

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE COMMISSION

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)	
)	
WASHINGTON PUBLIC POWER SUPPLY SYSTEM)	Docket No. 50-397
et. al.)	Permit No. CPPR-93
)	
(WPPSS Nuclear Project No. 2))	

SHOW CAUSE PETITION FROM THE COALITION FOR SAFE POWER
REQUESTING REVOCATION OF THE CONSTRUCTION PERMIT AND DENIAL
OF AN OPERATING LICENSE FOR WASHINGTON PUBLIC POWER SUPPLY
SYSTEM NUCLEAR PROJECT NO.2

I. INTRODUCTION

1. Comes now the Coalition for Safe Power (hereinafter "Petitioner" or "Coalition") to petition the Commissioners of the U.S. Nuclear Regulatory Commission (NRC), pursuant to Title 10 of the Code of Federal Regulations Section 2.206, to serve upon the Washington Public Power Supply System (WPPSS) (hereinafter "Licensee") an order to show cause, pursuant to 10 CFR 2.202(a) why the construction permit for WPPSS Nuclear Project No. 2 (hereinafter "WNP-2") should not be revoked, a stay of construction imposed, the pending application for an operating license denied, and a proceeding initiated under 42 U.S.C. 2239(a).

II. DESCRIPTION OF PETITIONER

2. The Coalition is a non-profit tax-exempt organization founded in 1969 to address nuclear issues in the Pacific Northwest through research, education and litigation. The Coalition, through its officers and attorneys, has represented its members before the Commission, as well as state agencies, on questions of nuclear power plant safety and licensing, and electric utility rates. The Coalition was an intervenor before the NRC in the construction permit applications for the Pebble Springs, Skagit and Skagit/Hanford nuclear projects. The organization intervened in two license amendment proceedings (Control Building Modification and Spent Fuel Pool Expansion) for the Trojan Nuclear Power Plant, is currently an intervenor in the Construction Permit Extension and Operating License proceedings for WPPSS Nuclear Project No. 1 (the latter is indefinitely suspended), and an intervenor in the Operating License application for WPPSS Nuclear Project No. 3.

III. AUTHORITY

3. Title 10 of the Code of Federal Regulations, 2.205(a), establishes the right of the public to petition the Commission to institute a proceeding pursuant to 2.202(a) to modify, suspend or revoke a license or for other relief. Such a petition must set forth the factual basis and the relief requested. The Commission may, pursuant to 10 CFR 2.202(a), institute such a proceeding by serving upon the licensee an order to show cause.

IV. DISCRETIONARY HEARING

4. The Atomic Energy Act of 1954, gives discretion to revoke, suspend, or modify the construction permit of an NRC licensee:

A license or construction permit may be revoked, suspended or modified in whole or in part, for any material false statement in the application for license or in the supplemental or other statement of fact required by the applicant; or because of conditions revealed by the application for license or statement of fact or any report, record, inspection, or other means which would warrant the Commission to refuse to grant a license on an original application; or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application; or for the violation of or failure to observe any of the terms and provisions of this chapter or of any regulation of the Commission.

42 U.S.C. 2236. Notwithstanding the discretionary aspect of this statute, the NRC has a mandatory duty to exercise its

authority when necessary and is required to determine that there will be adequate protection of the public health and safety. See Natural Resource Defense Council vs. U.S. Nuclear Regulatory Commission, 528 F.2d 166 (2d Cir. 1978).

5. There is no obligation under 10 CFR 2.206 for the Director or the Commission to grant the relief requested by the petitioner, nor to hold a formal hearing on the request. Although such action is entirely discretionary, the Supreme Court has determined that the Atomic Energy Act mandates that "the public safety is the first, last and permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility." Power Reactor Co. v. Electricians, 367 U.S. 396, 402 (1961), quoting In re Power Reactor Development Co., 1 AEC 128, 136 (1959). How the NRC fulfills this mandate, particularly in weighing the benefits of a discretionary hearing is discussed in the cases below.

6. First, a hearing should not be ordered by the agency when to do so will result in the reconsideration of issues:

Parties must be prevented from using 10 CFR 2.206 procedures as a vehicle for reconsideration of issues previously decided, or for avoiding an existing forum in which they more logically should be presented.

Consolidated Edison Company of New York; et. al., (Indian Point Units 1, 2 and 3), CLI-75-8, 2 NRC 173, 177 (1975). In the instant case there are no existing forums. The issues

of the technical and management capability of the Licensee to execute construction within the terms of the construction permit, and particularly to meet the requirements of Appendix B to 10 CFR Part 50 with an effective quality assurance/quality control (QA/QC) program, have not been and will not be, subject to public hearing. (The applications for both the construction permit and the operating license were uncontested.) Furthermore, the Coalition does not seek to have issues reviewed by the Licensing Board in granting the Construction Permit reexamined (i.e. if WPPSS can meet NRC requirements) but rather, the consideration of whether the Licensee has met and will continue to meet the requirements of the WNP-2 Construction Permit, the Safety Analysis Report (SAR), and the Rules and Regulations of the NRC. And further, if there is reasonable assurance that issuance of an operating license to the Licensee will not jeopardize the public health and safety.

7. In Indian Point, supra, the Commission considered what existing forum might be best suited to address the matters at issue. It cannot be argued in this case that the logical forum is the NRC's current consideration of the operating license as this is not a contested case proceeding in which the Petitioner could raise its concerns. A request for hearing and petition to intervene filed at this stage pursuant to 10 CFR 2.714 would be untimely in the extreme

and unlikely to be successful. In 1979 when the Operating License application was noticed the Coalition did not represent affected members of the public, and thus was unable to contemplate an active role in its consideration.

8. The fact that such a hearing was not and is not likely to be held should not jeopardize this Petitioner's right to a fair consideration of the issues raised herein. The provisions of Indian Point merely address the question of existing forums; it does not alter the fact that a utility with a construction permit bears the burden of proof:

We think it ineluctable that a utility must bear the burden of proving compliance with the Commission's safety regulations not only at the beginning and at the end of the nuclear licensing process - but, as in this case - when called upon at some interim point to "show cause" why a construction permit should not be lifted for unsafe construction practices. Where nuclear power plants are involved, public safety is indisputably better served if a utility must stop construction practices it cannot prove safe; a decision that it may continue those practices because someone else cannot prove them unsafe is manifestly not one which places public safety considerations first.

Consumer Power Company (Midland Plant, Units 1 and 2), ALAB-315, 3 NRC 101, 104 (1976). A petitioner need only provide the NRC Staff with "sufficient reason" to look into the matter of revocation of a license but is not required to assume the burden itself. Indian Point, supra. Public safety as well as the public's right to due process of law, dictate this should be so.

9. A petitioner is not without all responsibility however to prove its case:

[T]he standard to be applied in determining whether to issue a show cause order is, as we have said in Indian Point whether "substantial health or safety issues [have] been raised* * *." A mere dispute over factual issues does not suffice.

Indian Point, supra at 177. Another test against which any request for a discretionary hearing must be judged is whether such a proceeding would serve any "useful purpose". Public Service Company of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 443 (1980). The dissenting opinion in Marble Hill suggests a two-fold interpretation of "useful purpose", the first of which is the public's right to know the risk with which they live (considered to be predicted on widespread citizen interest). In the instant case, the lack of intervention in the licensing of WNP-2 notwithstanding, the matter of the WPPSS construction projects is now of great concern to the people of the Northwest. The termination of two WPPSS units, "mothballing" of an additional two, and the enormous cost overruns have given rise to tremendous interest and concern about the management of all of the projects. The WNP-2 plant is likely to be the only unit where the test of management's ability will directly impact public health and safety. The Northwest is already reeling from the financial impacts.

10. More importantly, the "useful purpose" served by a discretionary hearing is the technical resolution of problems which results in a greater degree of safety afforded to the public. As interpreted by the "Proposed General Statement of Policy and Procedure for Enforcement Action", 44 Fed. Reg. 66754, October 7, 1980 (implementing 10 CFR 2.202 and 2.204), suspending orders can be used to remove a threat to the public health and safety. Specifically, suspension orders can be issued to stop facility construction when further work would preclude or significantly hinder the identification and correction of an improperly constructed safety-related system or component; or if the implementation of a licensee's quality assurance program does not provide confidence that construction meets SAR commitments. Moreover, orders can be issued when the licensee has not responded adequately to other enforcement actions or when the licensee interferes with the conduct of an inspection or investigation, or for any reason not mentioned above for which the license revocation is legally authorized. The criteria by which this aspect of the "useful purpose" test may be judged has been set out in the case discussed below.

11. The primary test of "useful purpose" is based on what type of regulatory action best serves the public

welfare. In general, as stated in Marble_Hill, supra, the Commission has held that

public health and safety is best served by concentrating enforcement resources on actual field inspections and related scientific and engineering work as opposed to the conduct of legal proceedings.

The Appeals Board elaborated on these roles:

[W]here the matter is not one of inevitability of harm but rather of the extent to which the applicant is carrying out its obligations, the Commission's enforcement arm comes into play. It is in the first instance an enforcement and not an adjudicatory function to make certain that license conditions are being satisfied. It is left to enforcement personnel to insure that an unnecessary or avoidable impact is not incurred because of the Applicants lack of diligence.

Public_Service_Company_of_New_Hampshire, et al. (Seabrook Station, Units 1 and 2), ALAB-356, 4 NRC 525 (1976).

This notwithstanding, the Atomic Energy Act and the implementing regulations of the NRC recognize that the role of enforcement actions is limited, by providing for legal proceedings. In a case such as this, where enforcement actions have occurred but substantial questions remain, it is not clear where the threshold of "inevitability of harm" exists. The Appeals Board explained two reasons to grant such a petition:

* * *the NRC already provides a separate procedure, under 10 CFR 2.206, for any interested person to seek enforcement actions beyond those adopted. (emphasis added.)

and:

[The request must] state specifically what additional facts might be uncovered by a public hearing that has not been or will not be by pending investigations.

Marble_Hill, supra at 443.

12. The subject of this petition is, however, two-fold, addressing both the inevitability of harm and the extent to which the provisions of the Construction Permit are being carried out. As will be shown herein, what is known of the quality of WNP-2 is only what the inspections and investigations (a small sample of the as-built plant) of the NRC have revealed. The Licensee's programs, including original QA/QC, design reviews, audits, rework and re-verifications, have been shown by these NRC reviews, to not accurately represent the design and construction of the plant. Based upon the Licensee's constant failures to meet the regulations and fulfill commitments made to the NRC, it can only be concluded that neither the agency nor the owner knows what has been constructed. The inspection by the Construction Appraisal Team (CAT) in the summer of 1983² shows clearly that the level of enforcement actions utilized by the NRC to date have not resulted in a project which substantially conforms with the terms of the construction permit. The relief requested by the Petitioner, including 100 % review of the design and as-built plant and an adjudicatory determination of the quality of both the Licensee's plant and management, is the only method of determining that operation of this facility will not pose a threat to the public health and safety. This, in essence, is a determination of the "inevitability of harm", based on the extent to which the Licensee has conformed to the NRC's regulations.

