J. Barnie Beasley, Jr., P.E.
Vice President

Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.7110
Fax 205.992.0341

SOUTHERN COMPANY
Energy to Serve Your World℠

DEC | 5 2003

Docket Nos.: 50-348
50-364

NL-03-2418

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant
Application for License Renewal
Supplemental Information and Future Action Commitment List

Ladies and Gentlemen:

Southern Nuclear Operating Company (SNC) submitted the license renewal application for Joseph M. Farley Nuclear Plant, Units 1 and 2, (FNP) by SNC Letter No. NL-03-1657 dated September 12, 2003. On November 3-7, 2003, the Nuclear Regulatory Commission Staff conducted an audit of the FNP license renewal aging management programs classified as "Consistent with GALL." The NRC requested that certain additional information be submitted as a result of this audit. Enclosure 1 of this letter provides the requested information.

Enclosure 2 of this letter provides a consolidated list of license renewal future action commitments, as requested by the Staff. This list is current as of November 7, 2003, and could change during the License Renewal Application (LRA) review process.

Should you have additional questions, please contact Charles Pierce at telephone number 205-992-7872.

(Affirmation and signature are on the following page).

A099

Mr. J. B. Beasley, Jr. states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

J. B. Beasley, Jr.

Sworn to and subscribed before me this 5th *day of* December, *2003.*

Gloria H. Bui
Notary Public

My commission expires: 06-07-05

JBB/JAM/slb

Enclosures: 1. Supplemental License Renewal Information
2. License Renewal Future Action Commitments

cc: Southern Nuclear Operating Company
Mr. D. E. Grissette, General Manager – Plant Farley
Document Services RTYPE: CFA04.054; LC# 13877

U. S. Nuclear Regulatory Commission
Mr. R. William Borchardt, Acting Director – NRR
Mr. L. A. Reyes, Regional Administrator
Mr. S. E. Peters, NRR Project Manager – Farley
Mr. T. P. Johnson, Senior Resident Inspector – Farley

Enclosure 1

Supplemental License Renewal Information

Supplemental License Renewal Application Information
NRC Staff Audit of FNP License Renewal Programs
November 3-7, 2003

Provided below is supplemental license renewal information as requested by the staff. The answers to specific electrical questions are provided, followed by reactor coolant pump flywheel fatigue information and information concerning the Reactor Pressure Vessel (RPV) capsule pull schedule.

Section 1: Electrical Questions

Question No. E2

Auditors did not see any power penetrations in the List of Environmental Qualification (EQ) Packages. Does FNP have Non-EQ containment electrical penetrations? How are they age managed?

SNC Response:

Power penetrations (4160 volt) are not in the List of EQ Packages because they provide the electrical connection function for power to the reactor coolant pump motors which are not safety related.

The electrical connection function for non-EQ penetrations is covered under the Non-EQ Cables and Connections Program. The Non-EQ Cables and Connections Program will be revised to clarify that the electrical connection function of Non-EQ electrical penetrations is covered by this Aging Management Program (AMP).

The pressure boundary function of both EQ and Non-EQ electrical penetrations is covered under the Inservice Inspection Program.

Question No. E14

LRA Section 2.5.1 should have a description added for each electrical component type, such as splices, connections, fuse holders, etc.

SNC Response:

Electrical connections, including such items as splices, connectors, and terminal blocks, are included in the category "Electrical cables and connectors not subject to 10 CFR 50.49 EQ Requirements," consistent with item 77 of NEI 95-10 Rev. 3 Some items included in item 77 such as switchyard bus, transmission conductors, and fuse holders were listed separately in Table 2.5.1 to more specifically identify equipment addressed by Interim Staff Guidance (ISG) 2 and 5.

(Note: those electrical connection components associated with EQ circuits are included in the EQ Program.)

Question No. E15

What cables are in scope for license renewal (LR) (i.e., are safety related cables in scope)?

SNC Response:

All cables at FNP are in scope based on a "spaces approach". Only if a cable/connector material has a life of less than 60 years in a particular space is an analysis performed to determine if any specific cable is in-scope for LR. Thus, safety related cables are in scope.

