



POSITION PAPER

LICENSE STRUCTURE FOR
MULTI-MODULE SMALL MODULAR REACTOR FACILITIES

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I. Introduction

The purpose of this paper is to describe the Nuclear Energy Institute (NEI) position on multi-module reactor plant licensing with respect to the number of licenses requested by a single combined construction and operating license (COL) application and the subsequent NRC review, hearing, and safety evaluation documentation. This paper will also address the duration of licenses for (a) each module of a multi-module facility and (b) secondary side and other systems equipment shared by two or more modular reactors.

II. Discussion

The deployment of a multi-module nuclear plant introduces some different issues related to license application, structure, and duration. These issues have been addressed, in part, in the Next Generation Nuclear Project (NGNP) white paper titled, “License Structure for Multi-Module Facilities” (Reference 1).

License Structure

Regarding the license structure for a multi-module facility, NEI endorses the following two conclusions from the NNGNP white paper:

“A single application for a Part 52 COL can include multiple, essentially identical reactor modules, regardless of the size of the reactors”

and

“The single application with multiple, essentially identical reactor modules (e.g., upwards of ten) can undergo a single NRC review, SER [safety evaluation report] and NRC hearing.”

The basis for this endorsement is that the existing regulatory framework supports a single COL application requesting licenses for multiple reactor modules (reference 10 CFR 52.8 and 52.47 (c)). In addition, there is precedence for providing a single review, a single SER, and a single hearing for a site with more than one similar reactor. For example, several COL applications have been filed under Part 52 by multiple utilities involving dual-unit AP1000 plants (Reference 2 – example COL application). While the AP1000 Design Certification Document (DCD) is for a single-unit facility, the dual-unit AP1000 COL applications request two licenses to construct and operate two nuclear power plants. This proposed license structure has been accepted by the NRC.

License Duration

Regarding the license durations for a multi-module facility, NEI endorses the following conclusion from the NGNP white paper:

“The license duration for each module within a single license authorization is a period not to exceed 40 years from the date the Commission finds that the acceptance criteria in the license are met, in accordance with §52.103(g), for that module.”

Justification for this endorsement is that, assuming a single license is issued for each module, the issue regarding license duration for each module has been already decided by NRC rulemaking. In the final Part 52 rule, §52.1 Definitions, a definition for *modular design* was added to explain the type of modular reactor design that the Commission intended to refer to in the second sentence of the existing §52.103(g). The license duration under Part 52 is defined under §52.104 as a period not to exceed 40 years from the date that the Commission finds that the acceptance criteria in the license are met, in accordance with §52.103(g). Since the §52.103(g) finding is made for each module separately as it becomes ready to load fuel, there is no issue with maintaining the 40-year duration for each module if separate licenses are granted for each module.

License Duration for Shared Equipment

The issue of shared secondary side equipment between nuclear reactors is not unique to SMRs. However, some SMR designs may share more significant secondary side equipment and other systems than the operating fleet or the large new reactors. There are SMR designs where two or more reactors share secondary side equipment such as power conversion systems, e.g., multiple reactors supplying steam to a single turbine-generator. In some cases the reactors may become operational at different times.

In general, SMR designs where two or more reactors share secondary side and other systems, the license duration would be tied to the older license and handled similar to the precedents set for license renewals for the operating fleet. Hence, if a license extension is desired and the shared equipment falls within the scope of §54.21(a)(1), an integrated plant assessment would be completed with the older reactor's license renewal application (which would be submitted as part of a multi-reactor license renewal application). For the case where two reactors share the same equipment, for example, but become operational X number of years apart, the shared equipment would be tied to the older reactor's license.

Pursuant to §54.17(c), license renewal can be sought at most 20 years prior to expiration of the license. For the operating fleet, there are several multi-unit plants where the individual reactors became operational several years apart. Utilities have applied for license renewal for all units simultaneously. Hence for SMRs that share equipment that become operational within a few years of each other (most likely scenario), license renewal can still be sought simultaneously for multiple units without impact to any unit's

license duration. Thus, a 20-year license renewal would apply to the individual license date of each reactor.

III. Current regulatory framework

10 CFR Part 52.1 Definitions
10 CFR 52.8 Combining licenses; elimination of repetition
10 CFR 52.47 Content of applications; technical information
10 CFR 52.103 Operation under a combined license
10 CFR 52.104 Duration of Combined License
10 CFR 54.17 Filing of Application
10 CFR 54.21 Contents of Application – Technical Information

IV. Proposed Regulatory Changes

There are no proposed regulatory changes for the subject issue. NEI requests that the NRC provide a written response to this position paper confirming the approach contained within it.

V. Conclusions

License structure for SMRs is recommended to be similar to that used for the larger light water reactors. For planned multi-module plants, this would be a COL application with a single NRC review and COL hearing, resulting in a single NRC SER. The COL application would request a separate license per reactor module for the multi-module facility.

The license duration for each module would be 40 years starting from each module's 10 CFR 52.103(g) finding. Some of the SMR designs share secondary side and other equipment (like power conversion systems) between reactors. For shared equipment, license duration is handled similar to the current operating fleet. For license renewal purposes, the multi-reactor license renewal application would provide an integrated plant assessment for all applicable equipment per §54.21(a)(1).

VI. References

1. INL/EXT-10-18178, "License Structure for Multi-Module Facilities," August 2010.
2. "Bellefonte Application for Combined License for Bellefonte Units 3 and 4," (Rev 0), October 30, 2007.