13. The Commission's Appeal Board has held for some time that more than "hope" is required that quality assurance measures would produce better results (than hithertofore experienced). In Duquesne Light Company, et al., (Beaver Valley Power Station, Unit 2), ALAB-240, AEC 829, 834 (1974). The Appeals Board has most clearly stated the Commission's requirements for an affirmative finding:

This is not the first time we have indicated that quality assurance problems must be carefully scrutinized. We recently ruled that it was not sufficient for a licensing board to determine merely whether the applicant had adopted a quality program, which if implemented, would be satisfactory. Consumers Power Co. (Midland Units 1 & 2) ALAB-106, RAI-73-3, pg. 182 (March 26, 1973). We held that, in the circumstances there presented, a board must go on to assure itself that the program will be carried out stating (at 184):

No quality assurance program is self executing. * * * the program will be essentially without value unless it is timely, continuously and properly implemented. If the inquiry leads it to conclude that the record does not permit an affirmative finding on that score [whether or not the applicant will carry out a QA program] it then becomes the boards' responsibility to take whatever action required -- including possibly the outright denial of the construction permit -- to provide some measure of assurance that there will not be an improperly constructed facility which might present safety problems.

Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station) ALAB-124, 6 AEC 358, 361-2.

14. Thus while the cases cited above involve the granting of construction permits, they stand for the proposition that if QA implementation by a licensee has been poor, more than hope, in fact adjudicatory certainty, is necessary to fulfill the agency's responsibility under the law. Nothing, including the NRC's internal division of

labor, is more important than ensuring that the granting of a permit or license will, in fact, not pose a threat to the public health and safety. This petition details the continuing inability of the Licensee to meet the requirements of Appendices A and B to 10 CFR Part 50. While flaws described are illustrative not exhaustive, they show clearly a pattern of construction failures with little hope of improvement in operation.

15. The Commission must look closely at the management of construction of WNP-2 before granting the pending application for an operating license. Despite the popular industry position that defects in the construction organization will not carry over into the operations organization, the Commission has found to the contrary:

In large part, decisions about licensees are predictive in nature, and the Commission cannot ignore abdication of responsibility or abdication of knowledge by a licensee applicant when it is called upon to decide if a licensee for a nuclear facility should be granted.

Houston Lighting & Power Co. (South Texas Project Units 1 and 2), CLI-80-32, 12 NRC 281, 291 (1980). This sentiment has also been a directive of the House Committee on Government Operations:

The problems experienced by WPPSS in attempting to construct its first nuclear reactor heighten the Committee's concern over the need for NRC identification of major management problems at utilities prior to the issuance of an operating license.

House Report No. 96-1452, "Evaluating Nuclear Utilities' Performance: Nuclear Regulatory Commission Oversight" October 2, 1980 at 47.

V. 10 CFR 50 APPENDIX B CRITERIA

16. Construction of WNP-2 began in 1972. Since that time it has been subject to NRC inspections, the result of which are contained in Inspection and Enforcement inspection reports (hereinafter "IE Report", cited without docket number) and Systematic Assessment of Licensee Performance (SALP) annual Board reviews (hereinafter "SALP", cited by year of issuance). In 1983, an inspection was conducted by the Construction Appraisal Team (CAT) which performed a review of management, design, construction and QA/QC in May and June. Letter and Enclosures (3) from Richard C. Young, Director, DIE, NRC to D.W. Mazur, Managing Director, WPPSS, dated July 26, 1983 (hereinafter "CAT Report"). Despite the continuing failures of the Licensee revealed in numerous IE Reports, the NRC has repeatedly assured itself that corrective actions have been initiated which will result in the fulfillment of NRC requirements. A reading of the CAT Report does not bear this out.

17. Instead, it substantiates what had previously become altogether evident - namely that the Licensee has been, and continues to be, indifferent to and incapable of meeting the Commission's requirements, particularly Appendix B to 10 CFR 50. Moreover, it shows the effect of NRC's inconsistency in its analysis of Licensee's management performance -- stating in the 1982 SALP that management attention has been "aggressive", "evident", and "acceptable" but finding in 1983 that the "identified weaknesses require increased attention by management at all levels." SALP 1982

A. DESIGN CONTROL

18. Criterion III, "Design Control", establishes the requirement for the as-built plant to conform to the final, NRC-approved design including QA/QC measures which will assure that regulatory standards are both specified in design documents and that the adequacy of the design will be verified:

Measures shall be established to assure that the design basis, as defined in Section 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods or by the performance of a suitable testing program.

Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization.

19. One example of an ongoing failure of the licensee to conform to applicable design criteria is the Standby Service Water System (SSWS). In the process of an NRC

inspection in 1981 which reviewed the on-site design activities compliance with approved procedures and SAR requirements, it was determined that:

Forty-nine (49) questions relative to the design of the core spray systems, the residual heat removal system, the standby AC power system and the standby service water system were identified during recent special design reviews of these systems. Although the questions are reportedly being individually addressed by the responsible designers, there does not appear to be an assessment of the significance of the identified questions relative to the effectiveness of the design verification program that was reportedly in-place as the designs were being evolved. (emphasis added)

IE Report 81-17 at 11. Again in 1982, NRC found that

[because] the DIR Document Control log indicated that approximately 25 percent of the isometric drawings with DIRs on System 58 (Standby Service Water) for largebore pipe were not up-dated as required, the inspector did not have confidence that the working drawings were correct for the installation. (emphasis added)

IE Report 82-02 at 3. Despite the fact that the NRC Staff Safety Evaluation Report (SER) issued in May, 1983 indicates the SSWS problems have been resolved and the system meets applicable criteria, an April 1983 inspection report (dated June 2, 1983) suggests that, once again, the system may not meet design requirements. IE Report 83-17 at 2.

20. The CAT team also inspected a sample of installed electrical cable runs which had previously been accepted by QC inspectors, including high voltage, power, control and instrument cables. The cables sampled included trains to Residual Heat Removal (RHR), Control Rod, Diesel Generator

and Remote Shutdown systems, to name a few. The CAT report describes 4 routing deviations out of 18 cables inspected; 3 of 4 deviations were "a result of errors in the computer generated pull slips." CAT Report at II-7. Neither subsequent NRC enforcement reports nor Licensee responses address themselves to this serious violation of design, control requirements, although from the sample examined it can be inferred that 16% of the computer-generated pull slips at WNP-2 do not conform to the plant design. Routing through tray nodes and sleeve penetrations is necessary to achieve the design requirements for cable separation established by the WNP-2 Final Safety Analysis Report (FSAR) Section 8.3.1.4.2.1.

21. This was not the first instance NRC inspection had yielded evidence of improper design criteria for electrical circuit separation. The 1982 SALP, dated December 10, 1982, revealed "weaknesses" in the design and installation of electrical systems:

A major area of concern, discussed in the last assessment period, involved the lack of a clear definition of acceptance criteria for insuring the electrical independence of redundant safety related circuits. The licensee's criteria, which had been submitted as a response to NRR question Q31.100, was found to be not acceptable to the NRC. A revised criteria, submitted in June, 1981, was not clearly reflected in FSAR Amendments submitted in May, 1982. This new criteria is presently under NRR review. The regional inspection program remains uncertain of the status of the current installation with respect to acceptable independence criteria. During this assessment period, Burns and Roe continued to hold this problem within their organization. The

installation contractor, the construction manager, and the licensee have not taken an active part in assuring the quality of electrical installation with respect to separation criteria.

Outstanding deficiencies, identified by the licensee as early as 1978, in the separation and identification of cables within the power generation control complex remain unresolved.

1982 SALP at 6,7.

22. Cable tray separation is another area in which design control has been wholly inadequate. The CAT report places great significance on the substantial number of changes in separation criteria for WNP-2 stating that "[Bechtel document SWP/P-E-18, Electrical Separation Criteria, Rev. 2] represents a significant effort * * * to thoroughly address independence of redundant electrical systems at WNP-2." This notwithstanding, the report goes on to say that the 26 instances the team found in which cable tray separation was not maintained stems in part "from separation criteria changes". CAT Report at II-2. Lack of required design control has resulted in the failure of the design to meet cable tray separation criteria.

23. This design review deficiency the Licensee proposes to reanalyze rather than inspect. However, the deviations are more significant: the CAT team inspected an area "for which BRI design review had been completed," observing that 1) the BRI design review had failed to identify inadequate separation and 2) installation tolerances for cable trays and tray supports had not been

considered. CAT Report at II-3. The CAT report concludes that "verification to requirements [may not be able to] be accomplished without a physical inspection." CAT Report at II-3. Neither this report, nor subsequent documentation, explains what steps will be taken to ensure cable-tray separation requirements are met for the as-built plant, as well as how the design will meet the requirements considering the failure of the BRI design review to incorporate applicable criteria. Although there is no reasonable assurance that Criterion III of Appendix B has been met, the Licensee does not intend to conduct a physical walkdown of cable trays. CAT Report at II-3.

24. The second area in which the CAT team identified deficiencies in design control was civil and structural construction, concluding:

There is not reasonable assurance that the reinforced concrete members and structures were constructed in conformance with design requirements. This conclusion is supported by the findings that rebar placement deficiencies were identified in 10 to 12 examined locations, inspection records and NCR dispositions were found in a number of cases to be erroneous, and the accuracy of design drawings with regard to associated design calculations is questionable.

CAT Report at A-2. This serious challenge to the integrity of the as-built reinforced concrete structures raises again the question of "how or even whether adequate corrective work can be done." A question posed, but not answered, several years before by the U.S. House of Representatives Committee on Government Operations. House Report No. 96-1452, "Evaluating Nuclear Utilities' Performance: Nuclear Regulatory Commission Oversight" at 45.

25. The CAT team examined 12 limited areas; in 10 of these were deviations from design specifications. CAT Report at V-2. Certain of these deviations "would lead to significant impairment of structural strength." CAT Report at V-3. While the report states "the significance of inadequate rebar spacing is less well defined," it explains the significance to safety of meeting ACI 318-71 Code Sections 3.3.2 and 7.4:

The Section 3.3.2 requirements assure adequate flow of the concrete mix at placement to minimize weaknesses within the concrete matrix such as mix segregation, rock pockets and honeycomb. The Section 7.4 requirements assure adequate confinement for the rebar so that planes of weakness are not introduced into the concrete structures. Such planes of weakness result from the stresses induced in the concrete from adjacent rebar interacting to decrease the bond capability of the rebar below that assumed in the Code. Besides lessening the effective rebar strength, such planes of weakness can change failure modes associated with the structure from ductile to brittle, thereby further decreasing the strength margins associated with a design.

CAT Report at V-3.