Question No. E16

Are there any Non-EQ containment electrical penetrations? Why isn't there a Non-EQ containment electrical penetration AMP?

SNC Response:

FNP has both EQ and Non-EQ containment electrical penetrations.

The pressure boundary function of both EQ and Non-EQ electrical penetrations is covered under the Inservice Inspection Program.

The electrical portions of penetrations that provide a connection function for non-safety related equipment will be covered under the Non-EQ Cables and Connections Program.

Question No. E17

Is the non-segregated cable bus in scope, and does it need an Aging Management Review (AMR)? (See LRA Table 2.2-1f and Table 2.5.1)

SNC Response:

The "non segregated buses" item listed in Table 2.2-1f is the same equipment as the "metal enclosed cable bus" listed in Table 2.5.1. An AMR was performed and concluded that an AMP is not required because the bus has no aging effects requiring management.

Question No. E20

Explain why the grounding system is not in scope for license renewal.

SNC Response:

Uninsulated ground conductors are electrical conductors (e.g., copper cable, copper bar, steel bar) that are used to make ground connections for electrical equipment. Ground connections are made to electrical equipment housings and enclosures as well as metal

structural features such as cable tray systems and building structural steel. The ground conductors are isolated from the electrical operating circuits.

Uninsulated ground conductors have the following basic functions:

- Provide a common electrical ground reference for all electrical and electronic equipment.

- Enhance the capability of the electrical system to withstand electrical system disturbances (e.g., electrical faults, lightning surges) for equipment and personnel protection.

Uninsulated ground conductors do not perform or support any safety-related functions or any of the functions identified in 10 CFR 54.4(a). Uninsulated ground conductors are not relied on to remain functional during or following any design basis event. Therefore, there are no failures of uninsulated ground conductors that could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a).

No failures of uninsulated ground conductors are considered in the accident analysis in Chapter 15 of the UUFSAR. Since no failures are considered in the analyses, a failure mode and effects analysis is not required. There has not been an age-related failure of an uninsulated ground conductor at FNP. Since failures of uninsulated ground conductors are not part of the FNP current licensing basis (CLB) and have not been previously experienced at FNP or reported as industry operating experience, the failure of uninsulated ground conductors does not require consideration.

The staff has agreed to this position in the final safety evaluation report (SER) for the McGuire and Catawba nuclear stations.

Question No. E21

Section 2.5, Table 2.5-1 does not include transmission connections as a component type subject to AMR. Why are they not included with transmission conductors?

SNC Response:

The transmission conductors component type includes the transmission conductors and the hardware used to secure the conductors to high-voltage insulators. The AMR for transmission conductors includes associated hardware.

Question No. E22

Section 3.6 of the LRA discusses fuse holders and the aging effect of fatigue. Where are the other aging mechanisms discussed in Interim Staff Guidance (ISG) -5 addressed?

SNC Response:

ISG-5 states the following: (emphasis added)

- "Aging stressors such as **vibration, thermal cycling, electrical transients, mechanical stress, fatigue, corrosion, chemical contamination, or oxidation of the connecting surfaces** can result in fuse holder failure."
- "However, the AMP for fuse holders needs to include the following aging stressors, if applicable: **fatigue, mechanical stress, vibration, chemical contamination, and corrosion.**"
- "Visual inspection alone may not be sufficient to detect the aging effects from **fatigue, mechanical stress, vibration, or corrosion on the metal clamps** of the fuse holder."

The Farley LRA at section 3.6 states the following: (emphasis added)

- "**Fatigue** of metal clips due to **mechanical wear** and **thermal cycling** was evaluated for fuse holders."
- "**Vibration** could be induced in fuse holders by the operation of external equipment, such as compressors, fans, and pumps."
- "**Corrosion** of metallic clamps could occur if the fuse holders were located in humid environments or exposed to water or **boric acid** leakage."
- "With regard to internal moisture, a review of plant-specific operating experience did not reveal any instance of aging as a result of the formation of condensation internal to the panels. Based upon recent inspections of the fuse blocks, the surface condition of the fuse clips show no signs of **corrosion**. Additionally, there is no evidence of moisture."

