Status of nuclear power plants in Fukushima as of 16:00 March 18 (Estimated by JAIF)

Power Station	Fukushima Daiichi Nuclear Power Station					
Unit	1	2	3	4	5	6
Electric / Thermal Power output (MW)	460 / 1380	784 / 2381				1100 /3293
Type of Reactor	BWR-3	BWR-4	BWR-4	BWR-4	BWR-4	BWR-5
Operation Status at the earthquake occurred	In Service -> Shutdown	In Service -> Shutdown	In Service -> Shutdown	Outage	Outage	Outage
Core and Fuel Integrity	Damaged	Damaged	Damaged	No fuel rods	Not Damaged	Not Damaged
Reactor Pressure Vessel Integrity	Unknown	Unknown	Unknown			
Containment Vessel Integrity	Not Damaged	Damage Suspected	Might be "Not damaged"	Not Damaged	Not Damaged	Not Damaged
Core cooling requiring AC power	Not Functional	Not Functional	Not Functional	Not necessary	Not necessary	Not necessary
Core cooling not requiring AC power	Not Functional	Not Functional	Not Functional	Not necessary	Not necessary	Not necessary
Building Integrity	Severely Damaged	Slightly Damaged	Severely Damaged	Severely Damaged	Not Damaged	Not Damaged
Water Level of the Rector Pressure Vessel	Fuel exposed	Fuel exposed	Fuel exposed	Safe	Safe	Safe
Pressure of the Reactor Pressure Vessel	Stable	Unknown	Stable	Safe	Safe	Safe
Containment Vessel Pressure	Unknown	Low	Low	Safe	Safe	Safe
Water injection to core (Accident Management)	Continuing (Seawater)	Continuing(Seawater)	Continuing(Seawater)	Not necessary	Not necessary	Not necessary
Water injection to Containment Vessel (AM)	Continuing(Seawater)	to be decided(Seawater)	Continuing(Seawater)	Not necessary	Not necessary	Not necessary
Containment venting (AM)	Temporally stopped	Temporally stopped	Temporally stopped	Not necessary	Not necessary	Not necessary
Fuel Integrity in the spent fuel pool	Water injection to be considered	(No info)	Water level low, Water Injection continue	Water level low, Preparing Water Injection Hydrogen from the pool exposed	Pool Temp. Increasing	Pool Temp. Increasing
Environmental effect	NPS border: 646.2 μSv/h at 11:10, Mar. 17					
Evacuation	20km from NPS * People who live between 20km to 30km from the Fukushima #1NPS are to stay indoors.					
Remarks	Immediate threat is damage of the fuels in the fuel pool outside the containment vessel at Unit-1,2,3 and 4. The operation for filling the pool with water has been conducted since March 17 at Unit-3. Attempting to receive external power supply, TEPCO is laying a power cable between the transmission line and Unit-2.					

Power Station	Fukushima Daini Nuclear Power Station			
Unit	1	2	3	4
Electric / Thermal Power output (MW)	1100 / 3293			
Type of Reactor	BWR-5	BWR-5	BWR-5	BWR-5
Operation Status at the earthquake occurred	In Service -> Automatic Shutdown			
Status	All the units are in cold shutdown.			
Remarks	Unit-1, 2, 3 & 4, which were in full operation when the earthquake occurred, all shutdown automatically. External power supply was available after the quake. While injecting water into the reactor pressure vessel using make-up water system, TEPCO recovered the core cooling function and made the unit into cold shutdown state one by one. Latest Monitor Indication: 15.9 μSv/h at 12:00, Mar. 17 at NPS border Evacuation Area: 10km from NPS			

Power Station	Onagawa Nuclear Power Station		
Unit	1	2	3
Operation Status at the earthquake occurred	In Service -> Automatic Shutdown		
Status	All the units are in cold shutdown.		
Remarks	Unit-1, 2 & 3 all shutdown automatically when the earthquake occurred. Unit-2 & 3 were then led into cold shutdown state. Unit-2, which had just started operation after planned outage, got into cold shutdown immediately.		

Power Station	Tokai Daini
Operation Status at the earthquake occurred	In Service -> Automatic Shutdown
Status	In cold shutdown.
Remarks	Tokai Daini NPP, which was in full operation when the earthquake occurred, shutdown automatically. Core cooling function was gotten into service after external power supply was recovered on Mar. 13.

