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Citizens' Nuclear Information Center

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Recent Shifts in Monju Policy

The government is attempting the continued use of Monju for the nominal purpose of reducing the volume of radioactive waste

Rally against the Monju Reactor, 2013

Introduction

The fast breeder reactor Monju has been in a state of shutdown since the sodium coolant leak accident in December 1995. The reactor managed a zero-output trial restart on May 2010, but in August of the same year an in-vessel transfer machine, part of the equipment for fuel replacement, fell into the reactor, which is still shut down. The policy indicated in the Democratic Party of Japan (DPJ) government's Innovative Strategy for Energy and the Environment (2012) was to bring the research to an end after experimental operation of the reactor for about five years followed by a summary of the outcomes, but in September 2013 the Abe administration overturned this research termination by coming out with a Monju Research Plan.

Monju Research Plan

The research plan was put together by the Atomic Energy Science and Technology Commission Monju Research Plan working group (chaired by Hajimu Yamana) under the supervising ministry, Ministry of Education, Culture, Sports, Science, and Technology (MEXT). According to the DPJ government's Innovative Strategy for Energy and the Environment, "With international cooperation, Monju will be used to summarize the outcomes of fast breeder reactor development and carry out research aimed at reducing the volume of long-lived radionuclides in nuclear waste, and a research plan with a limited term of years will be formulated and implemented for that purpose, the research being terminated once the outcomes have been

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confirmed." The Strategy also stated, however, that, "Treatment technology for spent nuclear fuel for the purpose of reducing the volume of nuclear waste products, and R&D on burner reactors, will be promoted."

Until now, the breeder reactor has been held up as the kind of reactor resource-poor Japan should be aiming for, but the content of the plan shown above indicates no outlook for the practical realization of the fast breeder. What it does indicate is a gradual switch to nuclear waste volume reduction as a means of continuing the research. The breeding function is unnecessary for waste volume reduction, and thus there seems to be an awareness of a changeover from a fast breeder reactor to a fast reactor. Furthermore, Japan is also participating in the international R&D program for the fourth generation reactor (GEN-IV). It would seem that the changeover from the fast breeder reactor to the fast reactor is taking place bit by bit without any open decision-making. The Research Plan uses the ambiguous format "fast breeder reactor/ fast reactor." In the sponsor's greeting at "The International Forum on Peaceful Use of Nuclear Energy, Nuclear Non-Proliferation and Nuclear Security," held on December 3, 2013, the President of the Japan Atomic Energy Agency (JAEA), Shojiro Matsuura, spoke of Monju as a "prototype fast reactor." Since the head of the organization that has constructed and operated Monju uses this expression, we may say that the changeover to a fast reactor is now clear.

The finalized "Research Plan" gives approximately six years as the "period for summarizing outcomes." After operating the reactor for four months, a period of eight months is then provided for reactor maintenance along with data collection and analysis in accordance with a list of desired outcomes, one year being one "cycle." Therefore, after a scheduled one-year performance test operation, it is intended that the reactor will be put through five full-fledged operational cycles.

After the results from the six-year study are compiled, a decision will be made on whether or not to continue the Monju research, based on energy policy priorities and international conditions.

It is said that the Monju facility will be utilized for research on reduction of the volume of nuclear waste, but because in actuality the reactor was shut down for a long period, it contains much americium, so in a sense this only amounts to a positive-sounding expression for the necessity of using aging fuel. That is to say, since considerable time has passed since the plutonium that was going to be used as the fuel for Monju was reprocessed (plutonium extraction), they have little choice but to use fuel that has a high americium content. Theoretically, americium undergoes nuclear fission by bombardment with fast neutrons (1 MeV or greater), so this is one of the research issues that is said will be verified at Monju.

It is doubtful whether sufficient nuclear fission would take place in a fast reactor. The energy of neutrons in a reactor is not uniform, and depending on the circumstances, americium may absorb neutrons without undergoing fission. In that case, americium will change into a longer-lived radionuclide.

Organizational self-reformation

A research plan has been made, but is the organizational system capable of implementing it?

