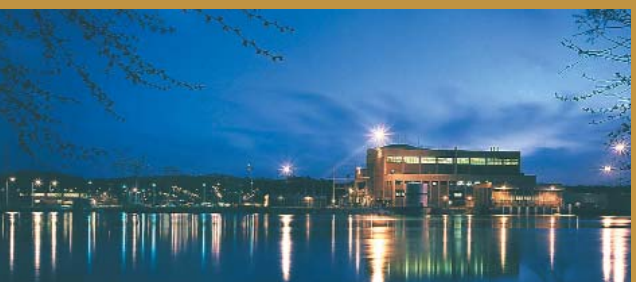
REACTOR LICENSE RENEWAL

Preparing for Tomorrow's Safety Today



UNITED STATES NUCLEAR REGULATORY COMMISSION

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May 20, 2002

Reactor license renewal is an important part of the Nuclear Regulatory Commission's (NRC) mission to regulate the civilian use of nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.

A large number of the nation's 103 operating nuclear power stations are expected to apply to the NRC for a twenty year operating license extension. The NRC has approved several license renewal applications to date and will likely be asked to approve dozens more over the next ten to fifteen years.

What does this mean to the U.S. public? For the past twenty years, the NRC has been studying and preparing for license renewal. This brochure provides an overview of the license renewal process - the technical issues that must be considered before an application can be submitted, how the NRC evaluates whether to approve a request for renewal, and a little about the NRC staff involved in the renewal process.

The NRC staff is open and accessible to questions you may have related to license renewal. The NRC is also committed to provide convenient access to as many license renewal documents as possible via our Web site (www.nrc.gov).

JIMI YEROKUN

Senior Reactor Inspector, NRC Region I, King of Prussia, PA

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Jimi has 21 years of experience in the nuclear industry, spending the last 12 with the NRC. Jimi received Bachelor's degrees in both mechanical engineering from Georgia Tech and physics from Benedict College.

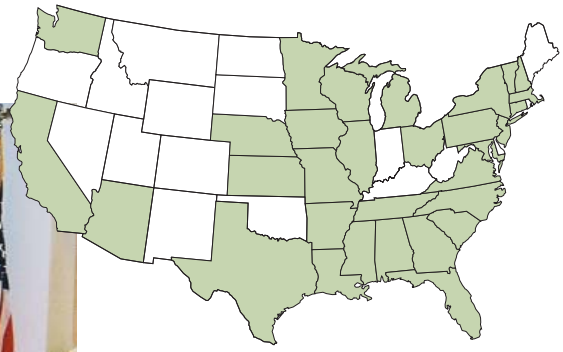
"A plant's age doesn't make much difference. It's our job to ensure it is operated safely - that's why we are here."

Jimi Yerokun

WHAT IS REACTOR LICENSE RENEWAL?

Nuclear energy today provides about 20% of the electricity supply in the United States. The U.S. Energy Information Administration (EIA) projects that total electricity demand will grow by 1.8% per year from 2000 to 2020. The EIA also estimates that about 90% of the existing number of the nation's nuclear power reactor units will still be used to generate electricity in 2020.

All commercial nuclear power reactors operating in the United States must be licensed and monitored by the Nuclear Regulatory Commission (NRC). Nuclear plant operators are subject to continual inspections by NRC Inspectors permanently stationed at each facility to monitor day-to-day operations safety – each site has at least two Resident Inspectors.



States with operating nuclear power generating stations

The license renewal review provides an independent examination, asking the following questions:

Does the reactor operator understand the effects of aging on critical safety components?

Has the operator taken appropriate actions to assure safe operation?

Regional Inspectors also make several visits annually to conduct routine inspections of various aspects of plant operations.

The Atomic Energy Act of 1954 and NRC regulations limit licensing of commercial nuclear power reactors to 40 years, and allow reactor operators to renew their licenses for up to an additional 20 years.

