

IAEA Update on Japan Earthquake

Staff Report (#)



Japan Earthquake Update (17 March 2011 11:05 UTC)

Based on a press release from the Japanese Chief Cabinet Secretary dated 17 March 2011 04:00 UTC, the IAEA can confirm that the Japanese military carried out four helicopter water droppings over the building of reactor unit 3 of the Fukushima Daiichi nuclear power plant.

According to the press release, the droppings took place between 00:48 UTC and 01:00 UTC.

Japanese Earthquake Update (17 March 01:15 UTC)

Injuries or Contamination at Fukushima Daiichi Nuclear Power Plant

Based on a press release from the Japanese Chief Cabinet Secretary dated 16 March 2011, the IAEA can confirm the following information about human injuries or contamination at the Fukushima Daiichi nuclear power plant.

Please note that this list provides a snapshot of the latest information made available to the IAEA by Japanese authorities. Given the fluid situation at the plant, this information is subject to change.

Injuries

- 2 TEPCO employees have minor injuries

- 2 subcontractor employees are injured, one person suffered broken legs and one person whose condition is unknown was transported to the hospital
- 2 people are missing
- 2 people were 'suddenly taken ill'
- 2 TEPCO employees were transported to hospital during the time of donning respiratory protection in the control centre
- 4 people (2 TEPCO employees, 2 subcontractor employees) sustained minor injuries due to the explosion at unit 1 on 11 March and were transported to the hospital
- 11 people (4 TEPCO employees, 3 subcontractor employees and 4 Japanese civil defense workers) were injured due to the explosion at unit 3 on 14 March

Radiological Contamination

- 17 people (9 TEPCO employees, 8 subcontractor employees) suffered from deposition of radioactive material to their faces, but were not taken to the hospital because of low levels of exposure
- One worker suffered from significant exposure during 'vent work,' and was transported to an offsite center
- 2 policemen who were exposed to radiation were decontaminated
- Firemen who were exposed to radiation are under investigation

The IAEA continues to seek information from Japanese authorities about all aspects of the Fukushima Daiichi nuclear plant.

Japanese Earthquake Update (16 March 22:00 UTC)

Temperature of Spent Fuel Pools at Fukushima Daiichi Nuclear Power Plant

Spent fuel that has been removed from a nuclear reactor generates intense heat and is typically stored in a water-filled spent fuel pool to cool it and provide protection from its radioactivity. Water in a spent fuel pool is continuously cooled to remove heat produced by spent fuel assemblies. According to IAEA experts, a typical spent fuel pool temperature is kept below 25 °C under normal operating conditions. The temperature of a spent fuel pool is maintained by constant cooling, which requires a constant power source.

Given the intense heat and radiation that spent fuel assemblies can generate, spent fuel pools must be constantly checked for water level and temperature. If fuel is no longer covered by water or temperatures reach a boiling point, fuel can become exposed and create a risk of radioactive release. The concern about the spent fuel pools at Fukushima Daiichi is that sources of power to cool the pools may have been compromised.

The IAEA can confirm the following information regarding the temperatures of the spent nuclear fuel pools at Units 4, 5 and 6 at Fukushima Daiichi nuclear power plant:

Unit 4

14 March, 10:08 UTC: 84 °C

15 March, 10:00 UTC: 84 °C

16 March, 05:00 UTC: no data

Unit 5

14 March, 10:08 UTC: 59.7 °C

15 March, 10:00 UTC: 60.4 °C

16 March, 05:00 UTC: 62.7 °C

Unit 6

14 March, 10:08 UTC: 58.0 °C

15 March, 10:00 UTC: 58.5 °C

16 March, 05:00 UTC: 60.0 °C

The IAEA is continuing to seek further information about the water levels, temperature and condition of all spent fuel pool facilities at the Fukushima Daiichi nuclear power plant.

[IAEA Director General to Travel to Japan \(16 March 18:50 UTC\)](#)

Director General Yukiya Amano announced the following today in Vienna:

"I plan to fly to Japan as soon as possible, hopefully tomorrow, to see the situation for myself and learn from our Japanese counterparts how best the IAEA can help. I will request that the Board of Governors meet upon my return to discuss the situation. My intention is that the first IAEA experts should leave for Japan as soon as possible."

On 15 March, Japan requested the IAEA for assistance in the areas of environmental monitoring and the effects of radiation on human health, asking for IAEA teams of experts to be sent to Japan to assist local experts.

