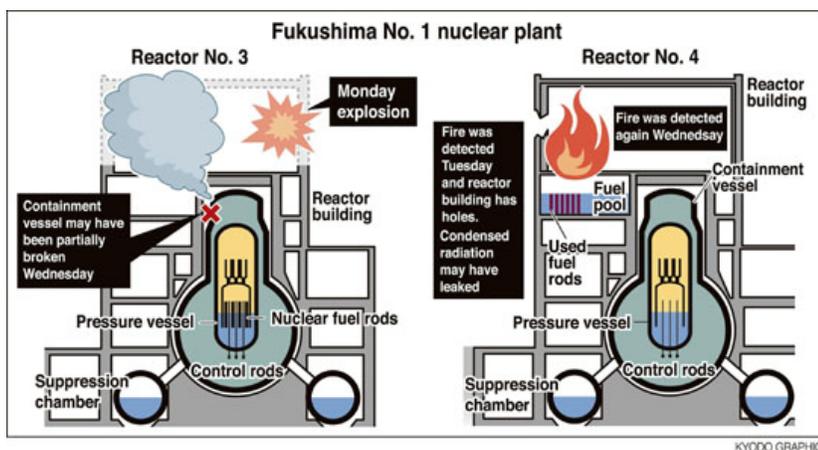


Thursday, March 17, 2011



SDF chopper can't drop water

By **ALEX MARTIN**
 Staff writer

Panic spread as reports on the crippled Fukushima nuclear plant indicated Wednesday high levels of radiation have leaked at the compound.

In a desperate effort, a Self-Defense Forces chopper tried to carry a bag of water to dump on one overheating location, but had to abort.

On Wednesday, Chief Cabinet Secretary Yukio Edano said the No. 3 reactor's primary containment vessel may have ruptured, although he later withdrew his remark.

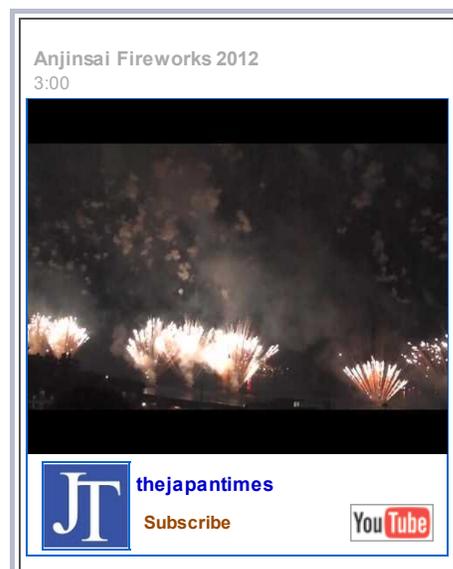
The containment vessel is the last line of defense to prevent the toxic radioactive materials from leaking. Edano's remark, though retracted later, raised further fears over whether the vessel can hold as workers pump in water in a frantic bid to cool the reactor.

In the worst case, the core could melt through all barriers and the container building, releasing a large amount of radiation into the atmosphere. The buildings housing at least reactors 1 through 3 have blown up due to hydrogen accumulations; 4's was breached.

Experts, however, say a "China Syndrome" outcome is highly unlikely — for now.

The storage pools for spent fuel rods installed in all six reactors are also a cause for worry. On Wednesday a second fire in two days was detected at reactor No. 4, where heat released from the spent rods rapidly evaporated the coolant. Reports also said steam could be detected coming from the storage pool of reactor No. 3, and that reactors 5 and 6 were also running low on coolant.

Experts say that while the situation appears to be an acute emergency, the Fukushima No. 1 nuclear plant was designed to handle serious accidents. As long as engineers continue to pump in seawater and boric acid to cool the fuel rods containing uranium oxide pellets, a catastrophic meltdown can be



forestalled.

The SDF chopper sent Wednesday from Sendai tried to get near reactor No. 4 to dump water on its fuel rod pool, but had to give up.

Keio University professor Kenzo Miya said despite the numerous events unfolding, he believed enough water was being pumped into reactors 1, 2 and 3 to keep the fuel rods stabilized, and the reports on the changing water levels were natural considering how pressure was being altered constantly by engineers.

The melting point of uranium oxide is around 3,000 degrees, while the fuel rods containing them, made of zirconium alloy, have a failure temperature of around 1,200 degrees. These rods are immersed in water to produce steam, which drives the turbines to create electricity.

The fuel rods are further contained in a thick steel pressure vessel, designed to withstand the high pressures that may occur during accidents. This is then housed by another layer of steel and concrete that contains the pumps and coolants, ultimately designed to contain a core meltdown.

Concrete is then poured around this structure to provide a secondary containment. The entire structure is housed in a boxlike building.

When the quake hit Friday, three of the six reactors were online. The reactors immediately shut down automatically, and control rods were inserted in the cores to absorb neutrons and rapidly neutralize the chain reaction, something that did not happen at Chernobyl, where the reactor continued to run.

The emergency core cooling system is designed to kick in during such an accident, but the tsunami caused it to fail.

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