

## NEW EARTHQUAKE MAPS PROMISE TO SHAKE UP UPF PLANS

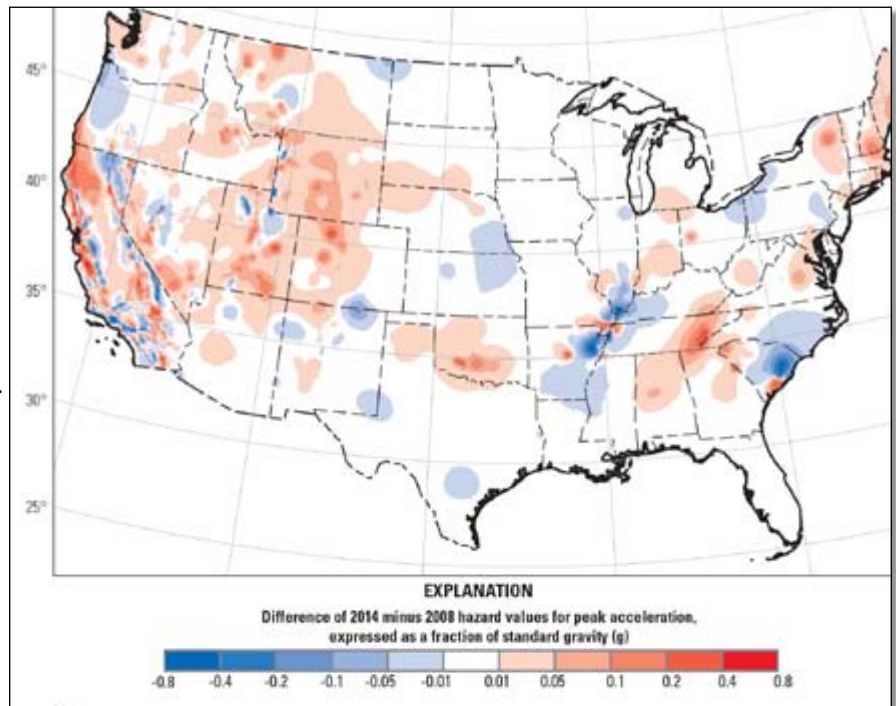
**Concerns about earthquake** activity and building stability at the Y12 Nuclear Weapons Complex in Oak Ridge predate plans for the National Nuclear Security Administration's flagship "modernized" bomb production plant, the Uranium Processing Facility.

The most recent earthquake hazard maps, released in August 2014 by the US Geological Survey, elevate those concerns in parts of the US in light of Fukushima and other recent earthquake data.

The new hazard maps mark several areas of the country with new hazard rankings, significantly higher than the 2008 rankings. East Tennessee is among those areas of the country with the largest increase on the new hazard maps, raising new questions about the advisability of locating a crucial defense facility, which handles radioactive nuclear weapons materials in a variety of forms, at Y12.

### NOT THE FIRST TIME

Seismic issues—how to assure the UPF would withstand a design-basis earthquake, or, if it failed, would fail in predictable ways—have been at the heart of the **concerns raised** by the Defense Nuclear Facilities Safety Board. After years of denial, the NNSA was compelled to modify its design to incorporate changes suggested by the Safety Board—everything from creating a four hundred thousand cubic yard block of concrete under the UPF to stabilize the foundation to thickening the interior walls to provide added resistance to shear factors. Some of these modifications contributed to the half billion dollar space/fit fiasco in 2012, when designers ran out of room for the equipment scheduled for the UPF.



Resolving seismic safety issues has sometimes seemed like a game to watchdogs. Instead of embracing maximum design safety, officials in Oak Ridge have tried to make buildings safer on paper by downgrading the design requirements for weapons facilities at Y12. Even the Red Team report, now being implemented by NNSA, breaks the production mission into parts so that non-nuclear operations can be accommodated in less robust, and less expensive, facilities.

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But efforts to downplay or avoid seismic safety concerns have consistently been undermined by science as our understanding of geologic behavior and earthquake effects has become more refined. In April 1994, when Oak Ridge officials were downplaying the likelihood of earthquakes in East Tennessee, *Science* magazine published an **article** by researchers from the University of North Carolina, Chapel Hill that reviewed geologic activity in the East Tennessee Seismic Zone and drew two conclusions. The first was already widely known: the East Tennessee Seismic Zone is the second highest activity seismic zone in the eastern United

States. The second was more jarring: the historic record of high frequency/low motion activity should not be construed as predictive of more of the same, but rather as a precursor of a future large-scale event.

