

POLICY ISSUE INFORMATION

December 22, 2011

SECY-11-0178

FOR: The Commissioners

FROM: Michael R. Johnson, Director
Office of New Reactors

SUBJECT: INSURANCE AND LIABILITY REGULATORY REQUIREMENTS FOR
SMALL MODULAR REACTOR FACILITIES

PURPOSE:

The purpose of this paper is to inform the Commission of the staff's approach to the resolution of issues concerning the applicability of insurance and liability regulatory requirements to small modular reactors (SMRs) and multimodule SMR facilities. This paper does not address any new commitments.

BACKGROUND:

Section 170 of the Atomic Energy Act, "Indemnification and Limitation of Liability" (the Price-Anderson Act, AEA, or the Act), establishes an indemnification and public liability scheme for damages resulting from nuclear power reactor incidents. Title 10 of the *Code of Federal Regulations* (10 CFR) Part 140, "Financial Protection Requirements and Indemnity Agreements," implements the Act for U.S. Nuclear Regulatory Commission (NRC) licensees.

Section 170(b)(1) of the Act establishes that the amount of primary financial protection required for a nuclear power plant is the amount of liability insurance available from private sources, except that for reactors with less than 100 megawatts electric (MWe), the Commission may require a lesser amount for reactors based on several factors. Such factors include, but are not

CONTACT: Arlon Costa, NRO/DARR
301-415-6402

limited to, the cost of insurance; the size, location, and type of the licensed activity; and the nature and purpose of the licensed activity.

Section 170(b)(1) of the Act requires that licensees for reactors above 100 MWe carry the maximum amount of insurance available from private sources and also participate in a secondary retrospective insurance plan in a specified amount per facility in the event of a nuclear incident. The NRC is required at least once every 5 years to adjust these numbers for inflation. The current retrospective premium per reactor per nuclear incident is \$111.9 million, with a maximum annual contribution being \$17.5 million per nuclear reactor [AEA, Section 170b.(1) and t]. With 104 nuclear reactors currently participating in the plan, the total amount of financial protection is approximately \$12 billion.

Consistent with the Act, the regulation at 10 CFR 140.11, "Amounts of Financial Protection for Certain Reactors," states that nuclear reactors designed for the production of 100,000 electrical kilowatts (100 MWe) or more are required to carry \$375 million of liability insurance. Currently, this sum is the maximum amount of liability insurance available from private sources. Section 140.11 also requires that each licensee of a facility above 100 MWe will, in the event of a nuclear incident that results in public liability in excess of the amount of primary liability insurance carried by the licensee where the incident occurred, contribute up to \$111.9 million towards public liability and no more than \$17.5 million per reactor within one calendar year.

The regulation at 10 CFR 140.12, "Amount of Financial Protection Required for Other Reactors," identifies financial protection requirements for nuclear reactors not addressed in 10 CFR 140.11. Reactors that generate in excess of 10 thermal megawatts, but do not generate electrical power, and reactors that generate less than 100 MWe are required to carry an amount of liability insurance between \$4.5 and \$74 million. The exact amount is determined by a formula described in the regulations, which is based on thermal power and on a site's population factor. Because the amount of financial protection required of these reactors is less than the maximum amount available from private sources, these reactors are not required to participate in the secondary retrospective premium plan.

The Act requires the Commission to treat a combination of facilities above 100 MWe but below 300 MWe each, with a combined rated capacity of no more than 1300 MWe, as a single facility for public liability insurance purposes [AEA, Section 170b.(5)(A) and (B)]. The Act is silent as to a combination of facilities below 100 MWe.

Section 170(c) of the Act provides the framework for the indemnification of NRC licensees. In those instances where the required financial protection is less than \$560 million, the NRC will indemnify that licensee up to \$500 million.

The staff has previously considered insurance and liability requirements for SMRs. In SECY-10-0034, "Potential Policy, Licensing, and Key Technical Issues for Small Modular Nuclear Reactor Designs," dated March 28, 2010, the staff described a general concern with the

requirements of the Act for non-electricity-producing nuclear reactors and noted that an amendment to the Act or revision to the regulations may be appropriate. Additionally, as described in SECY-11-0112, "Staff Assessment of Selected Small Modular Reactor Issues Identified in SECY-10-0034," dated August 12, 2011, the staff identified insurance and liability as a potential policy issue for integral pressurized-water reactors (iPWRs).