The accidental sodium leak and fire in 1995 was the result of a simple design error in the sheath of a thermocouple (for which Toshiba was responsible) used for measuring the temperature of molten sodium flowing through the pipes. Sodium leaked out by an unanticipated route, resulting in a fire. The accident involving an in-vessel transfer machine in 2010 was the result of a failure to enforce

Fast breeder reactor (FBR)	Breeding plutonium to enhance energy security Focus on economic efficiency
Fast reactor (FR)	No plutonium breeding Focus on reduction of volume of radioactive waste

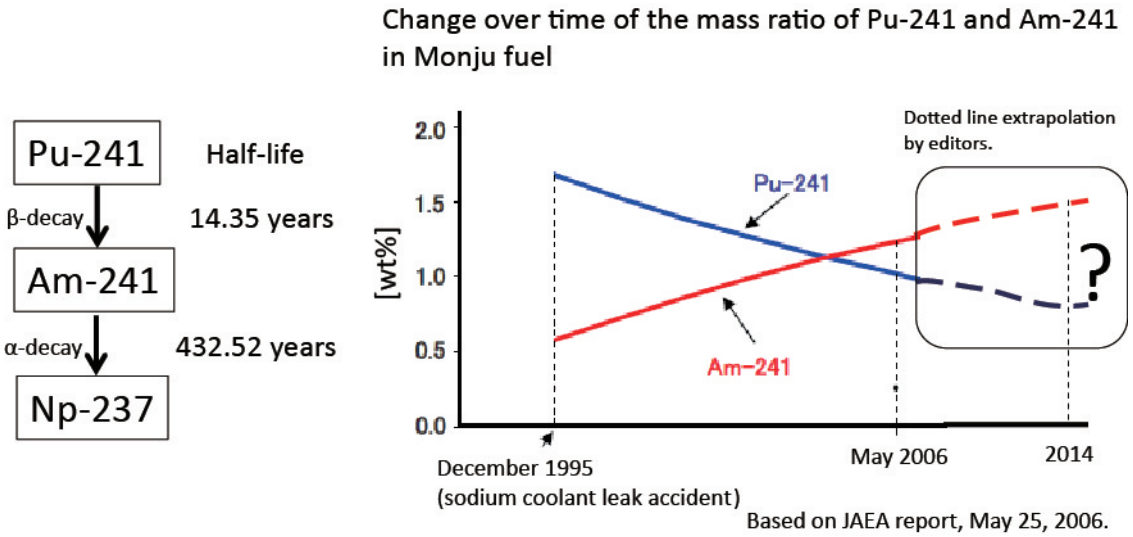
measures to prevent rotation of a device used for grasping and lifting fuel assemblies within the reactor, and it was also a simple design error on the part of Toshiba. After the 1995 accident, thorough safety inspections including confirmation of facility conformity to drawings and specifications were conducted, but they failed to detect the simple design error in internal relaying equipment. Problems occurred in 2010, just prior to restarting the reactor for a performance test run. These included substantial errors and failures to check the sodium leak detection equipment. Improvements should have been made by investigating the fundamental causes of these problems, but 14,316 subsequent inspection failures have come to light since late 2011.

Because of the lack of a suitable organizational system for running Monju, JAEA conducted its own analysis of the fundamental factors causing trouble and published ***Self-reformation –A Path Toward Rebirth–.*** *Self-reformation* was compiled by Shojiro Matsuura, who assumed presidency of the JAEA in May 2013. Matsuura previously headed the former Japan Atomic Energy Research Institute and was chief of the Nuclear Safety Commission from 2000 to 2006.

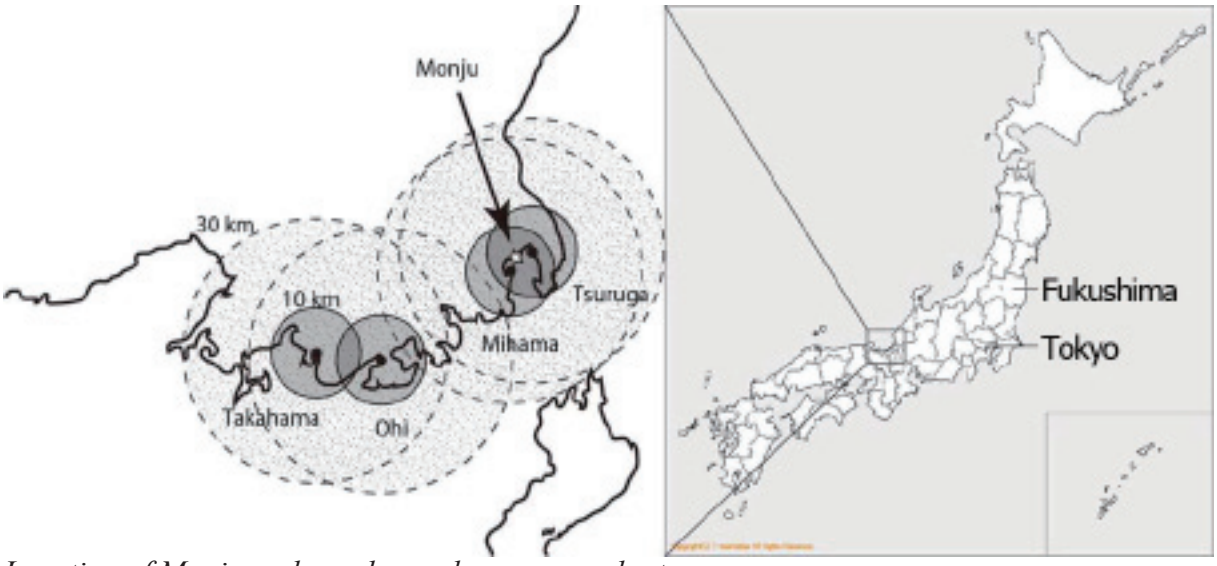
The JAEA has analyzed the fundamental causes of the accidents and problems thus far and has made organizational reform efforts, but even so, accidents and problems have continued to recur. Their analysis of the fundamental causes is nowhere to be seen in *Self-reformation*, and the recommendations for dealing with these issues remain those that were formerly made.

