

February 4, 2000

Dr. Raymond H. Gabaldon III, Technical Program Chair
Attn: TRANSACTIONS OFFICE
American Nuclear Society
555 North Kensington Avenue
La Grange Park, IL 60526

SUBJECT: PRESENTATION AT 2000 ANS ANNUAL MEETING

Dear Dr. Gabaldon:

Please find enclosed an original and three copies of the summary of an invited paper for presentation at the American Nuclear Society 2000 annual meeting. The paper is entitled "Extending the Term of Non-Power Reactor Licenses." The summary cover sheet and a copy of the summary on disk are also enclosed.

If you have any questions, please contact me at 301-415-1127.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Enclosures:
As stated

February 4, 2000

Dr. Raymond H. Gabaldon III, Technical Program Chair
Attn: TRANSACTIONS OFFICE
American Nuclear Society
555 North Kensington Avenue
La Grange Park, IL 60526

SUBJECT: PRESENTATION AT 2000 ANS ANNUAL MEETING

Dear Dr. Gabaldon:

Please find enclosed an original and three copies of the summary of an invited paper for presentation at the American Nuclear Society 2000 annual meeting. The paper is entitled "Extending the Term of Non-Power Reactor Licenses." The summary cover sheet and a copy of the summary on disk are also enclosed.

If you have any questions, please contact me at 301-415-1127.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Enclosures:

As stated

DISTRIBUTION:

E-MAIL

PDoyle
TDragoun
TMichaels
SHolmes
WEresian

JLyons
MMendonca
LMarsh
CBassett
Pisaac

HARD COPY

File Center
PUBLIC
OGC
DMatthews
SNewberry
AAdams
EHylton
REXB r/f

DOCUMENT NAME: C:\ans2000paperpkg.wpd

*See previous concurrence

To receive a copy of this document, indicate in the box C=Copy w/o attachment/enclosure E=Copy with attachment/enclosure N = No copy

OFFICE	LA:REXB	Tech Ed	PM:REXB	C:REXB:DRIP	D:DRIP	ADIP
NAME	EHylton*	BCalure*	AAdams	LMarsh	DMatthews	JJohnson
DATE	1 / 2 /00	1/10/00	1 /12 /00	1 /13 /00	1 /14 /00	1 /21 /00

OFFICIAL RECORD COPY

(For Presentation at the 2000 ANS Annual Meeting:
June 4 - 8, 2000, San Diego, California)

Extending the Term of Non-Power Reactor Licenses

by

Alexander Adams, Jr.
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
301-415-1127

For both power and non-power nuclear reactors (NPRs), the protection of the public health and safety is the NRC's primary mission. The NRC ensures licensed facilities are designed, constructed and operated within this objective by conforming to the relevant underlying regulatory requirements. Licensees, both power and non-power have sought amendments to their licenses in order to obtain renewals to their licenses or recapture of construction time, while maintaining compliance with the underlying regulations. While the regulations for NPRs and power reactors are not always the same, the basic principal of maintaining adequate safety is identical. This paper describes the ways some NPR licensees have sought and obtained amendments to their licenses which extended their licensed period. These methods of extension are recapture of construction permit time and extension of the license expiration date.

The regulations in 10 CFR 50.51(a) specify that each license will be issued for a fixed period of time to be specified in the license. Some NPR licenses were issued with the fixed period beginning from the date that the construction permit was issued. Because of the time required to construct their facilities, these licensees are not able to operate their reactors for the full fixed period of time. One NPR licensee has extended its license expiration date by more

than three years to recapture time spent during construction activities¹. Two conditions must be met for a licensee to recapture construction time. First, the license must be in the original construction period rather than a renewal period because when a license is renewed, a new fixed period of time starts and recapture of construction time is not possible. Second, the fixed period of time for the original license must have started with the issuance of the construction permit.

License renewals for NPRs are normally for a term of 20 years². If application is made for license renewal at least 30 days before the expiration date of the license, the existing license will not be deemed to have expired until the application has been finally determined [10 CFR 2.109(a)]. The staff has renewed licenses for NPRs that set the expiration date of the renewed license in two different ways. Some licenses specified the expiration date of the renewed license as 20 years from the date of the expiring license and others specified the expiration date as 20 years from the date of issuance of the renewal. Since the time required to review an application for license renewal can take several years or more, the method used to determine the expiration date can significantly affect the length of the license. One NPR licensee extended its license expiration date more than four years by changing the expiration date of the renewed license from 20 years from the date of the expiring license to 20 years from the date of issuance of the license renewal³. This method of extending the license expiration date can only be used by licensees that have renewed licenses with the expiration date of the renewed license as 20 years from the expiration date of the expiring license.

The staff has issued license amendments that changed the expiration date of the license to recapture construction time or that extends the license expiration date. The primary

safety concern in granting the amendment is the condition of various reactor facility systems and the ability of these systems to continue to function adequately during the additional time period.

The NRC staff considers the effects of aging of safety-related components during review of license renewals². Very few components in NPRs are subject to high temperatures or pressures or high neutron fluence that would result in aging concerns. Facility technical specifications contain surveillance requirements to help ensure that facility equipment functions as described in the safety analysis report and ensure that unacceptable degradation of equipment is not occurring. Systems and components that have a safety function are tested for proper operation on a regular basis. The NRC inspection program reviews these surveillance requirements to ensure that they are being carried out and that the licensee evaluates and addresses any problems with equipment.

Prior use of reactor components is discussed in Section 16.1 of Reference 2. Licensees have described and the NRC reviews material condition of the reactor facility, focusing on significant components and systems, such as fuel cladding, the reactor safety system, and engineered safety features. Items that may have fixed lifetimes and that are replaced on a set schedule, such as control rods or reflector assemblies, have been discussed and reviewed. Licensees have described the tests performed and the results of the testing to ensure proper operation of important systems and components. If applicable, damage mechanisms, such as irradiation aging, corrosion, or stress, were evaluated by licensees and described. In some cases, maintenance and upgrades to systems, such as installation of new instrumentation and control components, has been discussed. The effect on the environment of extending operation was discussed in an environmental report. Actual data from past operation has been

used to project the impact of extending operation. These are examples of some information that has been acceptable to the NRC staff and is given as guidance only.

The staff determined that 9 of the 36 operating NPRs can qualify to extend their licenses. For example, the Armed Forces Radiobiology Research Institute can gain 45 months by applying for an amendment for extension of their license expiration date. In all cases, it is the responsibility of the licensee to provide a safety analysis to justify their request. The NRC will review requests from licensees to ensure continued protection of the health and safety of the public.

References

1. U.S. Nuclear Regulatory Commission, "Issuance of Amendment No. 28 to Amended Facility Operating License No. R-37 - Massachusetts Institute of Technology Research Reactor," February 8, 1995.
2. U.S. Nuclear Regulatory Commission, NUREG 1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors," February 1996.
3. U.S. Nuclear Regulatory Commission, "Issuance of Amendment No. 16 to Facility Operating License No. R-79 - University of Missouri, Rolla Research Reactor," August 6, 1999.