26. Additional significant design weaknesses were raised by the CAT team which concluded that the "accuracy with which the design drawings reflect conformance with the design calculation requirements is questionable." CAT Report at V-6. The team reviewed only one calculation which revealed the in-situ rebar configuration to be 30% weaker than called for in the final calculation. Despite the identified lack of conservatism, the CAT team did not review

other calculations. The Licensee offered to map "hollow sounds" based on tapping and perform limited visual inspection of certain structures but the CAT team

indicated that such actions were insufficient to provide for resolution of the rebar placement concerns without further destructive examinations. Also, the scope of structural elements addressed by this approach was inadequate. Deficiencies in previous documentation are identified above. Neither good nor poor surface appearance provide positive indications of internal concrete quality or rebar placement adequacy. The volumetrically small honeycombing observed between closely spaced rebar in beams 2B11 and 2B25, even with "sound" appearing concrete below, are located in a "bond" failure plane and are therefore critical "flaws". Such volumetrically small yet critical voids could likely not be evident by "hollow" sounds when tapping the concrete surface. In addition, the nondestructive Windsor Probe (used for beam 2B11 only) and a radar detector (used for beams 2B3, 2B5, 2B11 and 2B25) were shown to be inadequate to determine rebar placement, especially in congested areas and given the use of convenience steel. The exposed physical configurations did not compare well with the indications of either method.

CAT Report at V-5, 6. The CAT team concluded that there is no reasonable assurance FSAR design requirements have been met. CAT Report at V-6. The CAT team also concluded that the destructive examinations which they had examined were themselves "insufficient to completely characterize the extent of the rebar placement deviations at these locations and to provide a sufficient data base to infer the extent of deviations throughout the facility." CAT Report at V-6. The NRC has not determined "whether this is an isolated or general discrepancy." IE Report, August 30, 1983, at 11.

B. RECORD CONTROL

27. Criteria II, "Quality Assurance Program", and XVII, "Quality Assurance Records", provide for the documentation of all aspects of the quality assurance program:

This program shall be documented by written policies, procedures, or instructions and shall be carried out throughout plant life in accordance with those policies, procedures or instructions. Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall also include closely-related data such as qualifications of personnel, procedures and equipment.

28. As is made clear elsewhere in this petition the Licensee has had a continuing inability to produce adequate documentation for safety-related work as required by the NRC. The mere existence of records, however, at WNP-2 has not been shown to fulfill the requirements due to the pervasive problem of nonconformity of the as-built plant with design drawings, QA/QC inspection paperwork and written procedures. The 1981 SALP Board cited numerous instances of incorrect records, missing records and conflicting data:

Another significant percentage of these noncompliances involve Criterion 17 (QA Records). Various functional areas are involved, such as test records, weld records, individual qualification records, and vendor survey records.

Working Paper, SALP Staff Summary WNP-2; February 1981, at 3. The IE staff concluded at that time that there was not sufficient information to determine that WNP-2 had been

constructed in conformance with the construction permit.

Id.

29. NRC inspections that year also concluded:

[The disposition of] voided documents sampled have no explanation for the invalidation and as such are not auditable or verifiable.

IE Report 81-02 at 10. Another inspection revealed the use of outdated documents. IE Report 81-06. Failure to comply with the requirements was again an issue in 1982, when it was revealed that Bechtel had lost an unknown number of inspection records. IE Report 82-18, Follow-up item 03. A Notice of Violation was issued following a February, 1983 inspection for failure to possess retrievable records for a contract released for final closeout. IE Report 83-05, Appendix A, March 29, 1982. And again in March, an inspection confirmed defects in record control:

The Supply System has arrived at conclusions regarding records accuracy, for closed contracts and purchased equipment contracts, without commensurate hardware reinspection or rigorous comparison with other data. * * * The Supply System has arrived at conclusions regarding the adequacy of some contractor's [sic] work, although some document reviews have not yet been completed
* * *

IE Report 83-10 at 3.

30. Two months later the CAT team found numerous instances of improper records control including the failure to accurately reflect the as-built plant, among them that anchor studs for the Reactor Pressure Valve (RPV) violated ASTM-193 in that they lacked identification on the exposed

portions:

A request for and examination of the certified Material Test Report could not be met by the licensee during the period of this inspection nor was documentation of acceptance or receiving inspection made available.

CAT Report at III-16, subsequently Unresolved item 83-38/07, IE Report 83-38 at 7.

31. The CAT team also found numerous instances of inadequate documentation. A review of QC records for weld-o-let welding on stainless steel and carbon steel piping revealed that:

- For weld reinforcement less than 100%, applicable engineering specification fail to provide criteria for the minimum required weld reinforcement.
- For weld reinforcement less than 100%, applicable quality control inspection documents fail to provide criteria for inspection and minimum acceptance requirements.

CAT Report at IV-3. The CAT Report states further that

* * *a program has been instituted to assess the adequacy of weld-o-let weld reinforcement on thin wall stainless steel piping systems. However, the program was limited in scope (to stainless steel and to one system) and, although problems were identified, the corrective action was to address insufficient weld reinforcement on a case-by-case basis as identified. However, supporting engineering documentation for case-by-case analysis may be inadequate.

CAT Report at IV-3. The CAT team also stated, in response to a licensee proposal to conduct a review of the documentation associated with rebar placement, that such an approach would not be adequate due to "[d]eficiencies in previous documentation identified above." CAT Report at

V-6. Finally, the actions of the WNP-2 Test and Start-up personnel, caused NRC to state, "the documentation inadequacy identified above indicates a need for more stringent record control in the area of tests and start-up activities." CAT Report at II-9.

C. WORKER_QUALIFICATIONS

32. Criteria II, "Quality Assurance Program", and XVII, "Quality Assurance Records", govern the qualification of craft and inspection personnel:

The program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. Sufficient records shall be maintained to furnish evidence of activities affecting quality [including] closely-related data such as qualifications of personnel.

33. The affidavit of Stuart Sandler (attached hereto as Exhibit 1), a welding engineer at WNP-2 from April 1978 to May 1979, states that workers in both the Engineering and Quality Assurance organization were unqualified. Personnel in the Burns & Roe engineering had little or no formal welding engineering training; only one member of the QA group that reviewed welding procedures had any engineering training at all. The end result of this situation, in 1979, was the failure to properly incorporate the AWS Code into welding procedures with the resultant gross defects in the Sacrificial Shield Wall in containment. The affidavit

concludes on this, by stating that, during a personal conversation with Mr. Toth of NRC Region V, Mr. Sandler was told that NRC knew personnel qualification was still a problem as late as November 1982.

34. The continuing failure of the Licensee to utilize properly trained craft, QA and inspection personnel was revealed most recently by the CAT team, which interviewed welders. Based on the inspection of piping system welds which revealed a large "number of questionable contour and surface conditions observed in the field" the CAT team concluded that retraining is warranted for both field engineers and QC inspectors. CAT Report at IV-4. The NRC also conducted a review of certification records for 11 Test and Start-Up personnel, only three of which met the explicit ANSI N45.2.6 requirement of previous inspection experience. CAT Report at VIII-6.

D. MATERIALS CONTROL

35. Criterion VIII, "Identification and Control of Materials, Parts and Components", governs the identification and control of materials, parts, and components, stating in part:

Measures shall be established for the identification and control of materials, parts and components * * * designed to prevent the use of incorrect or defective materials, parts and components.

36. The CAT team examined material traceability for

fasteners for bolted connections, concluding "significant problems were noted in the area." Improper or uncontrolled material substitution was found for fasteners used in pipe flanges, valve bonnets, mechanical connections and pipe couplings for a variety of safety-related equipment. CAT Report at VI-2. Lack of adequate manufacturing marking such that fastener quality is unknown was found in over one-third of those inspected and another third inspected were clearly inferior grade. In all cases, QC documentation indicated no substitution of materials. CAT Report at VI-2. Subsequent inspection of storage facilities revealed 4 of 5 lay down areas were inadequately controlled, and in two Bechtel warehouses, control of fastener storage was non-existent. CAT Report at VI-5.

E. MAINTENANCE & PRESERVATION

37. Criteria II, "Quality Assurance Program", and XIII, "Handling, Storage and Shipping", establish that materials and equipment important to safety will be preserved from harm in handling, storage, shipping and cleaning and kept in a suitable environment including "adequate cleanliness".

38. As early as 1978, licensee maintenance of safety-related equipment was found deficient. The NRC inspection of completed and in-process work on safety-related components revealed instances of poor equipment maintenance and cleanliness. IE Report 78-02,

unresolved item 78-02/02. Another inspection, performed that October, showed the "inspection maintenance record form, included in Work Procedure No. 23, to be inconsistent with the text of the procedure in some cases." IE Report 78-10. This item was listed as a follow-up item, and reviewed in April 1979 to find that

several of the components were somewhat dirty, that physical protection was not provided in one case, and that six valves were not properly positioned.

IE Report 79-06 at 2. The inspector went on to note that although the Licensee corrected the above-referenced situation prior to the end of the inspection,

* * * it is noted that additional efforts are required to assure that components are maintained in a clean and protected fashion as required by the maintenance program.

Id. A review of other inspection reports during the period show that "additional efforts" to resolve the continuing problem of maintenance were not taken.

39. In 1978 the NRC found that plant housekeeping required improvement to prevent possible damage to installed safety-related systems or components. See Open item 78-11/01. Two months later, in January 1979, NRC found additional instances of poor cleanliness control. Resulting in a Notice of Violation. IE Report 79-01 at 7. Again soon thereafter, another open item was found in the area of battery maintenance and a noncompliance in the maintenance of system cleanliness. IE Report 79-04, Noncompliance item

79-24/23. This pattern continued unresolved and again Licensee was cited for two noncompliances (79-16/26 and 28) and one follow-up item (79-16/27). In noting noncompliance 79-16/28 the inspector observed:

This is a repeat of a previous NRC finding of 27 February and 1 March, 1979.

IE Report 79-16 at 13.

40. The issue of housekeeping appears again in late 1980. See IE Report 80-06, open item 80-06/1 and IE Report 80-28, follow-up items 32 and 33. Maintenance records as well as physical maintenance were deficient: safety-related mechanical equipment records of contractor WBG contained errors and inconsistencies. IE Report 80-17, follow-up item 22. Problems continued to be revealed in future NRC inspection reports: one noncompliance was noted after the inspector discovered that maintenance records were not available for the first and second quarters of 1980:

The review of maintenance documentation also disclosed that the motor had not been tested for insulation resistance since August 7, 1979 * * * (Procedure No. WP-106) required these tests quarterly.

IE Report 81-03/03. In 1982, while a NRC inspector was on tour with NRC Commissioner Gilinsky he observed cable damage to the Control Rod Drive Hydraulic Control Units (HCU's). The inspector notified Licensee of his "concern for the care of components which have been installed in their final location * * *." IE Report 82-29 at 10. The report also notes that, on a routine tour of the plant the inspector

became aware of

water being discharged from a vent in the Standby Service Water System. Some of the water cascaded down into the Motor Control Center (MCC) * * *

IE Report 82-29 at 11.

41. Failure to preserve safety-related equipment and materials continues to this day. A noncompliance noted in 1983 observes:

* * * general disregard for protection of permanent installations in the vicinity of the containment isolation valves (FDR-V-3 and V-4) * *
* Also, debris was scattered on class 1E cables in a cable tray * * * NRC inspectors have in the past reminded the Supply System of the need for installation of pipe caps and cautioned regarding using cable trays as shelves for construction materials, equipment and debris * * * (emphasis added)

IE Report 83-14 at 5. The CAT team, later in 1983, concludes that "preventative maintenance records for actions completed prior to 1979 are sketchy" and that previous maintenance and surveillance actions have not yet been fully included in the Licensee's computerized system. CAT Report at VI-7.

