February 14, 1994

NOTE TO: Jim McKnight, P-137
Document Control Desk

FROM: Carol Norsworthy, 11-F-23
Licensing Assistant (Acting)
License Renewal Project
Directorate, ADAR, NRR

SUBJECT: DOCUMENT TO BE ADDED TO PROJECT 683 FILES IN THE NRC PUBLIC DOCUMENT ROOM (B&WOG GENERIC LICENSE RENEWAL PROGRAM)

Jim:

A meeting regarding Project 683 was held January 18-19, 1994, at the Crystal River Energy Complex in Florida. I am attaching a document from the B&W Owners Group concerning a commitment made by them at the meeting to the NRC to provide information on the definition of "passive". This document should be included with the meeting summary dated February 3, 1994.

If you have any questions, please call me at 504-3149.

Thank you.

cc: Tom Hiltz, 11F23

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February 10, 1994

PASSIVE STRUCTURE OR COMPONENT

At a meeting between the B&W Owners Group GLRP and the NRC License Renewal Staff in January 1994, a commitment was made to provide information to the NRC on the subject of the definition of 'passive'. Both in the NUMARC letter to the NRC dated November 18, 1993 and in SECY - 93 - 331, the term passive is used in the proposed re-definition of age-related degradation unique to license renewal (ARDUTLR). The purpose of this paper is to provide a working definition of 'passive' and some examples of what structures and components should be considered passive.

Table 1 attached provides a list of several definitions of 'passive' as obtained from several sources. They are provided only as examples.

The BWOG GLRP offers the following proposed license renewal explanation of passive structures or components for consideration:

Passive Components *- Components that exhibit no mechanical motion (spatial displacement) or conversion of electrical energy from one form to another. In the context of license renewal and the determination of those SCs that could be subject to age-related degradation unique to license renewal, passive components are those components which have only passive functions.*

Passive component functions include pressure boundary, radiation barrier, electrical continuity, absorption of neutrons, allow flow (limit blockage of process fluid), conduction of heat, maintain electrical system integrity, restrict flow (orifice, filter), maintain volume (tank), structural support, etc.

The following are some examples of passive components in a nuclear power plant:

Structures, block walls, containment tendons, cable trays, structural steel, shield walls, mechanical penetrations, air locks, equipment hatches, containment liner plates, dams, spent fuel racks.

Electrical cable, connectors, cabinets, switchgear, panel boards, electrical penetrations, electrical busses, battery racks.

Class 1 pressure boundary components, piping, steam generators, pressurizers, reactor vessel, reactor vessel internals (except internals vent valves), orifice plates, flow reducers, rupture disks, tanks, accumulators, heat exchangers, ventilation ducts, pipe and equipment supports, demineralizers, filters.

Table 1

The following information is provided to further define and clarify the meaning of 'passive SC' (passive structure or component) as used in the license renewal rule context. These definitions were obtained from the source documents noted.

1. Passive structures and components - (for the purposes of this part) do not have functional performance characteristics that can be monitored to reasonably indicate that their required functions will be adequately performed. Source: SECY-93-331, dated December 7, 1993.

2. Passive - cannot or should not change state under normal operating conditions or in response to accident conditions. NUMARC letter to NRC dated November 18, 1993 and NUREG-5695, "A Process for Risk Focused Maintenance," March 1991.

3. Passive valves - valves which are not required to change position to accomplish a specific function. Source: Section XI 1980 edition, Article IWV-2000, Definitions.

4. Passive valves - valves which maintain obturator position and are not required to change obturator position to accomplish the required functions. (obturator = valve closure member: disk, gate, plug, ball, etc.) Source: GMa -1988, Part 10.

5. A passive component has [illegible] functions only. Passive functions are [illegible]essure boundary, radiation barrier [illegible]ical continuity, absorb neutrons, allow flow (limit blockage of process fluid), transfer heat, maintain electrical system integrity, restrict flow (orifice), rupture (rupture diaphragm; must burst when design pressure exceeded), maintain volume (tank), structural support, etc. Source: Discussion with Vesse Roppel, supplemented with passive function examples from BWNT Report, 12-1229175-00.

6. A passive function is a function that is not active. An active function is a function that requires mechanical motion or a change of state (e.g. closure of a valve or relay, or the change in state of a transistor). For electrical devices, an active function is one that supplies energy to a system (e.g. battery or power supply) or converts energy from one form to another. Source: BWNT Report, 12-1229175-00.