Given the fast-changing situation in Japan, the Director General was unable to announce the itinerary for his trip. He expects to be in Japan for a short amount of time and then return to Vienna.

→ [View Video on YouTube \(http://www.youtube.com/watch?v=AR19cbbQgQk\)](http://www.youtube.com/watch?v=AR19cbbQgQk)

[Japanese Earthquake Update \(16 March 14:55 UTC\)](#)

Japanese authorities have reported concerns about the condition of the spent nuclear fuel pool at Fukushima Daiichi Unit 3 and Unit 4. Japanese Defense Minister Toshimi Kitazawa announced Wednesday that Special Defence Forces helicopters planned to drop water onto Unit 3, and officials are also preparing to spray water into Unit 4 from ground positions, and possibly later into Unit 3. Some debris on the ground from the 14 March explosion at Unit 3 may need to be removed before the spraying can begin.

[Japan Earthquake Update \(16 March 2011, 03:55 UTC\)](#)

Japanese authorities have informed the IAEA that a fire in the reactor building of Unit 4 of the Fukushima Daiichi nuclear power plant was visually observed at 20:45 UTC of 15 March. As of 21:15 UTC of the same day, the fire could no longer be observed.

Fire of 14 March

As previously reported, at 23:54 UTC of 14 March a fire had occurred at Unit 4. The fire lasted around two hours and was confirmed to be extinguished at 02:00 UTC of 15 March.

Water Level in Unit 5

Japanese authorities have also informed the IAEA that at 12:00 UTC of 15 March the water level in Unit 5 had decreased to 201 cm above the top of the fuel. This was a 40 cm decrease since 07:00 UTC of 15 March. Officials at the plant were planning to use an operational diesel generator in Unit 6 to supply water to Unit 5.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(15 March 2011, 22:30 UTC\)](#)

Japanese authorities have informed the IAEA that the evacuation of the population from the 20-kilometre zone around Fukushima Daiichi has been successfully completed.

The Japanese authorities have also advised that people within a 30-km radius to take cover indoors. Iodine tablets have been distributed to evacuation centres but no decision has yet been taken on their administration.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(15 March 2011, 20:35 UTC\)](#)

The Japanese government today requested assistance from the IAEA in the areas of environmental monitoring and the effects of radiation on human health, asking for IAEA teams of experts to be sent to Japan to assist local experts. Preparations for these missions are currently under way.

The missions will draw on IAEA resources and may also possibly involve Response and Assistance Network (RANET) and Member States' capabilities.

This development follows the IAEA's offer to Japan of its "Good Offices" - i.e. making available the Agency's direct support and coordination of international assistance.

RANET is a network of resources made available by IAEA Member States that can be offered in the event of a radiation incident or emergency. Coordination of RANET is done by the IAEA within the framework of the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(15 March 2011, 18:00 UTC\)](#)

The IAEA can confirm the following information about the status of the Fukushima Daiichi nuclear power plant:

Unit 4 was shut down for a routine, planned maintenance outage on 30 November 2010. After the outage, all fuel from the reactor was transferred to the spent fuel pool.

Units 5 and 6 were shut down at the time of the earthquake. Unit 5 was shut down as of 3 January 2011. Unit 6 was shut down as of 14 August 2010. Both reactors are currently loaded with fuel.

As of 00:16 UTC on 15 March, plant operators were considering the removal of panels from Units 5 and 6 reactor buildings to prevent a possible build-up of hydrogen in the future. It was a build-up of hydrogen at Units 1, 2 and 3 that led to explosions at the Daiichi facilities in recent days.

The IAEA continues to monitor and seek information on the status of plant workers, reactor conditions, and spent nuclear fuel at the Fukushima Daiichi nuclear plant.

[Japan Earthquake Update \(15 March 2011, 15:30 UTC\)](#)

An earthquake of 6.1 magnitude was reported today at 13:31 UTC in Eastern Honshu, Japan. The Hamaoka nuclear power plant is sited an estimated 100 kilometres from the epicentre.

IEC confirmed with Japan that the plant continues to operate safely.

Units 1 and 2 are decommissioned, Unit 3 is under inspection and not operational, and Units 4 and 5 remain in safe operational status after the earthquake.

[Japan Earthquake Update \(15 March 2011, 14:10 UTC\)](#)

The IAEA Incident and Emergency Centre (IEC) continues to monitor the status of the nuclear power plants in Japan that were affected by the devastating earthquake and consequent tsunami.