For fuse holders, SNC evaluated aging effects due to ambient thermal stress, radiation, general corrosion, boric acid corrosion, vibration and self-loosening of hardware, mechanical stress (fatigue), electrical transients, and thermal cycling.

Thus, SNC evaluated the aging effects and mechanisms listed in ISG-5. No aging effects requiring management were identified. Fuse holders are included in the scope of the XI.E1 program similarly to other cable connectors and terminations.

Question No. E23

Why is connection surface oxidation for high voltage switchyard bus materials not considered a significant aging mechanism at FNP?

SNC Response:

Connection surface oxidation is an applicable aging mechanism. The components reviewed are constructed from aluminum and stainless steel. The environment is an outside environment. In an outside environment, components may be exposed to direct sunlight, precipitation, and freezing conditions. This environment is termed "weather exposed" by the Generic Aging Lessons Learned (GALL) report. Potential aging effects and aging mechanisms are a change in material properties leading to increased resistance and heating due to connection surface oxidation. Aging effects apply only to the surfaces of the material.

The portions of the high voltage switchyard bus and connectors requiring an aging management review are made of tubular aluminum pipe, all aluminum cable, aluminum bolts, stainless steel flat and lock washers with stainless steel nuts. The connecting surfaces are coated with an anti-oxidant compound prior to tightening the connection. Based on operating experience, this method of attachment has been shown to provide a corrosion resistant low electrical resistance connection. Therefore, general corrosion resulting in the oxidation of connection surface metals is not a concern for aging management. Thus, connection surface oxidation was evaluated but determined to not be an aging effect requiring management for FNP.

Question No. E24

Loss of material of high voltage transmission conductors due to corrosion including the steel core and aluminum strand pitting is not addressed. There is also no discussion of wind loading on transmission conductors.

SNC Response:

The transmission conductors component type includes the transmission conductors and the hardware used to secure the conductors to high-voltage insulators. Transmission conductors are exposed to an outside environment. In an outside environment, components may be exposed to direct sunlight, precipitation, and freezing conditions. This environment is termed "weather exposed" by the GALL report. Potential aging effects and aging mechanisms are a change in material properties due to general corrosion (atmospheric oxidation of metals) and loss of material due to wear. These aging effects apply only to the surfaces of the material exposed to the specified environment.

FNP utilizes overhead cables as part of the bus connections between pieces of equipment in the high voltage switchyard. These overhead lines are made of aluminum conductors with a steel reinforced center. Corrosion tests performed by Ontario Hydro showed a 30% loss of composite conductor strength in an 80-year-old aluminum cable-steel reinforced (ACSR) conductor due to corrosion. The National Electrical Safety Code (NESC) requires that tension on installed conductors be a maximum of 60% of the

ultimate conductor strength. Therefore, assuming a 30% loss of strength, there would still be significant margin between what is required by the NESC and the actual conductor strength. Based on these test results, loss of material strength of the ACSR transmission conductors is not an aging effect requiring an aging management program for the period of extended operation. Therefore, loss of conductor strength due to corrosion of the transmission conductors is not an aging effect requiring an aging management program.

Wind loading that can cause a transmission line to swing back and forth is considered in the design and installation of the overhead conductors and hardware. The transmission conductors in scope for LR are short spans located entirely within the high voltage switchyard and therefore do not provide a large surface area to receive a wind load. The hardware is designed to accommodate movement with minimal wear. Based on the design of the transmission conductors and hardware, mechanical wear is not an aging effect requiring management.

Question No. E25

Dust, salt, and industrial effluents can cause insulator surface cracking. Why is this not addressed? Also the cement under the insulator materials can cause the insulator to crack. This is also not addressed.

SNC Response:

Various airborne materials such as dust, salt, and industrial effluents can contaminate insulator surfaces. A large buildup of contamination enables the conductor voltage to track along the surface more easily and can lead to insulator flashover. Surface contamination can be a problem in areas where there are greater concentrations of airborne particles such as near facilities that discharge soot or near the sea coast where salt spray is prevalent.