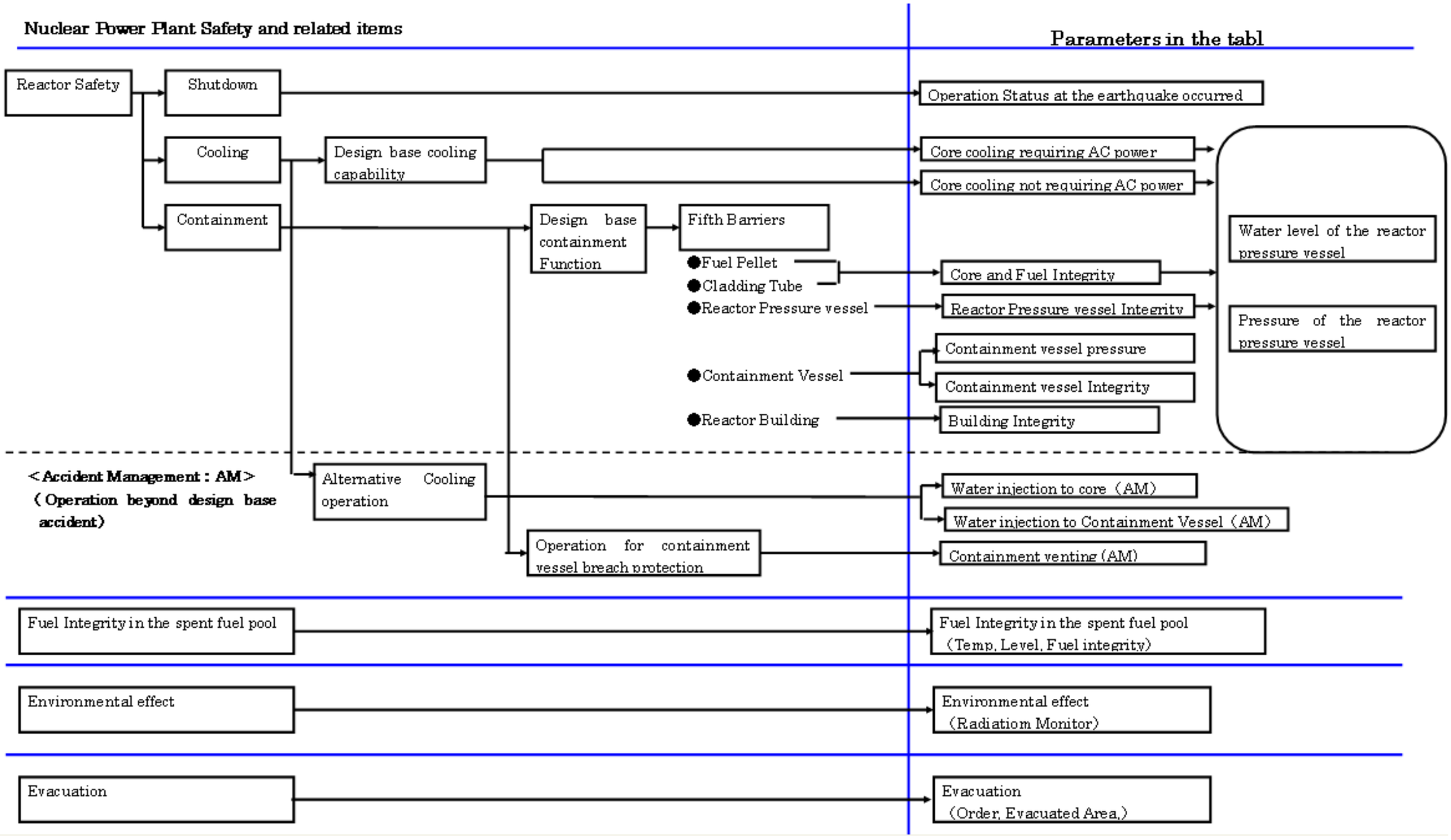
[Significance judged by JAIF]
: low
: high
: severe

[Source]
Governmental Emergency Headquarters: News Release (3/17 20:00, 3/18 6:00), Press conference (3/14 11:45, 16:15, 3/15 8:00, 11:00, 16:25, 3/16 11:15, 3/17 11:31)
NISA: News Release (3/14 7:30, 3/16 14:00, 20:08, 3/17 17:30), Press conference (3/16 12:00, 3/17 20:30)
TEPCO: Press Release (3/14 16:00, 17:35, 3/15 6:00, 12:00, 16:30, 23:35, 3/16 0:00, 3/17 11:30, 12:00),
Press Conference (3/14 12:10, 20:00, 3/15 8:00, 8:30, 3/16 early morning)

[Abbreviations]
INES: International Nuclear Event Scale
NISA: Nuclear and Industrial Safety Agency
SFP: spent fuel pool
TEPCO: Tokyo Electric Power Company, Inc.

Parameters in the Table

JAIF picks up these parameters to evaluate safety condition of the nuclear plants during this accident from the view point of the principles of nuclear power plant safety, which are "Shutdown", "Cooling" and "Containment". Then we create the chart. The following diagram is to show the correspondence relation of these parameters in the table to nuclear power plant safety.



