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International Atomic Energy Agency

Atoms for Peace

Fukushima Daiichi Status Report

27 July 2012

The IAEA issues regular status reports to the public on the current status of the Fukushima Daiichi Nuclear Power Plant, including information on environmental radiation monitoring, the status of workers, and current conditions on-site at the plant.

The information cited in this report is compiled from official Japanese sources, including the Ministry of Economy, Trade and Industry (METI), the Nuclear and Industrial Safety Agency (NISA), the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the Ministry of Health, Labour and Welfare (MHLW) and the Ministry of Foreign Affairs (MOFA) through the Japanese Permanent Mission in Vienna and the Cabinet's Office of the Prime Minister. Information is also provided by the Tokyo Electric Power Company (TEPCO), the operator of the Fukushima Daiichi Nuclear Power Plant.

Questions on the information provided in this report may be directed to info@iaea.org.

Release of the Japanese National Diet's Independent Investigation Commission report on the Fukushima Nuclear Accident

Previously the National Diet of Japan appointed an [independent](#) investigation committee to investigate the accident at TEPCO's Nuclear Power Station. On 5 July, the commission [released](#) its report to the Japanese Government. Currently only the executive summary of this report is [available](#) in English online. The executive summary concludes that the accident was a "manmade disaster" and "was the result of collusion between the government, the regulators and TEPCO, and the lack of governance by said parties". The summary discusses issues with both the operator and the regulator prior to and during the response to the accident. The summary provides several specific recommendations which include:

- Establishing a permanent committee for monitoring of the nuclear regulatory body by the National Diet;
- Reforming the crisis management system through a fundamental re-examination of the current system;
- Ensuring the Government meets its responsibility to the public health and welfare through establishing a system to deal with the long term public health consequences of the accident;
- Providing increased monitoring of the operators including setting tighter rules regarding the regulator relationship with the operator and having this relationship require full public disclosure;
- Requiring that the new regulatory body maintain independence, transparency, professionalism, consolidation [sic] and be proactive in its work;
- Reforming existing Japanese nuclear laws; and
- Developing a system of independent investigation commissions.

Details on these recommendations can be found in the document currently available. The English document also includes a summary of the findings from the written surveys sent to [workers](#) present at the plant during the accident and to the [evacuees](#) from the surrounding regions.

IAEA comments on the Japanese National Diet's Independent Investigation Commission report on the Fukushima Nuclear Accident

The Agency has provided the following comments on the National diet of Japan Fukushima Nuclear Accident Independent Investigation Commission report. When the full English translation is made available we may provide additional comments as appropriate.

Some of the findings listed in the Executive Summary of the report are observed to affirm the conclusions of the previous IAEA Fact Finding Mission on external hazard preparedness, accident management and monitoring, emergency response, and regulatory effectiveness. In addition, the Executive Summary brings up very specific findings on organizational failures both in TEPCO and NISA with respect to the Safety Culture in both organizations. These findings such as the lack of a "safety-first" attitude and a lack of questioning behaviour are indications of a lack of Safety Culture as defined in the IAEA recommendations for operation and regulatory organizations (please refer to [INSAG-4](#) and [INSAG-15](#)). These findings also provide two new issues:

(1) *Technically, contrary to the previous reports that identified the tsunami as the cause of major damage, there is evidence that leads to a conclusion that the earthquake might have also caused damage, including a potential small-break loss of coolant accident; and,*

(2) *Organizationally, it concludes, the environment of “regulatory capture” is one of the underlying issues.*

This information, together with recently released recommendations by the ICANPS, which is the independent investigation committee on behalf of the Japanese Cabinet, is being evaluated by the IAEA experts. The final reports from the Japanese Diet’s and Cabinet’s independent investigation committees will provide a basis for identifying additional lessons for consideration under the IAEA action plan, including the comparison with the IAEA Safety Standards, and to determine future actions, as appropriate.