A general safety inspection tracing back to the design documents was conducted only once during the general safety inspections at Monju after the accident in 1995, and has not been conducted since then. Considering the current situation in which the knowledge of the people who were involved initially is not being passed along, the author believes that a new general safety inspection with a retrospective review of the design documents is now necessary again.

Monju was developed using the so-called “convoy system” method. That is to say, the former Power Reactor and Nuclear Fuel Development Corp. was in charge of dividing up orders, with primary equipment orders (nuclear reactors) going to Mitsubishi Heavy Industries, secondary orders (sodium coolant systems for transferring heat from the primary equipment to the tertiary) to Toshiba, and tertiary orders (water and steam equipment) to Hitachi, with each of these companies responsible for the design, installation and maintenance of their respective equipment. Each of these manufacturers further subcontracted their work, entrusting actual maintenance work to the respective companies that had installed the equipment. This kind of order placement structure makes coordination among the manufacturers difficult. In addition, the people initially involved in the ordering side of the system as well as the people involved substantially in the design and installation among the manufacturers are mostly at retirement age, so technical knowledge and know-how will not be sufficiently conveyed. The outlook for success of the reformation is extremely dim.



The fissile material in the Monju fuel, Plutonium-241, decays naturally to Americium-241 at a half life of about 14 years.



Location of Monju and nearby nuclear power plants

The Nuclear Regulatory Commission's Response

The research plans and self-reformation all presuppose the renewed operation of Monju. From September 2013, new standards came into effect, and standards for experimental reactors are tentatively in order. Even so, however, they do not require the installation of an emergency reactor core cooling system at Monju. The risk of a runaway nuclear accident at Monju has been pointed out, but the standards for accidents peculiar to fast breeder reactors are "under consideration." Renewed operation with no standards in place would be unthinkable.

Meanwhile, the Nuclear Regulatory Commission is conducting an inspection of the fracture zone at the Monju site. It is taking the position that it is necessary to cover an area greater than that examined in the earthquake resistance 'back check' conducted by the JAEA in 2008. The JAEA maintains that the fracture zone at the site is not active, but the standards under the new regulations require consideration of whether or not slips could occur in association with movement of the main fault. These considerations will take time, so it will probably be at least several years before performance tests can begin at Monju.

If that is the case, 30 years will have passed since the Monju reactor was built. Such an old reactor, combined with such dubious conveyance of technical knowledge would mean that operation of this nuclear reactor would entail extremely high risks.

We Need a Comprehensive Appraisal of Monju!

First of all, a comprehensive appraisal is needed regarding the suitability of restarting the Monju reactor, the possibility of reducing the amount of nuclear waste, and whether or not this research is a suitable use of government funds. This appraisal needs to include a comprehensive assessment of the propriety of spending several trillion more yen on fast breeder reactor R&D when two trillion yen have already been invested, including into Monju, in the unfulfilled hopes of practical use. It must also consider the danger of a serious accident at Monju, given those that occurred at the nuclear plants in Fukushima. The fact that the MEXT is calling together scholars to promote Monju and drawing up research plans constitutes a serious problem.