7. Passive element - an element of an electric circuit that is not a source of energy, such as a resistor, inductor, or capacitor. Active element - any generator of voltage or current. Source: Dictionary of Scientific and Technical Terms, 5th edition, McGraw Hill

8. Passive - acted upon rather than acting itself. Subject to an external agency. Source: Webster's Third New International Dictionary.

9. Passive failure - a failure of a component to maintain its structural integrity or the blockage of a process flow path. Active failure - a malfunction, excluding passive failure, of a component that relies on mechanical movement to complete its intended function upon demand. Source: ANSI ANS 56.4 - 1983, Pressure - Temperature Transient Analysis for Light Water Reactor Containments.

TIME-LIMITED ANALYSES (TLA)

At a meeting between the B&W Owners Group GLRP and the NRC License Renewal Staff in January 1994, a commitment was made to provide information to the NRC on the subject of Time Limited Analyses (TLA). It was committed to provide a working definition of the phrase and some examples of what should be considered TLAs in License Renewal Applications. Several of the BWOG utilities contributed by conducting searches of their respective current licensing basis documents. In addition, the Standard Review Plan (SRP) was also independently searched. The attached table provides the initial results of these reviews.

In SECY 93-331, the NRC Staff proposed that the license renewal application (LRA) contain certain time limited analyses (TLAs) for Staff review and approval. As background, the Current Licensing Basis (CLB) contains certain explicit time-limited analyses. These analyses were performed by the licensee and approved by the NRC either prior to issuance of the original license or during the term of the operating license and form the basis for continued safe operation.

For the purposes of license renewal, a TLA to be considered under 10 CFR 54.21(f) (as proposed in SECY 93-331) is a calculation or analysis:

- that is required by specific generic regulatory documents (i.e. regulation, Standard Review Plan, Generic Letter, or Bulletin); and
- that evaluates some type of aging effect for its safety impact; and
- that includes an explicit assumption of an operating life of a component or structure, (e.g. 40 years); and
- that is described or summarized by the licensee in a CLB document, (e.g. the FSAR).

The attached table provides a list of potential time-limited analyses along with applicable references. These are considered potential because even though there may be a generic regulatory reference, the reference may not be applicable to a specific plant. The actual scope of TLA will be based on a review of the plant specific CLB.

POTENTIAL TIME LIMITED ANALYSES	
TLA DESCRIPTION	REFERENCES
Reactor Vessel The licensee shall submit projected values of RT_{PTS} for reactor vessel beltline materials by giving values for ... the projected expiration date of a renewal term...	10 CFR 50.61 SRP 5.2.2 CLB
Reactor vessel beltline materials must ... maintain upper-shelf energy throughout the life of the vessel of no less than 50 ft-lb.	10 CFR 50, Appendix G SRP 5.3.1 CLB
Reactor vessel material surveillance program.	10 CFR 50, Appendix H SRP 5.3.3 CLB
Thermal Stress during natural convection cooldown (Generic Issue 79)	GL 92-02 CLB

POTENTIAL TIME LIMITED ANALYSES (continued)	
TLA DESCRIPTION	REFERENCES
Reactor Coolant System	
Fatigue calculations will need to be updated as they generally assumed a number of cycles over a 40 year lifetime.	SRP 3.9.1, Section XI, CLB
Section XI inspections required for welded joints where CUF >0.4	ASME Section XI, Table IWB-2500-1, Examination Category B-J, Note (1)(b); SRP 5.2.4, CLB
Connected piping, thermal stresses; analyses were performed assuming 40 year life of plant.	IEB 88-08 CLB
Pressurizer surge line analyses; analyses required to meet applicable design codes for the design life of the plant.	IEB 88-11 CLB
HPI nozzle cracking, cumulative fatigue usage factor, CUF verified within allowable for the life of the plant.	GL 85-20 CLB
High Energy Line Break , postulated for break locations with CUF >0.1.	SRP 3.6.1, BTP MEB 3-1 CLB

POTENTIAL TIME LIMITED ANALYSES (continued)	
TLA DESCRIPTION	REFERENCES
Containment Tendon prestress relaxation: the final effective prestress at the end of 40 years was determined during initial licensing.	SRP 3.8.1 CLB
Control of heavy loads: cranes lifting loads at or near rated capacity were analyzed over a 40 year life.	NUREG-0612 CLB
Equipment Qualification	10 CFR 50.49 SRP 3.11 CLB