

# Information on Status of Nuclear Power Plants in Fukushima



Japan Atomic Industrial Forum, Inc.

## Policy on information and compilation

This JAIF-compiled information chart represents the situation, phenomena, and operations in which JAIF estimates and guesses the reactors and related facilities are, based on the latest data and information directly and indirectly made available by the relevant organizations when JAIF's updating works done. Consequently, JAIF may make necessary changes to descriptions in the chart, once (1) new developments have occurred in the status of reactors and facilities and (2) JAIF has judged so needed after reexamining the prior information and judgments.

JAIF will do its best to keep tracks on the information on the nuclear power plants quickly and accurately.

Status of nuclear power plants in Fukushima as of 12:00, May 24th (Estimated by JAIF)

| Power Station   | Fukushima Dai-ichi Nuclear Power Station   |  |  |  |   |             |
|---|--|--|--|--|---|-------------|
|   | 1  | 2  | 3  | 4  | 5   | 6           |
| Unit  | 460 / 1380   | 784 / 2381   | 784 / 2381   | 784 / 2381   | 784 / 2381  | 1100 / 3293 |
| Electric / Thermal Power output (MW)                                      | BWR-3  | BWR-4  | BWR-4  | BWR-4  | BWR-4   | BWR-5       |
| Type of Reactor   | In Service → Shutdown  | In Service → Shutdown  | In Service → Shutdown  | Outage   | Outage  | Outage      |
| Operation Status at the earthquake occurred                               | 400  | 548  | 548  | No fuel rods   | 548   | 764         |
| Fuel assemblies loaded in Core  | Damaged (most part*4)  | Damaged (35%*1)  | Damaged (30%*1)  | No fuel rods   | Not Damaged   | Not Damaged |
| Core and Fuel Integrity (Loaded fuel assemblies)                          | Damage and Leakage estimated   | Unknown  | Unknown  | Not Damaged  | Not Damaged   | Not Damaged |
| Reactor Pressure Vessel structural integrity                              | Damage and Leakage estimated   | Damage and Leakage Suspected                                   | Not damaged (estimation)   | Not Damaged  | Not Damaged   | Not Damaged |
| Containment Vessel structural integrity                                   | Not Functional   | Not Functional   | Not Functional   | Not necessary  | Functional  |             |
| Core cooling requiring AC power 1 (Large volumetric freshwater injection) | Not Functional   | Not Functional   | Not Functional   | Not necessary  | Functioning (in cold shutdown)                                  |             |
| Core cooling requiring AC power 2 (Cooling through Heat Exchangers)       | Severely Damaged (Hydrogen Explosion)  | Partly opened  | Severely Damaged (Hydrogen Explosion)                                    | Severely Damaged (Hydrogen Explosion)                                    | Open a vent hole on the rooftop for avoiding hydrogen explosion |             |
| Building Integrity  | Lower than the bottom of fuels   | Fuel exposed partially or fully                                | Fuel exposed partially or fully  | Safe   | Safe  |             |
| Water Level of the Reactor Pressure Vessel                                | Gradually increasing / Gradually decreasing  | Unknown / Stable   | Unknown / Gradually decreasing after an increase                         | Safe   | Safe  |             |
| Pressure / Temperature of the Reactor Pressure Vessel                     | Stable   | Stable   | Stable   | Safe   | Safe  |             |
| Containment Vessel Pressure   | Continuing (Switch from seawater to freshwater)  | Continuing (Switch from seawater to freshwater)                | Continuing (Switch from seawater to freshwater)                          | Not necessary  | Not necessary   |             |
| Water injection to core (Accident Management)                             | Feed water to fill up the CV (started 4/27)  | Feed water to fill up the CV (planned)                         | Feed water to fill up the CV (planned)                                   | Not necessary  | Not necessary   |             |
| Water injection to Containment Vessel (AM)                                | Temporally stopped   | Temporally stopped   | Temporally stopped   | Not necessary  | Not necessary   |             |
| Containment Venting (AM)  | 292  | 587  | 514  | 1331   | 946   | 876         |
| Fuel assemblies stored in Spent Fuel Pool                                 | Unknown  | Unknown  | Damage Suspected   | some of the spent fuel may have been damaged*3                           | Not Damaged   |             |
| Fuel Integrity in the spent fuel pool                                     | Water spray continues (freshwater)   | water injection continues (Switch from seawater to freshwater) | Water spray and injection continues (Switch from seawater to freshwater) | Water spray and injection continues (Switch from seawater to freshwater) | Pool cooling capability was recovered                           |             |
| Cooling of the spent fuel pool  | Poor due to loss of AC power (Lighting and parameter monitoring restored in the control room at Unit 1 and 3 on Mar. 24th, at Unit 2 on Mar. 26th, at Unit 4 on Mar. 29th)   |  |  |  | Not damaged (estimate)  |             |