The license renewal process is designed to assess whether a reactor can continue to operate safely during the extended period. The process focuses on reactor systems and components that could affect safety during the renewal period.

MIKE BUCKLEY

Resident Inspector, Peach Bottom Nuclear Power Station, Delta, PA

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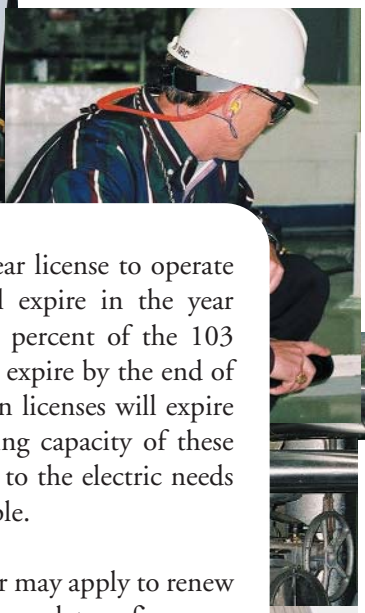
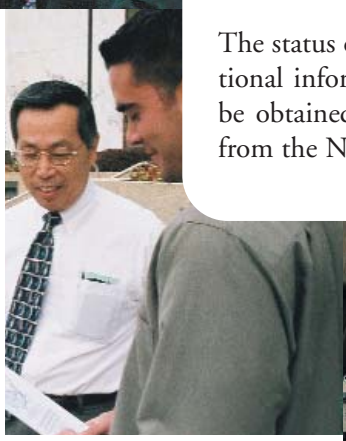
Mike is a former Senior Reactor Operator who has worked for the NRC for 11 years. Mike holds Bachelor's degrees in both electrical engineering and economics from the University of Michigan.

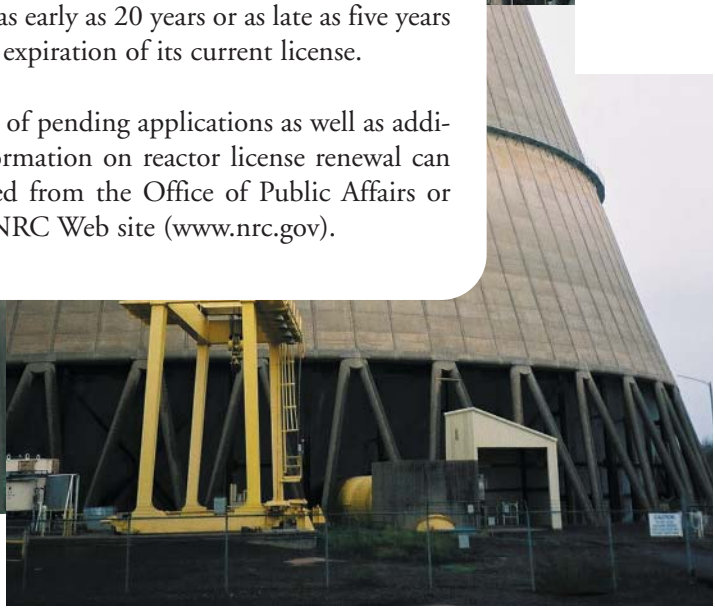
"The NRC has at least two inspectors like me on site, full-time at every plant, new or old, making sure every plant is safe."

Mike Buckley

WHICH REACTOR LICENSES WILL BE RENEWED?







The United States' first 40-year license to operate a nuclear power reactor will expire in the year 2009, and approximately 10 percent of the 103 operating reactor licenses will expire by the end of 2010. More than three dozen licenses will expire by 2015 -- the total generating capacity of these nuclear power plants is equal to the electric needs of more than 20 million people.

A nuclear power reactor owner may apply to renew its license as early as 20 years or as late as five years before the expiration of its current license.

The status of pending applications as well as additional information on reactor license renewal can be obtained from the Office of Public Affairs or from the NRC Web site (www.nrc.gov).

