

**NUMBER OF LICENSES AS APPLICABLE
TO A PEBBLE BED MODULAR REACTOR (PBMR) FACILITY**

I. ISSUE:

The Atomic Energy Act (AEA) contains a number of provisions related to issuance of licenses for reactors:

- Section 101 of the AEA and 10 CFR § 50.10(a) prohibit a person from possessing or using a "utilization facility" except as authorized by a license issued by the Commission. The Commission's regulations in 10 CFR § 50.2 define "utilization facility" as a nuclear reactor. If each PBMR module is treated as a separate nuclear reactor, each individual module could require a separate license.
- Section 161(h) of the AEA and 10 CFR § 50.52 grant the Commission the authority to "combine in a single license" activities that would typically be licensed separately. This paper discusses how these various regulations should be reconciled for a PBMR facility consisting of multiple modules.

II. EXELON'S PROPOSAL:

- 1) In the first PBMR license application, Exelon will apply for a single license for multiple PBMR modules.
- 2) Independently of the PBMR licensing proceeding, the NRC should initiate rulemaking to clarify that a set of modules may be treated as a single nuclear facility for licensing and other purposes.

E/7

III. ANALYSIS:

Section 101 of the AEA requires a person to obtain a license to possess or use a "utilization facility." Section 11(cc) of the AEA defines the term "utilization facility" as any equipment or device capable of making use of special nuclear material or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security or health and safety of the public. This definition is broad, and could be interpreted as including a set of integrated modules.

10 CFR § 50.2 is more specific, and defines "utilization facility" as "any nuclear reactor." A "nuclear reactor" is defined by 10 CFR § 50.2 as "an apparatus, other than an atomic weapon, designed or used to sustain nuclear fission in a self-supporting chain reaction." Under this section, each module could be classified as a "nuclear reactor."

Neither Section 101 of the Atomic Energy Act nor the corresponding provisions in 10 CFR § 50.10(a) requires that each utilization facility have a separate license - - instead, both the Act and the regulation make it unlawful for a person to possess or use a utilization facility except as authorized by a license issued by the Commission. Therefore, the Commission could, consistently with the language of both Section 101 of the Act and Section 50.10 of the regulations, issue a single license for multiple modules.¹

Furthermore, Section 161(h) of the AEA states that the Commission may consider in a single application one or more activities for which a license is

required. Additionally, 10 CFR § 50.31 states that an applicant may combine several applications for different licenses into one application. This provision has often been used to submit a single application for construction permits or operating licenses for multiple reactors at a single site. Therefore, existing regulations permit Exelon to file a single application for multiple modules at a site.

Additionally, Section 161(h) of the AEA and 10 CFR § 50.52 state that the Commission may combine in a single license the activities of an application which would otherwise be licensed separately. These provisions are typically used to combine licenses for radioactive materials issued under 10 CFR Parts 30, 40, and 70 with an operating license for a single reactor issued under Part 50. However, nothing in the language or legislative history of the AEA or the Commission's regulations would preclude the Commission from combining two or more Part 50 licenses for multiple modules into a single license.

Exelon believes that issuing a single license for multiple PBMR modules would have several beneficial effects. First, issuance of a single license for multiple modules would enable the modules to be treated legally, as well as practically, as a single nuclear facility. As discussed in Exelon's position paper on "Financial Protection Requirements Under the Price-Anderson Act and 10 CFR Part 140 as Applicable to a Pebble Bed Modular Facility," the requirements imposed by Part 140 would be prohibitively burdensome, if applied to each module rather than to a PBMR facility as a whole. Additionally, as discussed in other papers,

¹ We could find nothing in the legislative history of the Atomic Energy Act that directly discusses whether a single license may be issued for more than one reactor, or whether more than one

requirements on annual fees in Part 171 and operator staffing in 10 CFR § 50.54(m) would be unduly burdensome if applied to each module. These problems would be ameliorated if multiple modules were subject to a single license. Furthermore, issuance of a single license for a facility consisting of multiple modules would have other benefits, such as administrative efficiency and promotion of standardization among the modules.

It is important to note that 10 CFR Part 52 appears to contemplate issuance of a single license for multiple modules. In particular, 10 CFR § 52.103(g) states:

Prior to operation of the facility, the Commission shall find that the acceptance criteria in the combined license [COL] are met. *If the combined license is for a modular design*, each reactor module may require a separate finding as construction proceeds. (Emphasis added)

Under this provision, a single COL could be issued for multiple modules prior to commencement of construction, and the Commission would make a separate pre-operational finding for each module or set of modules as its construction is completed.²

Therefore, Exelon believes that NRC may issue a single license for multiple modules given the existing language in the Atomic Energy Act and the Commission's regulations. To avoid uncertainty for future license applications for modular reactor facilities, NRC should initiate rulemaking to expand the

reactor may be treated as a single utilization facility.

²

The licensing of a modular facility under Part 50 could be more complex due to the two-step licensing process. The Commission could issue a single construction permit for multiple modules. Upon completion of the construction of the first module or first set of modules (and any requisite hearings), the Commission could issue an operating license (OL) for all of the modules; however, pending completion of construction of the other modules, the OL would only authorize operation of the first module or first set of modules. As construction of each additional module or set of modules is completed, the NRC would provide an opportunity for hearing, make the requisite finding under 10 CFR § 50.57(a)(1), and amend the OL to authorize operation of the module or set of modules in question.

definitions of utilization facility and nuclear reactor in 10 CFR § 50.2 to include multiple modular reactors at a site. For the purpose of the definitions, Exelon suggests that the total size of a modular reactor facility be limited to no more than 1500 MWe (which would bound the size of a PBMR facility, which is expected to consist of up to 10 modules each with a rated capacity of between 100 and 150 MWe).