



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 10, 2000

Cathy Buford Slater  
Arkansas State Historic Preservation Officer  
State Historic Preservation Office  
1500 Tower Building, 323 Center  
Little Rock, AR 72201

Dear Ms. Slater:

The Nuclear Regulatory Commission (NRC) is in the process of developing a supplemental Environmental Impact Statement (EIS) in support of Entergy Operations, Inc.'s (Entergy) application for license renewal of Arkansas Nuclear One Unit 1 (ANO-1) dated January 31, 2000. From April 3 through April 6, 2000, the NRC and its contractor, Pacific Northwest National Laboratories (PNNL), conducted a site audit as part of this review. The primary goal of the site audit was to review documentation and gather information to ensure that the environmental requirements necessary to support license renewal are met.

Entergy indicated that the archeological sites identified in the ANO-1 Environmental Report were limited to those that were identified by the Arkansas State Historic Preservation Office (ASHPO). During the audit, the review team's investigation of potential archeological sites at the ANO-1 site revealed that there were other sites of potential historic value on the ANO-1 property that were not identified in the license renewal application. These sites do not appear to be tracked by the applicant. In addition, the staff identified information that conflicted with information provided to the NRC relating to the location of certain sites that were identified in the Environmental Report submitted with the license renewal application. The staff has been told that there is a possibility that one of the identified sites may have been disturbed about 10 years ago during the construction of the General Services Building.

Also, Entergy recently implemented a reforestation program at the ANO site that, based on the staff's observation, disturbed some of the potential archeological sites not identified in the application. In addition, the staff notes that some of the newly-planted trees may require eventual removal to conform the site to NRC requirements. Removal of these trees has the potential to further disturb some of these sites. Enclosure 1 is a detailed report of the observations of the archeologist who was present during the site visit.

The staff has determined that the activities by Entergy described here are relevant to current ANO-1 operation, and therefore, will be dispositioned under the current reactor oversight process. We are forwarding this information to make you aware that these sites of potential historic value have or may have been disturbed, and are possibly not being tracked by Entergy. In addition, as part of the scoping process that was implemented to support development of the supplemental EIS, the staff received a letter from Mr. Robert Cast, Historic Preservation Officer for the Caddo Tribe of Oklahoma (Enclosure 2), who requests additional information on this matter. Attachment 3 is the NRC's response to his May 15, 2000, letter.

Ms. Cathy Buford Slater

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If you have any questions related to the staff's environmental review in support of license renewal, please contact the ANO-1 Environmental Project Manager, Thomas Kenyon, at (301) 415-1120. If you have any questions concerning ANO-1 current operational activities, please contact the ANO-1 Operating Plant Project Manager, William D. Reckley, at (301) 415-1323.

Sincerely,



Cynthia A. Carpenter, Chief  
Generic Issues, Environmental, Financial  
and Rulemaking Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation.

Enclosures: As stated

cc:

Mr. George McCluskey  
Senior Archeologist  
State Historic Preservation Office  
1500 Tower Building, 323 Center  
Little Rock, AR 72201

Dr. Ann Early  
State Archeologist  
Arkansas Archaeological Survey  
2475 North Hatch  
Fayetteville, AR 72704

Ms. Cathy Buford Slater

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\*See previous concurrence.

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DATE	8/9/00	7/14/00	7/31/00	8/9/00	8/2/00	8/10/00

**PNNL Letter Report**  
**Prepared for Task No. 7 Under**

PILOT PLANT AND OWNERS GROUP LICENSE REVIEW ACTIVITIES  
AND ENVIRONMENTAL REVIEW OF APPLICATIONS  
NRC Project JCN J-2442  
PNNL Project 27487

**Purpose**

The purpose of this technical letter is to report observations resulting from a site visit to the Arkansas Nuclear One plant site, located in Pope County, Arkansas, just west of the city of Russellville. During this site visit, associated baseline information was compiled as well as a brief field reconnaissance of the facility site in which recent ground disturbing activities were noted which resulted in significant damage to prehistoric and historic cultural resource properties.

