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Columbia Nuclear Reactor's Earthquake Risks are Underestimated, Physicians Call for Shutdown

Seattle, WA, November 2, 2013

A local geologist examining existing knowledge of the seismic activity on the Hanford Nuclear Reservation and the Mid-Columbia basin has concluded that the earthquake standards set for the Northwest's only commercial nuclear power plant are at least 300% lower than should be required. Oregon and Washington Physicians for Social Responsibility, which commissioned the study, has called for the U.S. Nuclear Regulatory Commission to shut down the nuclear plant until it can meet adequate earthquake standards.

The Columbia Generating Station nuclear power plant, previously known as the Washington Public Power Supply System (WPPSS) plant #2 (WNP-2), is a GE Boiling Water Reactor with a Mark II containment that began operation in 1984 on the Hanford Nuclear Reservation along the Columbia River, north of Richland, Washington. The plant produces around 4% of the Pacific Northwest's electricity on an average annual basis.

Kennewick, WA-based consulting engineering geologist, Terry L. Tolan, LEG, produced two reports released yesterday by the Oregon and Washington chapters of Physicians for Social Responsibility. "No seismic structural upgrades have been made at the Columbia Generating Station despite all of the geologic evidence that has been assembled over the past thirty years which has dramatically increased the seismic risk at this site," Tolan concluded.

Tolan's reports and attachments, along with a letter from Oregon and Washington PSR chapter Presidents John Pearson, MD, and Steve Gilbert, PhD, DABT, were sent to Nuclear Regulatory Commission Chairwoman Allison Macfarlane yesterday, asking for her intervention and calling on the NRC to "put the safety of the public in the Pacific Northwest above the utility's interests to continue operating" and "shut down the CGS nuclear power plant immediately until it can be shown that it meets adequate earthquake standards."

"Given the design similarities to the Japanese GE BWR reactors, we are concerned that if an earthquake cracked the elevated spent-fuel pool, cooling water would drain and we could have a Fukushima-like scenario on our hands," said Seattle toxicologist Steven Gilbert, president of PSR's Washington chapter.

Portland pediatrician John Pearson, president of Oregon's PSR chapter, echoed that sentiment: "we have seen what a 'station black-out/loss of coolant' accident can do to this type of a nuclear reactor. We are very concerned that a major earthquake could lead to a similar accident on the Columbia River."

Geologist Tolan's first report outlines the new seismic information, based upon thirty years of additional research in the region, that was not included in the initial assessment of the nuclear power plant, including:

- 1) the erroneous placement of the largest historic earthquake in relation to the nuclear plant;
- 2) a doubling of the number of major fault lines discovered in the region;
- 3) ground motion studies for the US Department of Energy's Waste Treatment Plant, ten miles away, found potential for more than three times as much vibratory ground motion as had been estimated for the CGS nuclear plant;
- 4) faults at different layers in the substrata are now believed to be "coupled," increasing the potential for larger earthquakes;
- 5) faults are now known to be much longer than previously known – increasing the potential for more powerful earthquakes;
- 6) faults are now known to be "younger," indicating more recent quakes;
- 7) the distance of the closest active fault to the CGS nuclear plant is now known to be 2.3 miles, not the more than five miles away as originally believed;
- 8) faulting extends into the basement rock below basalt layers, greatly increasing the potential for large quakes; and,
- 9) surface faulting on Umtanum Ridge, which extends within 6.2 miles of the nuclear plant, indicates more recent activity than previously known, increasing the likelihood of earthquakes.

Tolan's second report dissects a 2010 analysis prepared by CGS nuclear plant operator Energy Northwest for the Nuclear Regulatory Commission regarding new seismic knowledge in the region – using some of the specifics from the first report to demonstrate why the utility's arguments are inadequate. ENW acknowledged that they had not reexamined some fundamental aspects of seismic hazard assessment such as the location of the faults, the lengths of the faults, the fault models, earthquake frequencies, and earthquake magnitudes. Tolan notes that "not reexamining these fundamental aspects was a notable failure on Energy Northwest's part."

The Oregon and Washington PSR letter to NRC Chair Macfarlane also noted that, post Fukushima, the NRC has carried out two seismic inspections of the CGS plant that were based on the original, clearly inadequate, licensed earthquake standards. They found that the Emergency Response Facilities, the Tower Makeup system, the Fire Protection Systems, the Floor Drain Isolation Valves and the Sump Level Switches were "not seismically qualified." The 2012 seismic inspections, known as walk downs and walk bys, showed 109 "potentially adverse seismic conditions" with 15 walk downs deferred and not yet reported. The NRC has reported that many of these failings, based upon the original earthquake standards, remain unaddressed.

See attachments:

- +October 31, 2013 letter from Drs. Pearson and Gilbert, Oregon & Washington PSR, to NRC Chairwoman Allison Macfarlane
- +Tolan Report #1
- +Tolan Report #2
- +Seismic Map for Mid-Columbia Basin
- +Attachments to Report #2