| Main Control Room Habitability & Operability                              | <ul style="list-style-type: none"> <li>● Status in Fukushima Dai-ichi NPS site<br/>Radiation level: 389 μSv/h at the south side of the office building, 16 μSv/h at the West gate, as of 09:00, May 23rd, 42 μSv/h at the Main gate, as of 10:30, May 21st.<br/>Some radioactive nuclides (I, Cs, Pu, Am Cm and Sr) has been detected in soil sampled at the Fukushima site.</li> <li>Radioactive materials continues to be detected in samples corrected from underground water and sea water at or near the site. Environmental monitoring has been enhanced.</li> <li>Radioactive Iodine and cesium have been detected in the seabed samples taken 15–20 km far from the plant from 15–20m deep. Level of radiation is 100 to 1,000 times above normal. (5/4)</li> <li>● Influence to the people's life<br/>Radioactive material was detected from milk, agricultural products and seafood from Fukushima and neighboring prefectures. The government issued order to limit shipment and intake of some products.<br/>Radioactive iodine, exceeding the provisional legal limit for drinking water, was detected from tap water sampled in some prefectures. All the restrictions of intake of the water, which was once issued by the government, have been lifted by May 10th.<br/>Radioactive cesium was detected in the sludge from a sewage treatment plants, one of which is 50 km far from the power station.<br/>Small amount of strontium was detected in some samples of soil and plants collected in the area 20–80 km away from the power station.<br/>Radioactive Cs above the legal limits have been detected in tea leaves harvested in some prefectures. The pref governments have asked the municipalities and the local farmers' association to voluntarily halt shipments.(5/13–)</li> </ul> |  |  |  |   |             |
| Environmental effect  | <ul style="list-style-type: none"> <li>&lt;1&gt; Shall be evacuated for within 3km from NPS, Shall stay indoors for within 10km from NPS (issued at 21:23, Mar. 11th) &lt;2&gt; Shall be evacuated for within 10km from NPS (issued at 05:44, Mar. 12th)</li> <li>&lt;3&gt; Shall be evacuated for within 20km from NPS (issued at 18:25, Mar. 12th) &lt;4&gt; Shall stay indoors (issued at 11:00, Mar. 15th), Should consider leaving (issued at 11:30, Mar. 25th) for from 20km to 30km from NPS &lt;5&gt; The 20km evacuation zone around the Fukushima Daiichi NPS is to be expanded so as to include the area, where annual radiation exposure is expected to be above 20mSv. People in the expanded zone are ordered to evacuate within a month or so. People living in the 20 to 30km and other than the expanded evacuation area mentioned above, are asked to get prepared for staying indoors or evacuation in an emergency (announced on Apr. 11th and issued on Apr. 22nd).</li> </ul>  |  |  |  |   |             |
| Evacuation  | <p>Level 7*2 ※Cumulative amount of radioactivity from Fukushima Daiichi NPS has reached the level to be classified as level 7.<br/>Total amount of radioactive materials released to the environment in this accident is one tenth as much as one in the Chernobyl accident so far.</p>  |  |  |  |   |             |
| INES (estimated by NISA)  | <p>Level 3*2<br/>● Progress of the work to restore cooling function<br/>TEPCO announced its plan to bring the damaged reactors to stable condition known as "cold shutdown" in about 6 to 9 months, a situation in which water temperatures inside the reactors have been stably brought below 100°C.(4/17, revised on 5/17)<br/>High radiation circumstance hampering the work to restore reactor cooling function. Discharging radioactive water in the basement of the buildings and concrete tunnels outside the buildings counties at unit 2 and 3.<br/>Works inside the reactor bldg becomes available after radiation inside were forcibly decreased through air purification.<br/>Emergency power generators were moved to higher ground in order to prevent the reactors' cooling systems from failing in case of major tsunami hits. External power source becomes more reliable after connecting 3 power lines with each other, which are for Unit 1/2, for Unit 3/4 and for Unit 5/6.<br/>The damaged containment vessel of unit 2 is need to be repaired before the work to restore reactor cooling function.<br/>TEPCO has been working to create a system to decontaminate and circulate water back into the reactors to cool them down since the discovery that water level in reactor No1 is very low.<br/>TEPCO estimated that fuel pellets would have melted and fallen to the bottom of the reactor at Unit 1 in its tentative assessment released on May 15. TEPCO also predict that an event associated with large amount of radioactive material release will not happen, since reactor have been cooled by means of water injection.*4</p>   |  |  |  |   |             |
| Remarks   | <p>● Function of containing radioactive material<br/>It is presumed that radioactive material inside the reactor vessel may leaked outside.<br/>Nitrogen gas injection into the Unit 1 containment vessel to prevent hydrogen explosion started on April 6th and continues.<br/>Preparation work for covering the reactor building was started at Unit 1 (5/13). Operation for installing the cover over the building is scheduled to start in June.<br/>● Cooling the spent fuel pool (SFP)<br/>Injecting and/or spraying water to the SFP continues for the purpose of cooling and makeing up water evaporated. Corrosion inhibitor, Hydrazine (H<sub>2</sub>NNH<sub>2</sub>), has been injected into the SFP (5/9–).<br/>Work for structural reinforcement to support the SFP is in progress at unit 4 prior to heat exchanger insulation for SFP cooling.<br/>Construction work to install heat exchangers to cool the SFP is in progress at unit 2.<br/>● Prevention of the proliferation of radioactively contaminated substance:<br/>TEPCO announced the plans to prevent radioactively contaminated water, dust and soil and radioactive material itself existing on site from spreading on Apr 17.<br/>Full operation of spraying synthetic resin to contain contaminated dust started on Apr. 26th and continues.<br/>● Worker's exposure dose: 30 workers has been exposed to radiation more than 100 mSv as of 5/11. *Emergency exposure dose limit has been set to 250mSv.</p>  |  |  |  |   |             |