Accidents of Fukushima Dai-ichi and Fukushima-Dai-ni Nuclear Power Stations

March 18, 2011 (13:00)

by Government Nuclear Emergency Response Headquarters

1. Latest Major Incidents and Actions

<March 16>

05:45 The fire occurred around the 3rd floor of the reactor building at Unit 4. (The fire was extinguished spontaneously.)

08:37 The white smoke like steam generated from Unit 3.
11:14 It was estimated that the white smoke was a large amount of evaporation from the pool.
No singular change was observed at parameters for the containment vessel (CV).
11:30 The operators returned to the room and restarted the operation for water injection as the possibility of serious damages of CV at Unit 3 was low.
<March 17>
09:48 Seawater discharge (4 times) to Unit 3 by the helicopters of Self-Defence Force(SDF) (～10:00)
19:05 Grand discharge (once) by riot police (～19:22)
19:35 Grand discharge (5 times) by Self Defense Forces (SDF) (～20:09)

2. Status of Nuclear Power Stations
(1) Fukushima Dai-ichi NPS

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Major Incidents	11th 15:42 Report IAW Article 10* (Loss of power)	11th 15:42 Report IAW Article 10* (Loss of power)	11th 15:42 Report IAW Article 10* (Loss of power)	14th 04:08 Water temperature in Spent Fuel Storage Pool increased at 84℃	Water temperature in SF Storage Pool is increasing	Water temperature in SF Storage Pool is
and Actions	11th 16:36 Report IAW Article 15* (Incapability of water injection by core cooling function)	11th 16:36 Report IAW Article 15* (Incapability of water injection by core cooling	13th 05:10 Report LAW Article 15* (Loss of reactor cooling functions)	15th 09:38 Fire occurred on 3rd floor (extinguished		
	12th 00:49 Report IAW Article 15* (Abnormal rise of CV pressure)	14th 13:25 Report LAW Article 15* (Loss of reactor cooling functions)	13th 08:41 Start venting	16th 05:45 Fire occurred (extinguished spontaneously)		
	12th 14:30 Start venting	14th 16:34 Seawater injection to RPV	13th 13:12 Seawater injection to RPV			
	12th 15:36 Hydrogen explosion	14th 22:50 Report IAW Article 15* (Abnormal rise of CV	14th 07:44 Report IAW Article 15* (Abnormal rise of CV pressure)			
	12th 20:20 Seawater injection to RPV	15th 00:00 Start venting	14th 11:01 Hydrogen explosion			
		15th 06:10 Sound of explosion	15th 10:22 Radiation dose			
		Supression Pool damaged	16th 06:40, 08:47 Radiaton dose 400mSv/h			
		15th 08:25 White smoke reeked	16th 08:34, 10:00 White smoke reeked			
			17th 09:48 Water discharge by SDF helicopters			
			17th 19:05 Grand water discharge by riot police			
			17th 19:35 Grand water discharge by SDF			
Major Data	-Water level (18th 07:55) (A) -1700mm (B) down scale	-Water level (18th 07:55) -1400mm	-Water level (18th 08:00) (A) -1900mm, (B) -2300mm	-Water temperature of SF Storage Pool Unmesurable (since 14th 04:08)	-Water temperature of SF Storage Pool (18th 08:00) 65.9℃	-Water temperature of SF Storage Pool (18th 63.0℃
	-Reactor pressure (18th 07:55) (A) 0.169MPaG, (B) 0.146MPaG	-Reactor pressure (18th (A) - 0.014MPaG, (B) -0.029MPaG	-Reactor pressure (18th 08:00) (A) -0.005MPaG, (B) 0.009MPaG			
	-CV pressure (18th 07:55) Unmesurable (14th 10:30～)	-CV pressure (18th 07:55) 0.130MPaabs	-CV pressure (18th 08:00) 0.150MPaabs			

* The Act on Special Measures Concerning Nuclear Emergency Preparedness

(2) Fukushima Dai-ni NPPs
All units are cold shutdown (Unit-1, 2, 4 have been recovered from Article 15 Incident)

3. State of Emergency Declaration
11th 19:03 State of nuclear emergency was decleared (Fukushima Dai-ni NPS)
12th 07:45 State of nuclear emergency was decleared (Fukushima Dai-ichi NPS)

4. Evacuation Order
PM direction: for the residents within 3km radius from Fukushima I to evacuate, within 10km radius from Fukushima I to stay in-house
11th 21:23 PM direction: for the residents within 10km radius from Fukushima I to evacuate
12th 05:44 PM direction: for the residents within 10km radius from Fukushima II to evacuate
12th 17:39 PM direction: for the residents within 20km radius from Fukushima I to evacuate
12th 18:25 PM direction: for the residents within 20-30km radius from Fukushima I to stay in-house
15th 11:06

Status of the Nuclear Power Plants after the Earthquake

Every efforts and measures have been taken at Fukushima Daiichi nuclear power plants. Other nuclear power plants in Japan are in normal operation or safely shutdown.