NOV 29 1985

Docket Nos.: 50-529/530

Mr. E. E. Van Brunt, Jr.
Executive Vice President
Arizona Nuclear Power Project
Post Office Box 52034
Phoenix, Arizona 85072-2034

Dear Mr. Van Brunt:

Subject: REQUEST FOR A SCHEDULAR EXEMPTION FROM A PORTION OF GENERAL DESIGN CRITERION 4 OF APPENDIX A TO 10 CFR 50 REGARDING THE NEED TO ANALYZE LARGE PRIMARY LOOP PIPE RUPTURES AS A STRUCTURAL DESIGN BASIS FOR PALO VERDE NUCLEAR GENERATING STATION UNITS 2 AND 3

In letters dated June 7, 1984 and July 16, 1985, the Arizona Public Service Company on behalf of itself and the other applicants for Palo Verde Nuclear Generating Station (PVNGS), requested for Units 2 and 3 a schedular partial exemption from certain requirements of General Design Criterion (GDC) 4 of Appendix A to 10 CFR 50. In support of this request, you referenced two documents: a report submitted by Combustion Engineering (CE) by letter dated June 14, 1983 and an amendment to the CE report submitted by letter dated December 23, 1983. These two documents together with the value-impact statement submitted by letter dated October 3, 1984 provided a comprehensive justification for the exemption request.

On the basis of the staff's evaluation of these submittals, the Commission has granted your exemption request for Palo Verde Units 2 and 3. The exemption is enclosed and will become effective upon date of issuance and will expire upon completion of the GDC 4 rulemaking changes but no later than the second refueling outage for Unit 2. The staff has received your request for construction permit (CP) amendments for Palo Verde Units 2 and 3 dated December 10, 1984 and revised in your July 16, 1985 letter.

The enclosed exemption is being forwarded to the Office of Federal Register for publication. Also enclosed is the Federal Register Notice of Environmental Assessment and Finding of No Significant Impact published on November 29, 1985.

Sincerely,

George W. Knighton, Chief
Licensing Branch #3
Division of Licensing

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Enclosures: As stated

cc: See next page

*Previous concurred on by:

LB#3/DL	LB#3/DL*	LB#3/DL*	LB#4/DL*	LB#3/DL	AD/L	AD/CSE:DE
MMeyer dh	EALicitra	JLee	KJabbour	GWKnighton	TMNovak	RBosnak
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AD/MCEB:DE	AD/RR:DSI	AD/RS:DSI	D:DSI	D:DE	OELD	D:DL
WJohnston	DMuller	RHouston	RBernero	JPKnight		HLThompson, Jr.
10/16/85	10/11/85	10/15/85	10/15/85	10/16/85	10/ /85	10/19/85

Mr. E. E. Van Brunt, Jr.
Arizona Nuclear Power Project

Palo Verde

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November [illegible], 1985

REQUEST FOR A SCHEDULAR EXEMPTION FROM A PORTION OF GENERAL DESIGN CRITERION 4 OF APPENDIX A TO CFR 50 REGARDING THE NEED TO ANALYZE LARGE PRIMARY LOOP PIPE RUPTURES AS A STRUCTURAL DESIGN BASIS FOR PALO VERDE NUCLEAR GENERATING STATION UNITS 2 AND 3

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UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
ARIZONA PUBLIC SERVICE COMPANY, ET AL.	)	Docket Nos. STN 50-529 and STN 50-530
	)	
(Palo Verde Nuclear Generating Station, Units 2 and 3)	)	

EXEMPTION

I.

On July 11, 1974, the Arizona Public Service Company, the Salt River Project Agricultural Improvement and Power District, the El Paso Electric Company, the Public Service Company of New Mexico, and the Arizona Electric Power Cooperative, Incorporated (the applicants) tendered an application for licenses to construct the Palo Verde Nuclear Generating Station, Units 1, 2 and 3 (Palo Verde or the facility) with the Atomic Energy Commission (currently the Nuclear Regulatory Commission or the Commission). Following a public hearing before the Atomic Safety and Licensing Board, the Commission issued Construction Permit Nos. CPPR-141, CPPR-142 and CPPR-143 on May 25, 1976, permitting the construction of Units 1, 2 and 3, respectively. Each unit of the facility is a pressurized water reactor, containing a Combustion Engineering Company (CE) nuclear steam supply system which is a standard plant design referred to as CESSAR System 80 (CESSAR). The facility is located at the applicants' site in Maricopa County, Arizona.

