



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN
OFFICE OF NUCLEAR REACTOR REGULATION

3.8.5 FOUNDATIONS

REVIEW RESPONSIBILITIES

Primary - Structural Engineering Branch (SEB)

Secondary - None

I. AREAS OF REVIEW

DOCKETED
USNRC

2003 JAN 29 PM 3:03

OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

The following areas related to the foundations of all seismic Category I structures are reviewed.

1. Description of the Foundations

The descriptive information, including plans and sections of each foundation, is reviewed to establish that sufficient information is provided to define the primary structural aspects and elements relied upon to perform the foundation function. Also reviewed is the relationship between adjacent foundations, including the methods of separation provided where such separation is used to minimize seismic interaction between the buildings. In particular, the type of foundation is identified and its structural characteristics are examined. Among the various types of foundations reviewed are mat-foundations and footings, including individual column footings, combined footings supporting more than one column, and wall footings supporting bearing walls.

Other types of foundations that may also be used are pile foundations, drilled caissons, caissons for water front structures, such as a pumphouse, and rock anchor systems. These types of foundation are reviewed on a case-by-case basis.

The major plant Category I foundations that are reviewed, together with the descriptive information, are listed below:

Rev. 1 - July 1981

USNRC STANDARD REVIEW PLAN

Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20545.

NUCLEAR REGULATORY COMMISSION

Docket No. 7222 Official Exh No. 93
In the matter of PFS
Staff _____ IDENTIFIED
Applicant _____ RECEIVED
Intervenor REJECTED _____
Cont'g Off'r _____
Contractor _____ DATE 6/20/02
Other _____ Witness BarkH
Reporter G Betz

- d. For the containment foundation, the design and analysis procedures referenced in subsection II.4 of SRP Section 3.8.1 are acceptable.
- e. The design report is found acceptable if it satisfies the guidelines contained in Appendix C to SRP Section 3.8.4.
- f. The structural audit is conducted as described in Appendix B to SRP Section 3.8.4.

For determining the overturning moment due to an earthquake, the three components of the earthquake should be combined in accordance with methods described in SRP Section 3.7.2. Computer programs are acceptable if the validation provided is found in accordance with procedures delineated in subsection II.4.e of SRP Section 3.8.1.

5. Structural Acceptance Criteria

For each of the loading combinations referenced in subsection II.3 of this SRP Section, the allowable limits which constitute the acceptance criteria are referenced in subsection II.5 of SRP Section 3.8.1 for the containment foundation, and are listed in subsection II.5 of SRP Section 3.8.4 for all other foundations. In addition, for the five additional load combinations delineated in subsection II.3 of this SRP section, the factors of safety against overturning, sliding and floatation are acceptable if found in accordance with the following:

<u>For Combination</u>	<u>Minimum Factors of Safety</u>		
	<u>Overturning</u>	<u>Sliding</u>	<u>Floatation</u>
a. -----	1.5	1.5	--
b. -----	1.5	1.5	--
c. -----	1.1	1.1	--
d. -----	1.1	1.1	--
e. -----	--	--	1.1

6. Materials, Quality Control, and Special Construction Techniques

For the containment foundation, the acceptance criteria for materials, quality control, and any special construction techniques are referenced in subsection II.6 of SRP Section 3.8.1. For all other seismic Category I foundations, the acceptance criteria are similar to those referenced in subsection II.6 of SRP Section 3.8.4.

7. Testing and Inservice Surveillance Requirements

At present there are no special testing or in-service surveillance requirements for seismic Category I foundations other than those required for the containment foundation, which are covered in subsection II.7 of SRP Section 3.8.1. However, should some requirements become necessary for special foundations, they will be reviewed on a case-by-case basis.

III. REVIEW PROCEDURES

The reviewer selects and emphasizes material from the review procedures described below, as may be appropriate for a particular case.