All units at the Fukushima Daini, Onagawa, and Tokai nuclear power plants are in a safe and stable condition (i.e. cold shutdown).

The IAEA remains concerned over the status of the Fukushima Daiichi nuclear power plant, where sea water injections to cool the reactors in Units 1, 2 and 3 are continuing. Attempts to return power to the entire Daiichi site are also continuing.

After explosions at both Units 1 and 3, the primary containment vessels of both Units are reported to be intact. However, the explosion that occurred at 21:14 UTC on 14 March at the Fukushima Daiichi Unit 2 may have affected the integrity of its primary containment vessel. All three explosions were due to an accumulation of hydrogen gas.

A fire at Unit 4 occurred on 14 March 23:54 UTC and lasted two hours. The IAEA is seeking clarification on the nature and consequences of the fire.

The IAEA continues to seek details about the status of all workers, reactors and spent fuel at the Fukushima Daiichi plant.

An evacuation of the population from the 20-kilometre zone around Fukushima Daiichi is in effect. The Japanese have advised that people within a 30-km radius shall take shelter indoors. Iodine tablets have been distributed to evacuation centres but no decision has yet been taken on their administration.

A 30-kilometre no-fly zone has been established around the Daiichi plant. Normal civil aviation beyond this zone remains uninterrupted. The Japan Coast Guard established evacuation warnings within 10 kilometres of Fukushima Daiichi and 3 kilometres of Fukushima Daini.

The IAEA and several other UN organizations held a meeting at 11:00 UTC today to discuss recent developments and coordinate activities related to consequences of the earthquake and tsunami. The meeting was called under the framework of the *Joint Radiation Emergency Management Plan of the International Organizations*, and this group expects to work closely together in the days ahead.

[IAEA Director General's Briefing on Day 5 of Japanese Earthquake Emergency \(15 March 2011, 14:00 UTC\)](#)

IAEA Director General Yukiya Amano briefed both Member States and the media on developments at the Fukushima Daiichi nuclear power plant.

→ [View Excerpts from Briefing \(http://www.youtube.com/watch?v=yZB8Br3T2Sk\)](http://www.youtube.com/watch?v=yZB8Br3T2Sk) :: [View Photos on Flickr \(http://www.flickr.com/photos/iaea_imagebank/sets/72157626148219457/\)](http://www.flickr.com/photos/iaea_imagebank/sets/72157626148219457/)

[Japan Earthquake Update \(15 March 2011, 11:25 UTC\)](#) [Fukushima Daiichi Nuclear Power Plant Update](#)

Radiation Dose Rates Observed at Site

The Japanese authorities have informed the IAEA that the following radiation dose rates have been observed on site at the main gate of the Fukushima Daiichi Nuclear Power Plant.

At 00:00 UTC on 15 March a dose rate of 11.9 millisieverts (mSv) per hour was observed. Six hours later, at 06:00 UTC on 15 March a dose rate of 0.6 millisieverts (mSv) per hour was observed.

These observations indicate that the level of radioactivity has been decreasing at the site.

As reported earlier, a 400 millisieverts (mSv) per hour radiation dose observed at Fukushima Daiichi occurred between Units 3 and 4. This is a high dose-level value, but it is a local value at a single location and at a certain point in time. The IAEA continues to confirm the evolution and value of this dose rate. It should be noted that because of this detected value, non-indispensable staff was evacuated from the plant, in line with the Emergency Response Plan, and that the population around the plant is already evacuated.

About 150 persons from populations around the Daiichi site have received monitoring for radiation levels. The results of measurements on some of these people have been reported and measures to decontaminate 23 of them have been taken. The IAEA will continue to monitor these developments.

Evacuation of the population from the 20 kilometre zone is continuing.

The Japanese have asked that residents out to a 30 km radius to take shelter indoors. Japanese authorities have distributed iodine tablets to the evacuation centres but no decision has yet been taken on their administration.

Background on Radiation

A person's radiation exposure due to all natural sources amounts on average to

about 2.4 millisievert (mSv) per year. A sievert (Sv) is a unit of effective dose of radiation. Depending on geographical location, this figure can vary by several hundred percent.

Since one sievert is a large quantity, radiation doses are typically expressed in millisievert (mSv) or microsievert (μ Sv), which is one-thousandth or one millionth of a sievert. For example, one chest X-ray will give about 0.2 mSv of radiation dose.