**Background**

The Russellville Station of the Arkansas Archaeological Survey conducted an archaeological reconnaissance survey of the ca. 1100-acre plant site in the summer of 1969 (Cole 1969). Construction of the plant had begun in 1968; therefore the areas of ground disturbance for the facilities themselves could not be surveyed. Reconnaissance inspection of the remainder of the plant site resulted in the identification and recording of five prehistoric archaeological properties – designated 3PP62-66. None of the numerous historic period properties that occur within the site boundaries (see discussion below) was recorded by the 1969 field effort, including the fenced May Cemetery that has more than 100 interments. Of note, although not recorded as historic properties in 1969, the May Cemetery and about 20 historic homesteads are shown on the individual sketch maps appended to the Site Survey Forms completed for the five prehistoric properties.

The results of the 1969 survey of areas outside the construction zones were incorporated into the Final Environmental Impact Statement for Arkansas Nuclear One, Unit 1 (AEC 1973). Because the major construction activities were already underway or had been completed, the conclusion was that there would be no adverse effect on the recorded cultural resource properties.

The issue of cultural resource properties at the ANO Site apparently was not raised again until the past two years as part of the relicensing effort for the nuclear facility. A 3/30/98 letter from the Arkansas State Historic Preservation Officer (SHPO) to FTN Associates reports that “five archaeological sites (3PP62, 3PP63, 3PP65, 3PP66, and the May Cemetery) are located within the ANO property boundary” (Slater 1998). Of note is the fact that 3PP64, recorded during the 1969 survey, has been dropped from the list, and the cemetery, not recorded in 1969, has been added. The omission of 3PP64 appears to be an administrative oversight as the property is still carried on the Arkansas Archaeological Survey site file at the Research Station at Arkansas Tech University.

The 3/10/98 SHPO letter further states: "All five of these sites are potentially eligible for inclusion on the National Register of Historic Places. Other unknown archaeological sites may also be present." [emphasis added]

### **Recent Impacts to Cultural Resource Properties at ANO**

In conjunction with the development of an Environmental Impact Statement for the ANO relicensing application, a site visit was conducted by the Nuclear Regulatory Commission (NRC) and a team of environmental specialists from the Pacific Northwest National Laboratory (PNNL) in early April 2000. Part of the site visit involves the opportunity for the scientists addressing individual resource areas to gather baseline information that is required to evaluate whether or not the proposed action will have an adverse effect on that particular resource area.

Review of the existing information for both known and potential cultural resources at the ANO site confirmed the presence of the five archaeological properties recorded in 1969, and further yielded information that as many as 35 or more additional historic period properties may exist within the site boundaries. The potential property locations were taken from soil and topographic maps dating 1913, 1940, and 1963. These potential properties include about 35 homesteads, in addition to the cemetery and historic trails/roads. Historic records indicate that some of these homesteads may date as early as the 1830s.

The site visit also revealed recent (within the past few weeks) and widespread disturbance to several hundred acres of land within the ANO property boundary that involved extensive remodification of the ground surface. These activities included removal and piling of existing woody vegetation, plowing or furrowing of the soil, and replanting of pine trees. In terms of potential for disturbance to cultural resource properties, the impacts involved were significant in that heavy equipment was involved, along with extensive disturbance of the surface and to a depth of probably 30 cm. or more (Photo 1).

During brief inspection of the impacted areas during the April site visit, considerable impacts to archaeological and historic properties were observed. Although extremely limited, the observations indicated at least five unrecorded historic period homesteads that had been plowed, including foundations, material culture dumps, and outbuildings (Photos 2, 3, and 4). In addition, two of the "potentially-eligible" archaeological properties recorded in 1969, 3PP63 and 3PP65 are located in the impact zone (Photos 2 and 4). Based on a comparison of the map locations of the historic homesteads and the areas disturbed during the reforestation activities, there are several other unrecorded historic properties located within the impact zone.

An additional impact to one of the previously recorded archaeological properties was brought to the attention of the visiting environmental review team when it was disclosed that the ANO office building may have been built on top of 3PP66 about 10 years ago. As noted above, this archaeological property is still being carried in the SHPO site files as one "potentially eligible for inclusion in the National Register of Historic Places." However, review of the 1969 field survey results casts some doubt on this situation since 3PP66 was originally recorded as being south of and outside of the ANO property line, meaning it may lie between the building and the edge of Lake Dardanelle. Consequently, whether or not this archaeological property still exists in an undisturbed condition remains to be determined.

