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STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530
AUTH.NAME AUTHOR AFFILIATION
VAN BRUNT,E.E. Arizona Public Service Co.
RECIP.NAME RECIPIENT AFFILIATION
Office of Nuclear Reactor Regulation, Director

SUBJECT: Provides necessary info required by NRC for application for issuance of 40-yr OL.Encl Bechtel & C-E 830328 & 840104 ltrs,respectively,reaffirm design criteria for 40-yr plant life.

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TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

NOTES:Standardized plant. 05000528
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Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

May 7, 1984
ANPP-29442 - WFQ/MSN

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN-50-528/529/530
File: 84-056-026; G.1.01.10; D.4.02.3

Dear Mr. Knighton:

The application for operating licenses for Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2 and 3 seeks the issuance of such licenses for a term of 40 years from the date of issuance. [See PVNGS License Application, General Information, Section 1, paragraph (e) (iii), page 1-5.] It is our understanding that the NRC Staff has established procedures requiring submittal of certain information with respect to such requests. Such information is set forth below and in the attachments hereto.

A review of the PVNGS Environmetal Report - Construction Permit Stage (ER-CP) and PVNGS Environmental Report - Operating License Stage (ER-OL) reveals that those environmental effects which are sensitive to the life of PVNGS were analyzed on the basis of an assumed 40-year plant life commencing with start of operations. See ER-CP, Sections 5.8.1 (page 5.8-2) - uranium and other materials and fuels; 8.1.1 (page 8.1-2) and 8.2.1 (page 8.2-2) and ER-CP, Supp. 6 (page 56-8.1-2 and 56-8.2-2) - present worth of revenues and costs; ER-CP, Supp. 1, page 51-4.1-1 - evaporation ponds; ER-OL, Section 2.1.2 (pages 2.1-5 and 2.1-6) - projected population growth to 2030 within 50 miles of PVNGS (see also PVNGS FSAR, Section 2.1.3).

Similarly, the NRC Staff environmental analyses were for the most part based on an assumed 30-40 year life for PVNGS where accumulated environmental effects were controlling. See PVNGS Final Environental Statement - Construction Permit Stage, NUREG-75/078 (FES-CP), Sections 3.5, 5.1.1, 10.1.1.1, 10.2.4, 10.3.4.2. The only instances where the NRC Staff environmental analyses were explicitly based on an assumed 30-year plant life are: (i) radiological assessment (FES-CP), Appendix, D; Final Environmental Statement - Operating License Stage, NUREG-0841 (FES-OL), Appendix C) and (ii) cost comparisons with alternative plants

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(FES-CP, Section 9.1.2.2). With respect to the latter, it is readily apparent that use of a 40-year life, rather than a 30-year life, would enhance the nuclear advantages over coal. With respect to the former, it is clear that PVNGS was evaluated on the basis that the design objectives of Appendix I to 10 CFR Part 50 would be achieved and it was concluded that (i) doses for any member of the public subject to maximum exposure will be very small when compared to natural background doses and 10 CFR Part 20 limits and (ii) there will be no measurable radiological impact on any member of the public from routine operation of PVNGS. (See FES-OL, Section 5.9.1.2, pages 5-25 and 5-26). Such conclusions would not be any different if a 40-year plant life had been assumed, rather than a 30-year plant life.

Further, APS has evaluated the attached letters from Bechtel Power Corporation and Combustion Engineering, Inc., and reaffirms that the PVNGS design criteria have from their inception specified a 40-year plant life and the safety analyses of the PVNGS design have been premised, where relevant, upon a 40-year life. It is therefore clear, that the issuance of a 40-year operating license will not pose any safety problems which have not been fully analyzed.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President, Nuclear
ANPP Project Director

EEVB/MSN/sp
Attachment

cc: E. A. Licitra (w/a)
A. C. Gehr "

May 7, 1984
ANPP-29442 - WFQ/MSN

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear Projects of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

Edwin E. Van Brunt Jr.
Edwin E. Van Brunt, Jr.

Sworn to before me this 7th day of May, 1984.

Nora E. Meador
Notary Public

My Commission Expires:

My Commission Expires April 6, 1987

Bechtel Power Corporation
Engineers – Constructors
12400 East Imperial Highway
Norwalk, California 90650
MAIL ADDRESS
P.O. BOX 60860 • TERMINAL ANNEX, LOS ANGELES, CALIFORNIA 90060
TELEPHONE (213) 864-6011

B/ANPP-E-100474
MOC 246597
March 28, 1983

Arizona Nuclear Power Project
P. O. Box 21666 - Mail Station 3003
Phoenix, Arizona 85036

Attention: Mr. Edwin E. Van Brunt, Jr.
APS Vice President, ANPP Project Director

Subject: Arizona Nuclear Power Project
Bechtel Job 10407
Architect-Engineer's Verification
of 40-Year Design Basis
File: G.1.01.10

Reference: Letter ANPP-22972-WFQ/MSN, February 14, 1983

Dear Mr. Van Brunt:

In response to your referenced letter, Bechtel has reviewed the design bases for systems and equipment within our scope of supply and confirmed that they will provide a 40-year service life beginning with issuance of OL. This service life period will not pose any undue risk to the health and safety of the general public or the operators of the plant. To support this conclusion, important plant design criteria and other factors have been reviewed and are addressed below.