[Source]

Government Nuclear Emergency Response Headquarters:

News Release (-5/19 17:00), Press conference

NISA: News Release (-5/22 15:00), Press conference

TEPCO: Press Release (-5/23 09:00), Press Conference

[Abbreviations]

MEXT: Ministry of Education, Culture, Sports, Science and Technology

INES: International Nuclear Event Scale

NISA: Nuclear and Industrial Safety Agency

TEPCO: Tokyo Electric Power Company, Inc.

NSC: Nuclear Safety Commission of Japan

\*1 TEPCO's estimation revised on April 27

\*2 Correction: Rating was raised from 5 to 7 for the accident of Unit 1 through 3

\*3 It is presumed that some of the spent fuel may have been damaged based on radioactive substance detected from the water sample taken from the pool of Unit 4.

\*4 TEPCO announced its tentative assessment on the status of the core of Unit 1 on May 15th.

[Significance judged by JAIF]

Low

High

Severe (Need immediate action)

| Power Station                               | Fukushima Dai-ni 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.  |         |       |         |
| INES (estimated by NISA)                    | Level 3  | Level 3 | —     | Level 3 |
| Remarks                                     | <p>Unit-1, 2, 3 &amp; 4, which were in full operation when the earthquake occurred, all shutdown automatically.<br/>           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.<br/>           No parameter has shown abnormality after the earthquake occurred off an shore of Miyagi prefecture at 23:32, Apr. 7th.<br/>           Latest Monitor Indication: <u>1.6 μSv/h at 09:00, May 23rd</u> at NPS border<br/>           Evacuation Area: 3km from NPS(3/12 7:45), 10km from NPS(3/12 17:39), 8km from NPS(4/21)</p> |         |       |         |