## **Conclusions**

Numerous prehistoric and historic period cultural resource properties exist within the 1100-acre ANO plant site. The number easily exceeds 40 individual properties. The 1969 archaeological survey was limited in scope and coverage, restricting recording efforts to only prehistoric properties even though the surveyors noted the locations of numerous historic ones. None of the cultural resource properties at ANO, recorded or known but unrecorded, has been completely recorded nor evaluated for National Register of Historic Places eligibility.

Significant and damaging impacts occurred at many of these properties as a result of the surface disturbance associated with the reforestation program. Although the actual amount of damage to archaeological contexts has not been quantified, it is substantial.

## **References Cited**

Cole, Kenneth W. 1969. "Archaeological Survey of the Arkansas Power and Light company Nuclear Power Plant construction Area, Pope County, Arkansas, 1969. Arkansas Archaeological Survey, University of Arkansas Museum, Fayetteville, AR.

U.S. Atomic Energy Commission. 1973. "Final Environmental Impact Statement related to the Arkansas Nuclear One Unit 1, Arkansas Power and Light Company, Docket No. 50-313.

Slater, Cathy Buford. 1998. Letter to Dr. Gary E. Tucker, FTN Associates, Ltd. Arkansas Historic Preservation Program, Little Rock, AR.

## **Photo Captions**

Photo 1: This photo indicates the widespread nature of the surface disturbance that resulted from the vegetation clearing and surface plowing. It was taken, looking west, along the northern side of Highway 333, in the northern sector of the plant site.

Photo 2: This photo depicts disturbance to an unrecorded historic homestead, located along the north side of Highway 333. Damage to the foundation is apparent, along with considerable disturbance of historic period artifacts. Previously recorded archaeological property 3PP65 is located on the ridge just north of this homestead in a similarly plowed area.

Photo 3: This photo shows an undisturbed fruit or storm cellar at a homestead about ¼-mile west of the one shown in Photo 2. Not evident in the foreground, but out of the view are the plowed remains of the habitation and artifact dump associated with the cellar.

Photo 4: This photo was taken along the eastern side of the plant access road, just south of the intersection with Highway 333 and north of the plant's meteorological tower. A former historic homestead is located in the vicinity of the tall trees, and archaeological property 3PP63 is located just over the rise, looking between the two trees.



**Photo 1**



**Photo 2**



**Photo 3**



**Photo 4**



## CADDO TRIBE OF OKLAHOMA

### Cultural Preservation Department

Post Office Box 487

Binger, Oklahoma 73009

405-656-2901 405-656-2344

Fax # 405-656-2892

May 15, 2000



Mr. Thomas J. Kenyon  
Senior Project Manager  
Office of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Re: *Energry Operations Inc., Arkansas Nuclear One Unit 1, Summary of Site Audit to Support Review of License Renewal Application of Arkansas Nuclear One Unit 1.*

Dear Mr. Kenyon:

Of the five issues addressed by the environmental review team during the ANO-1 site visit, the Caddo Tribe of Oklahoma is most concerned with point number five relating to the archeological sites at the ANO-1 site. Arkansas, and specifically this area, has the potential to produce many important historic properties. We are also concerned with the subsurface disturbance to any of these properties. The Caddo Tribe of Oklahoma has had a long history in the state of Arkansas. We ask that as a condition of this and any future permits that the area be surveyed for archeological and historic properties and that any areas of disturbance be reported to the Arkansas Historic Preservation Officer and to the Caddo Tribe of Oklahoma.

Under 36 CFR 800.6(a) it is the duty of the Agency official to "consult with the SHPO/THPO and other consulting parties, including Indian tribes and Native Hawaiian organizations, to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties." It is very disturbing to hear from your letter of May 1, 2000, that the reforestation program at the site, "disturbed some of the sites". How so, and what kind of action will the NRC take to make sure this will not happen again? Has a site damage assessment of the area been done? Is there a Historic Properties Management Plan for the area? What does 'some' mean? We look forward to a timely response to these questions. Thank you for your time and consideration.

Sincerely,

Robert Cast  
Historic Preservation Officer  
Caddo Tribe of Oklahoma



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 10, 2000

Mr. Robert Cast  
Historic Preservation Officer  
Cultural Preservation Department  
Caddo Tribe of Oklahoma  
PO Box 487  
Binger, Oklahoma 73009

Dear Mr. Cast:

**SUBJECT: LETTER REGARDING ARKANSAS NUCLEAR ONE UNIT 1 SITE AUDIT  
SUMMARY**

Thank you for your May 15, 2000, letter expressing concern with the NRC staff's observations of the reforestation program implemented at the Arkansas Nuclear One Unit 1 (ANO-1) site that disturbed archeological sites and sites of potential historic value. Although the letter was dated beyond the closing date of the comment period for scoping, the comments in your letter will be included in the Environmental Scoping Summary Report for ANO-1, and will be considered during the development of the plant's Supplemental Environmental Impact Statement. We are adding you to the service list for the environmental license renewal review to ensure that you are apprised of the results of the staff's environmental review being performed to support the license renewal of ANO-1.