(Hideyuki Ban, Co-director of CNIC)

Monju research plans (in Japanese):
http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu2/061/shiryo/1339409.htm

The Japan Atomic Energy Agency's reformation plans (in Japanese):
http://www.jaea.go.jp/02/press2013/p13092601/index.html

Reference Data:

Radiation Exposure Data for Nuclear Power Plant Workers (Fiscal Year 2012)

On October 9, 2013, the Nuclear Regulatory Agency published the FY2012 report on the management of worker radiation exposure at nuclear power facilities. *http://www.nsr.go.jp/committee/kisei/data/0026_03.pdf (in Japanese)*

Table 1 shows the data on radiation dose management for workers in nuclear reactor buildings of nuclear power plants, based on the report's data for "management of radioactive wastes and management of radiation doses of workers engaged in radiation-related jobs at nuclear reactor facilities for generating power for commercial use and those for generating power for research and development," during the period from April 2012 through March 2013. Previously, the data for Tokyo Electric Power Company's (TEPCO) Fukushima Daiichi Nuclear Power Station and the Fukushima Daini Nuclear Power Station remained un-submitted, due to "a delay in dosage calculation by TEPCO's subcontractors caused by the negative effects of the 2011 Great East Japan Earthquake." The data was finally submitted on April 26, 2013.

Table 2 shows the revised report published on July 5. Earlier, the Ministry of Health, Labor and Welfare closely examined the internal exposure data in the original report in response to complaints from the World Health Organization and other international organizations about the data. As a result, the ministry discovered that there were a number of discrepancies between the data presented by TEPCO and those from its subcontractors. The revised July 5 report contains the re-calculations of the data.

The number of workers at the Fukushima Daiichi Nuclear Power Station who suffered a cumulative radiation exposure of 20 mSv annually totaled 738, consisting of 63 TEPCO employees and 675 subcontractor employees. The maximum annual radiation dose registered by workers stood at 54.1mSv.

Table 3 shows the distribution of annual radiation dose registered by the workers at the Fukushima Daiichi Nuclear Power Station each fiscal year, published by TEPCO. According to our calculations, the workers' combined exposure doses for March 2011, FY2011, and FY2012 reached an enormously high level of approximately 349 man-Sv. Of these, about 73 percent are doses registered by subcontractor employees.

In most Western countries and South Korea, the central government has the responsibility for managing the radiation doses of workers at nuclear power facilities. In Japan, however, the subcontractors that employ such workers are expected to take responsibility for this. The government is doing nothing except collect the data from the subcontractors. Even after the nuclear accident in Fukushima on March 11, 2011, it is not TEPCO but the subcontractors who are required to manage worker radiation dose and worker health.It is still unclear how the major subcontractors evaluated the radiation doses of the workers employed by the lower and lowest level subcontractors.

Amid the confusion in the wake of the nuclear accident, there was a serious shortage of dosimeters for individual workers. Moreover, many workers lied about their doses, fearing that they might be fired once their doses exceeded the official limit. These incidents indicate that the published data do not correctly reflect the true situation on radiation doses. For many years, we have strongly insisted on the need for the government to unify the management of exposure doses of workers engaged in radiation-related work and take strict responsibility for data management. We called for the creation of such a system even before the March 11 nuclear accident, but the government has thus far totally failed to take the necessary measures.

(Mikiko Watanabe, CNIC)

Table 1.
FY2012 data on radiation exposure of workers at nuclear-reactor facilities for power generation (including Fugen and Monju)