The standard station post insulator design provides for 2 ½ mm of leakage distance for each millimeter of assembly height. The buildup of surface contamination is gradual and in most areas such contamination is washed away by rain; the glazed insulator surface aids this contamination removal. The rate of contamination buildup on the insulators is not significant. Therefore, surface contamination due to airborne contaminants is not an aging effect requiring further evaluation in FNP aging management reviews.

Porcelain is essentially a hardened, opaque glass. As with any glass, if subjected to enough force it will crack or break. The most common cause for cracking or breaking of an insulator is being struck by an object. Cracking and breaking caused by physical damage is not an aging effect and is not subject to an AMR. Cracks have also been known to occur with insulators when the cement that binds the parts together expands enough to crack the porcelain. This phenomenon, know as cement growth, is caused by improper manufacturing process or materials which make the cement more susceptible to moisture penetration.

The FNP station post insulators use only external cement joints. Under conditions of "growth," external joints preclude the development of tensile stresses on the porcelain.

Stresses are compressive in nature, and thus load the porcelain in its strongest state. Cracking due to cement growth is not an applicable aging effect for the insulators at FNP.

Strain insulators are designed in segments with the ability to be strung together to achieve the desired voltage withstand rating. Cement is used to attach the metal pin inside the porcelain and the metal cap external to the porcelain. Operating experience has shown that the insulator components are designed with a sufficient strength margin to prevent cracking failures due to tension. In addition, the transmission conductors in scope for LR are short spans located entirely within the high voltage switchyard and therefore exert less tension than normally found for a transmission line. Operating experience has shown that the insulators and hardware are designed to accommodate transmission line tension without failure due to cracking. Cracking is not an aging effect requiring management for FNP.

Question No. E26

For the Non-EQ Cables and Connections Program Master Document section on Alternate XI.E2 Program Scope, describe the basis for excluding co-ax and tri-ax cables other than for radiation monitoring and nuclear instrumentation systems.

SNC Response:

The criteria for including cables in the Alternate XI.E2 program are sensitive, high voltage, low-level signals which are installed in adverse localized environments. Nuclear instrumentation circuits meet these criteria. FNP also has cables feeding containment high range radiation monitors but the entire circuit including the portion of the cables that is outside containment is included in the Farley EQ program and therefore not subject to an AMR. No additional cables meeting the scope of the GALL XI.E2 program exist at FNP.

Question No. E27

The program scope for the Non-EQ Cables and Connections Program Master Document, the LRA, and ISG-15 are consistent. However, the FNP Non-EQ Cables Program Attribute Comparison in section 2.1 of the Past Precedent Review with Robinson is misleading with regard to cables included. Provide clarification.

SNC Response:

The scope of the FNP Alternate XI.E2 Program is non-EQ high voltage cables carrying sensitive, low-level signals installed in adverse localized environments. High-voltage, low signal level cables at FNP include nuclear instrumentation cables and containment high range radiation monitor cables. However, the high range radiation monitor cables, including the portions of the cables that are outside containment, are included in the Farley EQ program and therefore not in the scope of the XI.E2 Program.

Question No. E28

Use of a sampling method appears in parameters monitored or inspected and detection of aging effects for the Alternate X1.E2 subprogram of the FNP Non-EQ Cables and Connections Program. Remove sampling from this section or justify the use of a sampling method. There is a typo in section B.5.6.1.1 of the LRA: ISG-05 should be ISG-15.

SNC Response:

Use of a sampling will be removed from the Alternate XI.E2 subprogram of the Non-EQ Cables and Connections Program for parameters monitored or inspected and detection of aging effects. All cables within the scope of this program will be tested. ISG-05 is a typographical error; the correct reference should be ISG-15.

Question No. E29

What is the implementing procedure for the Alternate XI.E2 subprogram of the Non-EQ Cables and Connections Program?

SNC Response:

The non-EQ Cables and Connections Program is a new program. Implementing procedures have not yet been written. The commitment to implement the Non-EQ Cables Program is contained in Appendix A of the LRA, in Section A.2.19.

Question No. E30

The Non-EQ Cables Program Master Document section on Alternate XI.E2 Acceptance Criteria is not consistent with ISG-15. ISG-15 specifies calibration. What is the reason for testing?