Project general design criteria, which have been reviewed and approved by APS, have from their initial issue always specified a useful plant life of forty years, which is clearly post-OL. Environmental qualification criteria also specify assurance of a 40-year service life through design, analysis or test verification as appropriate. Application of codes and standards specified in general and detailed design criteria required the inclusion of design margins in meeting these criteria. Achievement of the 40-year service life for BOP systems and equipment will require operation in accordance with approved procedures and proper maintenance and replacement of known life-limited degradable and/or highwear components.

Facilities and plant structures have been designed with margin for a 40-year service life. Corrosion allowances on piping and equipment including tanks, and valve and pump bodies were established for 40-years' service with margin in accordance with applicable ASME or ANSI code requirements. Minimum wall thicknesses were verified during construction and preservice inspections.

It is recognized at this time that the corrosive nature of the Palo Verde soil has led to external corrosion being observed on buried piping, perimeter fence posts and the buried plant electrical grounding system. This situation is under investigation and modifications will be made as required to meet design criteria.

The structural design basis for plant piping and equipment, along with associated anchors, mountings and hangers, were analyzed for stresses for 40 years of operation including normal, upset, emergency and faulted conditions, as appropriate for the system safety class.

The radiological conditions, used as a basis for the design of plant shielding, radioactive waste treatment systems and plant ventilation systems provide for compliance with project design criteria throughout the plant's 40-year operating lifetime.

The plant electrical distribution systems have been designed for forty-years' operation. Environmental qualification of Class IE electrical equipment for forty-years' service per NUREG-0588 is nearing completion. This qualification program includes irradiation, accelerated aging and exposure to simulated design basis accident environmental conditions. Testing identified life-limited equipment items or component parts of safety-related equipment have resulted in surveillance and maintenance requirements to maintain the qualification objectives throughout the plant's 40-year lifetime.

Finally, the siting and plant interface with the environment and surrounding demography is favorable for 40-years' operation with minimal impact. The plant is in a remote area with benign seismicity and limited radiological threat pathways. It is isolated from industrial and transportation hazards. In the year 2030, forty-four years after initial operation of Unit 3, the LPZ (0 to 4 mile radius) population is projected to be only 4032, compared to about 1100 at the time of issuance of station operating license.

B/ANPP-E-100474
MOC 246597
March 28, 1983

In conclusion, we find that the design bases of the Bechtel scope portion of the PVNGS support forty years' safe operation from issue of the station operating license. This completes the action requested in the referenced letter.

Very truly yours,

BECHTEL POWER CORPORATION

W. H. Wilson
Project Manager
Los Angeles Power Division

PB:eg

C-E Power Systems
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Tel. 203/688-1911
Telex: 99297

POWER SYSTEMS

January 31, 1984
V-CE- 19694

Mr. E. E. Van Brunt, Jr.
Arizona Nuclear Power Project
P.O. Box 21666 - Station 3003
Phoenix, Arizona 85036

Subject: PVNGS Forty-Year Operating License

Reference: ANPP-22966, February 11, 1983

Dear Mr. Van Brunt:

The reference letter requested that Combustion Engineering (C-E) address the NSSS design in light of the APS intention to pursue a forty-year operating license for PVNGS.

For C-E's scope of supply, we confirm that such a forty-year license application is not a limiting consideration for the safety analyses or for the functional design objectives of the NSSS.

ASME Code Class 1 mechanical system or component design and fatigue analyses employ conservative estimates of operational characteristics for system parameter fluctuations (pressure, temperature, etc.) resulting from normal and off-normal transients. These characteristics are obtained by means of computer simulations of the Reactor Coolant System. These simulations and the number of events selected are considered to be conservative so that, in the aggregate, a forty-year useful life is expected. The design of the reactor vessel and its internals considered the effects of operation at design power and an 80% capacity factor for forty years, and demonstrated that expected cumulative fluences were not a limiting consideration. Surveillance capsules have been included to provide periodic checks of that expected fluence.

Structures, systems and components important to safety are designed to accommodate the effects and to be compatible with the pressure, temperature, humidity, chemical and radiation conditions associated with normal operation, maintenance, testing and postulated accidents in the area in which they are located.

Safety analyses performed to demonstrate the ability of emergency systems, including the emergency core cooling system, to mitigate the consequences of postulated accidents do not present a limitation to the request for a full forty-year operating license. These analyses conservatively estimate equipment

performance to be in a limiting direction, assume single failures of vital safety systems, and employ initial conditions which cover the expected range of plant operating parameters. Obviously, independent of the operating life of the plant, the conclusions of the safety analyses must be evaluated by APS from cycle to cycle, depending upon reload fuel design and management.

In addition to being designed and constructed to maintain integrity throughout plant life, the RCS is configured in a manner which allows for accessibility and in-service inspection of systems and components. Surveillance requirements to verify the availability of essential equipment for plant operation are contained in the technical specifications. APS has been apprised of the qualification programs for all equipment, which will permit the establishment of surveillance and maintenance requirements to maintain the qualification objectives throughout the plant lifetime.

In summary, C-E's review of the design bases contained in the FSAR leads to the conclusion that, for the design of PVNGS, the safety analyses performed to demonstrate the safe operation of these units, and the assumed conditions of operation, support the issuance of a full forty-year operating license.

Very truly yours,

C. Ferguson
Project Manager

CF:las