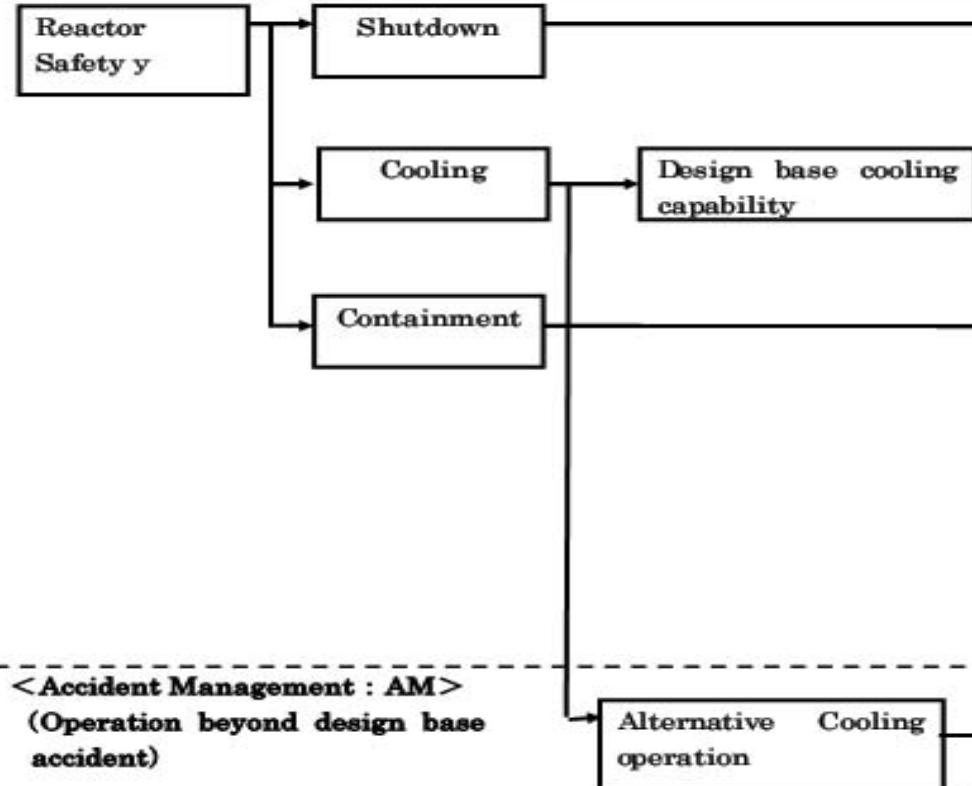
| Power Station                               | Onagawa Nuclear Power Station   |   |   |
|---|---|---|---|
| Unit  | 1   | 2 | 3 |
| Operation Status at the earthquake occurred | In Service → Automatic Shutdown   |   |   |
| Status                                      | All the units are in cold shutdown.   |   |   |
| Remarks                                     | <p>3 out of 4 external power lines in service with another line under construction broke down after an earthquake occurred off the shore of Miyagi prefecture at 23:32, Apr. 7th. All 5 external power lines have become available by Apr. 10th. Monitoring posts' readings have shown no abnormality. All SFP cooling systems had been restored after shutting down due to the earthquake.</p> |   |   |

| Power Station                               | Tokai Dai-ni  |
|---|---|
| Operation Status at the earthquake occurred | In Service → Automatic Shutdown   |
| Status                                      | In cold shutdown.   |
| Remarks                                     | No abnormality has been found after an earthquake occurred off the shore of Miyagi prefecture at 23:32, Apr. 7th. |

