























Proponent experts at WS2, including S. Stein and E. Calais



Recommendation: More research should be conducted

Report of the

Independent Expert Panel on New Madrid Seismic Zone Earthquake Hazards

Executive Summary

On the occasion of the bicentennial of the 1811-1812 earthquakes, we have reviewed the current national seismic hazard maps in the region of the New Madrid Seismic Zone (NMSZ), and the process of their generation focusing specifically on the hazard due to large events in the NMSZ. Our review solicited input from scientists, engineers, and the public. The review was called by the National Earthquake Prediction Evaluation Council (NEPEC) and motivated by a recommendation from the Advisory Committee on Earthquake Hazards Reduction and in part by the underlying controversy about the current high earthquake hazard assigned the NMSZ.

The hazard is sensitive to several geological parameters that are not certain, and which remain the focus of scientific research and refinement. The USGS national seismic hazard maps represent

Not a useful input to a hazard analysis













SSHAC Level	Level 1	Level 2 • Project Manager • Small Ti team • Peer reviewers • Hazard calculation team • Resource experts • Proponent experts	Level 3	Level 4 • Project Manager • Project TFI • Small TFI team • Panet(s) of evaluator experts • Peer reviewers • Resource experts • Proponent experts • Data team • Hazard calculation team	
Number of participants	Project Manager Small TI team Peer reviewers Hazard calculation team		Project Manager Project TI Larger TI team Peer reviewers Resource experts Proponent experts Data team Hazard calculation team		
Interaction	Limited or no contact with proponent and resource experts	Proponent and resource experts contacted individually	Proponent and resource experts interact with TI Team in facilitated workshops Proponent and resource to interact with evaluator exp facilitated workshops		
Peer review	Late stage	Late stage	Participatory Participatory		
Ownership	• TI Team	• TI Team	• TI Team	• TFI team and evaluator experts	
Transparency	Dependent on documentation	Dependent on documentation	Interested parties can view interactions at workshops Partice, tory peer reviewers observe workshops, participate in Workshop ∓ Dependent on mentation Participate in Workshop #3 Dependent on document		
Regulatory Assurance*	Limited or no interaction with proponent and resource experts reduces confidence Depends on TI team and degree to which data, models, and methods are readily available	Individual Interaction with proponent and resource experts increases confidence over Level 1 Depends on TI team, degree to which data, models, and methods are readily available, and success in obtaining additional information and understanding from individual interactions	Interaction among proponent, resource, and evaluator experts in facilitated workshops greatly increases confidence over Level 2 Documentation of evaluation and inlegration process by Ti Team key to high levels of confidence		

Table 4-2. Attributes of Various SSHAC Levels (Continued)						
SSHAC Level	Level 1	Level 2	Level 3	Level 4		
Cost	Lowest because of limited number of participants	Slightly greater than Level 1 because of time required for interaction with proponent and resource experts	Significantly greater than Level 2 because of greater number of participants and use of facilitated workshops Greater likelihood that TI team members are physically dispersed, requiring costs for systems to remotely access data and information Costs associated with TI Team working meetings	Comparable to Level 3 in terms of use of facilitated workshops and numbers of participants Greater likelihood that TF leam members and expert evaluators are physically dispersed, requiring cost for systems to remotely access data and information Greater than Level 3 because of need for TF1 to interact individually with evaluator experts		
Duration	Shortest because of limited or no interaction with proponent and resource experts	Slightly greater than Level 1 because of time required for interaction with proponent and resource experts	Significantly greater than Level 2 because of constraints in organizing workshops around proponent and resource expert, TI team member, and PPRP member personal schedules	greater than Level 2 onstraints in orkshops around di resource expert, Ti edules • Similar to Level 3 or longer because of constraints in organizing orkshops around proponent, resource, evaluator expert, TFI team member, and PPRP member personal schedules		
Management challenge	Least because of greater control over participants	 Slightly greater than Level 1 because of need to interact individually with proponent and resource experts whose schedules cannot be controlled 	Significantly greater than Level 2 because of increased number of participants (a number of whom may require subcontracts) and the logistics of organizing workshops	Greater than Level 3 because of increased number of participants (a number of whom may require subcontracts), the logistics of organizing workshops, and the logistics of organizing needed interactions among the TFI team and expert evaluators		
		cannot be controlled	NUF	expert evaluators		



Existing Study	Condition of Existing Study	Hazard Assessment Needed	Recommendation	SSHAC Lev for New Study
No study, or previous studies conducted at lower SSHAC Levels (2 or 1), or non-SSHAC studies	Not adequate for nuclear/critical facilities	Regional and/or site- specific	Conduct new study	3 or 4
Regional or site-specific	Not viable**	Regional and/or site- specific	Replace existing study	3 or 4
Regional or site-specific	Viable	Site-specific	Refine regional study locally consistent with RG 1.208 and ANSI/ANS-2.27 / 2.29 2008	23, or 4
Site-specific (one or more sites), no regional	Viable	Regional	Use site-specific studies to assist development of regional models	3 or 4
Site-specific (one or more sites), no regional	Not Viable	Regional	Conduct new study	3 or 4
**"Viable" is defined as: (1) based on a co body, and range of technically defensible i	Insideration of data, models, and minterpretations.	tethods in the larger tec	chnical community, and (2) repres	sentative of the cen



