

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555

April 29, 1994

NRC INFORMATION NOTICE 94-32: REVISED SEISMIC HAZARD ESTIMATES

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to NUREG-1488, "Revised Livermore Seismic Hazard Estimates for 69 Sites East of the Rocky Mountains," published in April 1994. It is expected that recipients will review the information for applicability to their facilities, specifically with regard to the Individual Plant Examination of External Events (IPEEE) process. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

During the 1980s, two probabilistic seismic hazard studies were undertaken, one by the Lawrence Livermore National Laboratory (LLNL), as documented in NUREG/CR-5250, "Seismic Hazard Characterization of 69 Nuclear Plant Sites East of the Rocky Mountains," dated January 1989, and another by the Seismicity Owners Group/Electric Power Research Institute (SOG/EPRI), as documented in EPRI NP-4726, "Seismic Hazard Methodology for the Central and Eastern United States," dated July 1986. These studies were performed in an effort to improve the estimation of the seismic hazard that can be expected anywhere in the United States east of the Rocky Mountains. The results of these studies produced significantly different seismic hazard predictions in terms of the absolute values of the probability of exceeding specific levels of earthquake induced ground motion. However, the results of both studies were consistent in terms of the relative seismic hazard from site to site. The consensus of the NRC staff and its consultants was that the differences in the results were not driven by the difference in methodologies, but rather were a result of the difference in the way in which the uncertainties in seismicity models and ground motions models were propagated through the computational processes of the two methodologies. In 1992, LLNL conducted another study under the sponsorship of the NRC using a revised method for elicitation of seismicity parameters, ground motion estimates, and the uncertainties associated with those parameters and estimates. The results of the new study were published for comment in draft NUREG-1488 in October 1993.

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The seismic hazard estimates calculated in the original LLNL study and in the EPRI NP-4726 study were considered in the preparation of NUREG-1407, "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities," published in June 1991. The results of the new LLNL study are substantially different from those of the previous LLNL study. Also, the EPRI study has not been revised since its publication in 1986. Therefore, the staff considers the results of the new LLNL study to represent the best available information on seismic hazard estimates.

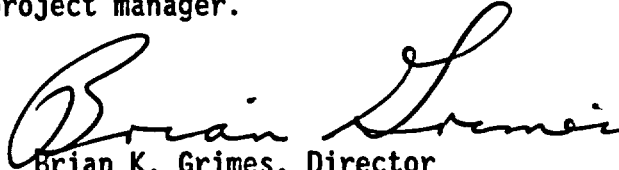
### Discussion

The consensus among experts associated with the probabilistic seismic hazard analyses (PSHA) was that the large differences between the median hazard estimates and the mean hazard estimates in the LLNL PSHA results were primarily caused by the large uncertainty factors that accompanied the seismic recurrence and ground motion models. In 1992, LLNL contacted the seismicity and ground motion experts from the original study as well as several others to elicit the required information using techniques that allowed the experts to be more precise about their estimates. Using a slightly modified version of the original LLNL Probabilistic Seismic Hazard Methodology, LLNL recalculated the seismic hazard estimates for all the nuclear power plant sites east of the Rocky Mountains. The results exhibited significant reductions in the observed spread between the median and the mean estimates of the hazard data. Subsequently, NRC published the revised seismic hazard estimates for all operating nuclear power plant sites east of the Rocky Mountains as draft NUREG-1488 for comment. The NRC received comments from two nuclear industry companies. These comments neither contested nor suggested amendments to the technical data conveyed by draft NUREG-1488. Instead, these comments suggested changes in the IPEEE program scope. Therefore, NUREG-1488 has been published with no technical changes.

The NRC staff is reviewing the new information described above to see if it is appropriate to revise the IPEEE seismic scope. NRC review of the scope of the current seismic IPEEE process may identify plants whose scope of investigation can be reduced based on the new hazard information.

Any modifications of the IPEEE process by the NRC will neither necessitate a revision to, nor have any impact on, efforts by licensees who have completed their seismic IPEEE or are near completion, or plan to proceed with the current guidance of Generic Letter 88-20, Supplement 4 and NUREG-1407. Licensees who have not completed the seismic portion of the IPEEE may continue with their programs and submit their completed IPEEEs for staff review based on the previous studies or submit a request to adjust their IPEEE schedule to take the new information into account.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.



Brian K. Grimes, Director  
Division of Operating Reactor Support  
Office of Nuclear Reactor Regulation

Technical contacts: Gus Giese-Koch, NRR  
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Ron Hernan, NRR  
(301) 504-2010

Attachment:  
List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-31	Potential Failure of Wilco, Lexan-Type HN-4-L Fire Hose Nozzles	04/14/94	All holders of OLs or CPs for nuclear power reactors.
90-68, Supp. 1	Stress Corrosion Cracking of Reactor Coolant Pump Bolts	04/14/94	All holders of OI or CPs for pressurized water reactors.
94-30	Leaking Shutdown Cooling Isolation Valves at Cooper Nuclear Station	04/12/94	All holders of OLs or CPs for nuclear power reactors.
94-29	Charging Pump Trip during a Loss-of-Coolant Event Caused by Low Suction Pressure	04/11/94	All holders of OLs or CPs for pressurized water reactors.
92-51, Supp. 1	Misapplication and Inadequate Testing of Molded-Case Circuit Breakers	04/12/94	All holders of OLs or CPs for nuclear power reactors.
94-28	Potential Problems with Fire-Barrier Penetration Seals	04/05/94	All holders of OLs or CPs for nuclear power reactors.
94-27	Facility Operating Concerns Resulting from Local Area Flooding	03/31/94	All holders of OLs or CPs for nuclear power reactors.
94-26	Personnel Hazards and Other Problems from Smoldering Fire-Retardant Material in the Drywell of a Boiling-Water Reactor	03/28/94	All holders of OLs or CPs for nuclear power reactors.
93-17, Rev. 1	Safety Systems Response to Loss of Coolant and Loss of Offsite Power	03/25/94	All holders of OLs or CPs for nuclear power.

OL = Operating License  
CP = Construction Permit

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orig /s/'d byBKGrimes

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\*See previous concurrence

OFFICE	DE:ECGB	DE:ECGB	DE:ECGB	D:RES	D:RES
NAME	GGiese-Koch	RRothman	GBagchi	JMurphy	LShao
DATE	4/7/94*	4/7/94*	4/8/94*	4/8/94*	4/8/94*
D/DE	OGCB:NRR*	AC/OGCB:NRR*	D/DORS:NRR		
BSheron	NECampbell	AJKugler	BKGrimes		
04/13/94*	04/21/94	04/21/94	04/25/94		

DOCUMENT NAME: 94-32.IN

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BSheron	NECampbell	AJKugler <i>JK</i>	BKGrimes <i>JK</i>
04/13/94*	04/21/94 <i>J.E. Campbell</i>	04/21/94	04/ /94

DOCUMENT NAME: INIPEEE.RES