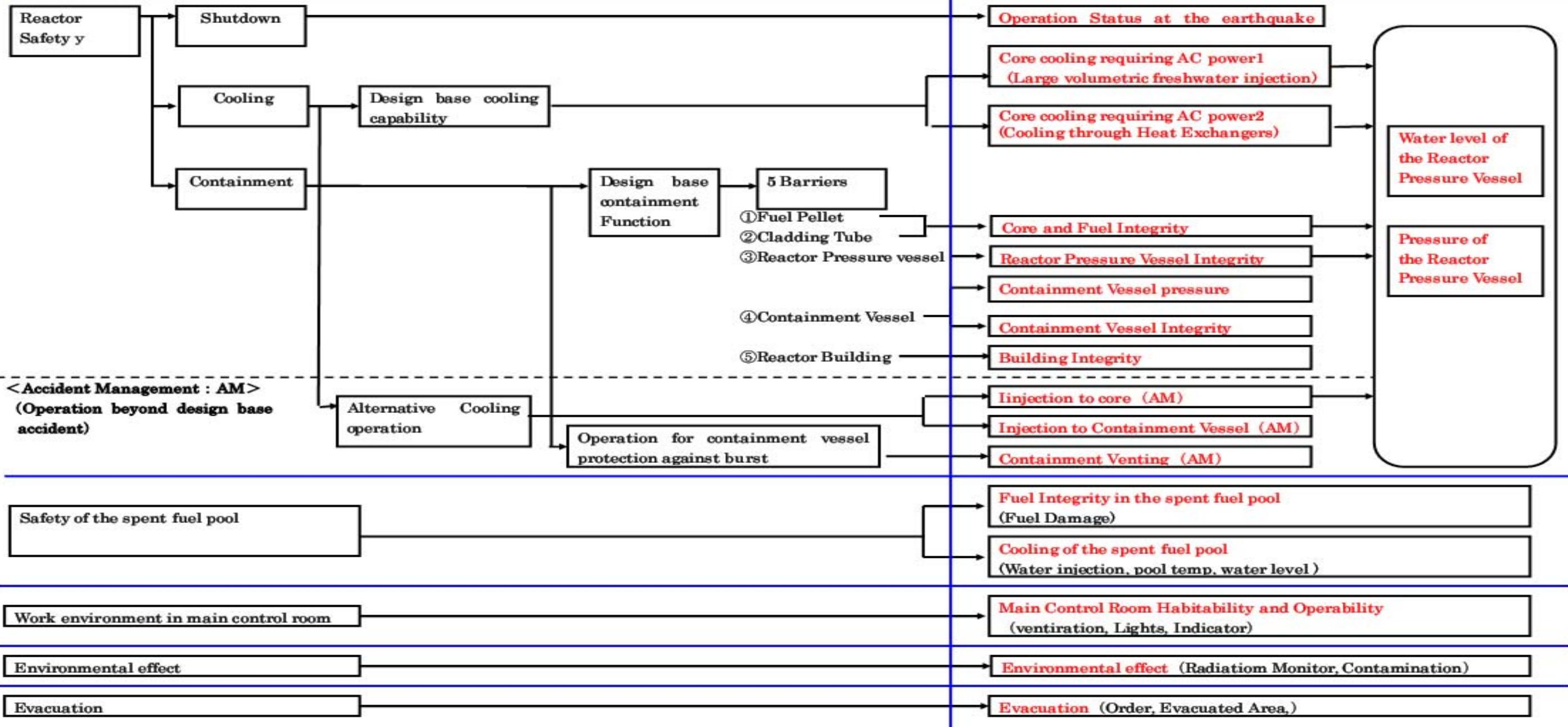
### Parameters in the Table

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.

### Nuclear Power Plant Safety and related items



### Parameters in the table



## 1. Latest Major event and response

May 21st

13:02-14:40 Hydrazine added freshwater was injected into the SFP at Unit 2 using concrete pump vehicle.

15:33-17:09 Water was sprayed to the No1 spent fuel pool

May 22nd

11:31 Volume of water to No.3 Reactor injected through fire extinguishing line was changed to 5 m3/h from 6 m3/h.

14:08 Volume of water to No.3 Reactor injected through fire extinguishing line was changed to 4 m3/h from 5 m3/h.