CHRISTOPHER GRIMES

Director, Policy and Rulemaking Program, NRC
Rockville, MD

Chris has worked with the NRC for 28 years and is a member of the prestigious Senior Executive Service. Chris received his Bachelor's degree in nuclear engineering from Oregon State University, and later pursed graduate studies in nuclear engineering at Catholic University.

"Nuclear power plants, like automobiles, can operate safely for long periods of time if they are properly maintained. The NRC has established safety standards that clearly define the inspection and maintenance practices that are required to properly maintain safety equipment so that nuclear power plants will continue to operate safely during the extended license term."

Christopher Grimes

HOW DOES THE REACTOR LICENSE RENEWAL PROCESS WORK?

If a reactor operator seeks to extend its original license, it must submit an application to the NRC that:

Identifies any reactor system, structure and component that would be affected by license renewal.

Demonstrates that it can safely manage the adverse effects of aging during the renewal period.

Analyzes the environmental effects of extended reactor operation.

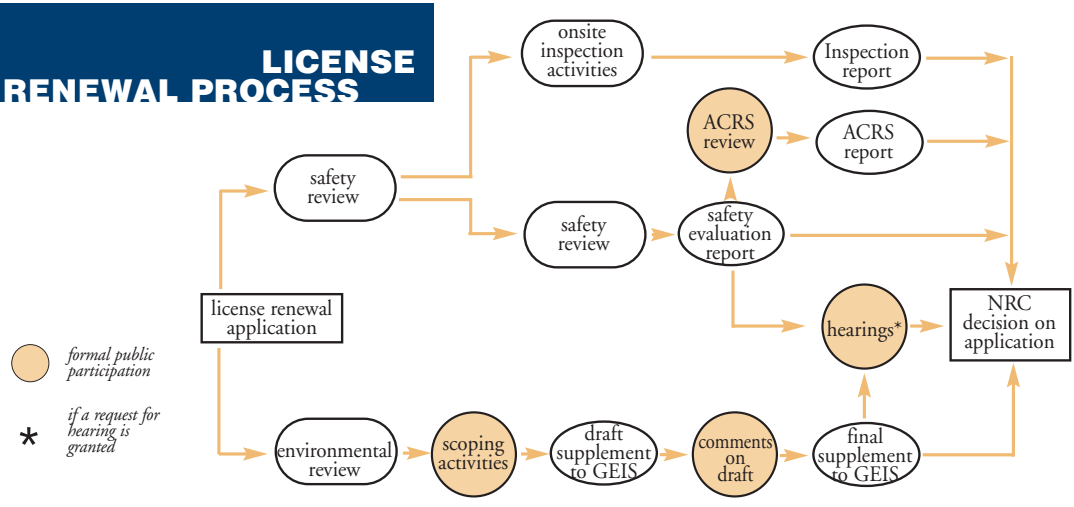
The NRC then conducts independent evaluations of the reactor operator's plans to address the safety issues and environmental issues related to license renewal.

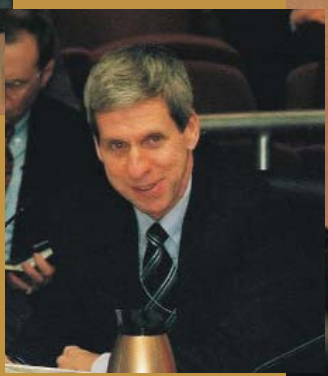
The NRC staff makes safety decisions and presents its findings on the renewal application to the Advisory Committee on Reactor Safeguards (ACRS). The ACRS acts as an independent third party oversight group that is required to review and make recommendations on the renewal application to the Commission. The ACRS is comprised of academic and scientific experts in various fields.

Public participation is an important part of the license renewal process. There are several opportunities for members of the public to question how aging will be managed during the period of extended operation. Information provided by the licensee is also available through NRC's public meetings and through published evaluations, findings and recommendations.

If any person believes they would be adversely affected by a reactor license renewal, they may also request a hearing.