Final Report of the Tokyo Electric Power Company’s Investigation Committee on the Accident at Fukushima Nuclear Power Stations

On 26 December 2011 the [Investigation Committee](#) on the Accident at Fukushima Nuclear Power Stations of Tokyo Electric Power Company released its [interim report](#) (which was translated into English later). On 23 July 2012 the final report was [released](#) in Japanese. On the same date the committee [released](#) the recommendations from its final report in English. The list of recommendations includes subjects discussed in the interim report as well as new topics. It includes recommendations for the follow subject matters [*please see the full document for a discussion of the specific areas in each subject*]:

- Disaster preparedness in light of complex disasters in mind
- Changing an attitude to see risks
- Deficiency analyses from the disaster victims’ standpoint [*sic*]
- Incorporating the latest knowledge in the disaster prevention plan
- Building disaster prevention measures
- The necessity of comprehensive risk analysis
- Severe accident management
- Reforming the crisis management system for a nuclear disaster
- The nuclear emergency response headquarters
- Off-site centers
- The roles of the prefectural government in nuclear emergency responses
- The provision of information and risk communication
- Improving radiation monitoring operations
- The SPEEDI system
- Evacuation procedures of residents
- Administering stable iodine tablets

- Radiation emergency medical care institutions
- Public understanding of radiation effects
- Information sharing with, and receiving support from, overseas
- Harmonization with international practices such as the IAEA safety standards
- The nuclear safety regulating body
- TEPCO
- Rebuilding safety culture
- Continued investigation of accident causes and damage
- Extended investigation of the whole picture of accident damage

IAEA comments on the Tokyo Electric Power Company's Investigation Committee on the Accident at Fukushima Nuclear Power Stations

The Agency has provided the following comments on the recommendations from the Final Report of the Investigation Committee on the Accident at Fukushima Nuclear Power Stations of Tokyo Electric Power Company. Many of the recommendations provided in the final report by the accident investigation committee follow the spirit of the requirements in the IAEA safety standard series documents such as [GSR - Part 1 - Government Legal and Regulatory Framework for Safety](#), [GS-R-2 - Preparedness and Response for a Nuclear or Radiological Emergency](#), [GS-G-2.1 - Arrangements for Preparedness for a Nuclear or Radiological Emergency](#) and [GSG-2 - Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency](#). Similarly, many of the recommendations also match specific recommendations provided in the guidance documents (TECDOCs) related to EPR.

The need for continual maintenance of existing plans including updating emergency response plans based on developing research and improving technical understanding of natural events will always remain an import process in any mature nuclear safety and emergency response program. Cooperation between national and local governments to have appropriately scaled evacuation and readiness plans which are routinely evaluated and enhanced are important factors for ensuring the capable participation of the public in an emergency.

The specific recommendation relating to the provision of information to overseas countries and having in place a process to receive their support reflect the importance of maintaining a high level of international awareness, communication and resource sharing between countries during an emergency. [The Convention on Early Notification of a Nuclear Accident](#) and the [Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency](#) are used by the Agency to facilitate the provision of information and the provision of support during such emergencies via the IEC.

The recognition, in the recommendations, of the importance of extracting new knowledge related to nuclear safety from the accident and sharing this knowledge with the international community is an important step in developing the lessons learned from this accident. In addition we would like to recognize that the sharing of these lessons learned should work in both directions as the Agency has acted to review the safety standards documents in response to those lessons already learned and identified from this accident and we work to continually improve existing safety requirement and recommendation documents on an ongoing basis and within an extensive partnership and international cooperation process with Member States and International Organisations.

The recommendations provided in this document reflect an important step towards a strengthened nuclear safety regime in the future. As the full document has not been translated into English we have not done a detailed analysis at this time but may provide such in the future, if determined appropriate.

