

RAS J-49

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Entergy (Pilgrim Nuclear Power Station)

Docket No. 50-293-LR Official Exhibit No. 19

OFFERED by: Applicant/Licensee Inter/Pilgrim Watch Ex 6

NRC Staff Other

IDENTIFIED on 4-10-08 Witness/Panel

NUREG-1891

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk Thibault

Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station

DOCKETED
USNRC

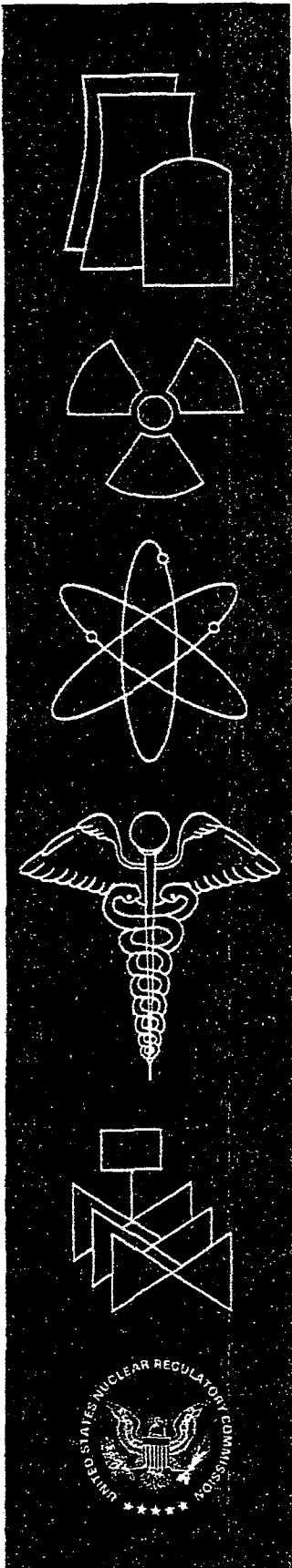
Docket No. 50-293

April 15, 2008 (10:00am)

OFFICE OF SECRETARY
RII FMAKINGS AND
ADJUDICATIONS STAFF

Entergy Nuclear Operations, Inc.

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001



Temp = SECY-028

DS03

adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the UFSAR supplement for this AMP and concludes that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2 AMPs That Are Consistent with the GALL Report with Exceptions and/or Enhancements

In LRA Appendix B, the applicant stated that the following AMPs are, or will be, consistent with the GALL Report with exceptions or enhancements:

- Buried Piping and Tanks Inspection Program
- BWR CRD Return Line Nozzle Program
- BWR Feedwater Nozzle Program
- BWR Penetrations Program
- BWR Stress Corrosion Cracking Program
- BWR Vessel ID Attachment Welds Program
- BWR Vessels Internals Program
- Diesel Fuel Monitoring Program
- Fatigue Monitoring Program
- Fire Protection Program
- Fire Water System Program
- Metal-Enclosed Bus Inspection Program
- Oil Analysis Program
- Reactor Head Closure Studs Program
- Reactor Vessel Surveillance Program
- Service Water Integrity Program
- Structures Monitoring Program
- Water Control Structures Monitoring Program
- Water Chemistry Control - Closed Cooling Water Program

For AMPs that the applicant claimed are consistent with the GALL Report, with exception(s) and/or enhancement(s), the staff performed an audit and review to confirm that those attributes or features of the program for which the applicant claimed consistency were indeed consistent. The staff also reviewed the exception(s) and/or enhancement(s) to the GALL Report to determine whether they were acceptable and adequate. The results of the staff's audits and reviews are documented in the following sections.

3.0.3.2.1 Buried Piping and Tanks Inspection Program

Summary of Technical Information in the Application. LRA Section B.1.2, "Buried Piping and Tanks Inspection," describes the new Buried Piping and Tanks Inspection Program as consistent, with exception; with GALL AMP XI.M34, "Buried Piping and Tanks Inspection."

This program includes (a) preventive measures to mitigate corrosion and (b) inspections to manage the effects of corrosion on the pressure-retaining capability of buried carbon steel, stainless steel, and titanium components. Preventive measures are in accordance with standard industry practice for maintaining external coatings and wrappings. Buried components are

inspected when excavated during maintenance. There will be a focused inspection within the first 10 years of the period of extended operation unless an opportunistic inspection (or an inspection via a method that assesses pipe condition without excavation) occurs within this ten-year period.

Staff Evaluation. During its audit and review, the staff confirmed the applicant's claim of consistency with the GALL Report and documented a detailed audit evaluation of this AMP in Audit and Review Report Section 3.0.3.2.1. The staff reviewed the exception to determine whether the AMP remained adequate to manage the aging effects for which it is credited.