For further information on radiation, see [Radiation in Everyday Life \(http://domain.com/Publications/Factsheets/English/radlife.html\)](http://domain.com/Publications/Factsheets/English/radlife.html) .

[Japan Earthquake Update \(15 March 2011, 07:35 UTC\)](#)

Japanese authorities have confirmed that the fire at the spent fuel storage pond at the Unit 4 reactor of Fukushima Daiichi nuclear power plant was extinguished on 15 March at 02:00 UTC.

Please note that all future communications from the IAEA regarding events in Japan will use the Coordinated Universal Time (UTC) standard.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(15 March 2011, 05:15 UTC\)](#)

Japanese authorities informed the IAEA that there has been an explosion at the Unit 2 reactor at the Fukushima Daiichi plant. The explosion occurred at around 06:20 on 15 March local Japan time.

Japanese authorities also today informed the IAEA at 04:50 CET that the spent fuel storage pond at the Unit 4 reactor of the Fukushima Daiichi nuclear power plant is on fire and radioactivity is being released directly into the atmosphere.

Dose rates of up to 400 millisievert per hour have been reported at the site. The Japanese authorities are saying that there is a possibility that the fire was caused by a hydrogen explosion.

The IAEA is seeking further information on these developments.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(15 March 2011, 02:35 UTC\)](#)

Japanese authorities yesterday reported to the IAEA at 20:05 UTC that the reactors Units 1, 2 and 3 of the Fukushima Daiichi nuclear power plant are in cold shutdown status. This means that the pressure of the water coolant is at around atmospheric

level and the temperature is below 100 degrees Celsius. Under these conditions, the reactors are considered to be safely under control.

Japanese authorities have also informed the IAEA that teams of experts from Tokyo Electric Power Company (TEPCO), the plant's operator, are working to restore cooling in the reactor Unit 4 and bring it to cold shutdown.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(14 March 2011, 22:03 UTC\)](#)

After the IAEA offered its "Good Offices" to Japan - i.e. making available the Agency's direct support and coordination of international assistance - the Japanese government yesterday asked the IAEA to provide expert missions to the country. Discussions have begun to prepare the details of those missions.

At a briefing for representatives of IAEA Member States held yesterday in Vienna, IAEA Director General Yukiya Amano outlined some of the areas in which IAEA support could be provided to Japan.

"The IAEA can offer support in technical areas such as radiation surveys and environmental sampling, medical support, the recovery of missing or misplaced radioactive sources or advice on emergency response," he said.

In addition, the IAEA is coordinating assistance from Member States through the Response and Assistance Network (RANET). The network consists of nations that can offer specialized assistance after a radiation incident or emergency. Coordination by the IAEA takes place within the framework of the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[IAEA Director General Briefs Media on Nuclear Safety in Japan \(14 March 2011, 16:45 UTC\)](#)

At 16:45 UTC on 14 March 2011, IAEA Director General Yukiya Amano briefed the media on the consequences of the twin natural disasters in Japan.

The press conference was opened by IAEA Director General Yukiya Amano, followed by comments from James Lyons, Director of the Division of Nuclear Installation Safety; Denis Flory, Deputy Director General for the Department of Nuclear Safety and Security; and Alena Buglova, acting Head of the Incident and Emergency Centre.

→ [Director General Statement \(http://domain.com/newscenter/statements/2011/amsp2011n006.html\)](http://domain.com/newscenter/statements/2011/amsp2011n006.html) :: [View Photos on Flickr \(http://www.flickr.com/photos/iaea_imagebank/sets/72157626265704486/\)](http://www.flickr.com/photos/iaea_imagebank/sets/72157626265704486/) :: [View Video on YouTube \(http://www.youtube.com/watch?v=lib-iWmfQOo\)](http://www.youtube.com/watch?v=lib-iWmfQOo)

Japanese Earthquake Update (14 March 2011, 14:35 UTC)

Fukushima Daiichi Nuclear Power Plant

Japanese authorities have reported to the IAEA that Fukushima Daiichi Unit 2 has experienced decreasing coolant levels in the reactor core. Officials have begun to inject sea water into the reactor to maintain cooling of the reactor core.

Sea water injections into Units 1 and 3 were interrupted yesterday due to a low level in a sea water supply reservoir, but sea water injections have now been restored at both Units.

Evacuation Status

On 12 March, the Japanese Prime Minister ordered the evacuation of residents living within 10 kilometres of the Fukushima Daiichi nuclear power plant and within 20 kilometres of the Fukushima Daiichi nuclear power plant.