## 2. Chronology of Nuclear Power Stations

## (1) Fukushima Dai-ichi NPS

|   | Unit 1  | Unit 3  | Unit 4  | Unit-5 and 6   |  |
|---|---|---|---|--|--|
| Major Incidents and Actions<br>*The Act on Special Measures Concerning Nuclear Emergency Preparedness | 11th 15:42 Report IAW Article 10* (Loss of power)<br><br>11th 16:36 Event falling under Article 15* occurred (Incapability of water injection by core cooling function)<br><br>12th 00:49 Event falling under Article 15* occurred (Abnormal rise of CV pressure)<br><br>12th 14:30 Start venting<br><br>12th 15:36 Hydrogen explosion<br><br>12th 20:20 Seawater injection to RPV<br><br>22nd 11:20 RPV temperature increased<br><br>22nd 02:33 Seawater injection through feed water line started in addition to fire extinguish line<br><br>24th 11:30 lights in the main control room becomes available<br><br>25th 15:37 Freshwater injection to the reactor started.<br><br>27th 08:30 Continuing to transfer the water in the basement of the turbine building<br><br>31st 09:20-11:25 Work to remove the water in the trench<br><br>31st 12:00 Start to transfer the water in the CST to the surge tank (- 15:27, Apr. 2)<br><br>31st 13:03 Start water injection to SFP<br><br>Apr. 3rd 12:18 Switch power supply for water injection pumps to the RPV from power supply vehicles to originally equipped power source<br><br>Apr. 7th 01:31 Injection of Nitrogen gas started after opening all valves through the line.<br><br>Apr. 10th 09:30 Transfer of water from the main condenser to the CST completed.<br><br>Apr. 14 12:20 Installation of silt fences in front of the Unit 1and 2 seawater screen and intake completed<br><br>Apr 17 16:00 Start investigation of the inside of R/B using a remote-controlled robot.<br><br>Apr. 29 11:36 The inside of the building was inspected. It was confirmed that there is no water significant leakage from the CV.<br><br>May 2 12:58 Water feeding was temporally switched from to the reactor injection pump to the fire pump to install alarm device to the reactor injection pump.<br><br>May 5 11:32-16:36 Ventilators to clean the highly radioactive air inside the reactor building were installed and started.<br><br>May 11 08:58 N2 injection to the CV temporally stopped while the work for restoring one of external power sources being conducted. It resumed later.<br><br>May 12 05:00 Instrumental reading of the water gage of the reactor No1 went off the scale on the lower side after adjusting the gage.<br><br>May 17 11:50 Volume of water injected was changed to 6 m3/h from 10 m3/h.<br><br>May 20 15:06 Water injected to the SFP<br><br>May 22 15:33 Water injected to the SFP | 11th 15:42 Report IAW Article 10* (Loss of power)<br><br>11th 16:36 Event falling under Article 15* occurred (Incapability of water injection by core cooling function)<br><br>13th 11:00 Start venting<br><br>14th 13:25 Event falling under Article 15* occurred (Loss of reactor cooling functions)<br><br>14th 16:34 Seawater injection to RPV<br><br>14th 22:50 Report IAW Article 15* (Abnormal rise of CV pressure)<br><br>15th 00:02 Start venting<br><br>15th 06:10 Sound of explosion, Suppression Pool damage suspected<br><br>15th 08:25 White smoke reeked<br><br>20th 15:05 operation of spraying water to the spent fuel pool started.<br><br>26th 10:10 Freshwater injection to the reactor started.<br><br>26th 16:46 lights in the main control room becomes available<br><br>29th 16:45 Start to transfer the water in the CST to the surge tank<br><br>Apr. 2nd 16:25 Start injecting concrete to stop water leakage from the pit near the intake<br><br>Apr. 2nd 17:10 Start transferring water in the condenser to the CST<br><br>Apr. 3rd 12:18 Switch power supply for water injection pumps to the RPV from power supply vehicles to originally equipped power source<br><br>Apr. 3rd 12:18 Switch power supply for water injection pumps to the RPV from power supply vehicles to originally equipped power source<br><br>Apr. 5th 15:07 Regarding leakage from the pit that is closed to discharge outlet of unit-2, hardening agent was injected to hole dug surrounding the pit. (Apr. 6 05:38 It was confirmed that water flow stopped)<br><br>Apr. 9th 13:10 Transfer of water from the main condenser to the CST completed.<br><br>Apr. 13th 17:04 Transfer of highly radioactive contaminated wafter accumulated in the trench outside the turbine building to the condenser completed<br><br>Apr. 14 12:20 Installation of silt fences in front of the Unit 1and 2 seawater screen and intake completed<br><br>Apr 18 13:42 Start investigation of the inside of R/B using a remote-controlled robot.<br><br>Apr. 19 10:08 Start transferring highly radioactive water accumulated in the turbine building and the concrete tunnel to the waste processing facility<br><br>Apr. 30 14:05 Start transferring highly radioactive water accumulated in the vertical part of the concrete tunnel outside the turbine BLDG to the waste processing facility<br><br>May 1 13:35 The work to block the vertical concrete tunnel outside the turbine bldg started.<br><br>May 2 12:58 Water feeding was temporally switched from to the reactor injection pump to the fire pump to install alarm device to the reactor injection pump.<br><br>May 6 09:36 Water injected to the SFP | 11th 15:42 Report IAW Article 10* (Loss of power)<br><br>12th 20:41 Start venting<br><br>13th 05:10 Event falling under Article 15* occurred (Loss of reactor cooling functions)<br><br>13th 08:41 Start venting<br><br>13th 13:12 Seawater injection to RPV<br><br>14th 05:20 Start venting<br><br>14th 07:44 Event falling under Article 15* occurred (Abnormal rise of CV pressure)<br><br>14th 11:01 Hydrogen explosion<br><br>15th 10:22 Radiation dose 400mSv/h<br><br>16th 08:34, 10:00 White smoke reeked<br><br>Since 17th, operation of spraying water to the spent fuel pool continues.<br><br>25th 18:02 Freshwater injection to the reactor started.<br><br>28th 17:40 Start to transfer the water in the CST to the surge tank<br><br>Apr. 13 13:50 Installation of silt fences in front of the Unit 3 and 4 seawater screen completed<br><br>Apr. 15 14:33 180kg of boric acid injection to No3 Reactor started.<br><br>May 8 12:10 Water injected the SFP by temporally installed motor driven pump conducted.<br><br>May 9 12:14 Water injected the SFP by originally installed clean up system conducted.<br><br>May 15 14:33 180kg of boric acid injection to No3 Reactor started.<br><br>May 17 10:11 Volume of water through feed water line and fire extinguishing line to No.3 Reactor increased<br><br>May 17 18:04 Start transferring water accumulated in the turbine building and the concrete tunnel to the waste processing facility<br><br>May 18 16:30 Examine the reactor BLDG prior to nitrogen injection<br><br>May 20 14:15 Volume of water through feed water line and fire extinguishing line to No.3 Reactor changed (increase)<br><br>May 20 17:39 Volume of water through feed water line and fire extinguishing line to No.3 Reactor changed (increase)<br><br>May 23 11:31 Volume of water through feed water line and fire extinguishing line to No.3 Reactor changed (decrease) | 14th 04:08 Water temperature in Spent Fuel Storage Pool increased at 84°C<br><br>15th 09:38 Fire occurred on 3rd floor (extinguished spontaneously)<br><br>16th 05:45 Fire occurred (extinguished spontaneously)<br><br>Since 20th, operation of spraying water to the spent fuel pool continues.<br><br>29th 11:50 lights in the main control room becomes available<br><br>Apr. 13 13:50 Installation of silt fences in front of the Unit 3 and 4 seawater screen completed<br><br>May 5 12:19 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 6 12:38 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 7 14:05 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 11 16:07 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 13 16:04 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 15 16:25 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 17 16:14 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 19 16:30 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 21 16:00 Operation of spraying water to the spent fuel pool with concrete pump truck conducted.<br><br>May 23 11:31 Volume of water through feed water line and fire extinguishing line to No.3 Reactor changed (decrease) | 19th 05:00 Cooling SFP with RHR-pump started at Unit 5<br><br>19th 22:14 Cooling SFP with RHR-pump started at Unit 6<br><br>20th 14:30 Cold shutdown achieved at Unit 5.<br>20th 19:27 Cold shutdown achieved at Unit 6.<br><br>22nd 19:41 All power source was switched to external AC power at Unit 5 and 6.<br><br>Apr. 1st 13:40 Start transferring pooled water in the Unit 6 radioactive waste process facility to the Unit 5 condenser.<br><br>May 1 14:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank started.<br><br>May 2 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 2 11:03 The Residual heat removal pump temporarily stopped while start up transformer testing<br><br>May 3 14:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 7 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 9 14:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 10 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 10 11:00 The operation of transferring water accumulated in reactor bldg of unit-6 to the waste processing facility conducted.<br><br>May 11 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the waste processing facility conducted.<br><br>May 11 11:00 The operation of transferring water accumulated in reactor bldg of unit-6 to the waste processing facility conducted.<br><br>May 12 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 12 10:30 The operation of transferring water accumulated in reactor bldg of unit-6 to the waste processing facility conducted.<br><br>May 13 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 13 11:00 Water accumulated in the room for high pressure injection system discharged to other space.<br><br>May 14 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted.<br><br>May 15 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted. |