On April 1978, the construction permits for Palo Verde, Units 1, 2 and 3 were amended to delete the Arizona Electric Power Cooperative, Incorporated, as a

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co-owner to the facility. On October 1, 1979, the applicants tendered an application for Operating Licenses for each unit of the facility. On April 28, 1982, the construction permits for the three units were further amended to included the Southern California Public Power Authority and the Los Angeles Department of Water and Power as co-owners to the facility (the Los Angeles Department of Water and Power will actually become a co-owner at the time that Palo Verde Unit 1 achieves commercial operation). On December 31, 1984 and June 1, 1985, Palo Verde Unit 1 was issued a low power license and a full power license, respectively. Palo Verde Units 2 and 3 are currently in the licensing review process.

II.

The Construction Permits issued for constructing the facility provide, in pertinent part, that the facility units are subject to all rules, regulations and Orders of the Commission. This includes General Design Criterion (GDC) 4 of Appendix A to 10 CFR 50. GDC 4 requires that structures, systems and components important to safety shall be designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with the normal operation, maintenance, testing and postulated accidents, including loss-of-coolant accidents. These structures, systems and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, discharging fluids that may result from equipment failures, and from events and conditions outside the nuclear power unit. The protective measures include physical isolation from postulated pipe rupture

locations, if feasible, or the installation of pipe whip restraints, jet impingement shields or compartments.

By letter dated June 7, 1984 (Reference 1) the applicants requested a lifetime partial exemption from GDC 4 by seeking authorization to not include pipe whip restraints and jet impingement shields on the Reactor Coolant System (RCS) main loop piping. This request was amended by the applicants in a letter dated July 16, 1985 (Reference 2) to a schedular partial exemption from GDC 4 for a period ending with the completion of the second refueling outage of each unit. By letter dated December 10, 1984, the applicants submitted an application for amendments of Construction Permits CPPR-142 and CPPR-143 for Palo Verde Units 2 and 3 (Reference 3). In support of the application, the applicants reference two documents: a report submitted by CE by letter dated June 14, 1983 (Reference 4) and an amendment to the CE report submitted by letter dated December 23, 1983 (Reference 5). The technical information contained in these two documents together with the value-impact analysis submitted by letter dated October 3, 1984 (Reference 6) provided a comprehensive justification for requesting a partial exemption from the requirements of GDC 4.

The CE submittals (References 4 and 5) contain the technical bases to demonstrate that, for CESSAR plants, guillotine type failures of the RCS main loop piping need not be considered in the design basis and hence, pipe whip restraints and jet impingement shields for the RCS piping are not required. The submittals

were made to support requests, by applicants with a CESSAR plant, for an exemption to GDC 4 as it relates to all postulated large pipe breaks specified in Section 3.6 of CESSAR-F, pipe whip restraints and jet impingement shields on the RCS primary piping and associated dynamic effects. No other changes in design requirements are addressed within the scope of the referenced reports; e.g., no changes to the definition of a LOCA nor its relationship to the regulations addressing design requirements of ECCS (10 CFR 50.46), containment (GDC 16, 50), other engineered safety features and the conditions for environmental qualification of equipment (10 CFR 50.49). The applicants' exemption request (References 1 and 2) also states that no other changes in design requirements are being requested.

III.

The technical bases provided by CE for the exemption request (References 4 and 5) relied on advanced fracture mechanics technology. These advanced fracture mechanics techniques, which make possible the acceptance of the technical bases, deal with relative small flaws in piping components (either postulated or real) and examine their behavior under various pipe loads. The objective is to demonstrate by deterministic analyses that the detection of small flaws by either inservice inspection or leakage monitoring systems is assured long before the flaws can grow to critical or unstable sizes which could lead to large break areas such as the double-ended guillotine break (DEGB) or its equivalent. The concept underlying such analyses is referred to as "leak-before-break" (LBB). There is no implication that piping failures cannot occur, but rather that improved knowledge of the failure

modes of piping systems and the application of appropriate remedial measures, if indicated, can reduce the probability of catastrophic failure to insignificant values.