Japan's Nuclear and Industrial Safety Agency (NISA) has reported that about 185 000 residents had been evacuated from the towns listed below as of 13 March 2011, 17:00 (JST).

Populations of Evacuated Towns Near Affected Nuclear Power Plants

Hirono-cho	5 387
Naraha-cho	7 851
Tomioka-cho	15 786
Okuma-cho	11 186
Futaba-cho	6 936
Namie-cho	20 695
Tamura-shi	41 428
Minamisouma-shi	70 975
Kawauchi-mura	2 944
Kuzuo-mura	1 482
Total	184 670

Iodine Distribution

Japan has distributed 230 000 units of stable iodine to evacuation centres from the area around Fukushima Daiichi and Fukushima Daini nuclear power plants, according to officials. The iodine has not yet been administered to residents; the distribution is a precautionary measure in the event that this is determined to be necessary.

The ingestion of stable iodine can help to prevent the accumulation of radioactive iodine in the thyroid.

Weather Forecast

In partnership with the World Meteorological Organization (WMO), the IAEA is continuing to monitor weather forecasts and is providing updates to Member States. Since the incident began, winds have been moving away from the Japanese coast to the East, and predictions call for the same patterns to persist for the next three days.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[IAEA Director General Briefed on Disaster Response and Nuclear Safety \(14 March 2011, 08:30 UTC\)](#)

At the IAEA's Incident and Emergency Centre (IEC) and at its International Seismological Safety Centre (ISSC), IAEA Director General Yukiya Amano received a briefing at 08:30 UTC.

The IAEA emergency management experts [detailed the status of emergency communications with Japanese authorities \(http://www.youtube.com/watch?v=YqiWVO6FNgo\)](http://www.youtube.com/watch?v=YqiWVO6FNgo) , as well as with emergency management counterparts in other IAEA Member States and among international organizations.

Director General Amano was briefed as well on nuclear safety, seismological activity, and the on-going disaster recovery efforts in Japan. The video of the briefing is available [here \(http://www.youtube.com/watch?v=YqiWVO6FNgo\)](http://www.youtube.com/watch?v=YqiWVO6FNgo) .

[Japan Earthquake Update \(14 March 2011, 06:00 UTC\)](#)

Japan's Nuclear and Industrial Safety Agency (NISA) has provided the IAEA with further information about the hydrogen explosion that occurred today at the Unit 3 reactor at the Fukushima Daiichi nuclear plant. A hydrogen explosion occurred at Unit 3 on 14 March at 11:01 am local Japan time.

All personnel at the site are accounted for. Six people have been injured.

The reactor building exploded but the primary containment vessel was not damaged. The control room of Unit 3 remains operational.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(14 March 2011, 04:15 UTC\)](#)

Based on information provided by Japanese authorities, the IAEA can confirm the following information about the status of Units 1, 2, 3 and 4 at Fukushima Daini nuclear power plant.

All four Units automatically shut down on 11 March. All Units have off-site power and water levels in all Units are stable. Though preparations have been made to do so, there has been no venting to control pressure at any of the plant's Units.

At Unit 1, plant operators were able to restore a residual heat remover system, which is now being used to cool the reactor. Work is in progress to achieve a cold shutdown of the reactor.

Workers at Units 2 and 4 are working to restore residual heat removal systems.

Unit 3 is in a safe, cold shutdown.

Radiation dose rate measurements observed at four locations around the plant's perimeter over a 16-hour period on 13 March were all normal.

[Japan Earthquake Update \(14 March, 2011, 03:00 UTC\)](#)

Japan's Nuclear and Industrial Safety Agency (NISA) has informed the IAEA that there has been an explosion at the Unit 3 reactor at the Fukushima Daiichi nuclear plant.

The explosion occurred at 11:01 am local Japan time.

The IAEA is seeking further information on this development.

[Japan Earthquake Update \(14 March 2011, 00:30 UTC\) - Clarified](#)

Based on information provided by Japanese authorities, the IAEA can confirm the following information about the status of Units 1, 2 and 3 at Fukushima Daiichi nuclear power plant.

Unit 1 is being powered by mobile power generators on site, and work continues to restore power to the plant. There is currently no power via off-site power supply or backup diesel generators being provided to the plant. Seawater and boron are being injected into the reactor vessel to cool the reactor. Due to the explosion on 12 March, the outer shell of the containment building has been lost.