Release of updated TEPCO Fukushima Accident Investigation Report

Previously TEPCO established the "*Fukushima Nuclear Accidents Investigation Committee*" and "*Nuclear Safety and Quality Assurance Meeting Accident Investigation Verification Committee*". In December 2011 it [released](#) an interim report on the accident. On 20 June 2012 TEPCO [announced](#) the release of the "*Fukushima Nuclear Accidents Investigation Report*". This report was produced by these committees and is presented in 7 parts which include:

- Fukushima Nuclear Accidents Investigation Report: Main body (Summary)
- Fukushima Nuclear Accidents Investigation Report: Main body (Summary, Attachment)
- Fukushima Nuclear Accidents Investigation Report: Main body
- Fukushima Nuclear Accidents Investigation Report (Appendix-1) Statement of the Prime Minister's Office regarding decommissioning
- Fukushima Nuclear Accidents Investigation Report (Appendix-2) Schedule (Time series)
- Fukushima Nuclear Accidents Investigation Report (Attachment)
- Major changes made on the interim report issued on December 2, 2011

This report and its annexes are currently only available in Japanese.

What are the recent developments at the Fukushima Daiichi nuclear power plant?

The following section of the summary concentrates on the recent activities conducted in relation to the reactors at Fukushima Daiichi.

- On 1 June TEPCO [submitted](#) to NISA a report on the reliability of the thermometers currently in use at Units 1-3. At this time this report is only available in Japanese.
- On 11 June TEPCO [announced](#) the start of payouts to the voluntary evacuees from the Southern Fukushima Prefecture
- On 12 June TEPCO [provided](#) images of their enhancement work for the cesium absorption apparatus
- On 20 June TEPCO [released](#) a document with the latest results from a radionuclide analysis of air from the openings at different buildings onsite
- On 25 June TEPCO [released](#) a document of images showing the current conditions onsite around the Daiichi Nuclear Power Station. Higher resolution versions of these images are [available online](#).
- On 9 July TEPCO [released](#) new images of the tsunami that hit the Fukushima Daiichi Nuclear Power Station last year.

- On 10 July TEPCO [released](#) results of a radionuclide analysis of air from the opening of the Unit 3 Waste Treatment Building

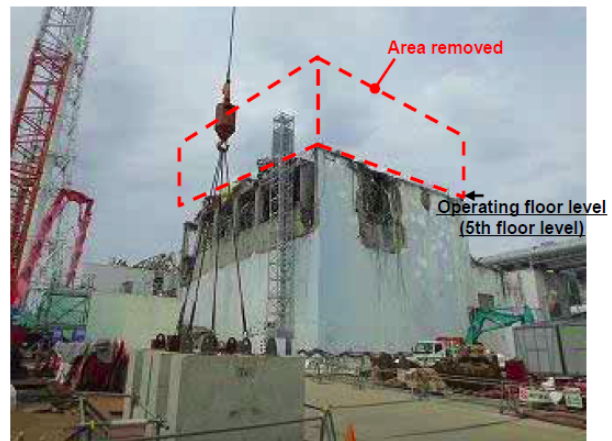
Recent operations in Unit 4

On 18 June TEPCO [released](#) results from a radionuclide analysis of water from the Unit 4 Turbine Building Basement.

On 26 November TEPCO began removing debris from the top of the Unit 4 Reactor Building. On 11 July TEPCO [announced](#) that the debris removal process had been completed. Figure 18 provides a before and after image of the debris removal work. Figure 19 shows two additional angles of the current status of the top of the Unit 4 Reactor Building.



Before debris removal (Southwest surface)
Photo taken on September 22, 2011



After debris removal completion (Southwest surface)
Photo taken on July 5, 2012

Figure 18: Before and after image of the debris removal from the top of the Unit 4 Reactor Building



Protection platform installation on the
Spent Fuel Pool
Photo taken on June 15, 2012



After debris removal
(Upper part of the operating floor, west surface)
Photo taken on July 9, 2012

Figure 19: Additional images of the top of the Unit 4 Reactor Building

Higher resolution images are [available](#) online.

Spent fuel storage pools

On 30 June TEPCO [reported](#) that a system trip occurred at the Unit 4 Spent Fuel Pool Circulation Cooling System. An investigation revealed that the cause of the system trip was a failure of the Uninterruptable Power Supply (UPS) in the system causing a loss of power to the monitoring instruments. The system was recovered by putting a bypass of the UPS in place. Plans are being developed to replace the malfunctioning UPS.