SNC Response:

As stated in Section 2.1.5.15 of the LRA, ISG-15 was not issued to the industry when the application was submitted. At FNP, nuclear instrumentation circuits are calibrated with the cables disconnected. Cable testing is a more useful approach for these cables because the calibration results would provide no information about the condition of the cables or connectors.

Question No. E31

For the Non-EQ Cables Program Master Document section on XI.E2 Operating Experience, connectors are not addressed. ISG-15 addresses connectors. Discuss them in the FNP AMP and LRA.

SNC Response:

SNC concurs that operating experience has shown that cable/connector issues are the source of most of the problems associated with the circuits within the scope of this program.

The following paragraph will be added to AMP SP-LR-AMP-21 under the operating experience of Section X1.E2:

"The vast majority of site-specific and industry wide operating experience regarding Neutron Flux Instrumentation Circuits is related to cable/connector issues inside of containment near the reactor vessel. There is comparatively far less operating experience in the other more benign areas of the plant."

Question No. E32

For the Non-EQ Cables Program Master Document section on XI.E2 Operating Experience, what is the implementing procedure?

SNC Response:

The Plant Farley Operating Experience Evaluation Program procedure is FNP-0-AP-65.

Section 2: Reactor Coolant Pump Flywheel Fatigue Supplemental Information

Request: Provide more information on the reactor coolant pump flywheel than what is currently provided in Appendix B of the LRA; also, add summary information to Appendix A.

SNC Response:

For FNP, WCAP-15666 and WCAP-14535A bound the issue of cracking of the reactor coolant pump flywheel. For both analyses, the fatigue crack growth evaluation is performed in accordance with the ASME Code, Section XI requirements. These analyses show that, for a bounding set of flywheels, the fatigue crack growth is negligible. In the WCAPs, the FNP flywheels were included in Group 5. Group 5 is bounded by Groups 1 and 2 for the purposes of the evaluation. The results of the evaluation are a crack growth of approximately 0.08 inches in the bounding Groups, assuming 6000 start and stop cycles in a 60 year operating life.

For FNP, the number of reactor coolant pump start and stop cycles is anticipated to be significantly less than 6000, even considering the extended license term. The number of reactor shutdowns is anticipated to be less than 200 (reference LRA, Section 4.3.1) and that would mean exceeding 30 start/stop cycles of the reactor coolant pumps per shutdown. FNP uses vacuum refill from a shutdown condition, which means that the RCPs are stopped and re-started once per shutdown under normal conditions. Given that the fatigue crack growth is not significant, and the number of start/stop cycles anticipated is so much less than assumed in the evaluation, SNC has concluded that the fatigue growth analysis is not significant to the aging of the reactor coolant pump flywheel. However, SNC conservatively elects to call this issue a TLAA. It is further significant to note that FNP has Technical Specification requirements to inspect the flywheels in accordance with the ISI Plan (TS 5.5.7).

Appendix A Supplemental Information

(This supplemental information will become a part of the FSAR supplement when re-issued.)

A.4.2.3 Reactor Coolant Pump Flywheel Fatigue

In WCAP-14535A and WCAP-15666, Westinghouse has generically analyzed the potential for cracking due to fatigue in Reactor Coolant Pump (RCP) flywheels. These two Westinghouse analyses are applicable to FNP. The evaluations of the growth of an assumed crack in the flywheel uses the assumption that the RCPs will experience 6000 start/stop cycles over 60 years of operation. The evaluations show that the crack growth is negligible for the flywheel model that bounds those in the RCP at FNP. The number of start/stop cycles for the FNP RCPs is estimated to be significantly less than 6000 through the period of extended operation. Therefore, these analyses are valid for FNP through the period of extended operation (demonstration in accordance with 10 CFR 54.21(c)(1)(i)).

Section 3: RPV Capsule Pull Schedule

Request: During recent NRC interactions on license renewal, the NRC requested that SNC provide their reactor pressure vessel capsule pull schedule.