F. QUALITY CLASS II

42. Criterion II of Appendix B, "Quality Assurance Program" establishes that

[T]he quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components to an extent with their importance to safety.

While the QA/QC program is generally applied to Quality

Class I (QC I) materials and equipment, there are numerous areas where Quality Class II (QC II) installations are important to safety, for example those components graded Seismic Category I (SC I). Such components could, for example, fail in a seismic event and degrade the operability of QC I equipment.

43. The CAT team inspected several areas of QC II-SC I equipment. Based upon review of pipe supports/restraints for conformance to design requirements, NRC concluded that the exclusions of these from the as-built plant program was improper. They noted parathetically,

For example, ceiling mounted support COND 606, in which about 35% of the anchor bolts were inadequate, was located directly over Class IE cables and provided for support of deadweight restraint COND 607 at an elbow on a riser, in addition to providing lateral support, for a significant portion of the line.

CAT Report at III-6. Moreover, the CAT team found that certain jurisdictional boundaries for component supports were not consistent with those required by ASME Section III, Subsection NF. These boundaries describe the allowable stress for a given component. The CAT team concludes:

(2) The various QC inspection and as-built programs applied to these supports/restraints have not been totally effective in identifying installed hardware that does not meet design requirements.

(3) The accuracy of previous inspection and as-built information documentation for Quality Class II, Seismic Category I supports/restraints does not appear to provide sufficient confidence in the acceptability of this hardware.

CAT Report at III-7.

44. The CAT team then proceeded to review the as-built program, inspecting 12 QC II-SC I piping supports which had been previously certified to meet current design documents. Fifty percent "[s]ignificantly deviate from the design drawings." CAT Report III-7. The team's inspection of the anchor bolts of one QC II, SC I support revealed 35% contained deficiencies. CAT Report at III-10. Lastly, they inspected the foundation anchorage bolts for the Reactor Closed Cooling (RCC) and Reactor Water Clean Up (RWCU) systems, stating that while they are QC II, they had been installed and inspected as QC I components. A review of the associated QC documentation showed proper installation, but a review of the equipment showed (1) washers not present (nor specified), (2) thread staking or jam nutting not performed (nor specified), and (3) 75% of the nuts on the sliding side of the RCC-1A heat exchange loose. Such gross installation failures could result in excessive stresses, jeopardizing operability of the equipment. CAT Report at III-12. This deviation from FSAR commitments was written up as noncompliance item 83-38-01. There is no reasonable assurance that the Licensee has or will apply installation and inspection techniques to QC II equipment, important to safety and governed by Criterion II.

G. PROCEDURES

45. Appendix B Criteria V, "Instructions, Procedures, and Drawings", VI, "Document Control" and IX, "Control of Special Processes", govern procedures which are required to ensure appropriate standards, codes and quality are used in design and construction activities:

Activities affecting quality shall be prescribed by documented instructions, procedures or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings.

Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality.

Measures shall be established to assure that special processes, including welding, heat treating and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedure in accordance with applicable codes, standards, specification, criteria, and other special requirements.

46. Throughout the history of construction at WNP-2, procedures have not been properly produced, reviewed and utilized. Procedures are written and rewritten, some at WNP-2 on a daily basis, by engineers, and are required to be reviewed by QA/QC personnel. Historically, the work affected has included piping and pipe support, welding, the sacrificial shield wall, quality assurance, maintenance and instrumentation. Failure to properly use procedures at WNP-2 continues to this day, affecting preoperational

testing, environmental sampling, reverification, and systems line-up. The Affidavit of Mr. Sandler shows that the Licensee consistently failed to apply the standards of independence review and personnel qualification to the writing of procedures necessary to ensure the use of applicable codes and standards for special processes such as welding. The affidavit demonstrates that personnel in both Engineering and Quality Assurance organizations were unqualified to perform the task of translating regulatory requirements, codes and standards into procedures. In fact, the affidavit points out, there were numerous violation of procedures used in the welding of structural steel for the sacrificial shield wall.

47. A review of NRC inspection records reveal management's inability to rectify this situation. In 1980, NRC found that the Licensee RDSW Task Force was not effectively performing review of contractor procedures for compliance with SAR requirements. The issue arises in 1981 and again in 1982. See IE Report 81-03 at 9, Noncompliance with Appendix B, Criterion V; IE Report 82-02 Unresolved Item 82-02/01. Later that year, the inspector concludes that Procedure Site Engineering Instruction (SEI) No. 3-4, is "weak". IE Report 82-17 at 4. As a result of an inspection conducted in June 1982, a Notice of Violation was issued for

"unapproved and unqualified" procedures. Another Notice of Violation was issued for noncompliance with Appendix B Criterion V as a result of IE Inspection 82-21. As noted in Appendix A Notice of Violation:

* * * approved construction specification used to install safety related Class 1E electrical cables since January 1972, have not specified acceptance criteria for separation of redundant Class 1E cables * * * (emphasis added)

IE Report 82-21 at 1. Informing the Licensee of the violation J.L. Crews, Director, Division of Resident, Reactor Projects and Engineering Programs states:

This failure indicates that these requirements may not have been properly translated into drawings, specifications, procedures, and instructions during the design process, and indicates that engineering reviews of as-built drawings may not have properly incorporated these requirements. These deficiencies indicate that deficient construction or construction of unknown quality may exist * * * (emphasis added)

Letter to R.G. Matlock, Program Director, WPPSS, October 25, 1982.

48. By January 1983, field engineers were still not familiar with the procedure requirements. IE Report 83-03 at 5. One month later procedures were found lacking once again and a Notice of Violation was issued. In the first case the inspector noted:

The procedure does not include any re-review of vendor or contractor procedures to verify incorporation of applicable requirements. This area is of specific concern to the NRC and is under review.

IE Report 83-05/02 at 5. The attached Notice of Violation states:

Contrary to the above (WPPSS Procedure PMI-12-8, Revision 0), on February 24, 1983, all of the

above required records were not retrievable for each of the Class I diesel oil storage tanks * * *

Appendix A to IE Report 83-05. A later inspection reveals that "inspection criteria of QCI-P-2.10 were abbreviated and not as thorough as the detailed criteria in the QCI-P-2.11."

IE Report Unresolved item 83-14/01. The same report notes a noncompliance:

The above circumstances indicate that work and inspection controls have not been sufficient to assure adequate repairs and conformance to associated contamination and concrete cover requirements.

IE Report 83-14/03 at 8.

49. The failure to incorporate proper procedures into the Construction Reverification Program has significantly defeated its effectiveness, undermining any assumption that it has been adequately implemented. An NRC inspection conducted in March, 1983 revealed that:

The Supply System did not assess SAR compliance and technical adequacy of procedures, during review of inactive site contracts and purchased-equipment contracts.

The Supply System personnel appear to have not performed their reviews in compliance with established procedures, for inactive contracts and purchased equipment contracts (e.g., contract 24).

The Supply System reverification of prior work did not appear to have made full use of findings resulting from the procedure reviews conducted during the work restart effort for each contractor. Although a generic problem list was developed, it did not include, or overly generalized, some issues identified by the restart reviewers, e.g.:

(1) The Civil contractor (210A) procedures reflected deficiencies in concrete placement criteria, such as cover, temperature, free fall,

layer depth, curing times and methods, and reinforcing steel placement.

(2) Intergranular corrosion test data for weld procedure 809-6 had not addressed location of weld metal, base metal and heat affected zones, and two of the locations were unsatisfactory. This was listed in the generic problem list as 'Miscellaneous problems with weld documentation and inspection.'

IE Report 83-10 at 3/4. The omission of proper procedures from the reverification program which was intended to ensure the design and as-built plant met the provisions of the construction permit, challenges the integrity of the entire program; there is no reasonable assurance that the reverification which has been completed has accomplished any useful purpose.

50. The failure to properly use procedures is now beginning to show up in the preoperational testing phase and in operating activities as evidenced by NRC Inspection Reports 83-07, 83-13 and 83-21. In the first, the inspector expressed some concerns regarding the technical content of PDT Procedure PT 7.2-B, because it did not include the requirements of Regulatory Guide 1.108, Paragraph C.2.a(6). IE Report 83-07 at 3. In the second, NUREG-0737 item I.C.6 was reviewed, revealing four administrative procedures had not

addressed the qualifications of the second person involved in dual verification, as per the guidance contained in NUREG-0737.

IE Report 83-13 at 2. Finally, in a review of preoperational Test Procedure No.3.0-A, Reactor Recirculation System, "some minor discrepancies" were discovered. IE Report 83-21 at 1.

51. Significant too is the NRC's own disinterest in ensuring Licensee conformance to Criteria V, VI, and IX through use of proper procedures. In Exhibit 1, Mr. Sandler explains how his concerns about the lack of adequate and independent QA at WNP-2 were treated by NRC. He states that Mr. Toth of Region V was unconcerned about the fact that QA exercised no independent review of Engineering despite the fact that it was the Engineering group which was responsible for the original design errors and code nonconformances that had occurred at WNP-2 up to 1979. Mr. Toth, he states, also confirmed the fact that the qualification of so-called engineers at the site was still questionable as of November, 1982. Despite repeated findings by NRC inspectors that the production and use of procedures was lacking, and complains from at least one engineer, NRC refused to force Licensee into compliance.

52. Thus, the findings of the 1983 SALP should come as no surprise:

A significant percentage of these noncompliances are against Criterion 5 (Instructions, Procedures, and Drawings). There are numerous instances of procedures not followed, work accomplished without procedures at the job site, procedures not qualified or approved prior to use, or procedure inadequacies. They involve various activities and disciplines such as welding, nondestructive examination, cleanliness of safety related equipment, steelwork erection and electrical installations.

SALP Working Paper, February, 1983 at 2. The CAT team found deficiencies in procedures as well, particularly in regard to welding.

53. Following the examination of QA-accepted welding, in-process welding and certain procedures, they reported that welding procedures (Bechtel Quality Control Procedure 14631/W-1.00 and Burns and Roe Specification 2808-215 Section 17A) "fail to provide well defined acceptance criteria in the area of weld contour or surface appearance." CAT Report at IV-2. The inspection also reveals that "numerous welds * * * exhibited acceptable contour and surface appearance." CAT Report at IV-3. The team interviewed 3 welders regarding procedures and found all 3 ignorant of procedures. CAT Report at IV-5. They inspected a small sample of welds which had been made by previous site contractors, and reviewed previously by Bechtel as part of the site quality verification program and found numerous unacceptable welds (on the order of 14%). CAT Report at IV-6, 7. These welds included pipes in the Residual Heat Removal (RHR), Low Pressure Core Spray (LCPS), Feed Water (FW), Reactor Feed Water (RFW) and Reactor Recirculation (RRC) systems. Uniformity in radiographic inspection techniques was found to be lacking and was traced to deficiencies in BESTCO procedure RT-194A, Rev. 4 which "lacks specificity or detail regarding orientation [clockwise vs. counterclockwise shots] and film technique." CAT Report at IV-9.

