

### Issues at Fukushima Daiichi Unit 3 March, 2011

**Outline**

<b>What</b>	Problem(s)	Damage to reactor
<b>When</b>	Date	See timeline
<b>Where</b>	Different, unusual, unique	Large earthquake/ tsunami; mixed oxide fuel
	State, city	Fukushima, Japan
	Facility, site	Daiichi Nuclear Power Station
	Unit, area, equipment	Unit 3
	Task being performed	Operating at full power

**Impact to the Goals**

<b>Worker Safety</b>	7 workers injured
<b>Public Safety</b>	Potential for health impacts
<b>Environmental</b>	Release of radiation to environment
<b>Cust. Service</b>	Evacuation of public within 20 km
<b>Cust. Service</b>	Rolling blackouts
<b>Production-Schedule</b>	Loss of electrical production capacity
<b>Property, Equip, Mtls</b>	Catastrophic damage to plant
<b>Labor, Time</b>	Massive efforts to cool reactor
Frequency	Very rare
This incident	?
Annualized Cost	?

**Timeline**

Date	Time	Description
March 11, 2011	2:46 p.m.	Earthquake of magnitude 8.9 (1)
		Reactor automatically shut down (2)
		Tsunami of at least 7 meters (3)
		Off-site power at Fukushima Daiichi lost (3)
		Automatic startup of emergency diesel generators
	3:41 p.m.	Emergency diesel generators malfunction (4)
	8:15 p.m.	Emergency declared at Daiichi power plant (4)
	10:00 p.m.	Government evacuates local residents within 3 km radius (5)
March 12, 2011	7:00 a.m.	Evacuation of local residents within 10 km radius (5)
	3:36 p.m.	Hydrogen explosion at unit 3 (5)
	7:11 p.m.	Evacuation periphery expands to 20 km around the Daiichi plant and 10 km around the Daini plant (5)
	10:35 p.m.	Iodine tablets distributed (7)
March 13, 2011	5:10 a.m.	Unable to confirm level of water injection to the reactor by the reactor core isolation cooling system
		Declaration of emergency
		High Pressure Cooling System automatically stopped (8)
		Attempt to restart the Cooling System failed (9)
	8:41 - 9:20 a.m.	Safety relief valve manually opened to vent (10)
	1:12 p.m.	Injection of sea water and boric acid into reactor vessel
March 14, 2011	6:50 a.m.	Pressure in the reactor containment vessel increased to 530 kPa (11)
	11:01 a.m.	Hydrogen explosion at the Daiichi unit 3 reactor building (6)
March 16, 2011	8:30 a.m.	Reports of steam coming from reactor building
March 17, 2011	6:15 a.m.	Increase in pressure of the suppression chamber
	9:48 a.m.	Water discharge by Self-Defense Force's helicopters (12)
	7-8:09 p.m.	Water discharge by the riot police's high-pressure water cannon trucks and Self-Defense Force's fire engines
March 18, 2011	2-2:45 p.m.	Water discharge by Self-Defense Force's fire engines and US Army's fire engines (12)
	4:00 p.m.	New electrical transmission line connected

