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Engineers Knew Fukushima Might Be Unsafe, But Covered It Up …

And Now the Extreme Vulnerabilty of NEW U.S. Plants Is Being Covered Up

By Washington's Blog
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Preface: The current nuclear reactor design was chosen – not because it was safe – but because it worked on navy submarines. And governments have been covering up nuclear meltdowns for 50 years.

BBC reporter Greg Palast reports – based on a first-hand interview of a senior engineer for the corporation which built the Fukushima nuclear plants, and a review of engineers' field diaries – that the engineers who built the Fukushima nuclear plants knew their design would fail in an earthquake:

> The plant was riddled with problems that, no way on earth, could stand an earth- quake. The team of engineers sent in to inspect found that most of these components could "completely and utterly fail" during an earthquake.

That quote is about the Shoreham, New York, power station, not Fukushima. But Palast claims that:

> (1) the company fraudulently changed the seismic report to pretend the plant was earthquake-safe;
>
> and
>
> (2) the exact same thing was done at Fukushima.

As I noted in March:

> In 2004, Leuren Moret warned in the Japan Times of the exact type of nuclear catastrophe that Japan is now experiencing:
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> > Of all the places in all the world where no one in their right mind would build scores of nuclear power plants, Japan would be pretty near the top of the list.
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> > ***
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> > Japan sits on top of four tectonic plates, at the edge of the subduction zone, and is in one of the most tectonically active regions of the world.

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Many of those reactors have been negligently sited on active faults, particularly in the subduction zone along the Pacific coast, where major earthquakes of magnitude 7-8 or more on the Richter scale occur frequently. The periodicity of major earthquakes in Japan is less than 10 years. There is almost no geologic setting in the world more dangerous for nuclear power than Japan — the third-ranked country in the world for nuclear reactors.

"I think the situation right now is very scary," says Katsuhiko Ishibashi, a seismologist and professor at Kobe University. "It's like a kamikaze terrorist wrapped in bombs just waiting to explode."

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On July 7 last year, the same day of my visit to Hamaoka, Ishibashi warned of the danger of an earthquake-induced nuclear disaster, not only to Japan but globally, at an International Union of Geodesy and Geophysics conference held in Sapporo. He said: "The seismic designs of nuclear facilities are based on standards that are too old from the viewpoint of modern seismology and are insufficient. The authorities must admit the possibility that an earthquake-nuclear disaster could happen and weigh the risks objectively."

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I realized that Japan has no real nuclear-disaster plan in the event that an earthquake damaged a reactor's water-cooling system and triggered a reactor meltdown.

Additionally, but not even mentioned by ERC officials, there is an extreme danger of an earthquake causing a loss of water coolant in the pools where spent fuel rods are kept. As reported last year in the journal Science and Global Security, based on a 2001 study by the U.S. Nuclear Regulatory Commission, if the heat-removing function of those pools is seriously compromised — by, for example, the water in them draining out — and the fuel rods heat up enough to combust, the radiation inside them will then be released into the atmosphere. This may create a nuclear disaster even greater than Chernobyl.

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It is not a question of whether or not a nuclear disaster will occur in Japan; it is a question of when it will occur.

As the US Geological Survey notes, Japan has had many earthquakes, including:

- 1891 10 27 – Mino-Owari, Japan – M 8.0 Fatalities 7,273
- 1896 06 15 – Sanriku, Japan – M 8.5 Fatalities 27,000
- 1911 06 15 – Ryukyu Islands, Japan – M 8.1 Fatalities 12
- 1923 09 01 – Kanto (Kwanto), Japan – M 7.9 Fatalities 143,000
- 1927 03 07 – Tango, Japan – M 7.6 Fatalities 3,020
- 1933 03 02 – Sanriku, Japan – M 8.4 Fatalities 2,990
- 1943 09 10 – Tottori, Japan – M 7.4 Fatalities 1,190