54. Radiographic inspection and nondestructive inspection (NDE) rely upon acceptable surface appearance of welds. This is not merely an aesthetic requirement: poor

quality welds and weld repairs may have unacceptable linear indications. The documentation and physical quality of welds are particularly important at WNP-2 because it is a Boiling Water Reactor (BWR) and thus highly susceptible to intergranular stress corrosion cracking (IGSCC). Linear indications not discovered by Licensee contractors, or by Bechtel in subsequent reverification work, but discovered by the CAT team, are in systems important to safety. Failure of these systems would result in a LOCA.

H. CORRECTIVE ACTIONS & AS-BUILT PLANT

55. Criteria XV, "Nonconforming Materials, Parts, or Components" and XVI, "Corrective Action", govern what is required of the QA/QC program's corrective actions:

Measures shall be established to control materials, parts or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures.

Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment and nonconformances are promptly identified and corrected.

56. A review of nonconformances and corrective actions at WNP-2 strongly indicates that alterations and corrections have only addressed individual problems (often even failing

to resolve these) and never the underlying programmatic causal factors. The Licensee seems to have altogether ignored, among other things, the timeliness aspect of Criterion XVI. In 1980, an investigation into an allegation revealed that the main steam stop valves were installed in the wrong location. (The Loop-B main steam isolation valve was installed in Loop-A.) IE Report 80-19. In 1983, errors were again found in the Main Steam Isolation Valves with a significant problem being a plug failure in the main steam line. IE Report 83-17. The Licensee was cited for a violation of this aspect of Criterion XVI (as well as for Criterion IX) on August 2, 1982, for contrary to the WPPSS Quality Assurance Program (Section 17 of the PSAR), bends were made in stainless steel pipe using an unapproved and unqualified pipe bender with an unapproved and unqualified pipe bending procedure:

Contrary to the above safety-related stainless steel piping was being installed in the hydraulic system for the reactor recirculation system on June 7-10, 1982. The piping had been formed by use of an unapproved and unqualified procedure and pipe bender. A nonconformance Report was not prepared until June 11, 1982, even though the conditions had been identified and reported to the Construction Manager (Bechtel) by the Authorized Nuclear Inspector on June 3, 1982. In addition, a Bechtel Quality Assurance Engineer identified the condition on June 6, 1982.

57. The Licensee often takes literally years to "resolve" issues. One example is the licensee's failure by 1983 to follow through on commitments (11 items) made to the NRC in response to a June 17, 1980 NRC inquiry under CFR 50.54(f). IE Report 83-10. Another the is the resolution of cable separation issue (see Section VA of this petition).

In IE Report 82-21, the licensee was cited for its failure to meet the electrical independence criteria. According to the Notice of Violation, of October 25, 1982:

The NRC is also concerned that the deviations noted in Appendix B indicate a failure to conform to commitments made to the NRC in your June 18, 1981 letter (G02-81-146) concerning electrical cable separation criteria.

IE Report 82-21, Appendix A at 2. The 1982 SALP Board also noted this as a "major area of concern discussed in the last assessment period." SALP at 6.

58. As early as January 1980 problems were recognized in the area of as-built drawing resolution. The NRC reviewed procedures in connection with IE Bulletin 79-14 (piping hanger seismic capability) and found that not all specification requirements were reflected in the procedures reviewed. IE Report 80-01 at 4. Also noted in that inspection were numerous problems in the approximately 60 hangers audited. Incorrect clearances for pipe supports were again revealed that year due to:

* * * [an] inadequate as-built program and insufficient qualification and training of inspectors.

IE Report 81-08 at 6.

59. The as-built program for drawings was reviewed in 1982 with NRC noting:

Generally, the as-built procedures require as-building to be done by field engineers without quality assurance/quality control audits for accuracy.

IE Report 82-11 at 6. This was determined notwithstanding the fact that the Licensee had committed to the NRC that field engineers as-built drawings would be given an

additional check by the contractors' QA/QC inspectors and the process would be monitored by the owners' quality assurance group. See Letter GO-79-156 of September 7, 1979. This inspection also found discrepancies in drawings for the piping system of the Main Steam Loop A, Condensate Supply to Reactor Core Isolation Cooling (RCIC) Pump, Standby Treatment Filter Unit to Contract 206, and Diesel Oil Fuel Line.

60. Problems with the as-built program have continued: the as-built configuration of pipe supports were found to contain undersize welds. IE Report 82-24. A 1983 review of the Bechtel As-Built Drawing Program, concluded:

The quality assurance audit results showed that the earlier "status as-built efforts" could not be relied upon for detailed accuracy to serve as final as-built drawings.

IE Report 83-03 at 5. The audit also revealed that the Bechtel field engineers were missing discrepant conditions:

The field engineers' insensitivity to the skew joint configuration appears inexplicable. This is a matter which has previously been specifically addressed across the board on site, within Burns and Roe, all site contractors, and Bechtel. This included the filing of a 10 CFR 50.55(e) report with NRC, due to Bechtel not having initially addressed this matter within their program. The subject was recently also issued by Bechtel as a "Lesson Learned" item for other Supply System projects. In view of the current audit findings, it was not clear as to whether or not previous as-built efforts could be accepted as valid. (emphasis added)

IE Report 83-03 at 6. This same NRC inspector reported that the Licensee had turned over the high pressure core spray

system to Test and Startup with two missing Class I snubber hangers

[demonstrating] further weakness in the as-built and final documentation review programs.

Id. NRC also expressed hope that Bechtel had resolved previous concerns in IE Reports 80-01, 82-24 and 83-03. But an inspection in 1983 revealed further errors in the drawings. IE Report 83-17. No expression of hope was made by the CAT team:

The 'as-built' program for piping and supports, while identifying a number of hardware deficiencies does not appear completely effective in that the NRC CAT findings indicate additional deficiencies, some of which are considered significant. In addition, the subsequent audit conducted by the licensee of a larger sample found essentially the types of deficiencies as those identified by the NRC CAT inspectors.

Executive Summary, CAT Report.

61. However, such findings should not have come as a surprise to the NRC. The NRC SALP Board concluded in 1982 that the Licensee's Construction Reverification Program was "in place and working" based on an assessment by the Licensee in April 1982. 1982 SALP at 11. While the Board went on to express their concern that sample sizes might not be adjusted to reveal generic, rather than isolated problems, they were content to base their conclusions on the Licensee's audit, a fallacious approach considering management's original responsibility for the errors. The SALP also criticizes the Licensee's contractors' ability to carry out corrective actions stating that "the Bechtel program is experiencing some weaknesses." 1982 SALP at 13.

The Board also pointed to "a trend toward lack of personnel staffing to adequately verify the activities of the reverification program" as well as "an apparent reluctance to increase the sample size once a deficiency has been identified." Id. Moreover, in conclusion the Report stated:

During the previous period NRC noted that the licensee had overlooked some commitments to NRC. Modified approaches and plans for problem resolutions was a perceived weakness. * * * However, there have been cases this period where the licensee approached problem resolution in a manner different than that formally committed to the NRC, and delayed notifying the NRC of these changes. One such item involved the reduction of hardware inspections from 100 percent to 10 percent as related to special requirements checklists. This area represents a continued weakness in the licensee's program.

Id. at 13. Commenting on the Licensee's ability to ensure implementation of proposed corrective actions, the SALP Board stated:

During this assessment period, an effective tracking system for insuring implementation of proposed corrective actions to resolve reported construction deficiencies, remains absent in the licensee's program. Many of the issues reported by the licensee under 10 CFR 50.55(e) requirements, remain unresolved long after the licensee's final report submittal. Notable among these are deficiencies in the fuel pool cooling system installation, concrete expansion anchor installation, load-bearing grout installation, and independence of redundant circuits within the power generation control complex. Final reports on these deficiencies were submitted as early as 1979. However, corrective actions did not appear to have been properly implemented during the assessment period. (emphasis added)

1982 SALP at 14.

62. Region V was perceiving the same inability of Licensee to follow through on its commitments to the NRC:

WPPSS described the policies for conduct of reviews and re-inspection in the WPPSS July 17, 1980 reply to NRC inquiry. One of the policies read: "This program will have priority over ongoing work. The project construction work pace will be adjusted accordingly." Another Supply System policy included integration of the reverification effort into the general project completion activities. However, associated with this integration has been a drain of personnel from the reverification effort, and a postponement of reverification activities to support the recent reactor vessel hydrotest. The reverification staff has been reporting this status to the Supply System management in weekly progress reports. Following the management meeting, the WPPSS Director of Licensing and Quality stated that this was his first notification of staffing problems with the reverification group, and he indicated that additional support in this area may be forthcoming. (emphasis added)

IE Report 82-18 at 4. Even though the problem had been reported to management it was never properly addressed. When apparently it sunk in, the Licensee was still reluctant to make a firm commitment to resolve the problem.

63. The NRC's enforcement approach to the 1982 SALP findings rests in the closing paragraph:

The licensee should devote additional effort to insuring that proposed corrective actions to reported construction deficiencies are fully implemented.

Id. It is unclear why the NRC staff in 1982 believed that continued reliance on the good faith effort of the Licensee would be adequate to resolve its inability to identify, analyze and insure proper completion of corrective actions. A February, 1983 Region V inspection detailed findings on a

review of the Construction Reverification Program with a survey of its overall status. The Licensee's comments were incorporated into the writeup of and April 1983 inspection. This document shows clearly the the Licensee was unable to conform to NRC regulations despite the "new" commitments included in the report. The agency found 11 deviations, including that (1) the Licensee had made changes in the commitments to its 50.54(f) response without first obtaining Region V concurrence, and (2) the Licensee applied reinspection criteria less than SAR commitments. IE Report 83-10 at 3, 4, 5. Other failures in the reverification program are detailed elsewhere in this petition.

64. The CAT team uncovered numerous instances of Licensee failure to initiate adequate corrective action ^{or} required procedures for nonconforming items, concluding that overall:

the identified weaknesses required increased attention by management at all levels to assure completed installations meet design requirements.

CAT Report at A-1. The scope of this comment applied to the "as-built" plant program which "does not appear completely effective"; steel rebar replacement deficiencies; welds "not in accordance with code requirements" and "weld repairs not controlled to ensure that the proper areas were repaired and that the repairs were adequately performed"; and mechanical equipment deficiencies which "indicate questionable bolting installation and control of parts." Id.

65. In reviewing the NCR and corrective action system for Electrical and Instrumentation Construction, the NRC revealed that, of their sample, only 25 % of the NCRs reviewed, had "adequate documentary evidence of corrective action." CAT at II-17. These failures were the responsibility of the WNP-2 startup organization. CAT Report at II-18. In the area of mechanical construction, the NRC inspection revealed that despite the fact that piping runs had been subject to (1) initial QC inspection, (2) one or more as-built plant walk-downs, and (3) the recent verification programs, a significant

number and extent of the deficiencies [revealed] indicates that actions must be taken to correct the deficiencies in the licensee's walkdowns.

CAT Report at III-2. And again, with regard to piping supports and restraints, the team concluded that, for both QC inspection and as-built programs,

based on the number and type of discrepancies noted by the NRC CAT inspectors, it does not appear that adequate corrective action has been taken.