Unit 2 is being powered by mobile power generators on site, and work continues to

restore power to the plant. There is currently neither off-site power supply nor backup diesel generators providing power to the plant. The reactor core is being cooled through reactor core isolation cooling, a procedure used to remove heat from the core. The current reactor water level is lower than normal but remains steady. The outer shell of the containment building is intact at Unit 2.

Unit 3 does not have off-site power supply nor backup diesel generators providing power to the plant. As the high pressure injection system and other attempts to cool the reactor core have failed, injection of water and boron into the reactor vessel has commenced. Water levels inside the reactor vessel increased steadily for a certain amount of time but readings indicating the water level inside the pressure vessel are no longer showing an increase. The reason behind this is unknown at this point in time. To relieve pressure, venting of the containment started on 13 March at 9:20 am local Japan time. Planning is underway to reduce the concentration of hydrogen inside the containment building. The containment building is intact at Unit 3.

The IAEA is seeking information about the status of spent fuel at the Daiichi plant.

[Japan Earthquake Update \(13 March 2011, 20:45 UTC\)](#)

The Japanese authorities have informed the IAEA that radioactivity levels at the site boundary of the Onagawa nuclear power plant have returned down to normal background levels. The first (ie lowest) state of emergency was reported at the plant earlier on Sunday after an increased level of radioactivity was detected at the site boundary. Investigations at the site indicate that no emissions of radioactivity have occurred from any of the three Units at Onagawa. The current assumption of the Japanese authorities is that the increased level may have been due to a release of radioactive material from the Fukushima Daiichi nuclear power plant.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(13 March 2011, 12:35 UTC\)](#)

Japanese authorities have informed the IAEA's Incident and Emergency Centre (IEC) that venting of the containment of reactor Unit 3 of the Fukushima Daiichi nuclear power plant started at 9:20 am local Japan time of 13 March through a controlled release of vapour. The operation is intended to lower pressure inside the reactor containment.

Subsequently, following the failure of the high pressure injection system and other attempts of cooling the plant, injection of water first and sea water afterwards started. The authorities have informed the IAEA that accumulation of hydrogen is possible.

Japanese authorities have also informed the IAEA that the first (i.e. lowest) state of emergency at the Onagawa nuclear power plant has been reported by Tohoku Electric Power Company. The authorities have informed the IAEA that the three reactor Units at the Onagawa nuclear power plant are under control.

As defined in Article 10 of *Japan's Act on Special Measures Concerning Nuclear Emergency Preparedness*, the alert was declared as a consequence of radioactivity readings exceeding allowed levels in the area surrounding the plant. Japanese authorities are investigating the source of radiation. The IAEA has offered its "Good Offices" to Japan to support the nation's response to the 11 March earthquake and tsunami. One IAEA capability intended to help member states during crises is the Response and Assistance Network (RANET). The network consists of nations that can offer specialized assistance after a radiation incident or emergency. Such assistance is coordinated by the IAEA within the framework of the Assistance Convention.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(13 March 2011, 02:35 CET\) - Corrected](#)

An earlier version of this release incorrectly described pressure venting actions at Units 1, 2 and 4 at the Fukushima Daini nuclear power plant. Venting did not occur at these Units.

Japanese authorities have informed the IAEA that Units 1, 2 and 4 at the Fukushima Daini retain off-site power. Daini Unit 3 is in a safe, cold shutdown, according to Japanese officials.

Japanese authorities have reported some casualties to nuclear plant workers. At Fukushima Daiichi, four workers were injured by the explosion at the Unit 1 reactor, and there are three other reported injuries in other incidents. In addition, one worker was exposed to higher-than-normal radiation levels that fall below the IAEA guidance for emergency situations. At Fukushima Daini, one worker has died in a crane operation accident and four others have been injured.

In partnership with the World Meteorological Organization, the IAEA is providing its Member States with weather forecasts for the affected areas in Japan. The latest predictions have indicated winds moving to the Northeast, away from Japanese coast over the next three days.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[Japan Earthquake Update \(12 March 2011, 20:10 UTC\)](#)

Japanese authorities have informed the IAEA that the explosion at Unit 1 reactor at the Fukushima Daiichi plant occurred outside the primary containment vessel (PCV), not inside. The plant operator, Tokyo Electric Power Company (TEPCO), has confirmed that the integrity of the primary containment vessel remains intact.