Advanced fracture mechanics technology was also applied to Westinghouse topical reports (References 7, 8,and 9) submitted to the staff on behalf of the licensees belonging to the Owners Group for Unresolved Safety Issue (USI) A-2, "Asymmetric Blowdown Loads on PWR Primary Systems". Although the topical reports were intended to resolve the issue of asymmetric blowdown loads that resulted from a limited number of discrete break locations, the technology advanced in these topical reports demonstrated that the probability of breaks occurring in the primary coolant system main loop piping is sufficiently low such that these breaks need not be considered as a design basis for requiring installation of pipe whip restraints or jet impingement shields. The staff's evaluation of these Westinghouse reports is attached as Enclosure 1 to Reference 10.

Probabilistic fracture mechanics studies conducted by the Lawrence Livermore National Laboratories (LLNL) on both Westinghouse and Combustion Engineering nuclear steam supply system main loop piping (Reference 11) confirm that both the probability of leakage (e.g., undetected flaw growth through the pipe wall by fatigue) and the probability of a DEGB are very low. The results given in Reference 9 are that the best-estimate leak probabilities for Westinghouse

nuclear steam supply system main loop piping range from 1.2×10^{-8} to 1.5×10^{-7} per plant year and the best estimate DEGB probabilities range from 1×10^{-12} to 7×10^{-12} per plant year. Similarly, the best-estimate leak probabilities for Combustion Engineering nuclear steam supply system main loop piping range from 1×10^{-8} to 3×10^{-8} per plant year, and the best-estimate DEGB probabilities range from 5×10^{-14} to 5×10^{-13} per plant year. These results do not affect core melt probabilities in any significant way.

During the past few years it has also become apparent that the requirement for installation of large, massive pipe whip restraints and jet impingement shields is not necessarily the most cost effective way to achieve the desired level of safety, as indicated in Enclosure 2 to Reference 10. Even for new plants, these devices tend to restrict access for future inservice inspection of piping; or if they are removed and reinstalled for inspection, there is a potential risk of damaging the piping and other safety-related components in this process. If installed in operating plants, high occupational radiation exposure (ORE) would be incurred while public risk reduction would be very low. Removal and reinstallation for inservice inspection also entail significant ORE over the life of a plant.

IV.

The primary coolant system of CESSAR facilities, as described in References 4 and 5, has two (2) main loops each comprising a 42-inch diameter hot leg and two (2) 30-inch diameter crossover legs and cold legs. The materials in the

primary loop piping are SA 516 Gr 70 (pipes) and SA 508 CL 1, 2 or 3 (safe ends and nozzles). The piping system is cladded on the inside surface with stainless steel. In its review of References 4 and 5, the staff evaluated the CE analyses with regard to:

- the location of maximum stresses in the piping, associated with the combined loads for normal operation and the SSE;

- potential cracking mechanisms;

- size of throughwall cracks that would leak a detectable amount under normal loads and pressure;

- stability of a "leakage-size-crack" under normal plus SSE loads and the expected margin in terms of load;

- margin based on crack size; and

- the fracture toughness properties of carbon steel piping and weld material.

The NRC staff's criteria for evaluation of the above parameters are delineated in Enclosure 1 to Reference 10, Section 4.1, "NRC Evaluation Criteria," and are as follows:

(1) The loading conditions should include the static forces and moments (pressure, deadweight and thermal expansion) due to normal operation, and the forces and moments associated with the safe shutdown earthquake (SSE). These forces and moments should be located where the highest stresses, coincident with the poorest material properties, are induced for base materials, weldments and safe-ends.

(2) For the piping run/systems under evaluation, all pertinent information which demonstrates that degradation of failure of the piping resulting from stress corrosion cracking, fatigue or water hammer is not likely, should be provided. Relevant operating history should be cited, which includes systems operational procedures; system or component modification; water chemistry parameters, limits and controls; resistance of material to various forms of stress corrosion, and performance under cyclic loadings.

(3) A throughwall crack should be postulated at the highest stressed locations determined from (1) above. The size of the crack should be large enough so that the leakage is assured of detection with adequate margin using the minimum installed leak detection capability when the pipe is subjected to normal operational loads.

(4) It should be demonstrated that the postulated leakage-size crack is stable under normal plus SSE loads for long periods of time; that is, crack

growth, if any, is minimal during an earthquake. The margin, in terms of applied loads, should be determined by a crack stability analysis; i.e., that the leakage-size crack will not experience unstable crack growth even if larger loads (larger than design loads) are applied. This analysis should demonstrate that crack growth is stable and that the final crack size is limited, such that a double-ended pipe break will not occur.