CAT Report at III-5. Reviewing supports/restraints for adequacy of implementation of the as-built plant program, the inspectors discovered that 40% of QC II-SC I, supports (not included in any as-built program) "significantly deviate from the design drawings." CAT Report at III-7.

The report states:

The as-built programs have not been totally effective in identifying hardware deficiencies.

Id.

66. Further inspection of mechanical equipment installation revealed that the Bechtel program to retorque 100% of foundation bolts for nonrotating mechanical equipment has failed entirely in that (1) obvious defects in installation (gaps, lack of washers, etc.) were not considered and were widespread, (2) materials control was questionable, and (3) torquing has not been controlled and torque values are widely divergent for unknown causes. QC documentation failed to reveal any of these deficiencies. The Licensee has not developed a plan of corrective action to ensure overall uniformity in torque values beyond simply retightening to specified values:

The accuracy of the information and adequacy of the remedial actions associated with the applicants SDR for the 3-RHR, LPCS and HPCS pump bolting are questionable.

CAT Report at III-15. In addition, 5 of 5 Ingersoll-Rand pumps which were disassembled were found to have two or more problems related to materials. Id.

67. Contrary to Criterion XV, the Licensee has not assured the rework or repair of NCRs. The CAT team examined NCR-1851, which was associated with concrete honeycombing of certain beams in the reactor building. The review showed that (1) original QC records failed entirely to show the deficiencies in rebar placement, (2) the original disposition of the NCR failed entirely to identify

deviations and ensure adequate repairs, and (3) that without destructive examination, such gross failures would not have been evident. CAT Report at V-4. The NRC concludes:

There is not reasonable assurance that the reinforced concrete members and structures at WNP-2 were constructed to provide sufficient strength to adequately conform to FSAR design requirements.

CAT Report at III-15. The Licensee's occasional ability to identify nonconformances is meaningless without adequate and timely resolution of the deficiencies.

68. The CAT team also reviewed six NCRs for structural steel welding, of which half were found not acceptable. Resolution of the NCRs was based on incomplete consideration of weld deviations and design errors leading NRC to conclude:

[T]here is not reasonable assurance that critical locations [i.e., heavily loaded welded connections] will be examined and that potential weld deviations allowed by [criteria] QVI-09 can be tolerated.

CAT Report at V-11. NCR resolution of improper material substitution for fasteners (NCR 218-08304) judged acceptable "as is" was based on a review of bolts which, while certified to meet ASTM A 307 standards, lacked entirely the documentation to show this. Thus, a disposition based on a review of records, rather than upon physical testing, relied upon records which did not exist. This so-called NCR resolution violated the requirements of the code.

I. TEST AND START-UP

69. Test and start-up QA/QC are governed generally by Criterion XI, "Test Control", of Appendix B to 10 CFR Part 50 which states in part:

A test program shall be established to assure that all testing required to demonstrate that structures, systems and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

70. The CAT report is the major source of indications regarding the quality of the Test Start-Up (SU) program, despite the fact that the team did not choose to review the program in its entirety. What little was reviewed paints a bleak picture: 75% of the personnel assigned to the SU organization, while certified by WPPSS, failed to meet the governing requirements of ANSI N18.7 in that they had zero previous inspection experience. Hardware (cable terminations, and station batteries) associated with work performed by the SU was found to have deficiencies and inspection reports generated by a subcontractor were not controlled to ensure adequate corrective actions. CAT Report at VIII-6. In the area of electrical cable termination, the CAT team concluded that "the documentation inadequacy identified above indicates a need for more stringent record control in the area of test and start-up activities." CAT II-9. The CAT team also determined that

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J. MANAGEMENT

73. The issuance of an operating license must not be inimical to the public health and safety in that the Commission must find that the activities authorized by the license can, and will, be conducted in compliance with NRC regulations and that the applicant is technically qualified to perform the activities. 10 CFR 50.57(a)(3), (4) and (6). Criterion I, "Organization", of Appendix B establishes that it is the applicant which is wholly responsible for the establishment and implementation of the quality assurance program required by General Design Criteria (GDC) 1 of Appendix A.

74. The failure of Licensee's management to maintain an adequate and functioning QA/QC program to ensure that design and construction of WNP-2 met applicable requirements has been evident from the onset of construction and is documented in part in sections A through I of part V of this petition. The early multitude of deviations from SAR commitments resulted in NRC's issuance of a 10 CFR 50.54(f) inquiry, on June 17, 1980 on quality assurance, simultaneous with a notice of violation and \$61,000 civil penalty, as a result of serious deficiencies in the

the failure to install 70-90% of the bolts on the gear and terminal box covers for the motor operators for Residual Heat Removal and RHIC valves "were the responsibility of the WNP-2 start-up." CAT Report at II-14. The CAT report concludes that "[w]eaknesses were identified in Quality Control for work performed during the Test and Startup Phase." CAT Report at A-3.

71. The Region V inspection of August 1-15, 1983 which pursued areas raised by the CAT team and upon which a Notice of Violation was issued (the only enforcement action taken on the deficiencies identified by the CAT team) did not follow up with a review of the overall ability of the SU organization. Review of the issues raised above was limited to the observation that there lacked a "formal method to identify their actions on unsubstantiated deficiencies identified in these [contractor generated inspection] reports." The licensee committed to additional administrative controls.

72. Additionally, the CAT Report makes overall findings:

Weaknesses were identified in Quality Control for work performed during the Test and Startup Phase. In this area, these weaknesses included: inspectors were not free from schedular requirements in some case; some inspector qualifications did not appear to meet Supply System commitments; the program did not ensure that deficiencies were corrected; and in some cases the corrective actions were not documented and the records properly maintained.

CAT Report at A-3. Clearly the SU organization reflects the same deviations from FSAR and Appendix B requirements as has the QA/QC program as a whole.

sacrificial shield wall, pipe whip restraints. 1981 SALP concluded:

Region V has found the overall licensee performance marginally acceptable but has had longstanding concerns over the ineffectiveness in the implementation of the WPPSS quality assurance program and the inadequate control of contractor activities * * * The regional evaluation reveals uncorrected and repeat noncompliance items, and instances of work being conducted without planning and procedures.

SALP Staff Summary - WNP-2, Working Paper, February, 1981, at 1.

75. The 1981 SALP provides us further insight into Licensee's problems under the heading of "NRR Project Manager Comments":

The WPPSS organization has been marked in the past with apparently naive management who failed to stay current with NRC licensing requirements.

Id. at 4. The FSAR submittal by the Licensee was rejected twice and only accepted upon the condition of a major clean-up. But even following the imposition of this condition, Licensee still failed:

[Two] years after the first tendering of the WNP-2 OL application, staff wrote a third letter to WPPSS again indicating that certain portions (e.g., Chapter 7) needed major revisions to upgrade the quality and character.

The NRC Staff also characterized the Licensee's responses as "footdragging" that "can take anywhere from six months to two years" for production of an acceptable product.

76. Shortly following the Notice of Violation, the United States House of Representatives Committee on Government Operations issued a report stating:

This apparent massive confusion at the WPPSS site has been partly attributed by an NRC inspector to WPPSS' difficulties in managing a large array of contractors doing construction work, including safety-related work* * *The inspector observed that the Licensee management had not been effective in requiring contractor compliance with specification requirements.

House Report No. 96-1452, supra, at 46.

77. This was not a new development -- the SALP Board of the previous year observed:

In summary, the significant increase in the number of items of noncompliance, including the repetition of five items of noncompliance, disclosed ineffective quality assurance program implementation with inadequate control of contractor's activities.

SALP of 4/1/79 to 4/1/80 at 3. This was a continuing failure despite an NRC Enforcement Conference in 1978 and subsequent management meeting in 1979. See USNRC Region V Enforcement Conference Reports 78-04 and 78-06; IE Report 79-08. In October, 1980 the NRC received 9 specific allegations concerning the quality assurances practices of the construction management organization. Of the 9, 3 were substantiated including: audit findings removed by the QA Manager; nonconformance reports and corrective action requests voided by QA Manager; and the main steam stop valves installed in the wrong location. See IE Report 82-08 at 7, 8.

78. In 1981, the Washington State Senate Energy & Utilities Committee issued a report to the Washington State Senate & the 47th Legislature, concluding:

* * * WPPSS mismanagement has been the most significant cause of cost overruns and schedule delays on the WPPSS projects.

"WPPSS Inquiry", March 1, 1981, Executive Summary.

The Committee concluded:

WPPSS does not have nor has it ever had an effective change management system. The failure of WPPSS management to institute such a system is a direct and principal cause of project schedule delays.

Id. at 38. The committee also concluded that this matter had been brought to the attention of Licensee's management numerous times to no apparent avail. Id. at 39.

79. The 1982 SALP reiterated NRC's concerns that management could not ensure compliance with the regulations:

During the previous period NRC noted that the licensee had overlooked some commitments to NRC. Modified approaches and plans for problem resolutions was a perceived weakness. The Licensee has given increased attention to NRC commitments and has effected improvements in this area. However, there have been cases this period where the Licensee approached problem resolution in a manner different than that formally committed to the NRC, and delayed notifying the NRC of these changes.

SALP, December 10, 1982 at 13. In April 1983 the NRC continued to express the same doubts:

The inspector stated that these incidents did not exhibit good management control and greater attention in this area would be required to provide some degree of confidence that the Licensee was capable of testing and operating the plant in accordance with NRC requirements and sound industry practices.

IE Report 83-17 at 2. And the NRC CAT inspectors were to

conclude that:

Weaknesses were identified in Quality Control for work performed during the Test and Startup Phase. In this area, these weaknesses included: inspectors were not free from schedular requirements in some cases; some inspector qualifications did not appear to meet Supply System commitments; the program did not ensure that deficiencies were corrected; and in some cases the corrective actions were not documented and the records properly maintained.

CAT Report at 3. As a result of the CAT inspection in May and June 1983, 8 Appendix B criteria were identified as potential enforcement findings.

80. The financial events of the last few years will only exacerbate the problem of management:

A deferral of WNP-3 and the associated disruption in the Supply System organization will impact the Project, Generation and technical organizations required to support WNP-2 operation in the same manner as discussed under licensing impacts. In most cases, the same individuals are involved in completing construction, startup, or licensing commitments prior to fuel load and supporting operation after fuel load. While it is clear in the long term that there are sufficient personnel resources within the Supply System and its contractors to meet the needs of WNP-2, the short time to fuel load makes it very unlikely that a 15 to 20 percent loss in WNP-2 personnel can be compensated for without impacting the schedule.

Analysis of Alternative Related to WNP-3, May 26, 1983, Bonneville Power Administration, at 41. In fact, personnel loss recently reached 24%.