LICENSE RENEWAL PROCESS





WHAT IS A SAFETY REVIEW?

The NRC Office of Nuclear Reactor Regulation reviews the operator's renewal application and supporting documentation. The review results in a safety evaluation report that is made available for public review. Teams of specialized inspectors travel to the reactor site to verify that the aging management plan has been or is ready to be implemented.

The NRC license renewal inspection program verifies the information in the renewal application and important findings in the safety evaluation report. The operator must show that the effects of aging will not adversely affect any reactor structures and components during the renewal period. These structures and components include components such as the reactor vessel, containment structure and steam generators.

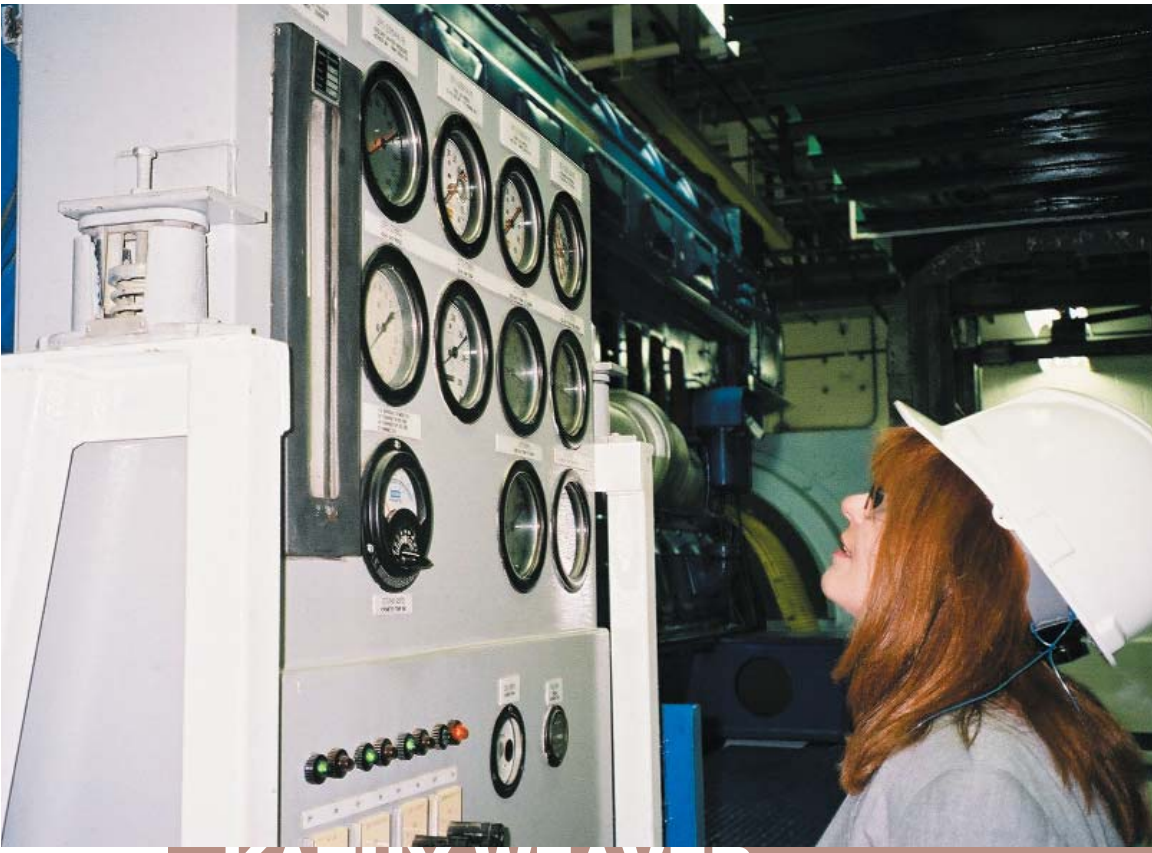
For some reactor structures and components, additional action may not be needed where an operator can demonstrate that it already has programs that will assure safe operation of the plant throughout the period of extended operation.