|  |   |   |  |   |
|--|---|---|--|---|
|  | May 7 09:22 Operation of discharging water accumulated in the concrete tunnel outside turbine bldg to the waste processing facility temporarily stopped while piping work for feeding water into the reactor being conducted. | May 23 14:08 Volume of water through feed water line and fire extinguishing line to No.3 Reactor changed (decrease) |  |   |
|  | May 10 13:09 Water injected to the SFP conducted  |   |  | May 16 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted. |
|  | May 12 15:20 Operation of discharging water accumulated in the concrete tunnel outside turbine bldg to the waste processing facility temporarily restarted,   |   |  | May 17 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted. |
|  | May 14 13:00 Water injected to the SFP  |   |  | May 18 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted. |
|  | May 18 09:23 4 workers entered the reactor BLDG to measure radiation  |   |  | May 18 10:00 The operation of transferring water accumulated in Turbine bldg of unit-6 to the makeshift tank conducted. |
|  | May 18 13:10 Hydrazine added freshwater was injected into the SFP at Unit 2 using concrete pump vehicle.  |   |  | May 18 10:30 transferring water accumulated in the reactor bldg to the waste processing facility conducted              |
|  | May 22 13:02 Hydrazine added freshwater was injected into the SFP at Unit 2 using concrete pump vehicle.  |   |  |   |