The staff has determined that the activities by Entergy described here are relevant to current ANO-1 operation, and therefore, will be dispositioned under the current reactor oversight process. We will notify the Arkansas SHPO of Entergy's activities, describe the disturbed sites that the staff observed, and discuss the other related concerns identified during the April site audit. In addition, the staff will forward your letter to the Arkansas SHPO along with a detailed report by the archeologist who made the observations. The information provided to the Arkansas SHPO will address some of the questions raised in your May 15, 2000, letter. You will receive a copy of this letter under separate cover.

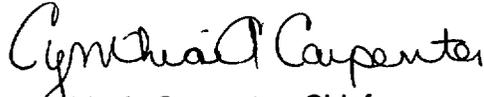
As you were not present at the scoping meeting held last April, I am providing some background information explaining the license renewal process (see enclosed). If you have

Mr. Robert Cast

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any questions concerning this matter, please contact the ANO-1 Environmental Project Manager, Thomas J. Kenyon, at (301) 415-1120. If you have any questions concerning ANO-1 current operational activities, please contact the ANO-1 Operating Plant Project Manager, William D. Reckley, at (301) 415-1323.

Sincerely,



Cynthia A. Carpenter, Chief  
Generic Issues, Environmental, Financial  
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Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation.

Enclosure: As stated

cc w/o encl: See next page

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\*See previous concurrence

## **TIP 1 -- License Renewal**

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### **Introduction**

Based on the Atomic Energy Act, the Nuclear Regulatory Commission (NRC) issues licenses for commercial power reactors to operate for up to 40 years and allows these licenses to be renewed for another 20 years. A 40-year license term was selected on the basis of economic and antitrust considerations--not technical limitations.

The first 40-year operating license will expire in the year 2006. Approximately 10 percent of the 102 remaining operating plants will expire by the end of the year 2010, and more than 40 percent will expire by the year 2015. The decision whether to seek license renewal rests entirely with nuclear power plant owners, and will be based on the plant's economic situation and whether it can meet NRC requirements.

The NRC has established a license renewal process that can be completed in a reasonable period of time with clear requirements to assure safe plant operation for an additional 20 years of plant life.

### **Background**

In 1982, the NRC held a workshop on nuclear power plant aging in anticipation of the interest in license renewal. The results of the workshop led the NRC to establish a comprehensive program for Nuclear Plant Aging Research. Based on the results of that research, a technical review group concluded that many aging phenomena are readily manageable and do not pose technical issues that would preclude life extension for nuclear power plants. In 1986, the NRC published a request for comment on a policy statement addressing major policy, technical and procedural issues related to life extension.

In 1991, the NRC published the license renewal rule as 10 CFR Part 54. The NRC then undertook a demonstration program to apply the rule to pilot plants and develop experience to establish implementation guidance. To establish a scope of review, the rule defined *age-related degradation unique to license renewal*. However, during the demonstration program, the NRC found that many aging effects arise and are dealt with during the initial license period. In addition, the NRC found that the review did not allow sufficient credit for existing programs, particularly the maintenance rule, which also helps manage plant aging phenomena.

As a result, in 1995 the NRC amended the license renewal rule. The amended Part 54 established a regulatory process that is more efficient, more stable and more predictable than the previous license renewal rule. In particular, Part 54 was clarified to focus on managing the adverse effects of aging. The rule changes were intended to ensure that important systems, structures and components will continue to perform their intended function during the 20-year period of extended operation.

NRC's responsibilities under the National Environmental Policy Act call for a review of the environmental impact of license renewal. In parallel with aging efforts, the NRC pursued a separate rulemaking, 10 CFR Part 51, to focus the scope of review of environmental issues.