DISCUSSION:

During development of plans to resolve the issues identified in SECY-10-0034 and SECY-11-0112, the staff held discussions with stakeholders and nuclear industry representatives. This outreach included several public workshops in 2010 and 2011 to discuss SMR insurance indemnity, liability, and applicability of the regulations and the Act. Subsequently, the staff reviewed the Nuclear Energy Institute's (NEI's) position paper titled "NRC Insurance and Liability Requirements for Small Reactors," dated June 6, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111590689). In that paper, the NEI concluded that existing financial protection requirements for SMRs were adequate and did not recommend statutory or regulatory changes for the near term. The staff also reviewed a report titled "Interim Report of the American Nuclear Society President's Special Committee on Small and Medium Sized Reactor (SMR) Generic Licensing Issues," issued July 2010 (ADAMS Accession No. ML110040946), which contains a section on "Nuclear Insurance and Liability for SMRs." The American Nuclear Society also did not identify the need for any statutory or regulatory changes.

During preapplication discussions with SMR vendors, the staff identified a potential inequity in the insurance and liability requirements for a specific SMR design and configuration that may warrant rulemaking to resolve. All but one of the proposed SMR designs planned for near-term deployment, specifically the iPWR SMR technologies, have power levels for each module that exceed 100 MWe. Under the financial protection mechanisms addressed in the Act and current regulations, licensees for these designs would be required to purchase the maximum amount of liability insurance and to participate in the secondary insurance pool.

However, one of the proposed SMR designs features individual reactor modules each with power less than 100 MWe. This design also includes provisions for multiple reactor modules in a single building, with some shared systems, where the aggregate power for three or more reactor modules would be in excess of 100 MWe, and the power level for the maximum number of reactor modules featured in this design would be in excess of 500 MWe. Under current regulations, because the power level of each individual reactor module is less than 100 MWe, a licensee for this design would be required to purchase primary insurance, determined by the formula identified in 10 CFR 140.12, up to a maximum of \$74 million for all of the reactor modules combined regardless of total aggregate power, and would not be required to participate in the secondary insurance pool; additionally, the NRC would be obligated to indemnify the licensee up to \$500 million.

The current insurance and indemnity requirements in 10 CFR Part 140 for multiple reactor modules that collectively exceed 100 MWe may not provide adequate assurance to the public that all claims resulting from a nuclear incident at such a facility would be compensated under

the Act. The staff therefore, plans to complete a comparative analysis of each of the designs. If the staff concludes that an inequity exists, the staff has identified two possible approaches for addressing it.

One approach involves raising the amount of insurance required per licensee to account for multiple reactor modules. The Act permits the NRC to require a licensee of a facility less than 100 MWe to obtain up to the maximum amount of insurance available from private sources. Under Part 140, however, raising the amount of insurance required per licensee to account for multiple reactor modules under 100 MWe each cannot be done in light of 10 CFR 140.12, which authorizes total financial protection for multiple reactors equal only to the highest amount required for any one reactor. This approach would therefore require rulemaking.

Another approach, which may be permissible under NRC's current regulations, involves treating multiple reactor modules at a site as a single reactor for insurance and liability purposes. Because of the flexibility afforded the Commission in defining "reactor" under the Act, and the definition of "nuclear reactor" in Part 140, it may be possible, under Part 140, to treat multiple reactor modules in a single building, with some shared systems, where the aggregate power for all of the reactor modules would be in excess of 100 MWe, as a single reactor for insurance and liability purposes. Because this approach represents a different interpretation of the Part 140 requirements than the staff currently employs, implementing this approach would require the staff to explain this new interpretation of the current regulations in a new guidance document for SMRs. As a general matter, regulatory and policy changes, other than for minor interpretations and guidance, require notice and comment rulemaking. Also, substantive changes in guidance or interpretations are considered equivalent to a rule change requiring notice and comment under certain circumstances.

The staff has not identified a change to the Act that would be necessary at this time.

The staff's next steps are to engage stakeholders, as appropriate, to inform the staff's comparative analyses. Upon completion of those analyses, if the staff concludes that an inequity exists, the staff will address this inequity through one of the approaches described above. The first of these designs is not expected to be submitted for the staff to review before the fourth quarter of fiscal year 2013. Because insurance and liability requirements are an issue for licensees that would reference these designs after they are certified by the Commission, there is adequate time for the staff to engage stakeholders to more fully address this issue, complete the necessary analyses, and develop the regulatory basis and budget for guidance or rulemaking, if necessary.

RESOURCES:

No additional resources are required in support of the stakeholder engagements described in this paper. Resources to support a future guidance update or rulemaking will be requested as part of the NRC's fiscal year 2014 budget process.

The Commissioners

- 5 -

COORDINATION:

The Office of the General Counsel reviewed this paper and has no legal objection.

/RA/

Michael R. Johnson, Director
Office of New Reactors