Major Data \*1

Reactor Water level (May 23 11:00)  
(A) Lower beyond lower end of the gauge , (B) -1600mm

Reactor pressure (May 23 11:00)

(A) 0.545MPaG, (B) 1.468MPaG\*2

CV pressure (May 23 11:00) 0.1333MPaabs

RPV temperature (May 23 11:00)  
117.2°C\*2 at feed water line nozzle

Thermography (Apr. 26 23:00)  
CV: 25°C, SFP: 23°C

Reactor Water level (May 23 11:00)  
(A) -1500mm, (B) -2100mm

Reactor pressure (May 23 11:00)

(A) -0.016MPaG\*2, (B) -0.020MPaG\*2

CV pressure (May 23 11:00) 0.040MPaabs

RPV temperature (May 23 11:00)  
112.5°C at feed water line nozzle

Water temperature in SFP (May 23 11:00) 70.0 °C

Thermography (Apr. 26 07:30)

Top of R/B: 24°C

Reactor Water level (May 23 11:00)  
(A) -1800mm, (B) -2250mm

Reactor pressure (May 23 11:00)

(A) -0.121MPaG\*2, (B) -0.113MPaG\*2

CV pressure (May 23 11:00) 0.1008MPaabs

RPV temperature (May 23 11:00)  
105.8°C\*2 at feed water line nozzle

Thermography (Apr. 26 07:30)

CV: 26°C, SFP: 56°C

SFP water temperature measured with a concrete pump vehicle

Apr. 12 : about 90°C

22 before spray: about 91°C

23 before spray: about 83°C

23 after spray : about 66°C

24 before spray: about 86°C

24 after spray : about 81°C

Water temperature of SFP  
Unit 5 43.5°C (May 23 12:00)

Unit 6 39.0°C (May 23 12:00)

## (2) Fukushima Dai-ni NPPs

All units are cold shutdown (Unit-1, 2, 4 have been recovered from a event falling under Article 15\*)

### 3. State of Emergency Declaration

11th 19:03 State of nuclear emergency was declared (Fukushima Dai-ni NPS)

12th 07:45 State of nuclear emergency was declared (Fukushima Dai-ichi NPS)

### 4. Evacuation Order

11th 21:23 PM direction: for the residents within 3km radius from Fukushima I to evacuate, within 10km radius from Fukushima I to stay in-house

12th 05:44 PM direction: for the residents within 10km radius from Fukushima I to evacuate

12th 17:39 PM direction: for the residents within 10km radius from Fukushima II to evacuate

12th 18:25 PM direction: for the residents within 20km radius from Fukushima I to evacuate

15th 11:06 PM direction: for the residents within 20-30km radius from Fukushima I to stay in-house

25th Governmental advise: for the residents within 20-30 km radius from Fukushima I to voluntarily evacuate

### Abbreviations:

SFP: Spent Fuel Storage Pool

EDG: Emergency Diesel Generator

RPV: Reactor Pressure Vessel

R/B: Reactor Building

RHR: Residual Heat Removal system

CST: Condensate water Storage Tank

T/B: Turbine Building

\*1 Trend data of primary parameters are available at Japan Nuclear Technology Institute's Home Page; "[http://www.gengikyo.jp/english/shokai/special\\_4.html](http://www.gengikyo.jp/english/shokai/special_4.html)".

\*2 Data trend is continuously monitored.