## **Renewal Process**

The license renewal process proceeds along two tracks- technical reviews of safety issues and environmental issues. As previously described, the requirements for these reviews are contained in NRC regulations, 10 CFR Parts 54 and 51, respectively. The applicant must provide NRC an evaluation that addresses the technical aspects of plant aging and describes the ways those effects will be managed. It must also prepare an evaluation of the potential impact on the environment if the plant operates for another 20 years. The NRC reviews the application and verifies the safety evaluations through inspections. 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 made available to the public. A number of public meetings are held by the NRC, and NRC evaluations, findings and recommendations are published when completed. Concerns may be litigated in a formal adjudicatory hearing if any party that would be adversely affected requests a hearing. In addition, members of the public may petition the Commission for consideration of issues other than the management of the effects of aging during the period of extended operation of the plant.

A nuclear power plant licensee may apply to the NRC to renew its license as early as 20 years or as late as five years before expiration of its current license. License renewal is expected to take 30 months, including the time to conduct an adjudicatory hearing, if necessary. Upon receipt of a license renewal application, the review is conducted according to the following steps :

- Notice that an application has been tendered for a renewed license is published in the *Federal Register*
- Notice of opportunity for hearing published in the *Federal Register*
- NRC staff complete acceptance review and docketing of the application
- Notice of intent to seek public comments for environmental impact statement (EIS) published in the *Federal Register*
- Affected parties and interested persons file hearing request
- Atomic Safety and Licensing Board (ASLB) panel appointed
- Public Meeting & environmental scoping
- End environmental scoping comment period
- Petitioner files proposed issues to be addressed in a hearing with the ASLB
- NRC staff issue request for additional information with safety questions on the content of the application, if necessary
- ASLB ruling on intervention
- NRC staff issue request for additional information for environmental questions, if necessary
- Applicant submits responses to safety questions from the additional information, if necessary

- Applicant submits response to environmental questions from the additional information, if necessary
- NRC staff issue safety evaluation report and identify open items or license conditions
- NRC staff issue draft environmental impact statement for comment
- Public meeting to discuss draft environmental impact statement
- End draft environmental impact statement comment period
- Applicant completes responses to safety evaluation open items
- NRC staff issues safety evaluation report supplement and final environmental impact statement
- Review of the safety evaluation report by the Advisory Committee for Reactor Safeguards
- Complete ASLB hearing
- ASLB Initial Decision
- Commission decision absent any petition for review, or
- Commission decision on any petition for review

### **Environmental Reviews**

The NRC identified nearly 100 potential impacts to the human environment as a result of renewing a license. All nuclear plants affect the environment in similar ways, although we recognize that each location is unique and may have unique problems. To streamline the license renewal process, the NRC resolved a large number of these potential impacts on a generic basis. In addition, each plant must examine those potential impacts that are unique to its design, location or other circumstances where the NRC could not arrive at a generic conclusion.

Environmental protection regulations were revised in December 1996, to facilitate the environmental review for license renewal. The Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants, NUREG-1437, Volumes 1 and 2, examines the possible environmental impacts associated with renewing licenses of nuclear power plants. For each type of environmental impact, the GEIS attempts to establish generic findings that are applicable to all nuclear power plants. Thus, an applicant for license renewal may incorporate these generic findings in an environmental report, provided there is no new and significant information to change these findings, and address only those environmental impacts that are required to be evaluated on site-specific basis.

The NRC performs reviews of environmental impacts of license renewal in accordance with National Environmental Policy Act and the requirements of 10 CFR Part 51. A public meeting is held near the nuclear power plant seeking renewal to identify the scope of the environmental review specific to the plant. The result of the staff review is an NRC recommendation on the environmental acceptability of the license renewal action. This is commonly known as a draft

plant-specific supplement to the GEIS, which is published for public comment. The staff discusses results of its review at a separate public meeting. After consideration of comments on the draft, the NRC prepares and publishes a final plant-specific supplement to the GEIS.

In August 1999, the Commission issued Addendum 1 of the GEIS and amended Part 51 to address the impacts associated with the transportation of high-level waste. This change to the regulations resulted in a generic conclusion regarding the environmental impacts.

In February 2000, the NRC issued an environmental standard review plan (NUREG-1555, Supplement 1) to provide guidance on how the environmental portions of renewal applications are to be reviewed. The NRC also developed a regulatory guide (DG-4005), that identifies the format and content of environmental reports that accompany license renewal applications. The draft guide was issued for public comment in July 1998, and a final version of the guide is scheduled to be published in 2000.

