

Immediately & Adequately Reinforce All Fuel Ponds At Fukushima Daiichi & Buttress the Buildings that support them.

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Mitsuhei Murata, Former Japanese Ambassador to Switzerland and Former Japanese Prime Minister Naoto Kan and nuclear fuel rod assembly expert Arnie Gunderson and many other technical experts have described a terrifyingly likely prospect. An unstoppable, apocalyptically-radioactive fire will start in the spent-fuel pools, that are now precariously perched on the refueling decks on top of Fukushima Daiichi Reactors 3 **and** 4, if the reactor buildings collapse or the ponds otherwise run dry. This continues to alarm many scientists and government officials around the world. It is going to take far too long to continue to risk waiting for the fuel rods to all be moved, since another earthquake is likely to strike a fatal blow at any time. Therefore, this report recommends securing prefabricated buttresses against the walls of crumbling reactor buildings 3 and 4 to stabilize them against horizontal ground motion during earthquakes, to more-reliably support these vital spent fuel ponds. Further steps to reinforce the pools *themselves* should also be undertaken.

Never before in the history of the World has it been so utterly critical to *immediately* make absolutely certain that already-crumbling buildings *cannot* fall---*no matter what!* Spent Fuel Pond Collapses at Fukushima Daiichi are dangerously probable. The ground itself, beneath the foundations of the Fukushima Daiichi Reactor 4 Building has subsided unevenly, almost a meter in some places. The structural stability of Fukushima Daiichi unit #4 was dubiously verified by only just *one*, **anonymous** "outside" expert. Even according to previous analyses by Tepco-affiliated experts, the diagonal support is inadequate for Richter 7 earthquakes and greater, *especially* in the highly probable event of horizontal ground motion. Precariously perched on top of two crumbling reactor buildings at Fukushima Daiichi Nuclear Reactor Complex, are fuel ponds that have *many* reactors worth of dangerously radioactive spent fuel in them.

A single collapse such as this could set a Domino-like chain of events that would be horrifyingly catastrophic to the Entire World, for *generations*. Extrapolating from a Brookhaven Experiment, fuel pond collapses would lead to a highly radioactive, pyrophoric fire; like thermite, it would produce its own oxygen, meaning that it cannot even be smothered. It cannot be cooled because water breaks down and releases hydrogen gas which burns and *reintroduces* the heat of decomposition. *Fortunately, contrary to public perception, there is considerable evidence that the relevant decision makers in Japan and in the US, and in many other countries already recognize the seriousness of this situation.*

So far all of the public attention has focused on the Reactor 4 Fuel Pond when, arguably, the Reactor 3 Building, with its precariously perched Fuel Pond, is probably in worse condition due to criticality events that led to especially-destructive, dynamite-like supersonic explosions called detonations, in addition to a hydrogen gas chemical explosion. The fact that the Reactor 3 Pond has half as many rods is irrelevant since it, like the Reactor 4 fuel pond could *still*, by itself, start a domino-effect of snowballing contamination and intense gamma ray skyshine that would compel the abandonment of the entire Daiichi **(1) Complex** of six reactors and with *its scores* of entire spent reactor cores in spent fuel ponds, **and** the entire Daini **(2) Complex**, with *its scores* of reactors and reactor cores, ten km away **and, quite likely**, the *entire* Tokai Complex-just fifty km from Tokyo, with *its scores* of reactor cores worth of Fuel Assemblies. All together, we are talking about a release of three Reactor *Complexes* containing *hundreds* of reactor **cores** worth of lethal radioactive fallout and radioactive gases. This opens the horrifying specter of abandoning Tokyo for *generations*. Based upon excess fatalities from the 2011 Fukushima evacuation, such an enormous and urgent evacuation, by itself, would kill about ten thousand people; where would they go, and how would they get there? How many *millions* would be horribly irradiated before they even *could* be relocated? Together these three complexes have the potential to release *several hundreds* of Chernobyls worth of fallout, all over the World, dwarfing all the radiation ever released by mankind, and doing so in a short span of time.

As urgent as this horrifying prospect really is, Tepco's much-criticized painfully slow solution really *may* actually be the only safe way to move the fuel rod assemblies, *given the technical, professional standards, regulatory, AND human realities of the situation*. Tepco has suddenly decided that they can move two assemblies at a time in the same amount of time as moving *one* assembly, even though this has never before been done, and the new crane is not designed for that. Cutting into the cranes rated margin of safety is *especially* likely to end badly if an earthquake strikes at the wrong time during a double-fuel rod assembly transfer. Dropping a single assembly could in itself set this apocalyptic domino effect into motion. If the pools can be reasonably reinforced, then they should patiently move the fuel assemblies as slowly as prudence dictates.

The Proposal

We probably do not need to *strengthen* the buildings so much as we need to *stabilize* them against *horizontal* motion. The single fastest way to stabilize these buildings is to install prefabricated Buttresses to stabilize the sides from tipping. Existing prefabricated bridge elements such as those used by combat engineers might be perfect.

Military personnel are especially suited for these vital tasks since they are already committed to accomplishing vital missions, *even if they must die to do so!* In contrast, Tepco *already* tried to pull out its workers and abandon the entire site early in the accident, before the Prime Minister intervened. Combat engineers are the best military personnel for reinforcing the buildings on an emergency basis under these treacherous conditions.

Submarine crews may be the best experts for stopping really bad leaks really fast, in case the fuel ponds just start cracking and leaking. Water proofing the outside of the fuel ponds by spraying on a urethane rubber roof coating and wrapping them in strong metal straps would help assure their integrity, even if they start seriously cracking and the inner liner fails.