(5) The crack size margin should be determined by comparing the leakage-size crack to critical-size cracks. Under normal plus SSE loads, it should be demonstrated that there is adequate margin between the leakage-size crack and the critical-size crack to account for the uncertainties inherent in the analyses and in leakage detection capability. A limit-load analysis may suffice for this purpose; however, an elastic-plastic fracture mechanics (tearing instability) analysis is preferable.

(6) The materials data provided should include types of materials and materials specifications used for base metal, weldments and safe-ends, the materials properties including the J-R curve used in the analyses, and long-term effects such as thermal aging and other limitations to valid data (e.g., J maximum, maximum crack growth).

V.

The staff's evaluation of the analysis contained in the CE submittals (References

4 and 5), is presented in Reference 12. Based on that evaluation, the staff finds that CE has presented an acceptable technical justification, addressing the above criteria, for not installing protective devices to deal with the dynamic effects of large pipe ruptures in the main loop primary coolant system piping of CESSAR facilities. As stated in Reference 12, this finding is based on the following observations:

(1) The loads associated with the highest stressed locations in the main loop primary system piping were provided and are within Code allowables.

(2) For CE plants, there is no history of cracking failure in reactor primary coolant system loop piping. CE reactor coolant system primary loops have an operating history which demonstrates their inherent stability. This includes a low susceptibility to cracking failure from the effects of corrosion (e.g., intergranular stress corrosion cracking), water hammer, or fatigue (low and high cycle). This operating history includes several plants with many years of operation.

(3) The results of the leak rate calculations performed for CESSAR used initial postulated throughwall flaws that are equivalent in size to that in Enclosure 1 to Reference 10. CESSAR facilities are expected to have an RCS pressure boundary leak detection system which is consistent with the guidelines of Regulatory Guide 1.45 so that they can detect leakage of one (1)

gpm in one hour. This will be verified during the case-by-case review of each applicant's submittal. The calculated leak rate through the postulated flaw is large relative to the staff's required sensitivity of plant leak detection systems. The margin is at least a factor of ten (10) on leakage.

(4) The expected margin in terms of load for the leakage-size crack under normal plus SSE loads is greater than a factor of three (3) when compared to the limit load. In addition, the staff found a significant margin in terms of loads larger than normal plus SSE loads.

(5) The margin between the leakage-size crack and the critical-size crack was calculated. Again, the results demonstrated that a crack size margin of at least a factor of three (3) exists.

In view of the analytical results presented in References 4 and 5 and the staff's evaluation findings related above, the staff concluded that the probability or likelihood of large pipe breaks occurring in the primary coolant system loop of a CESSAR facility is sufficiently low such that protective devices associated with postulated pipe breaks in the CESSAR primary coolant system need not be installed.

The staff evaluation (Reference 12) stated that applicants or licensees with CESSAR facilities who intend to use the "leak-before-break" approach to eliminate the need to install protective devices associated with postulated

pipe breaks in their primary coolant systems must confirm that their as-built facility design substantially agrees with the design described in References 4 and 5; specifically, the piping loads should be no greater than those cited in the references. Also, applicants or licensees must confirm that their leak detection systems meet the staff's requirements in (3) above.

In their application for a Construction Permit amendment (Reference 3), the applicants reference a letter, dated October 3, 1984, submitted by the Arizona Public Service Company on the Palo Verde docket (Reference 6). Reference 6 states that the leak-before-break analysis performed by CE (References 4 and 5) was performed on the Palo Verde design (as the prototypical CESSAR plant) using pertinent Palo Verde parameters. Hence, the CE analysis envelopes the Palo Verde design with respect to such parameter as loads, material properties, postulated crack leakage and size, seismicity, and leak detection system capabilities. In addition, the leak detection system for Palo Verde is consistent with the guidelines of Regulatory Guide 1.45 so that it can detect leakage of one (1) gpm in one hour. Therefore, the Palo Verde design substantially agrees with the design described in References 4 and 5.

Based on the above evaluation, the staff concludes that the probability or likelihood of large pipe breaks occurring in the RCS main loop piping for Palo Verde, Units 2 and 3 is sufficiently low such that large pipe breaks and their associated dynamic loads, as indicated in the applicants' December 10, 1984, letter, need not be considered as a design basis for requiring pipe

whip restraints and jet impingement shields. Eliminating the need to consider these dynamic loads for this particular application does not in any way affect the design bases for the containment, the emergency core cooling system, or the environmental qualification for Palo Verde.