The staff reviewed those portions of the Buried Piping and Tanks Inspection Program for which the applicant claims consistency with GALL AMP XI.M34 and finds them consistent. Furthermore, the staff concludes that the applicant's Buried Piping and Tanks Inspection Program provides reasonable assurance of management of the effects of aging so components crediting this program can perform intended functions consistent with the CLB during the period of extended operation. The staff finds the applicant's Buried Piping and Tanks Inspection Program acceptable as consistent with the recommended GALL AMP XI.M34, "Buried Piping and Tanks Inspection," with the exceptions as described:

Exception. The LRA states an exception to the GALL Report program element "detection of aging effects," specifically:

For cases of excavation solely for the purpose of inspection – methods such as "phased array" UT will be used to determine wall thickness without excavating.

The proposed exception eliminates the possibility of inadvertent excavation related damage during inspection while assessing the component. As the technology becomes available for the nuclear industry, applicants may use this technology to examine the condition of buried piping. On this basis, the staff finds this exception acceptable.

Operating Experience. LRA Section B.1.2 states that there is no operating experience for the new Buried Piping and Tanks Inspection Program.

However, in the past five years, the applicant has had limited experience with the inspection of buried piping, mainly on the fire water underground distribution system. This system, approximately 35 years old, consists of cement-lined malleable iron pipe with mechanical joints and no history of significant leaks other than during two instances in 2001 and 2005. In the first, the 8-inch underground line downstream of 8-L-22 failed, the probable cause induced most likely by minor fabrication anomalies compounded by marginal installation techniques. When examined, this piping was found to be in very good external condition overall except for a small area of surface corrosion attributed to marginal installation techniques. In the second instance, the 8-inch underground pipe failed in the area of the N2 tank adjacent to the emergency diesel generator (EDG) building. Due to congestion and the presence of the tank (installed after the piping), it was not possible to dig up the piping for examination to determine the cause of the failure (possibly related to the tank installation). Apart from these two instances, a number of valves and piping excavated during maintenance were found to be in good condition.

From an additional historical perspective, the SSW system has had leaks on the buried inlet (screenhouse to auxiliary bays) piping due to internal corrosion. The original piping material was

rubber-lined carbon steel wrapped with reinforced fiberglass, coal tar saturated felt, and heavy Kraft paper. The leaks were determined to be results of the rubber lining degrading from contact with sea water. These pipes were replaced in 1995 and 1997 with the same external and internal coatings as for the original pipe.

In addition, the SSW buried discharge piping (also rubber-lined carbon steel with external pipe wrapping) from the auxiliary bays to the discharge canal experienced severe internal corrosion due to failure of the rubber lining. Two 40-foot lengths of 22-inch diameter pipes (one on each loop) were replaced in 1999 with carbon steel coated internally and externally with epoxy. The replaced piping was examined with its wrapping removed and its external surface was found to be in good condition. Since then, the entire length of both SSW buried discharge loops have been lined internally with pipe linings cured in place – "B" Loop in 2001 and "A" Loop in 2003.

The staff reviewed the operating experience presented in the LRA and interviewed the applicant's technical personnel to confirm that the plant-specific operating experience revealed no degradation not bounded by industry experience.

The staff confirmed that the "operating experience" program element satisfies the criterion defined in the GALL Report and in SRP-LR Section A.1.2.3.10. The staff finds this program element acceptable.

UFSAR Supplement. In LRA Section A.2.1.2, the applicant provided the UFSAR supplement for the Buried Piping and Tanks Inspection Program. The staff reviewed this section and determined that the information in the UFSAR supplement is an adequate summary description of the program, as required by 10 CFR 54.21(d).

The LRA states that this program will be implemented before the period of extended operation (Commitment No. 1).

Conclusion. On the basis of its audit and review of the applicant's Buried Piping and Tanks Inspection Program, the staff finds that those program elements for which the applicant claimed consistency with the GALL Report are consistent. In addition, the staff reviewed the exception and its justification and determined that the AMP, with the exception, is adequate to manage the aging effects for which it is credited. The staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the UFSAR supplement for this AMP and concludes that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.3.2.2 BWR CRD Return Line Nozzle Program

Summary of Technical Information in the Application. LRA Section B.1.3, "BWR CRD Return Line Nozzle," describes the existing BWR CRD Return Line Nozzle Program as consistent, with exceptions, with GALL AMP XI.M6, "BWR Control Rod Drive Return Line Nozzle."

Under this program, the applicant has cut and capped the CRD return line nozzle to mitigate cracking and continued ISI examinations to monitor the effects of crack initiation and growth on intended functions of the CRD return line nozzle and cap. In 2003, a structural weld overlay was