THE EVOLUTION OF PRESENT-DAY USAEC SEISMIC AND GEOLOGIC CRITERIA

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SUMMARY

Numerous changes in methods, concepts and review procedures that symbolized the development of present-day USAEC Standards for selection of seismic design parameters. From the primitive concept of estimating a seismic factor based solely upon the earthquake history of an area and then doubling the estimated seismic factor; to the present deterministic Safe Shutdown Earthquake, predicted upon geologic considerations, required many years of adversary reviews, public hearings and advancement in the state-of-the-art. A review of procedures used in the original selection of seismic factors, at Peach Bottom I, Oyster Creek, San Onofre I as examples, through more recent plants such as Nine Mile II, the Atlantic Generating Station, and etc., are discussed from the point of view of a utility consultant.

The effects of prolonged public-hearings, adversary-type review of SAR submittal and advanced of the state-of-the-art have refined (and in all instances expanded) the type of studies needed to satisfy the present day criteria. Today's procedure do represent a cross-section of opinion and are still not finalized. In fact, Appendix A, 10CFR100, Seismic and Geologic Siting Criteria, is presently being revised (it should be available for discussion in September and if so will be a part of the presentation). Thus, the implementation of the criteria discussed in detail in the paper generally are in a state of flux. The continual refinement of criteria, the long lead time between the engineering seismology study and public hearing (about 2 years) requires a constant awareness by the

investigator, with the possibility of numerous revisions, during the progress of a project.

The ^{authors} will discuss the scope of study required for "Today's" plant, including:

1. Literature source
2. Field geology and geophysics
3. Use of local experts
4. Laboratory testing
5. Analyses and Evaluation
6. Development of criteria-(seismic factor, soil-structure interaction parameters and response spectra)
7. Report presentation

This review of past, and discussion of present criteria will provide a useful review of the US Seismic and Geologic investigative evolution necessary to operate in today's environment.