An [inspection](#) of the failed UPS from the Unit 4 Spent Fuel Pool Circulating Cooling system took place on 5 July.

On 2 July TEPCO [reported](#) that the desalination work that had been ongoing at the Unit 2 Spent Fuel Pool was now considered complete. Figure 27 shows the history of sea water injections and salt removal work and Figure 28 shows the salt concentration in water over time as measured by TEPCO.

On 19 July NISA [reported](#) that TEPCO had successfully [conducted](#) an operation to remove two unused fuel assemblies (un-irradiated) from the Unit 4 Spent Fuel Pool. Both assemblies were moved to the Common Spent Fuel Pool. These fuel bundles will be examined to determine if there is a serious risk of corrosion on the other fuel bundles currently stored in the Unit 4 Spent Fuel Pool. Figure 29 shows one of the bundles being lifted out of the pool with workers in the foreground. Figure 30 shows the bundles wrapped in a plastic covering prior to transport.



Figure 29: Unused fuel bundle being lifted out of the Unit 4 Spent Fuel Pool

150-200	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100-150	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50-100	163	25	1	0	0	0	0	0	0	0	0	0	0	0	0
20-50	420	193	111	70	29	10	19	6	3	4	0	0	0	1	0
10-20	883	658	490	330	210	140	115	105	83	69	73	93	40	50	38
Less than 10	2242	4876	6385	6827	7304	6997	6869	6451	5931	6105	5623	5611	5608	5251	5313
Total personnel reported	3745	5752	6987	7227	7543	7147	7003	6562	6017	6178	5696	5704	5648	5302	5351
Max dose reported	199.42	85.29	59.18	39.62	36.76	29.25	35.50	35.30	20.39	23.20	18.98	18.81	19.06	23.53	16.85
Average dose reported	13.66	5.14	3.56	2.85	2.07	1.83	1.73	1.65	1.35	1.27	1.26	1.31	1.16	1.06	1.18

Current status of evacuation areas

On 30 March the Nuclear Emergency Response Headquarters [released a document](#) outlining the reclassification of some restricted areas and area in which evacuation orders have been issued. The reclassification of these areas has been conducted on the basis outlined in [this document](#). This figure shows which areas have [changed designation](#) including which areas had their restrictions removed during the month of April.