- 1944 12 07 – Tonankai, Japan – M 8.1 Fatalities 1,223
- 1945 01 12 – Mikawa, Japan – M 7.1 Fatalities 1,961
- 1946 12 20 – Nankaido, Japan – M 8.1 Fatalities 1,330
- 1948 06 28 – Fukui, Japan – M 7.3 Fatalities 3,769
- 1952 03 04 – Hokkaido, Japan region – M 8.1 Fatalities 31
- 1964 06 16 – Niigata, Japan – M 7.5 Fatalities 26
- 1968 05 16 – Off the East Coast of Honshu, Japan – M 8.2 Fatalities 47
- 1995 01 16 – Kobe, Japan – M 6.9 Fatalities 5,502
- 2000 10 06 – Western Honshu, Japan – M 6.7
- 2003 05 26 – Near the East Coast of Honshu, Japan – M 7.0
- 2003 09 25 – Hokkaido, Japan Region – M 8.3
- 2003 10 08 – Hokkaido, Japan Region – M 6.7
- 2003 10 31 – Off the East Coast of Honshu, Japan – M 7.0
- 2004 05 29 – Off the East Coast of Honshu, Japan – M 6.5
- 2004 09 05 – Near the South Coast of Western Honshu, Japan – M 7.2
- 2004 09 05 – Near the South Coast of Honshu, Japan – M 7.4
- 2004 09 06 – Near the South Coast of Honshu, Japan – M 6.6
- 2004 10 23 – Near the West Coast of Honshu, Japan – M 6.6 Fatalities 40
- 2004 11 28 – Hokkaido, Japan Region – M 7.0
- 2004 12 06 – Hokkaido, Japan Region – M 6.8
- 2005 03 20 – Kyushu, Japan – M 6.6 Fatalities 1
- 2005 07 23 – Near the South Coast of Honshu, Japan – M 5.9
- 2005 08 16 – Near the East Coast of Honshu, Japan – M 7.2
- 2005 10 19 – Near the East Coast of Honshu, Japan – M 6.3
- 2005 11 14 – Off the East Coast of Honshu, Japan – M 7.0
- 2005 12 02 – Near the East Coast of Honshu, Japan – M 6.5
- 2006 06 11 – Kyushu, Japan – M 6.3
- 2007 03 25 – Near the West Coast of Honshu,Japan – M 6.7 Fatalities 1
- 2007 07 16 – Near the west coast of Honshu, Japan – M 6.6 Fatalities 9
- 2008 05 07 – Near the East Coast of Honshu, Japan – M 6.8
- 2008 06 13 – Eastern Honshu, Japan – M 6.9 Fatalities 13
- 2008 07 23 – Eastern Honshu, Japan – M 6.8 Fatalities 1
- 2008 09 11 – Hokkaido, Japan region – M 6.8
- 2009 08 09 – Near the South Coast of Honshu, Japan – M 7.1
- 2009 08 10 – Near the South Coast of Honshu, Japan – M 6.1 Fatalities 1
- 2009 08 12 – Izu Islands, Japan region – M 6.6
- 2009 08 17 – Southwestern Ryukyu Islands, Japan – M 6.7
- 2009 10 30 – Ryukyu Islands, Japan – M 6.8
- 2011 03 11 – Near the East Coast of Honshu, Japan – M 9.0 Fatalities 10,019

Yet:

> Japanese engineer Masashi Goto, who helped design the containment vessel for Fukushima's reactor core, says the design was not enough to withstand earthquakes or tsunamis.

Indeed, Reuters points out today:

> [A] review of company and regulatory records shows that Japan and its largest utility repeatedly downplayed dangers and ignored warnings — including a 2007 tsunami study from Tokyo Electric

> Power Co's senior safety engineer.
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> In other words, Tokyo Electric scientists realized as early as 2007 that it was quite possible a giant wave would overwhelm the sea walls and other defenses at Fukushima by surpassing engineering assumptions behind the plant's design that date back to the 1960s.
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> ***
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> Despite the projection by its own safety engineers that the older assumptions might be mistaken, ... "There are no legal requirements to re-evaluate site related (safety) features periodically," the Japanese government said in a response to questions from the United Nations nuclear watchdog, the International Atomic Energy Agency, in 2008.

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In addition, years before Fukushima engineer Mitsuhiko Tanaka blew the whistle on the fact that Tepco covered up a defective containment vessel, the above-quoted Japan Times article blew the whistle:

> Yoichi Kikuchi, a Japanese nuclear engineer who also became a whistle-blower, has told me personally of many safety problems at Japan's nuclear power plants, such as cracks in pipes in the cooling system from vibrations in the reactor. He said the electric companies are "gambling in a dangerous game to increase profits and decrease government oversight."
>
> [Kei Sugaoka, a Japanese-American senior field engineer who worked for General Electric in the United States, who previously blew the whistle on Tepco's failure to inform the government of defects at the reactors] agreed, saying, "The scariest thing, on top of all the other problems, is that all nuclear power plants are aging, causing a deterioration of piping and joints which are always exposed to strong radiation and heat."

U.S. Plants Unsafe As Well

As Palast notes, the Shoreham power station could very well fail in an earthquake.