81. Additionally, in recent years, the Licensee has placed great reliance on the services of the Bechtel Power Corporation (Bechtel) which has a long history of nuclear plant design and construction failures. Bechtel was

responsible for both the FSAR and the placement of the foundation for the Midland nuclear project; the deviations from NRC approved practices are well documented. See e.g. Memo from J.G. Keppler to H.D. Thornburg, Director, RCI, I&E, NRC re: Midland 1 and 2, November 1, 1978, "Excessive Settlement of Diesel Generator Building Foundation; Memo from H.D. Thornburg to G.G. Gowan, re: Comments on Needed Action on Midland Enforcement Package, September 27, 1979; Letter from E.J. Gallegar to G. Fiorelli, Chief, Reactor Construction and Engineering Support Branch, re: Meeting with Consumers Power Co., January 21, 1980. Bechtel was also responsible for design and construction errors found in the Trojan Nuclear Plant Control Building, and the breakdowns in quality assurance at the San Onofre and Palisades nuclear projects.

62. In 1981, Bechtel took over the WNP-2 construction management organization. Soon thereafter the NRC inspected the Bechtel Quality Assurance Program and found that Bechtel's reverification responsibilities had not been defined and that audit staff, and audit work activities appeared shallow. IE Report 81-17 at 2.

NRC also found Bechtel QC Inspectors did not know the ASME nondestructive testing requirements for different materials and Code classes, and the Field Welding Engineer supervisor did not assign a qualified Field Welding Engineer to accompany the QC inspector in the examination of arc strikes, contrary to requirements of PED. The Licensee received a Notice of Violation. IE Report 81-21.

83. NRC also interviewed the Hartford Insurance Company Authorized Nuclear Inspector (ANI), contracted by Bechtel to monitor implementation of the ASME quality assurance program. Following the inspection of ANI's routine records the NRC Inspector noted:

This document identified several areas where Bechtel was not properly implementing its quality assurance program at the site during September. Inadequate training of crafts, availability of work procedures, departures from work procedures, and insufficient material identification / segregation were identified.

Id. at 7. The ANI inspector told NRC that although Bechtel had taken action to correct the problems the company had requested him not to document his concerns on the "SIS Record" in the future, but rather address issues to Bechtel management in meetings or other less formal means. The matter was left open by the NRC inspector as Item 81-21/83 which has yet to be closed according to NRC inspection reports. In May, 1982 NRC investigated allegations at WNP-2 and found that Bechtel's conclusion that the "quality inspection program should be implemented in safety related areas only with regards to Fire Protection System," was in conflict with the Bechtel Construction Quality Control Manual, as well as that Bechtel inspections were being performed using unauthorized documents for acceptance criteria. IE Report 82-12 at 5.

VI. 10 CFR 50 APPENDIX A CRITERIA

84. The failure of the Licensee to implement a QA/QC program in accordance with Appendix B 10 CFR 50 has resulted in construction of a nuclear power plant substantially lacking conformity with 10 CFR 50.55(a) and Appendix A to that Part. The investigations of the NRC clearly show that the General Design Criteria (GDC) have not been met for WNP-2, a fact which the Licensee has been unable to demonstrate affirmatively to the contrary. The lack of adequately designed, constructed and installed safety-related systems make operation of the plant an unacceptable risk. As will be shown below, electrical systems at WNP-2 required for the operation of systems necessary to safety do not meet applicable criteria as designed or installed; fluid systems at WNP-2 including reactor recirculation, reactor core isolation, residual heat removal and emergency core cooling which are required for anticipated abnormal occurrences and other events, are not assured to operate; and the integrity of structures which house systems and equipment important to safety and internal structures which must function as specified have not been constructed to applicable standards. For these reasons, there is no assurance that the probability of a core melt has not been substantially increased.

A. ELECTRICAL CIRCUITS

85. Contrary to GDC 1, 2, 3, 4, 17, 33, 34, 35, 38, 41, 44 of Appendix A, there is no reasonable assurance that electrical circuits, cables, cable trays and electrical components necessary to safety have been designed, installed and inspected in conformance with 50.55(a)(h). As illustrated by the examples described in Section V above, NRC inspections have revealed that:

(1) At least 16% of the computer-generated pull slips for cable routing deviate from the design (para. 20);

(2) These cables include high voltage, power, control and instrumentation to systems such as RHR, control rod, diesel generator and remote shutdown (para. 20);

(3) From the sample inspected by the CAT team it can be inferred that 5% of the cables have been improperly routed due to failure of craft personnel to construct the plant to design specifications (para. 20);

(4) Improper design criteria for separation of electrical circuits has been utilized since 1978 and remains unresolved (para. 21, 47, 57, 61);

(5) Proper separation criteria and installation tolerances for cable trays and cable tray supports has not been utilized (para. 22);

(6) Design review of cable separation, including that performed by Burns & Roe (BRI), failed to reveal deviations subsequently uncovered by the CAT team (para. 23, 47);

(7) Cable trays have been used as repository for flammable debris and electrical equipment has not been properly maintained (e.g. Control Rod Hydraulic System) (para. 40, 41);

(8) WPPSS has repeatedly committed to resolving the failure to meet electrical cable separation criteria and has repeatedly failed (para. 57, 61);

(9) WPPSS has failed to adequately document evidence of corrective action for 75% of the NCRs issued on Electrical and Instrumentation construction (para. 65);

(10) Electrical work performed by the test and startup organization, including electrical cable terminations, was deficient (para. 70); and

(11) Quality Class II (Seismic Category I) piping supports suspending systems over safety-related cables has been inadequately installed (para. 43, 44, 65).

86. Inspection 82-21, which focused on the installation of safety-related Class 1E electrical cables, revealed two violations of 10 CFR 50 Appendix B which had persisted over a three-year period beginning in January 1979:

The NRC is particularly concerned with the two violations (items A and B of Appendix A of this letter) because of the very essential role they play in the execution of an effective Quality Assurance Program for construction related to electrical installation work activity. * * * These deficiencies indicate that deficient construction or construction of unknown quality may exist due to failure of your Quality Assurance program to provide adequate control of design and construction activities.

Letter from J. L. Crews, Director, Division of Resident, Reactor Projects and Engineering Programs to WPPSS, Appendix A. NRC, not the Licensee's QA/QC program, has revealed the ongoing failure of design and the as-built plant to meet NRC criteria.

The above findings show that:

(1) Contrary to GDC 1, the QA/QC program at WNP-2 has not assured use of proper design criteria and conformance of the as-built plant with design specifications;

(2) Contrary to GDC 2 and 4, there is no assurance that cables have been routed such that their operability will not be degraded by environmental conditions caused by natural sources or in-plant failures;

(3) Contrary to GDC 3, separation criteria necessary to minimize fire and other common cause failures have not been met;

(4) Contrary to GDC 17, IEEE Stds. 279, 384, Reg. Guide 1.75, and ASB BTP 9.5-1, electrical and physical separation criteria have not been met which are necessary to assure compliance with the single failure criterion such that a single failure will not result in the loss of a redundant counterpart; and

(5) Contrary to GDC 33, 34, 35, 38, 41 and 44, there is no assurance that the circuits for reactor coolant makeup, residual heat removal, emergency core cooling, containment heat removal, containment atmosphere cleanup and and cooling water are separate and independent of each other.

B. STRUCTURE

87. Contrary to GDC 1, 4, 16, 50, 51 of Appendix A, there is no reasonable assurance that steel reinforced concrete structures have been designed and constructed in conformance with 10 CFR 50.55(a)(1). NRC inspections have revealed a continuing inability of the Licensee to ensure structural integrity of structures important to safety, as demonstrated in Section V above, which reveal that:

(1) Deficiencies (including lack of or improper installation of steel reinforcing) have been discovered in the majority of areas subjected to destructive testing (para. 25, 26, 67);

(2) Documentation in the form of original QC records and reverification resolutions of NCRs, do not accurately depict the as-built plant or the design strength for reinforced concrete and structural steel (para. 25, 31, 67, 87);

(3) Further destructive testing is required to assess the scope and quality of deviations in steel rebar placement (para. 25, 26);

(4) Lack of rebar to design specifications will result in decreased margins of strength by the addition of planes of weakness and a change in failure mode from ductile to brittle (para. 25);

(5) Design drawings which specify the quantity and configuration of rebar are "questionable" according to the CAT, resulting in substantial loss of design conservatism (para. 25);

(6) Improper procedures which isolated AWS Codes, were utilized for welding of structural steel in the containment (para. 46, 51); and

(7) The quality assurance program reviewing procedures from the Burns & Roe Engineering group, was essentially nonexistent (para. 33, 46, 51).

88. Additionally, structural steel installations in the reactor building reviewed by the CAT team revealed that 10% of the fillet welds on containment penetration stiffeners were undersized. CAT Report at V-10. NRC also concluded that the deficiency is generic for "similar-type penetrations (drywell and wetwell)". CAT Report at V-12. Fifteen percent of welded connections on structural steel beams were found deficient, including undersized, missing and improper surface conditions. Licensee's reverification program allowed such deviations on a generic basis (and has submitted an FSAR amendment to this effect), but the CAT team concluded:

[It is our opinion] that the blanket "acceptable" deviations from AWS D.1.1 contained in QVI-09 [WPPSS Reverification Instructions, "Special Structural Steel Reinspection Criteria"] are excessive. * * * Welds evaluated per the applicant's application at QVI-09 are still of questionable quality."

CAT at V-10.

89. Other aspects of the CAT inspection of the structural steel reverification included a review of the NCRs, 50% of which, though "resolved" and reviewed by Burns and Roe, the NRC found unacceptable.

the NRC CAT determined that Burns and Roe is not accounting for weld deviations allowed in the reverification examinations performed in accordance with the accepted criteria of QVI-09.
* * * The concern remains that not all allowed weld deviations are considered when Burns and Roe determines the acceptability of welded connections.

CAT Report at V-10/11. In conclusion:

The design deficiencies in the Burns and Roe resolution of NCRs (not accounting for all allowed weld deviations and design calculation errors) indicate a need for additional review in the NCR resolution area.

CAT Report at V-12. These deviations from criteria occur in the Reactor Building and affect such systems as HVAC, the operability of which is required to preserve the environment of safety-related equipment and components.

90. The above findings show that:

(1) Contrary to GDC 1, no independent quality assurance program existed at WNP-2 with regard to welding of structural steel; and

(2) Contrary to GDC 2, 4, 16, 50, 51, applicable codes, standards, guides, and specifications have not been utilized at WNP-2 which are necessary to ensure that the structural integrity and safety function of the containment and associated internal structures (including sacrificial shield wall) can withstand specified design conditions and perform as required in the event of natural events or postulated accidents.