Since that article, research on the East Tennessee seismic zone has yielded other interesting information. Robert Hatcher of the University of Tennessee said in 2011 the East Tennessee seismic zone has seen earthquakes of magnitude 6 in the past, spanning thousands of years. A magnitude 6 earthquake could move bedrock a foot or more. Hatcher refuted the suggestion that seismic activity in East Tennessee was likely to peter out in a few decades. His findings appear to be supported by the most recent Seismic Hazard maps published by the USGS.

## THE MORE WE KNOW...

The recent USGS hazard maps upgrade the risks (and the design requirements) for Y12 and the Oak Ridge Reservation, with implications not only for the UPF, but also for the continued operation of production facilities in Building 9212, a facility which is not seismically qualified, lacking structural support to withstand a design-basis earthquake. **Recent reports** from the DNFSB indicate some of the same problems plague Building 9215, one of the facilities the Red Team

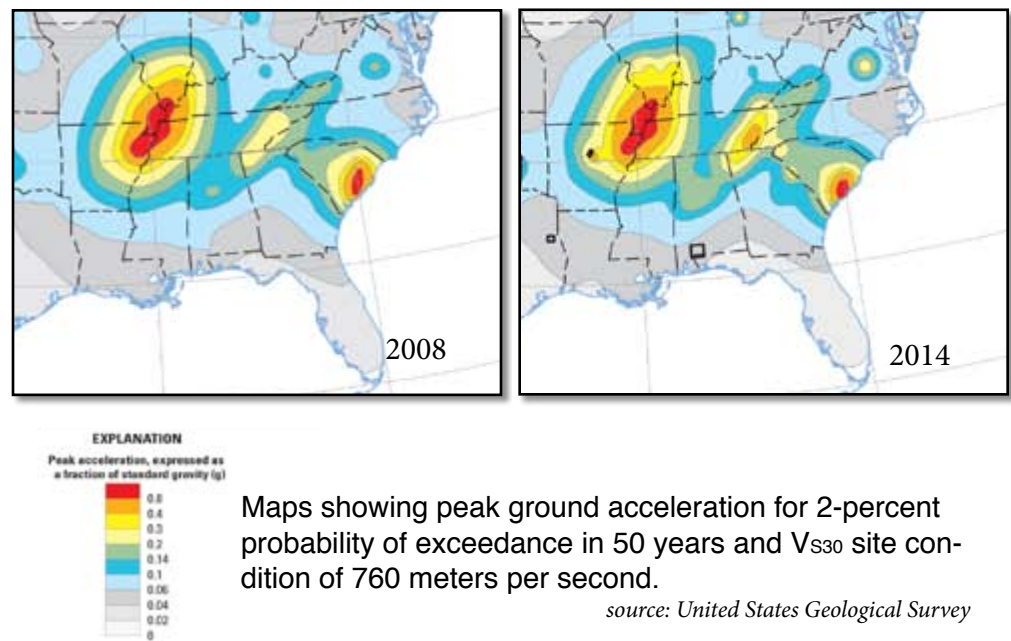
proposes using for relocated production activities.

The USGS maps show the hazard increase in East Tennessee to be among the largest increases in the country, resulting in a significant increase in risk.

NNSA has thus far refused to respond to requests for a the legally required environmental analysis for the Red Team plan from the Alliance for Nuclear Accountability and the Oak Ridge Environmental Peace Alliance. A new Environmental Impact Statement for Y12 would have to factor in the most recent information on seismic hazards, making it hard for

NNSA to justify continued operations, let alone a new UPF at Y12.

But here's the thing. A major earthquake that caused structural failure of facilities at Y12 would not just compromise worker, public and environmental health and safety. It would also disrupt indefinitely the US capacity to produce thermonuclear secondaries and cases for US nuclear warheads. The resulting loss of material accountability/control and unprecedented environmental remediation challenge would likely extend the disruption to US weapon production capacity for decades.



## THREE THINGS YOU CAN DO

Check out the USGS 2014 Seismic Hazard Map. The main map is here: [http://earthquake.usgs.gov/hazards/products/conterminous/2014/2014\\_pga2pct50yrs.pdf](http://earthquake.usgs.gov/hazards/products/conterminous/2014/2014_pga2pct50yrs.pdf), but there is lots of interesting stuff at the USGS web site. (trigger warning: not for the squeamish, especially in California.)

Write NNSA Administrator Klotz. Tell him NNSA must complete a new Environmental Impact Statement for the UPF incorporating this new information.

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Get ready to participate in the UPF EIS process. There will be hearings in Oak Ridge and a public comment period. You can read old UPF Updates on OREPA's web site: [www.orepa.org](http://www.orepa.org). Scroll to the bottom for UPF resources, including archived Updates on the right.