SNC Response:

SNC's general intent is to pull the next to last capsule at a fluence equivalent to 60 years of operation and the final capsule at 80 years of operation on each unit.

For Unit 1, the next to last capsule, designated as Capsule V was withdrawn during the Spring 2003 refueling outage. The Capsule V fluence was projected at approximately 61 EFPY. The last capsule on Unit 1, Capsule Z, is expected to be withdrawn during the Fall 2007 refueling outage. The fluence on Capsule Z is projected to be approximately 73 EFPY.

On Unit 2, the next to last capsule, designated as Capsule Y is planned on being withdrawn during the Spring 2004 refueling outage. At that time, Capsule Y fluence is projected to be approximately 57 EFPY. The last capsule on Unit 2, Capsule V, is expected to be pulled during the Spring 2007 refueling outage. The fluence on Capsule Y is projected to be approximately 75 EFPY.

These schedules and fluence levels are tentative and the best estimates at this time. Final decisions on the timing of future capsule pulls will be made later.

Enclosure 2

License Renewal Future Action Commitment List

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
1	FNP will enhance the Flow Accelerated Corrosion (FAC) program prior to entering the extended period of operation by adding the auxiliary feedwater pump turbine exhaust piping to scope of the program.	A.2.8	Prior to the end of the current operating license term	LRA App. B, Section B.4.1
2	Prior to the extended period of operation, SNC will evaluate the scope of the Diesel Fuel Oil Program and the need to enhance procedural guidance for maintaining and monitoring the diesel driven fire pump fuel oil system	A.2.9	Prior to the end of the current operating license term	LRA App. B, Section B.4.2
3	The Structural Monitoring Program will be enhanced prior to entering the period of extended operation to include portions of structures and components which are in scope for license renewal but are not currently monitored. These additional structures and components include: • submerged portions of the Service Water Intake Structure (SWIS), • in-scope support features for ATWS, SBO, and fire protection safe shutdown equipment in the Turbine Building, • structural portions of the Oil Static Pump House, • in-scope components in the Low Level Radwaste Building and Solidification/Dewatering Building (e.g., fire protection). An enhancement will be made to the Structural Monitoring Program document to clarify the hangers and supports to be inspected in Category I buildings.	A.2.10	Prior to the end of the current operating license term	LRA App. B, Section B.4.3
4	The scope of the Service Water Program will be expanded prior to the extended period of operation to include inspection of piping from the main service water header to the air compressor credited for Appendix R safe shutdown and inspection of the service water pump columns.	A.2.11	Prior to the end of the current operating license term	LRA App. B, Section B.4.4

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
5	The FNP Fire Protection Program will be enhanced prior to entering the period of extended operation (with the exception of sprinkler head testing which will be implemented prior to 50 years of fire protection system service) through the use of administrative controls and procedures as follows: • The fire protection sprinkler system piping will be subjected to wall thickness evaluations (e.g., non-intrusive volumetric testing and/or visual inspections during plant maintenance) prior to the period of extended operation and at specific intervals thereafter. The plant-specific inspection interval will be established from the initial inspection results and revised as appropriate for subsequent inspection results. • A sample of sprinkler heads will be inspected by using the guidance of National Fire Protection Association (NFPA) 25 (2002), Section 5.3.1.1.1, at or before 50 years service and every 10 years thereafter. • Diesel driven fire pump surveillance procedures will be upgraded to provide more detailed instructions related to inspection of the fuel oil supply piping. • The current practice of replacing CO_2 hoses at 5 year intervals will be formalized in fire protection procedures.	A.2.12	Prior to the end of the current operating license term	LRA App. B, Section B.4.5
6	FNP will implement a new Reactor Vessel Internals Program which will be an integrated inspection program that addresses the reactor internals. It is intended to supplement the inspection requirements of ASME Section XI, IWB Category B-N-3 to ensure that aging effects do not result in a loss of intended function of internal components during the period of extended operation.	A.2.13	Prior to the end of the current operating license term	LRA App. B, Section B.5.1