The staff also reviewed the value-impact analysis, provided by the applicants in their October 3, 1984, submittal (Reference 6) for not providing protective structures against postulated reactor coolant system loop pipe breaks, to assure as low as reasonably achievable (ALARA) exposure to plant personnel. The Palo Verde value-impact analysis shows that the elimination of protective devices for RCS pipe breaks will save an occupational dose for plant personnel of approximately 560 person-rem for each unit over the operating lifetime of the facility. The staff review of the analysis shows it to be a reasonable estimate of dose savings. Therefore, with respect to occupational exposure, the staff finds that there is a radiological benefit to be gained by eliminating the need for the protective structures.

VI.

In view of the staff's evaluation findings, conclusions, and recommendations above, the Commission has determined that, pursuant to 10 CFR 50.12(a), this exemption is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest. The Commission hereby approves the schedular partial exemption from GDC 4 of Appendix A to 10 CFR Part 50, to permit the applicants not to install pipe

whip restraints and jet impingement shields and not to consider dynamic effects as detailed in Part II of this exemption, associated with postulated pipe breaks in the RCS main loop piping of Palo Verde, Units 2 and 3, as specified in the applicants' letters, dated June 7, 1984, December 10, 1984 and July 16, 1985.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of the exemption will have no significant impact on the environment (50 FR48509).

The exemption is effective upon the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 29 day of November , 1985

References

(1) Letter E. E. Van Brunt, Jr., of Arizona Public Service Company to the Nuclear Regulatory Commission, Docket Nos. STN 50-528/529/530, June 7, 1984.

(2) Letter E. E. Van Brunt, Jr., of Arizona Public Service Company to the Director of Nuclear Reactor Regulation, Docket Nos. STN 50-529/530, July 16, 1985.

(3) Letter E. E. Van Brunt, Jr., of Arizona Public Service Company to the Nuclear Regulatory Commission, Docket Nos. STN 50-529/530, December 10, 1984, with enclosure, "Application for Amendments of Construction Permits Nos. CPPR-142 and CPPR-143".

(4) Letter A. E. Scherer of Combustion Engineering, Inc., to Darrell G. Eisenhut, Docket No. STN 50-470, June 14, 1983, with enclosure, "Basis for Design of Plant Without Pipe Whip Restraints for RCS Main Loop Piping".

(5) Letter A. E. Scherer of Combustion Engineering, Inc., to Darrell G. Eisenhut, Docket No. STN 50-470F, December 23, 1983, with enclosure, "Leak Before Break Evaluation of the Main Loop Piping of a CE Reactor Coolant System," Revision 1, November 1983.

(6) Letter E. E. Van Brunt, Jr., of Arizona Public Service Company, ANPP-30736 to the Nuclear Regulatory Commission, Docket Nos. STN 50-528/529/530, October 3, 1984.

(7) Mechanistic Fracture Evaluation of Reactor Coolant Pipe Containing a Postulated Circumferential Throughwall Crack, WCAP-9558, Rev. 2, May 1981, Westinghouse Class 2 proprietary.

(8) Tensile and Toughness Properties of Primary Piping Weld Metal for Use in Mechanistic Fracture Evaluation, WCAP-9787, Mary 1981, Westinghouse Class 2 proprietary.

(9) Westinghouse Response to Questions and Comments Raised by Members of ACRS Subcommittee on Metal Components During the Westinghouse Presentation of September 25, 1981, Letter Report NS-EPR-2519, E. P. Rahe to Darrell G. Eisenhut, November 10, 1981, Westinghouse Class 2 proprietary.

(10) NRC Generic Letter 84-04, "Safety Evaluation of Westinghouse Topical Reports Dealing with Elimination of Postulated Breaks in PWR Primary Main Loops," February 1, 1984.

(11) Lawrence Livermore National Laboratory Report, UCRL-86249, "Failure Probability of PWR Reactor Coolant Loop Piping," by T. Lo, H. H. Woo, G. S. Holman and C. K. Chou, February 1984 (Preprint of a paper intended for publication).

(12) NRC Letter Cecil O. Thomas to A. E. Scherer of Combustion Engineering, Inc., Docket No. STN 50-470, October 11, 1984, with enclosure, "Safety Evaluation Report on the Elimination of Large Primary Loop Ruptures as a Design Basis".

References (Cont.)

NOTE: Non-proprietary versions of References 7 and 8 are available in the NRC Public Document Room as follows:

(7) WCAP 9570
(8) WCAP 9788

All other references are available in the NRC Public Document Room.