### **Safety Reviews**

License renewal requirements for power reactors are based on two key principles:

1. That operating plants will continue to maintain adequate levels of safety during the plant's life under requirements of their original licenses. A possible exception may be the detrimental effects of aging on certain systems, structures and components, and possibly a few other issues that arise only during the period of extended operation, and
2. That each plant's licensing basis is required to be maintained during the renewal term.

Applicants are required to identify all plant systems, structures and components that are safety-related, or whose failure could affect safety-related functions, and that are relied on to demonstrate compliance with the NRC's regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout.

The applicant must review all systems, structures and components within the scope of the rule to identify "passive" and "long-lived" structures and components. It must be demonstrated that the effects of aging will be managed in such a way that the intended functions of those structures and components will be maintained for the period of extended operation. Passive and long-lived structures and components include components such as the reactor vessel, reactor coolant system piping, steam generators, the pressurizer, pump casings, and valve bodies.

The detrimental aging effects in active components are more readily detected and corrected by routine surveillance, performance indicators and maintenance. Surveillance and maintenance programs for active components are required throughout the period of extended operation. Active components include equipment such as motors, diesel generators, and cooling fans; and electrical equipment such as batteries, relays, and switches.

For some passive structures and components within the scope of the renewal evaluation, no additional action may be required where the applicant can demonstrate that the existing programs provide adequate aging management throughout the period of extended operation.

However, if additional aging management activities are warranted for a structure or component within the scope of the rule, applicants will have to establish a new aging management program or an augmented existing program to manage the effects of aging.

Another requirement for license renewal is the identification and updating of time-limited aging analyses. During the design phase for a plant certain assumptions about the length of time the plant will be operated are made and incorporated into design calculations for several of the plant's systems, structures, and components. Under a renewed license, an applicant can demonstrate that (1) the original analyses remain valid for the period of extended operation, (2) the analyses have projected to the end of the period of extended operation, or (3) the effects of aging on the intended function(s) will be adequately managed for the period of the extended operation.

The NRC staff is continuing development of implementation guidance for the license renewal rule with input from interested stakeholders. A draft Generic Aging Lessons Learned (GALL) report was prepared and made publicly available. The report documents the basis for determining when existing programs are adequate and when existing programs should be augmented for license renewal. A public workshop was conducted on December 6, 1999, to discuss the approach for the report and its contents. The GALL report is currently under review and will be referenced in an update of the draft standard review plan for license renewal as the basis for identifying those programs that warrant particular attention during the staff's review of a license renewal application.

In 1996, the NRC developed a draft regulatory guide for the format and content of the safety aspects of a license renewal application. This guide proposes to endorse an implementation guideline prepared by the Nuclear Energy Institute as an acceptable method of implementing the license renewal rule. The NRC will include changes to the guide and standard review plan as generic renewal issues are resolved, as well as other changes resulting from lessons learned and process improvements identified during the review of the initial renewal applications. The NRC plans to issue the draft GALL report, Standard Review Plan and Regulatory Guide for public comments in August 2000.

### **Inspections**

The NRC has developed inspection guidance and inspection procedures for use in the safety review of license renewal applications. Inspection Manual Chapter 2516 and Inspection Procedure 71002 provide the basic guidance for license renewal inspections. The NRC is revising these procedures to incorporate the lessons learned during the implementation of the inspection program in review of the first two applications.

License renewal inspections take place before the approval of an application for a renewed license to verify that an applicant meets the requirements of the rule and has implemented license renewal programs and activities consistent with their license renewal application and the NRC's safety evaluation report.

The primary objectives of license renewal inspections are to review the documentation and effectiveness of an applicant's license renewal program and to verify that there is reasonable assurance that the effects of aging will be adequately managed.

### **Hearings**

The Commission has issued a policy statement clearly describing its expectations with regard to the conduct of adjudicatory proceedings, with particular expectations for license renewal (*Federal Register* Vol. 63, page 41872, August 5, 1998). The Commission expects that hearings be conducted on an efficient and reliable schedule--imposed by order, as necessary and appropriate--while ensuring fair resolution of contested issues. In addition, there should be timely identification of any open generic policy issues for Commission decision and effective integration of the review of technical issues into the adjudicatory process.

