

Washington Public Power Supply System
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Docket No. 50-508

December 10, 1982
G03-82-1276

U. S. Nuclear Regulatory Commission, Region V
Office of Inspection and Enforcement
1450 Maria Lane, Suite 260
Walnut Creek, California 94596-5368


Attention: Mr. D. M. Sternberg
Chief, Reactor Projects Branch No. 1

Subject: NRC INSPECTION AT WNP-3
DEVIATION (50-508/82-16/03)
MASONRY BLOCK WALL - FAILURE TO CONSTRUCT
IN ACCORDANCE WITH QUALITY CLASS I

Reference: G03-82-1199, Letter, R. S. Leddick to D. M. Sternberg,
NRC Inspection at Washington Nuclear Project No. 3
(WNP-3), dated November 24, 1982.

The referenced letter reported that the subject Deviation could not be resolved at the time because the evaluation required to determine the scope of the problem and resultant corrective actions had not been completed. This evaluation has subsequently been completed. A report of corrective steps taken/planned, results achieved and the date when corrective actions will be completed is attached.

Should you have any questions or desire further information, please contact me directly.


R. S. Leddick (760)
Program Director, WNP-3

DRC:nj

Attachments

cc: J. Adams - NESCO
D. Smithpeter - BPA
Ebasco - New York
WNP-3 Files - Richland

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DEVIATION

Table 1.8-1 of the WNP-3 FSAR states that the WNP-3 project complies with Regulatory Guide 1.29, Rev. 3.

Regulatory Position 2 of Regulatory Guide 1.29, Rev. 3, states, in part, that: "Those portions of structures...whose failure could reduce the functioning of any plant feature...to an unacceptable safety level... should be designed and constructed so that the SSE would not cause such failure.

Regulatory Position 4 of Regulatory Guide 1.29, states, in part, that: "The pertinent quality assurance requirements of Appendix B to 10CFR Part 50 should be applied to all activities affecting the safety-related functions of those portions of structures...covered under Regulatory Position 2..."

Contrary to the above, a masonry block wall 23 feet 1 inch high was installed approximately 6 feet from nuclear safety related Diesel Generator Control Panel "A". Failure of this wall during a seismic event may disable the "A" diesel generator. The wall was classified as WPPSS Quality Class G and therefore was installed as a non-safety related structure not subject to the requirements of the licensee's quality assurance program required by 10CFR50, Appendix B.

REVIEW FOR BLOCK WALL (NO. 41) ACCEPTABILITY

To determine the safety significance and acceptability of the wall in question, a detailed review was conducted by Ebasco. Results of the review are summarized as follows:

- All concrete block walls in the RAB have been seismically designed for the SSE using loads derived from the maximum building accelerations at the installed elevation of the block walls.
- All reinforcing steel is furnished as WPPSS Quality Class I.
- Since concrete blocks are commercially available only as manufactured standard products, they are procured as WPPSS Quality Class G with provisions for material certification that assure adequate and consistent strength as assumed in the design.
- Bonding mortar does not conform to the requirements of WPPSS Quality Class I. Mortar materials are only available as commercially manufactured products. Mixing of mortar materials is controlled by the practical considerations of workability. Of real importance is the fact that, in the case of these reinforced block walls, the mortar has little structural significance and is not even considered in the structured analysis.

REVIEW FOR BLOCK WALL (NO. 41) ACCEPTABILITY (CONTINUED)

- Concrete block fill (grout) does not conform to all of the requirements of WPPSS Quality Class I. Even though the concrete fill material was furnished as Class I, it was not always tested as Class I at the point of discharge.
- The concrete block walls (including No. 41) have been constructed in accordance with WPPSS Quality Class G requirements, supplemented by the Engineer's visual inspection for compliance with the specification and drawings. These inspections have been documented by the use of one or more of three different record forms. For the wall in question (No. 41), the inspections were documented on five Concrete Tracking Records and three Daily Reports.
- For all block walls constructed to date, four prism test sections (without rebar) have been prepared in accordance with specification requirements. Two of the test sections are being cured and two have been tested with test results exceeding design requirements.
- Independent compressive strength tests were performed on grout and mortar with results exceeding design requirements.

It has been concluded that, even though the bonding mortar and concrete fill do not meet the requirements of Quality Class I, the wall in question is acceptable based on: 1) the available records of inspection; 2) material tests performed to date; and 3) prism tests performed and in process. In addition, it is considered that, with the exception of mortar and grout, the design and construction of all masonry block walls in the RAB are in compliance with the Supply System's response to the NRC regarding IE Bulletin 80-11 (Reference Letter G03-81-854, dated March 25, 1981).

CORRECTIVE STEPS PLANNED

To further strengthen the program for the construction and inspection of masonry block walls in the RAB, the following actions are being initiated:

- 1) Inspection by the Engineer during construction will be strengthened by issuance of a Resident Engineering Instruction that will provide more detailed inspection criteria. In addition, a standard reporting format for documenting these instructions will be adopted.
- 2) All concrete block walls previously installed in seismic zones and for which neither "Concrete Tracking Records" nor "Concrete Block Wall Construction Forms" exist (i.e., wall Nos. 45, 60, 64 and 66 at RAB EL 390) will be examined using metal detection methods to independently confirm the inclusion of reinforcing steel.

CORRECTIVE STEPS PLANNED (CONTINUED)

- 3) Prism tests will continue to be performed and recorded as required by the construction specification to demonstrate the requisite composite strength of the concrete blocks, mortar and fill.
- 4) Independent tests will be conducted on the mortar and concrete fill (in accordance with the Uniform Building Code) at the same frequency as the prism tests. All test results will be documented.
- 5) As determined by the Engineer, core samples, when obtained during the various phases of block wall construction (e.g., in conjunction with penetration installation), will be visually examined for soundness and the results documented.

Additional corrective actions:

- 1) The FSAR will be amended to specify that mortar and concrete block fill are not furnished to Quality Class I. The FSAR change has been submitted to the Supply System for review and implementation.
- 2) The Supply System response to IE Bulletin 80-11 will be amended to address that mortar and concrete block fill are not Quality Class I materials.

DATE WHEN CORRECTIVE ACTIONS WILL BE COMPLETED

The program detailed above is presently being implemented. Full implementation will be achieved prior to any further erection of masonry block walls in the RAB. It is anticipated that all corrective actions will be completed by February 28, 1983.