As a countermeasure to limit damage to the reactor core, TEPCO proposed that sea water mixed with boron be injected into the primary containment vessel. This measure was approved by Japan's Nuclear and Industrial Safety Agency (NISA) and the injection procedure began at 20:20 local Japan time.

Japan has reported that four workers at Fukushima Daiichi were injured by the explosion.

NISA have confirmed the presence of caesium-137 and iodine-131 in the vicinity of Fukushima Daiichi Unit 1. NISA reported an initial increase in levels of radioactivity around the plant earlier today, but these levels have been observed to lessen in recent hours.

Containment remains intact at Fukushima Daiichi Units 1, 2 and 3.

Evacuations around both affected nuclear plants have begun. In the 20-kilometre radius around Fukushima Daiichi an estimated 170 000 people have been evacuated. In the 10-kilometre radius around Fukushima Daini an estimated 30 000 people have been evacuated. Full evacuation measures have not been completed.

The Japanese authorities have classified the event at Fukushima Daiichi Unit 1 as a level 4 "Accident with Local Consequences" on the International Nuclear and Radiological Event Scale (INES). The INES scale is used to promptly and consistently communicate to the public the safety significance of events associated with sources of radiation. The scale runs from 0 (deviation) to 7 (major accident).

Japan has also confirmed the safety of all its nuclear research reactors.

The IAEA continues to liaise with the Japanese authorities and is monitoring the situation as it evolves.

[IAEA Director General's Update on Tsunami and Earthquake Emergency Response \(12 March 2011, 19:00 UTC\)](#)

IAEA Director General Yukiya Amano provided a [video](http://www.youtube.com/watch?v=g82a36LWtcU) (<http://www.youtube.com/watch?v=g82a36LWtcU>) statement on the aftermath of the earthquake and tsunami that struck Japan. Director General Amano expressed his sincerest condolences for the lives and homes lost, and said: "My heart goes out to the people of my home country as they rise to the challenge of this immense tragedy."

Director General Amano notes the current effort to prevent further damage to Unit 1 reactor at the Fukushima Daiichi nuclear power plant.

In response to the situation, Director General Amano also explained the IAEA's dual role to use emergency communication channels to exchange verified, official information between Japan and other IAEA Member States, as well as to coordinate the delivery of international assistance, should Japan or other affected countries request it.

The video statement can be accessed [here \(http://www.youtube.com/watch?v=g82a36LWtcU\)](http://www.youtube.com/watch?v=g82a36LWtcU) .

[Japan Earthquake Update \(12 March 2011, 12:40 UTC\)](#)

Japan's Nuclear and Industrial Safety Agency (NISA) has informed the IAEA's Incident and Emergency Centre (IEC) that there has been an explosion at the Unit 1 reactor at the Fukushima Daiichi plant, and that they are assessing the condition of the reactor core.

The explosion was reported to NISA by the plant operator, Tokyo Electric Power Company (TEPCO), at 0730 CET. Further details were not immediately available.

Japanese authorities have extended the evacuation zone around the Fukushima Daiichi plant to a 20-kilometre radius from the previous 10 kilometres.

At the nearby Fukushima Daini nuclear power plant, the evacuation zone has been extended to a 10-kilometre radius from the previous three kilometres.

The authorities also say they are making preparations to distribute iodine to residents in the area of both the plants.

The IAEA has reiterated its offer of technical assistance to Japan, should the government request this. The IAEA continues to liaise with the Japanese authorities, and is in full response mode to monitor the situation closely around the clock as it evolves.

[Japan Earthquake Update \(12 March 2011, 06:30 UTC\)](#)

Japanese authorities have informed the IAEA's Incident and Emergency Centre (IEC) that, starting at 12 March 9:00 am local Japan time, they have started the preparation for the venting of the containment of the Unit 1 reactor at the Fukushima Daiichi plant through a controlled release of vapour. The operation is intended to lower pressure inside the reactor containment.

Evacuation of residents living within ten kilometres of the Fukushima Daiichi nuclear power plant is reported to be under way. An area with a radius of three kilometres

around the plant had already been evacuated.

The evacuation of residents living within three kilometres of the Fukushima Daini nuclear power plant is also under way.

The IAEA's IEC continues to liaise with the Japanese authorities, and is in full response mode to monitor the situation closely around the clock as it evolves.