### **Industry Activities**

The industry's past approach to license renewal was to submit technical reports on particular topics for staff approval instead of submitting a complete license renewal application. This approach, along with compilations of past aging research programs, established a foundation of technical information that licensees can use to evaluate the feasibility of license renewal and later reference in a license renewal application.

The Babcock & Wilcox Owners Group, representing five operating B&W plants, has formulated a generic license renewal program. The B&W Owners Group has submitted generic license renewal reports on the reactor coolant system piping, the pressurizer, the reactor pressure vessel, and reactor vessel internals. The Westinghouse Owners Group also has programs for license renewal and has submitted technical reports on the aging management activities for the reactor coolant system supports, the pressurizer, the Class I piping, the containment structure, and the reactor vessel internals. The Boiling Water Reactor Owners Group is currently concentrating its efforts on reports related to the reactor vessel internals program.

Industry representatives also participate in working groups and technical committees, coordinated by the Nuclear Energy Institute, to address generic technical and process issues, and to develop additional guidance related to scoping and aging management programs. The NRC has established a formal feedback process by which the resolution of the generic renewal issues and lessons learned during the review of the initial renewal applications is documented and included in revisions to the implementation guidance. This process identified "credit for existing programs in license renewal" (SECY-99-148) as a policy issue that warranted Commission involvement. The resolution of this issue, as well as the development of improved guidance from other renewal lessons, is expected to improve the efficiency of future renewal reviews.

### **Plant Applications**

Baltimore Gas and Electric Company submitted the first license renewal application for its two Calvert Cliffs units in April 1998. The NRC issued a draft safety evaluation report in March 1999, and a final safety evaluation report in November 1999. Renewal inspections were completed. The Commission issued the renewed license based on staff recommendations on March 23, 2000, extending the license to 2034 for Unit 1 and 2036 for Unit 2.

Duke Energy Corporation submitted a license renewal application for its three Oconee units in July 1998. The NRC issued a draft safety evaluation report in June 1999, and a final safety

evaluation report in February 2000. Renewal inspections were completed, and the staff is preparing its recommendation to the Commission regarding issuance of the renewed license.

Both utilities submitted environmental reports required by 10 CFR Part 51. Separate environmental scoping meetings were held near each of the plants to obtain comments from the public. After the draft environmental impact statements were issued for each plant, the staff met with the public to describe the results of the review, and help them develop any additional comments on the review. All comments received from members of the public were considered in NRC's environmental impact review for each of the plants. The NRC issue final plant-specific supplements to the GEIS in October 1999, and December 1999, for Calvert Cliffs and Oconee plants, respectively.

Entergy Operations, Inc., submitted a license renewal application for Arkansas Nuclear One, Unit 1 (ANO-1) in February 2000. ANO-1 is a Babcock & Wilcox nuclear steam supply system originally licensed for commercial operation in 1974. The NRC plans to issue a draft safety evaluation in January 2001, and a final safety evaluation in September 2001. Also, the NRC plans to issue the draft environmental impact statement for comment in December 2000 and the final environmental impact statement in July 2001.

Southern Nuclear Operating Company, Inc., the licensee for the Edwin I. Hatch Nuclear Plant, Units 1 and 2 (HNP), submitted its application in March 2000. Both units of HNP are General Electric nuclear steam supply systems originally licensed for commercial operation in 1975 and 1979, respectively. The NRC plans to issue a draft safety evaluation in February 2001, and a final safety evaluation in October 2001. Also, the NRC plans to issue the draft environmental impact statement for comment in January 2001 and the final environmental impact statement in July 2001.

A number of other licensees have expressed interest in license renewal, and have announced plans to submit license renewal applications. Florida Power & Light Company has announced its intention to submit renewal applications for its Turkey Point and St. Lucie plants; Duke Energy Company for its Catawba and McGuire plants; PECO Energy Company for its Peach Bottom plant; Virginia Electric & Power Company for its North Anna and Surry plants; Carolina Power & Light Company for its H. B. Robinson Unit 2, Florida Power Corporation for its Crystal River plant; South Carolina Electric Company for its Summer plant; Southern Nuclear Operating Company for its Farley plant; Entergy for its Arkansas Nuclear One, Unit 2 ; Nebraska Public Power District for its Cooper plant, and Omaha Public Power District for its Fort Calhoun plant.

