

PBAPS UFSAR

APPENDIX Q - LICENSE RENEWAL AGING MANAGEMENT UFSAR SUPPLEMENT

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>
Q.0	<u>INTRODUCTION</u>
Q.1	<u>EXISTING AGING MANAGEMENT ACTIVITIES</u>
Q.1.1	Flow Accelerated Corrosion Program
Q.1.2	Reactor Coolant System Chemistry Activities
Q.1.3	Closed Cooling Water Chemistry Activities
Q.1.4	Demineralized Water and Condensate Storage Tank Chemistry Activities
Q.1.5	Torus Water Chemistry Activities
Q.1.6	Fuel Pool Water Activities
Q.1.7	High Pressure Service Water Radioactivity Monitoring Activities
Q.1.8	Inservice Inspection (ISI) Program
Q.1.9	Primary Containment Inservice inspection Program
Q.1.10	Primary Containment Leakage Rate Testing Program
Q.1.11	Inservice testing (IST) Program
Q.1.12	Reactor Materials Surveillance Program
Q.1.13	Corrective Action Program
Q.1.14	Crane Inspection Activities
Q.1.15	Conowingo Hydroelectric Plant (Dam) Aging Management Program
Q.1.16	Maintenance Rule Structural Monitoring Program
Q.1.17	Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits
Q.2	<u>ENHANCED AGING MANAGEMENT ACTIVITIES</u>
Q.2.1	Lubricating and Fuel Oil Quality Testing Activities
Q.2.2	Boraflex Management Activities
Q.2.3	Ventilation System Inspection and Testing Activities
Q.2.4	Emergency Diesel Generator Inspection Activities
Q.2.5	Outdoor, Buried and Submerged Component Inspection Activities
Q.2.6	Door Inspection Activities
Q.2.7	Reactor Pressure Vessel and Internals ISI Program
Q.2.8	GL 89-13 Activities
Q.2.9	Fire Protection Activities
Q.2.10	HPCI and RCIC Turbine Inspection Activities

PBAPS UFSAR

- Q.2.11 Susquehanna Substation Wooden Pole Inspection Activity
- Q.2.12 Heat Exchanger Inspection Activities

PBAPS UFSAR

TABLE OF CONTENTS (cont'd)

<u>SECTION</u>	<u>TITLE</u>
Q.3	<u>NEW AGING MANAGEMENT ACTIVITIES</u>
Q.3.1	Torus Piping Inspection Activities
Q.3.2	FSSD Cable Inspection Activity
Q.3.3	Non-EQ Accessible Cable Aging Management Activity
Q.3.4	One-time Piping Inspection Activities
Q.3.5	Inaccessible Medium-Voltage Cables not subject to 10 CFR 50.49 Environmental Qualification Requirements
Q.3.6	Deleted (Second License Renewal determined this activity is not needed)
Q.3.7	Selective Leaching
Q.4	<u>TIME-LIMITED AGING ANALYSES ACTIVITIES</u>
Q.4.1	Environmental Qualification Activities
Q.4.2	Fatigue Management Activities
Q.5	<u>TIME-LIMITED AGING ANALYSES SUMMARIES</u>
Q.5.1	Reactor Vessel Neutron Embrittlement
Q.5.1.1	Reactor Vessel Neutron Embrittlement
Q.5.1.1.1	Upper Shelf Energy (USE)
Q.5.1.1.2	P-T Limit Curves
Q.5.1.1.3	Reactor Vessel Circumferential Weld Examination Relief
Q.5.1.1.4	Reactor Vessel Axial Weld Failure Probability
Q.5.2	Metal Fatigue
Q.5.2.1	Reactor Vessel Fatigue
Q.5.2.2	Reactor Vessel Internals Fatigue and Embrittlement
Q.5.2.2.1	Reactor Vessel Internals Fatigue Analyses
Q.5.2.2.2	Reactor Vessel Internals Embrittlement Analyses
Q.5.2.2.3	Effect of Fatigue and Embrittlement on End-of-Life Reflood Thermal Shock Analyses
Q.5.2.3	Piping and Component Fatigue and Thermal Cycles
Q.5.2.3.1	Fatigue Analyses of Group I Primary System Piping
Q.5.2.3.2	Assumed Thermal Cycle Count for Allowable Secondary Stress Range Reduction in Group II and III Piping and Components
Q.5.2.3.3	Design of the RHR System for a Finite Number of Cycles
Q.5.2.4	Effects of Reactor Coolant Environment on Fatigue Life of Components and Piping (Generic Safety Issue 190)
Q.5.3	Environmental Qualification of Electrical Equipment
Q.5.4	Containment Fatigue

PBAPS UFSAR

TABLE OF CONTENTS (cont'd)

<u>SECTION</u>	<u>TITLE</u>
Q.5.4.1	Fatigue Analyses of Containment Pressure Boundaries: Analysis of Tori, Torus Vents, and Torus Penetrations
Q.5.4.2	Fatigue Analyses of SRV Discharge Lines and External Torus-Attached Pipe
Q.5.4.3	Expansion Joint and Bellows Fatigue Analyses - Drywell to Torus Vent Bellows
Q.5.4.4	Expansion Joint and Bellows Fatigue Analyses - Containment Process Penetration Bellows
Q.5.5	Metal Corrosion Allowances
Q.5.5.1	Reactor Vessel Corrosion Main Steam Nozzle Cladding Removal Allowance
Q.5.6	In-service Flaw Growth Analyses that Demonstrate Structural Integrity for 40 Years
Q.5.6.1	Generic Letter 81-11 Crack Growth Analysis to Demonstrate Conformance to the Intent of NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking"
Q.5.6.2	Fracture Mechanics of As-Forged Laminar Tear in a Unit 3 Main Steam Elbow
Q.5.7	Crane Load Cycle Limit
Q.6	<u>REFERENCES</u>
Q.7	<u>NEWLY IDENTIFIED ITEMS (10 CFR 54.37(b))</u>
Q.7.1	Newly Identified Structures, Systems and Components (SSC)
Q.7.2	Newly Identified Time Limited Aging Analyses (TLAA)

PBAPS UFSAR

APPENDIX Q - LICENSE RENEWAL AGING MANAGEMENT UFSAR SUPPLEMENT

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>
Q.5.1	Clamps installed on the replacement core spray sparger pipes structurally replacing welds at each of the four sparger T-box locations