

From: Martin, Robert *MR*
To: Manoly, Kamal; Khanna, Meena
Subject: FYI: Other seismic events
Date: Monday, August 29, 2011 9:34:12 AM

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Ref to NRC

From: Reckley, William *WR*
Sent: Monday, August 29, 2011 9:01 AM
To: Martin, Robert
Subject: Plant Restart

Sorry but I was out of the office on Friday. I don't have any personal experience with a plant restart following an earthquake but there is some guidance published by EPRI and we have a regulatory guide (RG1.166). Found following in a slide (ML081290423)

- **1986 Earthquake Near Perry (Magnitude 5.0)**
 - Plant designed to withstand 0.15 g
 - Momentary peak accelerations of 0.19 to 0.23 g at high frequency
- **High frequency peak values have minimal effect on structures**
 - Leaks in flange joints in non-safety related piping and small cracks in concrete
 - Regulatory Guide 1.166 (post-earthquake shutdown and walkdown requirements) issued following this event
- **Allowed plants to have more realistic shutdown criteria during high frequency seismic events**
- **California earthquakes in 1989 (Loma Prieta – Magnitude 6.9) and 1994 (Northridge – Magnitude 6.7)**
 - Not in immediate vicinity of NPPs – other industrial facilities nearby
 - Enabled close study of earthquake effects on structure and component response by NRC and industry
 - NRC revised Reg. Guides 1.136 & 1.61 to endorse latest industry codes
- **San Simeon earthquake in 2003 (Magnitude 6.5)**
 - Approximately 50 miles from the Diablo Canyon NPP
 - Motion recorded at Diablo Canyon was 0.04 g (less than shutdown criteria)
 - Developed insights on structural models
- **Wabash Valley earthquake in Illinois on 4/18/2008 (magnitude 5.2)**
 - Expected magnitude for that source
 - Closest NPP is Clinton (120 miles away)
 - Ground motion substantially less than licensed safe shutdown earthquake

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