And as I pointed out in my March article:

> As MSNBC notes, there are 23 virtually-identical reactors in the U.S. to the leaking Fukushima reactors.
>
> As McClatchy notes, American reactors hold much more spent fuel than the Japanese reactors (the amount of radioactive fuel at Fukushima – in turn – dwarfs Chernobyl):
>
> U.S. nuclear plants use the same sort of pools to cool spent nuclear-fuel rods as the ones now in danger of spewing radiation

> at Japan's Fukushima Daiichi plant, only the U.S. pools hold much more nuclear material.
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> ***
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> The Japanese plant's pools are far from capacity, but still contain an enormous amount of radioactivity, Lyman said. A typical U.S. nuclear plant would have about 10 times as much fuel in its pools, he said.

And yet the nuclear industry and American government are poo-poohing the danger. As McClatchy notes:

> The Nuclear Regulatory Commission reaffirmed its position that the U.S. pools are operated safely.

The Nation notes:

> Aileen Mioko Smith, director of Green Action Kyoto, met Fukushima plant and government officials in August 2010. "At the plant they seemed to dismiss our concerns about spent fuel pools," said Mioko Smith. "At the prefecture, they were very worried but had no plan for how to deal with it."
>
> Remarkably, that is the norm—both in Japan and in the United States. Spent fuel pools at Fukushima are not equipped with backup water-circulation systems or backup generators for the water-circulation system they do have.
>
> The exact same design flaw is in place at Vermont Yankee, a nuclear plant of the same GE design as the Fukushima reactors. At Fukushima each reactor has between 60 and 83 tons of spent fuel rods stored next to them. Vermont Yankee has a staggering 690 tons of spent fuel rods on site.
>
> Nuclear safety activists in the United States have long known of these problems and have sought repeatedly to have them addressed. At least get backup generators for the pools, they implored. But at every turn the industry has pushed back, and the Nuclear Regulatory Commission (NRC) has consistently ruled in favor of plant owners over local communities.
>
> After 9/11 the issue of spent fuel rods again had momentary traction. Numerous citizen groups petitioned and pressured the NRC for enhanced protections of the pools. But the NRC deemed "the possibility of a terrorist attack...speculative and simply too far removed from the natural or expected consequences of agency action." So nothing was done—not even the provision of backup water-circulation systems or emergency power-generation systems.

Similarly, Pro Publica points out:

> Opponents of nuclear power have warned for years that if these pools drain, either by accident or terrorist attack, it could lead to

a fire and a catastrophic release of radiation.

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The nuclear industry says fears about the storage pools at U.S. plants are overblown because the pools are protected and, even if fuel is exposed to the air, the chance of a fire is incredibly small.

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"People should be very concerned because the NRC [Nuclear Regulatory Commission] has acknowledged that spent fuel pools that are not located inside the containment have the potential to cause catastrophic accidents," said Diane Curran, a lawyer who has represented environmental groups and governments in challenges to fuel storage plans.

"These are not high-probability accidents," Curran said, "but we have seen how low-probability accidents can happen."

After the Sept. 11 terrorist attacks, Congress asked the National Academies to study the vulnerability of spent fuel to a terrorist attack.

The resulting 2005 report, "Safety and Security of Commercial Spent Nuclear Fuel Storage ," concluded that "an attack which partially or completely drains a plant's spent fuel pool might be capable of starting a high-temperature fire that could release large quantities of radioactive material into the environment."

The report found that the vulnerability of the spent fuel to fire depends on how old it is and how it is stored. As the fuel ages, it cools, so it becomes less susceptible to a fire.

"The industry standard is that fuel that is older than five years can be dry-stored," said Kevin Crowley, director of the nuclear and radiation board for the National Research Council, part of National Academies.

The report recommended that the nuclear industry take steps to decrease the vulnerability of the storage pools to fire. Some of those steps are classified, Crowley said. But he said others, like making sure there were fire hoses or spray systems above the pools, were pretty simple.

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The nuclear industry disagreed with the national academy about the vulnerability of the spent fuel to a fire.

So a Fukushima-type disaster was inevitable ... and will be inevitable in the U.S. as well, unless steps are taken to make the plants safer.

Engineers Pretend Fukushima Never Happened

Nuclear engineer Arnie Gundersen noted yesterday that new US plant designs are very near being licensed by the Nuclear Regulatory Commission without any Fukushima modifications:

Indeed, Palast notes that the same company that designed the failed Fukushima plants, and the vulnerable Shoreham facility is:

> the designated builder for every one of the four new nuclear plants that the Obama Administration has approved for billions in federal studies.

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