UNITED STATES NUCLEAR REGULATORY COMMISSION

ARIZONA PUBLIC SERVICE COMPANY, ET AL

PALO VERDE NUCLEAR GENERATING STATION, UNITS 2 & 3

DOCKET NOS. STN 50-529 AND STN 50-530

ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an Exemption from a portion of the requirements of General Design Criterion (GDC) 4 (10 CFR 50, Appendix A) to the Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power*, and Southern California Public Power Authority (the applicants) for the Palo Verde Nuclear Generating Station, Units 2 and 3, located at the applicants' site in Maricopa County, Arizona.

ENVIRONMENTAL ASSESSMENT:

Identification of Proposed Action: The Exemption would permit eliminating the need to install the pipe whip restraints and jet impingement shields and to not consider the dynamic effects associated with postulated pipe breaks in the Palo Verde Units 2 and 3 primary coolant system, on the basis of advanced calculational methods for assuring that piping stresses would not result in rapid piping failure; i.e., pipe breaks.

Need for Proposed Action: The proposed Exemption is required because GDC 4 requires that structures, systems and components important to safety shall be appropriately protected against dynamic effects including the effects of dis-

*The Los Angeles Department of Water and Power will not actually become a co-owner until after Palo Verde Unit 1 achieves commercial operation.

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charging fluids that may result from equipment failures, up to and including a double-ended rupture of the largest pipe in the reactor coolant system (Definition of LOCA). In recent submittals, the applicants have provided information to show by advanced fracture mechanics techniques that the detection of small flaws by either inservice inspection or leakage monitoring systems is assured long before flaws in the piping materials can grow to critical or unstable sizes which could lead to large break areas, such as the double-ended guillotine break or its equivalent. The NRC staff has reviewed and accepted the applicants' conclusion. Therefore, the NRC staff agrees that the double-ended guillotine break in the primary pressure coolant loop piping, and its associated dynamic effects, need not be required as a design basis accident for pipe whip restraints and jet impingement shields, i.e., the restraints and shields are not needed. Accordingly, the NRC staff agrees that an exemption from GDC 4 is appropriate.

Environmental Impact of the Proposed Action: The proposed Exemption would not affect the environmental impact of the facility. No credit is given for the barriers to be eliminated in calculating accident doses to the environment. While the jet impingement barriers would minimize the damage from jet forces from a broken pipe, the calculated limitation on stresses required to support this proposed Exemption assures that the probability of pipe breaks which could give rise to such forces are extremely small; thus, the pipe whip restraints and jet impingement shields would have no significant effect on the overall plant accident risk.

The proposed Exemption does not otherwise affect radiological plant effluents. Likewise, the relief requested does not affect non-radiological plant effluents, and has no other environmental impact. The elimination of the pipe whip

restraints and jet impingement shields would tend to lessen the occupational doses to workers inside containment. Therefore, the Commission concludes that there are no significant radiological or non-radiological impacts associated with this proposed Exemption.

The proposed Exemption involves design features located entirely within the restricted area as defined in 10 CFR 20. It does not affect plant non-radioactive effluents and has no other environmental impact. Therefore, the Commission concludes that there are no non-radiological impacts associated with this proposed Exemption.

Since we have concluded that there are no measurable negative environmental impacts associated with this proposed Exemption, any alternatives would not provide any significant additional protection of the environment. The alternative to granting the Exemption would be to require literal compliance with GDC 4.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in the Final Environmental Statement (Operating License Stage) for Palo Verde, Units 2 and 3.

Agencies and Persons Contacted: The NRC staff reviewed the applicants' request and applicable documents referenced therein that support this proposed Exemption for Palo Verde, Units 2 and 3. The NRC did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for this action. Based upon the environmental assessment, we conclude that this action will not have a significant effect on the quality of the human environment.

For details with respect to this action, see the requests dated June 7, 1984, December 10, 1984 and July 16, 1985, and the information provided by the applicants in a letter dated October 3, 1984, and other information provided by Combustion Engineering, Inc., in letters dated June 14, 1983 and December 23, 1983, which are referenced by the applicants. These documents, utilized in the NRC staff's technical evaluation of the exemption request, are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Phoenix Public Library, Business, Science and Technology Department, 12 East McDowell Road, Phoenix, Arizona 85004. The staff's technical evaluation of the exemption request will be published with the exemption (if the exemption is granted) and will also be available for inspection at both locations listed above.

Dated at Bethesda, Maryland, this 19th day of November 1985.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

*Previous concurred on by:

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