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
7	FNP will implement a new Flux Detector Thimble Inspection Program prior to the period of extended operation. The program will include flux detector thimbles for both units which, although they form part of the reactor coolant pressure boundary, are exempted from ASME Section XI as instrumentation. It does not include the instrument guide tubes, which are covered under the ISI Program and the Reactor Vessel Internals Program.	A.2.14	Prior to the end of the current operating license term	LRA App. B, Section B.5.2
8	FNP will implement the new External Surfaces Monitoring Program prior to the period of extended operation. The FNP External Surfaces Monitoring Program will employ periodic visual inspections to manage accessible and insulated external surfaces susceptible to loss of material that require aging management for license renewal. Susceptible external surfaces include carbon steel and low alloy steels in inside and outside environments, and galvanized steel, cast iron, copper alloys, and aluminum in an outside environment. The FNP External Surfaces Monitoring Program is also credited for managing loss of material, cracking, and change in material properties in elastomers within the scope of the program.	A.2.15	Prior to the end of the current operating license term	LRA App. B, Section B.5.3
9	FNP will implement the new Buried Piping and Tank Inspection Program prior to the period of extended operation. This program will be consistent with NUREG-1801 Program XI.M34. This program will be used to manage loss of material from the external surfaces of pressure-retaining buried carbon steel piping and tanks. Preventive measures have been put in place in accordance with standard industry practices for external coatings and wrappings. Buried piping and tanks will be inspected when they are excavated for maintenance or when those components are exposed for any reason. FNP will implement this new program prior to the period of extended operation.	A.2.16	Prior to the end of the current operating license term	LRA App. B, Section B.5.4

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
10	FNP will implement a One Time Inspection Program to verify the effectiveness of various other aging management programs and confirm the absence of aging effects. This program will be consistent with the aging management programs described in NUREG-1801 XI.M32 and XI.M33. The new FNP One-Time Inspection Program will be designed to provide objective evidence that an aging effect is not occurring, or that the aging effect is occurring slowly enough to not affect the component or structure intended function during the period of extended operation, and therefore will not require additional aging management. The program will also be used to verify the effectiveness of other AMPs to confirm the absence of an aging effect. With respect to inspection timing, the One-Time Inspection Program is to be completed before the end of the current operating license. Insofar as practical with respect to scheduled outages, the inspections will be performed within a window of five years immediately preceding the period of extended operation. SNC may schedule an inspection earlier to minimize the impact on plant operations. However, inspections will not to be scheduled too early in the current operating term, which could raise questions regarding continued absence of aging effects prior to and near the extended period of operation. The new program will include in the sample set those components requiring aging management which are made of cast iron, bronze, brass and other alloys that are exposed to environments that may lead to selective leaching of one of the metal constituents. In addition to one time visual inspection, some components constructed from the aforementioned materials will be subjected to hardness testing. The systems or components listed below will be included in the sample set of components that will be compiled based upon (a) determination of the sample size based on an assessment of materials of fabrication, environment, aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the	A.2.17	Prior to the end of the current operating license term	LRA App. B, Section B.5.5

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
10, cont'd	component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation. Specific Components Included in Sample Population • Pressurizer cast austenitic stainless steel spray heads and associated coupling / lock bar • Reactor coolant system small bore (< 4 NPS), butt-welded piping • An RCP thermal barrier CCW nozzle • Cast iron, bronze, brass and other alloy components in any system requiring aging management that are exposed to environments that may lead to selective leaching • A bounding CVCS letdown orifice or Charging / SI Pump mini-flow orifice (based on pressure drop) • Sample portion of the external surface of the service water piping in the Diesel Generator Building which is obscured by guard piping. General LRA Systems In-scope Closed Cooling Water Systems Spent Fuel Pool Cooling and Cleanup Reactor Coolant System Emergency Core Cooling Systems Main Steam Auxiliary and Radwaste Area Ventilation Reactor Makeup Water Storage Steam Generator Blowdown Demineralized Water System Auxiliary Feedwater Auxiliary Steam and Condensate Chemical and Volume Control System Compressed Air System			