If additional aging management activities are needed, the applicant may be required to establish new monitoring programs, increase inspections, or revise design criteria.

When the plant was designed, certain assumptions were made about the length of time the plant would be operated. During the renewal process, the operator must also confirm whether these design assumptions will continue to be valid throughout the period of extended operation or that aging effects will be adequately managed.

"License renewal involves a careful examination of the systems of a plant that are subject to aging, so as to ensure that safety margins are maintained over an extended operating period."

NRC Chairman Richard A. Meserve
National Press Club, January 17, 2002



KATHY WEAVER

Resident Inspector, Arkansas Nuclear Power Station One, Russellville, AR

Kathy began working for the NRC at the Grand Gulf Nuclear facility more than 11 years ago, and has served as Resident Inspector at Arkansas Nuclear One for the last five years. Kathy holds an Associate's Degree in nuclear technology and a Bachelor's degree in nuclear engineering.

"It's a good rule that the NRC resident inspectors can only stay at any plant for seven years. Although it's hard on our families, it ensures our objectivity."

Kathy Weaver

DR. SAM LEE

Senior Materials Engineer, License Renewal and Environmental Impacts Program, NRC Rockville, MD

Dr. Lee has been with the NRC for more than 15 years. Sam received his Ph.D. in mechanical engineering from the Massachusetts Institute of Technology.

"Many people believe everyone at the NRC works for the nuclear power industry. We don't - we are working for everyone's safety."

Dr. Sam Lee

DR. MICHAEL MASNIK

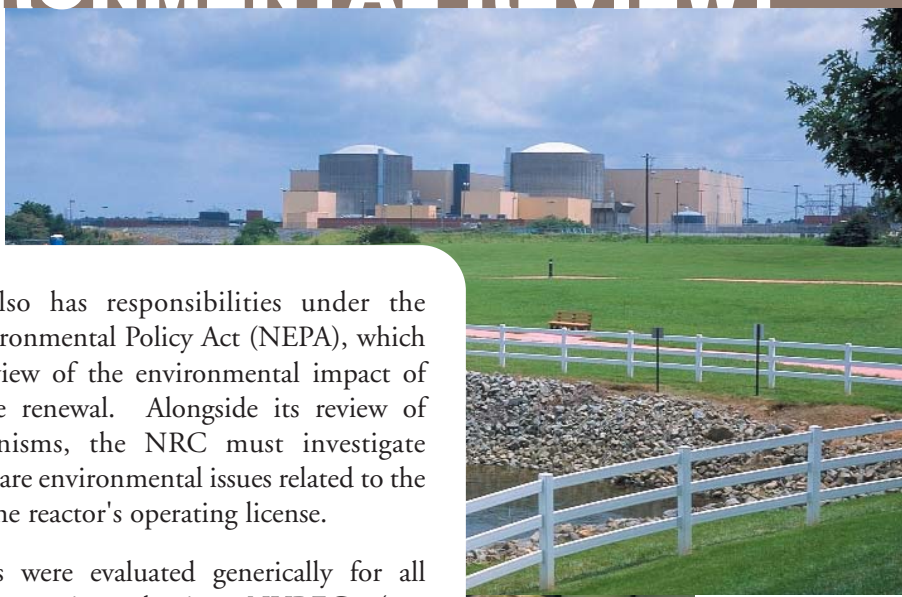
Senior Project Manager, Environmental Section
License Renewal and Environmental Impacts Program, Rockville, MD

Dr. Masnik has over 30 years of experience assessing impacts to the aquatic environment from electric power generation, and has been with the NRC for over 27 years. Michael received his MS and Ph.D. in Ichthyology - the study of fish - from Virginia Polytechnic Institute and State University.

