challenges as it recruits and trains a new generation of nuclear insurance specialists.

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