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
10, cont'd	Containment Isolation System Control Room Area Ventilation Diesel Fuel Oil Emergency Diesel Generator Fire Protection Containment Spray Feedwater System Hydrogen Control System Liquid Waste and Drains Protection Open Cycle Cooling Water Potable and Sanitary Water Primary Containment HVAC Sample System			
11	FNP will implement the new NiCrFe Component Assessment Program prior to the period of extended operation. The NiCrFe Component Assessment Program will be developed to address industry concerns regarding the potential for primary water stress corrosion cracking (PWSCC) in nickel alloy components exposed to the reactor coolant environment. This new program will assess nickel base alloy component susceptibility to PWSCC and provide for any required augmented inspection requirements to ensure that the component functions will be maintained during the period of extended operation. The FNP program scope includes nickel base alloy reactor coolant pressure boundary components with known or potential susceptibility to PWSCC, excluding steam generator tubes, which are specifically addressed by the Steam Generator Program, and Reactor Internals which are addressed by the Reactor Vessel Internals Program.	A.2.18	Prior to the end of the current operating license term	LRA App. B, Section B.5.8
12	FNP will implement the new Non-EQ Cables and Connections Program prior to the period of extended operation. The Non-EQ Cables and Connections Program consists of two parts. The first part	A.2.19	Prior to the end of the current operating license term	LRA App. B, Section B.5.6

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
12, cont'd	addresses non-EQ electrical cables and connections used in circuits with sensitive, high voltage, low-level signals such as radiation monitoring and nuclear instrumentation. An AMP designed specifically for these types of cables will be implemented as an alternate program to the XI.E2 program described in NUREG-1801. The other part addresses non-EQ electrical cables and connections exposed to adverse localized environments caused by heat, radiation, or moisture and inaccessible medium voltage cables that are simultaneously exposed to significant moisture and voltage. This program section will be implemented consistent with NUREG-1801 programs XI.E1 and XI.E3.			
13	FNP will implement a new Fatigue Monitoring Program consistent with NUREG-1801 Program X.MI. The new Fatigue Monitoring program will be used to monitor fatigue conditions of the metal piping and components that form the reactor coolant pressure boundary (RCPB). Specifically included will be the pressurizer subcomponents, the RPV shell and head, RPV inlet and outlet nozzles, reactor coolant piping, charging nozzles, safety injection nozzles and the other Class 1 piping one-inch in diameter or larger. The other Class 1 components that have received a fatigue analysis will also be included, since the cycles they were designed for are bounded by the cycle limits used by the program.	A.3.2	Prior to the end of the current operating license term	LRA App. B, Section B.5.7
14	The application of the appropriate environmental factors to the calculations for the following locations resulted in an environmentally-assisted fatigue adjusted value greater than 1.0. For the locations listed below, SNC will take corrective action prior to the period of extended operation which might include a more refined analysis, replacement, inspection program approved by the NRC. • Charging nozzles and alternate charging nozzles • RHR 6-inch RHR/SI nozzles to the Reactor Coolant System cold leg.	A.4.2.1	Prior to the end of the current operating license term	LRA Section 4.3.1

Farley Nuclear Plant - License Renewal Future Action Commitments				
No.	**Commitment**	**LRA App. A Location**	**Implementation Schedule**	**Source**
15	Pursuant to 10 CFR Part 54.21 (1) (c) (ii), Southern Nuclear will update the RHR Relief Valve Flow Capacity analysis that utilizes P/T curves as an input to include the calculated 54 EFPY P/T Limit Curves prior to the period of extended operation.	A.4.7	Prior to the end of the current operating license term	LRA Section 4.5.3
16	Prior to the period of extended operation FNP will collect data for the transients (pressurizer heat-up, unit loading/unloading at 5% full power per minute, small step increase/decrease in load of 10% full power per minute, and large step increase in load) not counted prior to the installation of the fatigue monitoring software and use the data to develop a best estimate historical count and an expected 60-year count.	N/A	Prior to issuance of the renewed license.	LRA Section 4.3.1
17	FNP will use the NUREG-1437 Supplemental Environmental Impact Statement for Farley Nuclear Plant along with the original Farley Environmental Impact Statement as the basis for any environmental reviews performed during the renewal term.	Appendix D	Prior to the end of the current operating license term	LRA App. D