### **Highlights of License Renewal**

- The Atomic Energy Act limits initial licenses to 40 years but allows for renewal. 10 CFR Part 54 of the NRC's regulations provides appropriate procedures and requirements for renewing power reactor licenses up to an additional 20 years.
- Nuclear power comprises approximately 20 percent of the electric power produced in the United States. With many operating licenses expiring in the next 15 years, license renewal would be needed to maintain the same level of nuclear energy supply into the future.

- The decision whether to request renewal of an operating license rests with plant utilities.
- NRC's license renewal rule builds on existing programs such as the maintenance rule, and targets structures and components that typically cannot be readily monitored.
- Several opportunities are provided for public participation throughout the license renewal process.
- NRC's review of a license renewal application is expected to take about 30 months, including time for a hearing, if requested and justified.
- Applicants can apply for renewal as early as 20 years before their current licenses expire, but not later than 5 years before the current license expires.
- NRC reviews both safety and environmental issues affecting license renewal-10 CFR Part 54 and Part 51, respectively.
- The NRC will focus its safety review of renewal applications on the management of the effects of aging during the period of extended operation on "passive" and "long lived" structures and components and updating of time-limited aging analyses.
- Environmental aspects of license renewal are covered by a generic environmental impact statement and NRC's regulations 10 CFR Part 51. The generic environmental impact statement is supplemented by the plant-specific reviews.
- The Baltimore Gas and Electric Company submitted the first license renewal application for its Calvert Cliffs plants in April 1998. The NRC issued a safety evaluation report in November 1999, and the final plant-specific supplement to the generic environmental impact statement in October 1999. A renewed license was issued on March 23, 2000.
- Duke Energy submitted a license renewal application for its three Oconee plants in July 1998. The NRC issued a safety evaluation report in February 2000, and the final plant-specific supplement to the generic environmental impact statement in December 1999.
- Entergy Operations, Inc. submitted a license renewal application for Arkansas Nuclear One, Unit 1 in February 2000. The NRC plans to issue a draft safety evaluation in January 2001, and a final safety evaluation in September 2001. Also, the NRC plans to issue the draft environmental impact statement for comment in December 2000 and the final environmental impact statement in July 2001.
- Southern Nuclear Operating Company, Inc., the licensee for the Edwin I. Hatch Nuclear Plant, Units 1 and 2, submitted its application in March 2000. The NRC plans to issue a draft safety evaluation in February 2001, and a final safety evaluation in October 2001. Also, the NRC plans to issue the draft environmental impact statement for comment in January 2001 and the final environmental impact statement in July 2001.
- The industry's past approach to license renewal has been to submit technical reports on selected structures, systems, or components for NRC review and approval instead of

submitting actual license renewal applications. The current industry's approach is to submit renewal applications and pursue generic technical issues in parallel.

- Generic technical reports have been submitted by the Babcock and Wilcox Owners Group, the Westinghouse Owners Group, and the Boiling Water Reactor Owners Group, which address license renewal requirements and aging management programs for major systems, structures and components. These reports would be referenced in individual plant applications.
- The NRC issued a draft regulatory guide for the format and content of a renewal application that proposes to endorse a guideline prepared by the Nuclear Energy Institute as an acceptable approach for implementing the renewal rule. Improvements will be made with increased experience from license renewal. The NRC plans to issue the draft regulatory guide for public comment in August 2000.
- NRC developed a draft regulatory guide which addresses the format and content of the Environmental Report that accompanies a license renewal application. The draft guide was issued for public comment in July 1998, and a final version of the guide is scheduled to be published in 2000.
- NRC is preparing a standard review plan for the license renewal safety review. A working draft was completed and placed in the Public Document Room in December 1995, and updated in September 1997. A draft Generic Aging Lessons Learned (GALL) report was prepared and made publicly available. The NRC will include changes to the standard review plan as generic renewal issues are resolved, as well as other changes resulting from lessons learned and process improvements identified during the review of the initial renewal applications. The NRC plans to issue the draft GALL report and the standard review plan for public comment in August 2000.
- NRC issued its environmental standard review plan NUREG-1555, Supplement No.1, for license renewal in February 2000.
- NRC developed inspection guidance and inspection procedures for use in the safety review of license renewal applications. Inspection Manual Chapter 2516, and Inspection Procedure 71002 provides the basic guidance for license renewal inspections.
- In August 1998, the Commission issued a policy statement on the efficient, reliable yet fair conduct of adjudicatory proceedings, particularly those related to license renewal applications.

Last Update: August 2000

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