C. FLUID SYSTEMS

91. Contrary to GDC 1, 14, 31, 32, 54 to Appendix A, there is no reasonable assurance that systems, equipment and components composing the reactor coolant pressure boundary and important to safety meet the criteria of 10 CFR 50.55a(a)(b)(c). NRC inspections discussed in Section V above have shown that:

- (1) No documents exist to confirm the material specifications for the Reactor Pressure Vessel anchor studs (para. 30);
- (2) Substantial improper and uncontrolled material substitution has occurred for fasteners for pipe flanges, valve bonnets, mechanical connections and pipe couplings (para. 36);
- (3) Inferior grade fasteners were found in one entire string of emergency equipment (RHR, HPCS, LPCS, SLCS) (para. 36);
- (4) The majority of foundation anchorage bolts for RCC and RWCU were improperly installed (contrary to documentation) (para. 44);
- (5) The Reactor Recirculation System (RRC) and Main Steam Isolation Valves have been the subject of numerous discrepancies in installation and test procedures (para. 50, 56);
- (6) Improper welding procedures, unqualified welders, and unacceptable welds (passed by QC inspectors) have been found in the majority of fluid systems important to safety (e.g. RHR, LCPS, HPCS, FW, RFW, RRC, RCIC, RWCU, RCC, MSS, SLD, SW; para 31, 53, 59, 60, 64) as well as systems considered by the staff to be Quality Class C (e.g. Diesel Oil Fuel Line) (para. 59);
- (7) The design installation and maintenance of the Standby Service Water System has been the subject of repeated NRC findings (para. 19, 40);

(8) Installation and maintenance of electrical components of systems important to safety have been deficient. (e.g. RHR, RHC, Control Rod Hydraulic) and cable separation criteria has not been met (para. 40, 70);

(9) Installation of mechanical equipment in the reactor pressure coolant bounding has been grossly deficient and QC ineffective in assuming corrective action (RHR, LPCS, HFCS) (para. 66);

(10) Inadequate procedures and documentation (including radiographs), as well as poor quality welds and weld repairs will affect the detection and prevention of intergranular stress corrosion cracking in fluid systems important to safety (para. 49, 54); and

(11) Design and installation of piping supports for fluid systems important to safety seriously deviated from requirements including missing supports, inadequate welds, inadequate anchoring, incorrect clearances and failure to apply jurisdictional boundaries has failed entirely and one consequence is the as-built pipe supports/restricts are in substantial nonconformance with design drawings (para. 43, 44, 58, 60, 65);

92. The above findings show that:

1) Contrary to GDC 31 and 32, there is no assurance that RPV anchor studs are adequate to meet the material specification for tensile and fracture toughness such that when under operating and accident conditions, the boundary will behave in non-brittle manner;

2) Contrary to GDC 1 and 14, 31 and 32 substantial use of inferior fasteners and gross deviations from accepted installation techniques have been used on systems, components and equipment for fluid systems in the reactor coolant pressure boundary increasing the risk of gross failure, rapidly propagating failure, and jeopardized operability; and

3) Contrary to GDC 14, 30, 33, 34, 35, 38, 41 and 44, there is no assurance that the substantial deviations exist in the design, installation, maintenance, testing and documentation of the majority of fluid systems, equipment and components necessary for safety will not adversely affect operability and safe shutdown of the plant during normal and accident conditions.

VII. NRC_ENFORCEMENT

93. The responsibilities of NRC's Office of Inspection and Enforcement (I&E) are established by 10 CFR 1.64:

The Office of Inspection and Enforcement develops policies and administers programs for: inspecting licensees to ascertain whether they are complying with NRC regulations, rules, orders, and license provisions, and to determine whether these licensees are taking appropriate actions to protect nuclear materials and facilities, the environment, and the health and safety of the public; inspecting applicants for licenses, as a basis for recommending issuance or denial of a limited work authorization, construction permit or an operating license; inspecting suppliers of safety-related services, components, and equipment to determine whether they have established quality assurance programs that meet NRC criteria; investigating incidents, accidents, allegations, and unusual circumstances including those involving loss, theft, or diversion of special nuclear material; enforcing commission orders, regulations, rules, and license provisions; recommending changes in licenses and standards, based on the results of inspections, investigations, and enforcement actions; and notifying licensees regarding generic problems so as to achieve appropriate precautionary or corrective action * * * NRC's five Regional offices are responsible for carrying out inspections and investigations.

94. The lack of decisive actions on the part of I&E, Region V to ensure the Licensee meets SAR commitments and Appendix B requirements has contributed to the erosion of QA/QC at WNP-2. Following the 1980 stop work order NRC continued to report the inability of the Licensee to overcome deficiencies and deviations in the WNP-2 QA/QC program. Despite, in some cases, failure of the original craft work and QA/QC, lack of adequate or accurate

documentation, failure of rework and repair, and the inability of the Licensee to overcome all of these deviations in reverification or audit programs, the NRC has continued to rely on the Licensee. Clearly, continuing commitments and recommitments have not resulted in program improvements; they should not have been considered a basis upon which to withhold agency measures which would have ensured corrective actions or terminated the permit. In fact, where NRC has cited the Licensee for deviations from SAR commitments, the corrective actions proposed and approved have been restricted to the isolated instances, when in fact the errors have pointed to a need for a "generic" fix. Moreover, Licensee (re)commitments are often prospective with the result that past defects are not adequately analyzed or corrected. It is inappropriate in the extreme for NRC to continue to accept the Licensee coming forward with new "plans" in which it proposes to meet Commission criteria -- such commitments are supposed to go without saying, as a condition of the construction permit. Additionally, at present, the visit of the CAT team exists merely as an academic exercise; the CAT findings have been turned over to Region V which has so clearly shown itself to be disinterested in ensuring Licensee compliance. The CAT report itself shows Region V has not ensured full and timely corrective actions pursuant to its statutory responsibility.

95. There is no assurance that the public record, upon which the Petitioner must rely, is in any way complete. In a Congressional investigation of the activities of Region V inspectors by the Office of Investigator and Auditor (OIA), the Subcommittee on Oversight and Investigation of the House Committee on Interior and Insular Affairs revealed that NRC personnel had engaged in improprieties, among them releasing lists of issues to licensees, without apparent subsequent write-up in publicly available documents. To the Petitioner's knowledge, the NRC OIA has failed to investigate all allegations made by NRC personnel which pertained to WNP-2. See e.g. OIA's "Narbut Report" at 19, 49. (It is also relevant to note that James J. Cummings, director of the OIA and responsible for authorizing all investigations was removed from his position by the Commissioners in September 1983.) OIA did, however, followup on investigations related to the WPPSS Nuclear Projects No. 1 and 4 and San Onofre, including one which revealed the cancellation of planned enforcement action at the latter plant. With inappropriate non-public "resolutions" of NRC concerns and allegations made by private and public employees, the public has no way to know what matters NRC and the Licensee "settled" between themselves, whether properly or improperly. Moreover, there is no assurance that possible improprieties would have

been fully investigated by NRC's OIA or that other improprieties besides the ones revealed in the Narbut Report have not occurred at WNP-2. Likewise, there is no assurance that what is known to have occurred was not improper or criminal.

VIII. RELIEF REQUESTED

96. Petitioner, having shown herein that the Licensee, Washington Public Power Supply System, has failed to meet the criteria of 10 CFR Part 50 for the construction of WPPSS Nuclear Project No. 2, requests the revocation of Construction Permit No. CPPR-93 pursuant to 10 CFR 50.50, 50.54(e) and 50.100, in that prior knowledge of the scope and substance of Licensee's failure to meet NRC requirements would have caused the Commission to refuse the original application for the permit. Moreover, the foregoing has demonstrated that the Commission cannot yet make the finding required by 10 CFR 50.57 for issuance of an operating license that there is reasonable assurance that the activities authorized could be conducted without endangering the public health and safety, and thus the pending application for the license should be DENIED.

97. The request for a revocation of the WNP-2 Construction Permit and denial of a Operating License notwithstanding, the Petitioner requests further relief to include:

1) Modification of the construction permit to include a mandatory review by an independent contractor /1 of: a) 100% of the as-built plant systems, equipment, components and areas important to safety; b) destructive-testing of safety-related steel-reinforced concrete structures; c) 100% of design documentation (drawings, calculations and procedures); and d) upper-level and mid-level management responsible for design, construction, the QA/QC program, audits and operation of the plant with the resulting identification of responsibility for past failures;

2) Appointment of an independent panel of investigators from outside the agency to investigate a) possible improprieties and illegal acts by NRC inspectors and investigators; b) the handling by the OIA of the improprieties which have been previously identified; and c) the effectiveness of NRC's Region V to fulfill the mandated responsibility to enforce the regulations of the NRC which exist to ensure protection of the public health and safety;

1. The review should be conducted by an independent contractor using criteria set forth in the 1981 letter from Chairman Palladino to Congressmen Dingell and Ottinger. Specifically, this criteria sets forth the independence and competence criteria as follows: (1) technical competence of the company and the individual companies and assurance that (2) the contractor had no previous activities at the plant, (3) that the contractor had no previous employment with the licensee, (4) that no individual employee had been employed previously by the licensee, (5) that neither the company nor employees owned or controlled licensee stock, and (6) that members of the present households of the employees were

3) Modification of the construction permit to include: a) removal from the management organization those responsible for past failures at the project; b) removal of contractors and subcontractors shown not to have been able to meet the minimum requirements of NRC regulations; c) implementation and verification of corrective actions for all identified deviations from requirements; and

4) Hearings before an Atomic Safety and Licensing Board.

VIV. CONCLUSION

38. As the foregoing petition has illustrated, the Licensee has not designed, constructed and documented WNP-2 in compliance with the regulations of 10 CFR Part 50 and in conformity with the terms of its construction permit. The evidence presented herein is perforce only that which is on the public record and is but a fraction of the findings made by the NRC over the course of plant construction. Most importantly, the vast majority of these findings come not from the Licensee's QA/QC program, audits or verification programs but from NRC inspections and investigations which are of necessity, limited to a fraction of a percent of the final design and as-built plant. The only conclusion that can be drawn from this history of NRC regulation, and in particular the CAT inspection, is that no QA/QC program has been consistently implemented at WNP-2 and the failure to do so has resulted in substantial inability to meet

requirements of Appendix A criteria. The Commission has evidence here that, its rules and regulations have not been met, and that the resultant as-built plant is not safe to operate pending at the very least a 100% independent review of the plant.

99. Of the 24 nuclear plants in the country nearing 100% completion, most have, in response to NRC requests, conducted independent design verification programs (IDVP). At WNP-2, however, the Licensee has been allowed to conduct its own in house review despite its inferior track record. IDVPs have been seen the the NRC as a way to make-up for past deficiencies in QA programs; what better candidate than a plant which was not only ranked among the worst constructed projects in the 1981 SALP, but had more areas of deficiencies than any other.

100. Finally, we would bring to the Commission's attention the recent position of the NRC staff and a ruling by an Atomic Safety and Licensing Board in the application for an operating license for WPPSS Nuclear Project No. 3. In responding to Intervenor's contention which addresses QA/QC at that project the NRC Staff attorney stated:

* * * that the culmulative impact of the inspection reports * * * does raise some reason to inquire further into implementation of the QA/QC Program at the site.

Special Prehearing Conference, August 17, 1983, Docket No. 50-508 OL, Transcript at 73, 1. 21-25. The ASLB on ruling on the contention, agreed with the NRC Staff and Intervenor stating that further inquiry is required to determine whether Applicant (WPPSS) will implement a QA/QC program as

required and if there is reasonable assurance that operation of the plant will not endanger public health and safety.

Memorandum and Order (Ruling on Proposed Contentions),
September 27, 1983, at 22.

101. WHEREFORE PETITIONER PRAYERS FOR AN ORDER
GRANTING THE REQUESTED RELIEF SET FORTH ABOVE.

Respectfully submitted

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Dated this day, 14th
of October, 1983