[Japan Earthquake Update \(11 March 2011, 21:10 UTC\)](#)

Japanese authorities have informed the IAEA's Incident and Emergency Centre (IEC) that officials are working to restore power to the cooling systems of the Unit 2 reactor at the Fukushima Daiichi nuclear power plant. Mobile electricity supplies have arrived at the site.

Japanese officials have also reported that pressure is increasing inside the Unit 1 reactor's containment, and the officials have decided to vent the containment to lower the pressure. The controlled release will be filtered to retain radiation within the containment.

Three reactors at the plant were operating at the time of the earthquake, and the water level in each of the reactor vessels remains above the fuel elements, according to Japanese authorities.

The IAEA's IEC continues to liaise with the Japanese authorities, and is in full response mode to monitor the situation closely round the clock.

[IAEA Director General Expresses Condolences Following Japan Earthquake \(11 March 2011, 20:50 CET\)](#)

"I would like to express my condolences and sympathies to the people of Japan who have suffered from this earthquake and to the Government of Japan," said IAEA Director General Yukiya Amano.

[Japan Earthquake Update \(11 March 2011, 20:30 CET\)](#)

Japanese authorities have informed the IAEA's Incident and Emergency Centre (IEC) that today's earthquake and tsunami have cut the supply of off-site power to the Fukushima Daiichi nuclear power plant. In addition, diesel generators intended to provide back-up electricity to the plant's cooling system were disabled by tsunami flooding, and efforts to restore the diesel generators are continuing.

At Fukushima Daiichi, officials have declared a nuclear emergency situation, and at the nearby Fukushima Daini nuclear power plant, officials have declared a heightened alert condition.

Japanese authorities say there has so far been no release of radiation from any of

the nuclear power plants affected by today's earthquake and aftershocks.

The IAEA's IEC continues to liaise with the Japanese authorities, and is in full response mode to monitor the situation closely round the clock.

[Japan Earthquake Update \(11 March 2011, 16:55 UTC\)](#)

Japanese authorities have informed the IAEA's Incident and Emergency Centre (IEC) that they have ordered the evacuation of residents within a three-kilometre radius of the Fukushima Daiichi nuclear power plant, and told people within a 10-kilometre radius to remain indoors.

The Japanese authorities say there has so far been no release of radiation from any of the nuclear power plants affected by today's earthquake and aftershocks.

"The IAEA continues to stand ready to provide technical assistance of any kind, should Japan request this," IAEA Director General Yukiya Amano said.

The IAEA's IEC continues to liaise with the Japanese authorities, and is in full response mode to monitor the situation closely round the clock.

[Japan Earthquake Update \(11 March 2011, 11:45 UTC\)](#)

The IAEA's Incident and Emergency Centre has received information from Japan's Nuclear and Industrial Safety Agency (NISA) that a heightened state of alert has been declared at Fukushima Daiichi nuclear power plant. NISA says the plant has been shut down and no release of radiation has been detected.

Japanese authorities have also reported a fire at the Onagawa nuclear power plant, which has been extinguished. They say Onagawa, Fukushima-Daini and Tokai nuclear power plants were also shut down automatically, and no radiation release has been detected.

The IAEA received information from its International Seismic Safety Centre that a second earthquake of magnitude 6.5 has struck Japan near the coast of Honshu, near the Tokai plant.

The IAEA is seeking further details on the situation at Fukushima Daiichi and other nuclear power plants and research reactors, including information on off-site and on-site electrical power supplies, cooling systems and the condition of the reactor buildings. Nuclear fuel requires continued cooling even after a plant is shut down.

The IAEA is also seeking information on the status of radioactive sources in the country, such as medical and industrial equipment.

The World Meteorological Organization has informed the IAEA that prevailing winds are blowing eastwards, away from the Japanese coast.

All IAEA staff in Japan, both in the Tokyo office and in nuclear facilities, are confirmed to be safe.

Japan Earthquake Update (11 March 2011, 08:30 UTC)

The IAEA's Incident and Emergency Centre received information from the International Seismic Safety Centre (ISSC) at around 08:15 CET this morning about the earthquake of magnitude 8.9 near the east coast of Honshu, Japan.

The Agency is liaising with the Japanese Ministry of Economy, Trade and Industry (METI) to confirm further details of the situation. Japanese authorities reported that the four nuclear power plants closest to the quake have been safely shut down.

The Agency has sent an offer of Good Offices to Japan, should the country request support.

Current media reports say a tsunami alert has been issued for 50 countries, reaching as far as Central America. The Agency is seeking further information on which countries and nuclear facilities may be affected.

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