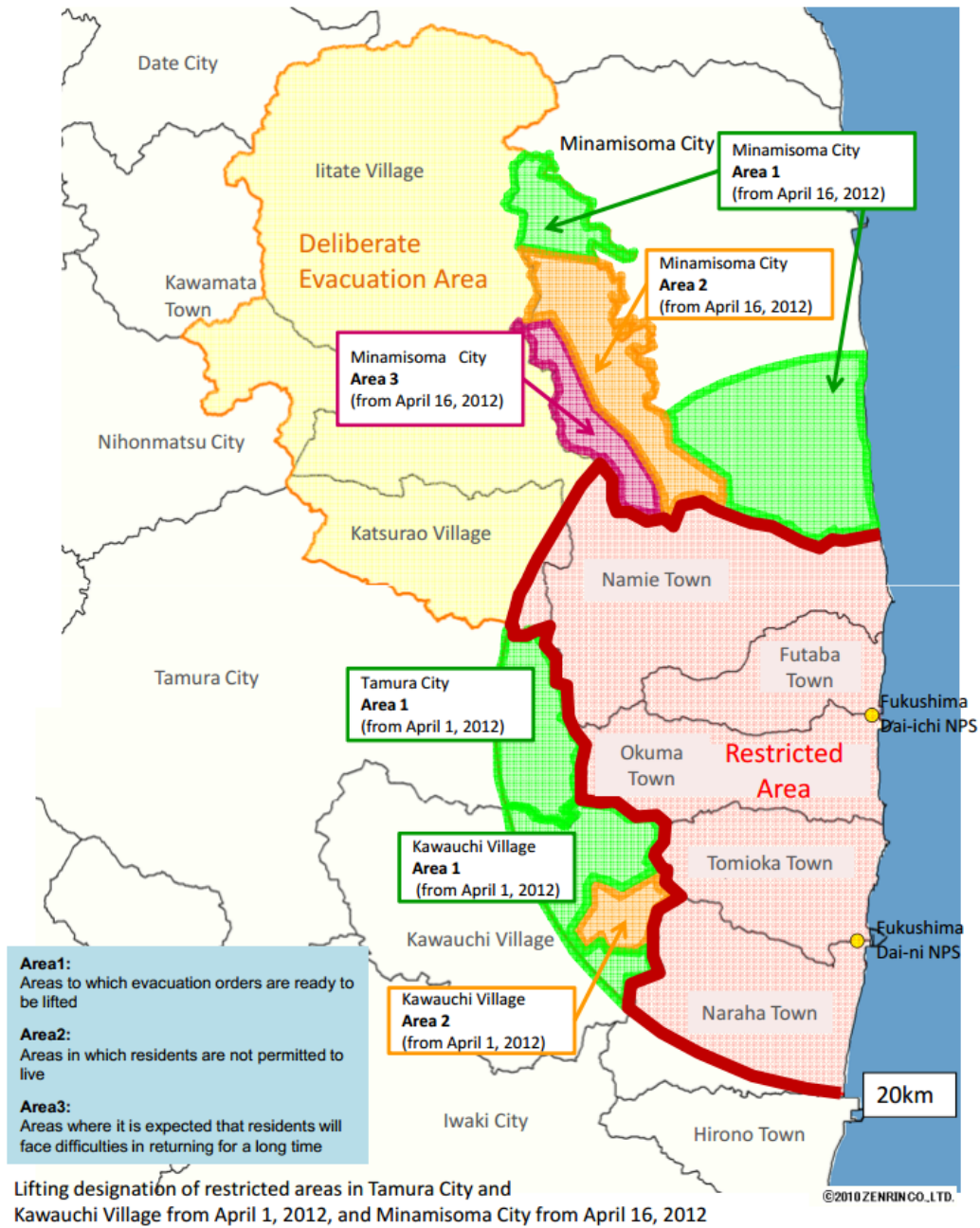


Figure 40: Current evacuation areas (as of 1 April)

The previous map of evacuation areas is available in previous reports and [online](#).

What is the latest information regarding radiation monitoring of foodstuffs?

On 29 June TEPCO [provided results](#) and images from their analysis of fish and shellfish samples collected on 14 June 2012.

Food monitoring

Food monitoring data were reported on 25-29 June and 2-6, 9-13 July 2012 by the Ministry of Health, Labour and Welfare (MHLW) for a total of 15599 samples collected from 46 different prefectures in Japan.

Analytical results for 15486 (over 99%) of the 15599 samples indicated that Cs-134 and Cs-137 were either not detected or were below the provisional regulation values or new standard limits for radionuclides (effective from 1 April 2012) set by the Japanese authorities. However, 113 samples were above the new standard limits for radionuclides Cs-134 and Cs-137.

Food restrictions

Updated information was reported by the MHLW on 25, 28, 29, June and 5 and 12 July 2012 placing restrictions on the distribution of:

- Boar and bear meat from Miyagi prefecture.
- Bamboo shoot produced in Koriyama-shi, Fukushima prefecture.
- Japanese black porgy captured in Sendai bay, Miyagi prefecture.
- Log-grown shiitake (hothouse cultivation) produced in Mibu-machi, Tochigi prefecture.
- Bamboo shoot produced in Kurihara-shi, Miyagi prefecture.
- Stone flounder captured offshore in Ibaraki prefecture.
- Long shanny and Barfin flounder captured offshore in Fukushima prefecture.

On 11 July 2012 the MHLW indicated the lifting of restrictions on the distribution of:

- Ume produced in Soma-shi, Fukushima prefecture.

A summary of the status of food restrictions reported since March 2011 is [available here](#).

The IAEA will continue to issues regular status reports to the public on the current status of the Fukushima Daiichi Nuclear Power Plant.

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