"Part of NRC's mission is the protection of the environment. We consider the impact of the facility on the local environment when deciding whether to extend the license of a nuclear plant for an additional 20 years. Our environmental review for license renewal takes up to 18 months and involves 15 to 20 experts in a variety of disciplines. I happen to be an expert on aquatic ecology"

Michael Masnik

WHAT ARE THE REQUIREMENTS FOR AN ENVIRONMENTAL REVIEW?

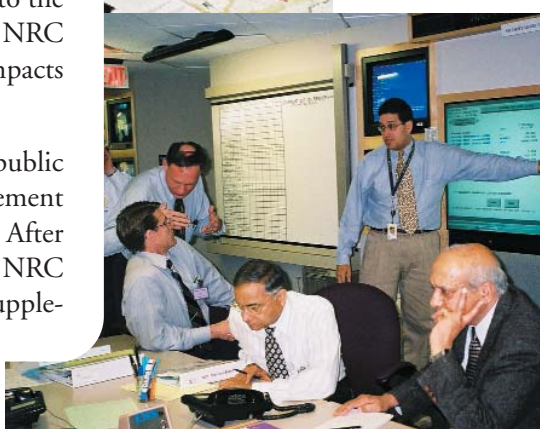


The NRC also has responsibilities under the National Environmental Policy Act (NEPA), which calls for a review of the environmental impact of reactor license renewal. Alongside its review of aging mechanisms, the NRC must investigate whether there are environmental issues related to the extension of the reactor's operating license.

Certain issues were evaluated generically for all plants. The generic evaluation, NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), assessed the scope and impact of environmental effects that would be associated with license renewal at any nuclear power plant site.

A site-specific supplement to the generic environmental impact statement is required for reactor license renewal. A public "scoping" meeting is held near the plant to get input from the public and local officials on any additional environmental issues they believe should be included in the supplement to the generic environmental impact statement. The NRC then determines whether the environmental impacts should preclude renewal.

The NRC recommendation is published for public comment as a draft environmental impact statement and discussed at a second public meeting. After consideration of comments on the draft, the NRC prepares and publishes a final plant-specific supplement to the GEIS.



MELVIN SHANNON

Senior Resident Inspector, Oconee Nuclear Power Station, Seneca, SC

Mel is a former Senior Reactor Operator with more then 30 years experience in nuclear power. Mel has worked for the NRC since 1986. Mel received his Bachelor's degree from the University of New Hampshire.

"Resident Inspectors have been at each plant from day one of their operation and they will be there until each plant stops running."

Melvin Shannon

HOW DID THE LICENSE RENEWAL PROCESS DEVELOP?

In 1982, the NRC established a program for Nuclear Plant Aging Research. The program concluded that many aging phenomena are manageable and should not preclude license renewal for nuclear power reactors.

The NRC issued a license renewal rule in 1995, focusing on managing the adverse affects of aging. The safety requirements for license renewal were codified in Title 10 of the Code of Federal Regulations, 10 CFR Part 54.

The NRC later developed guidance documents for the implementation of the reactor license renewal rule, including the Generic Aging Lessons Learned (GALL) report (NUREG-1801), the Standard Review Plan for license renewal (NUREG-1800) and Regulatory Guide (RG 1.188). These guidance documents recommend safety standards for aging management programs and an acceptable format for the renewal application.

The NRC issued an amended rule in 1996 regarding the environmental protection requirements for license renewal, 10 CFR Part 51. In 2000, the NRC issued supplements to the Regulatory Guide (RG 4.2) and the Standard Review Plan (NUREG-1555) providing further guidance to the NRC staff and the public reviewing environmental portions of the renewal applications.

As the NRC gains experience from current and future reviews it also expects to update this guidance to further improve the process.

SURESH CHAUDHARY

Senior Reactor Inspector, NRC Region I, King of Prussia, PA

Suresh has worked for the NRC for more than 23 years. Suresh holds both a Bachelor's and Master's degree in civil engineering from the University of Missouri.

"We establish and enforce safety requirements for all plants, regardless of age. We have as much at stake as anyone else because our families and friends live near them."

Suresh Chaudhary











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