Plant	Attribution	Effective dose level [per person]											Collective effective dose	Average effective dose	Maximam effective dose
		～5mSv	5mSv～10mSv	10mSv～15mSv	15mSv～20mSv	20mSv～25mSv	25mSv～30mSv	30mSv～35mSv	35mSv～40mSv	40mSv～45mSv	45mSv～50mSv	50 mSv～	(man・Sv)	(mSv)	(mSv)
Tokai	Power Company	309	0	0	0	0	0	0	0	0	0	0	0.00	0.0	0.6
	Subcontractor	1016	0	0	0	0	0	0	0	0	0	0	0.07	0.1	4.5
	Total	1325	0	0	0	0	0	0	0	0	0	0	0.07	0.1	4.5
Tokai-2	Power Company	354	0	0	0	0	0	0	0	0	0	0	0.04	0.1	2.2
	Subcontractor	2092	2	0	0	0	0	0	0	0	0	0	0.32	0.2	5.7
	Total	2446	2	0	0	0	0	0	0	0	0	0	0.36	0.1	5.7
Tsuruga	Power Company	439	0	0	0	0	0	0	0	0	0	0	0.02	0.1	1.3
	Subcontractor	2360	1	0	0	0	0	0	0	0	0	0	0.30	0.1	5.4
	Total	2799	1	0	0	0	0	0	0	0	0	0	0.32	0.1	5.4
Onagawa	Power Company	479	0	0	0	0	0	0	0	0	0	0	0.01	0.0	0.9
	Subcontractor	3479	43	4	0	0	0	0	0	0	0	0	1.10	0.3	12.1
	Total	3958	43	4	0	0	0	0	0	0	0	0	1.12	0.3	12.1
Higashidori	Power Company	289	0	0	0	0	0	0	0	0	0	0	0.00	0.0	0.1
	Subcontractor	747	0	0	0	0	0	0	0	0	0	0	0.01	0.0	1.1
	Total	1036	0	0	0	0	0	0	0	0	0	0	0.01	0.0	1.1
Fukushima-1	Power Company	1165	266	90	39	23	16	9	10	2	2	1	7.30	4.5	54.1
	Subcontractor	7567	1875	1231	769	254	206	95	104	16	0	0	71.51	5.9	43.1
	Total	8732	2141	1321	808	277	222	104	114	18	2	1	78.81	5.7	54.1
Fukushima-2	Power Company	642	0	0	0	0	0	0	0	0	0	0	0.06	0.1	1.5
	Subcontractor	2452	17	6	1	0	0	0	0	0	0	0	0.71	0.3	17.2
	Total	3094	17	6	1	0	0	0	0	0	0	0	0.77	0.2	17.2
Kashiwazaki-kariwa	Power Company	1150	0	0	0	0	0	0	0	0	0	0	0.10	0.1	4.3
	Subcontractor	4965	31	3	0	0	0	0	0	0	0	0	0.51	0.3	11.4
	Total	6115	31	3	0	0	0	0	0	0	0	0	0.61	0.3	11.4
Hamaoka	Power Company	791	0	0	0	0	0	0	0	0	0	0	0.06	0.1	3.0
	Subcontractor	3980	38	15	0	0	0	0	0	0	0	0	1.45	0.4	15.0
	Total	4771	38	15	0	0	0	0	0	0	0	0	1.51	0.3	15.0
Shika	Power Company	401	0	0	0	0	0	0	0	0	0	0	0.01	0.0	0.6
	Subcontractor	1174	0	0	0	0	0	0	0	0	0	0	0.11	0.1	2.5
	Total	1575	0	0	0	0	0	0	0	0	0	0	0.12	0.1	2.5
Shimane	Power Company	527	0	0	0	0	0	0	0	0	0	0	0.02	0.0	1.5
	Subcontractor	2117	67	0	0	0	0	0	0	0	0	0	1.32	0.6	7.6
	Total	2644	67	0	0	0	0	0	0	0	0	0	1.34	0.5	7.6
Tomari	Power Company	417	0	0	0	0	0	0	0	0	0	0	0.01	0.0	1.9
	Subcontractor	2181	20	0	0	0	0	0	0	0	0	0	0.54	0.2	8.3
	Total	2598	20	0	0	0	0	0	0	0	0	0	0.55	0.2	8.3
Mihama	Power Company	457	0	0	0	0	0	0	0	0	0	0	0.02	0.0	1.0
	Subcontractor	2314	7	0	0	0	0	0	0	0	0	0	0.50	0.2	6.3
	Total	2771	7	0	0	0	0	0	0	0	0	0	0.52	0.2	6.3
Takahama	Power Company	517	0	0	0	0	0	0	0	0	0	0	0.03	0.1	1.0
	Subcontractor	2938	16	0	0	0	0	0	0	0	0	0	0.88	0.3	9.0
	Total	3455	16	0	0	0	0	0	0	0	0	0	0.91	0.3	9.0
Ohi	Power Company	516	4	0	0	0	0	0	0	0	0	0	0.20	0.4	7.9
	Subcontractor	2636	46	3	0	0	0	0	0	0	0	0	1.24	0.5	12.0
	Total	3152	50	3	0	0	0	0	0	0	0	0	1.44	0.4	12.0
Ikata	Power Company	350	0	0	0	0	0	0	0	0	0	0	0.01	0.0	0.7
	Subcontractor	1662	0	0	0	0	0	0	0	0	0	0	0.16	0.1	2.8
	Total	2012	0	0	0	0	0	0	0	0	0	0	0.17	0.1	2.8
Genkai	Power Company	523	0	0	0	0	0	0	0	0	0	0	0.01	0.0	1.1
	Subcontractor	2348	1	0	0	0	0	0	0	0	0	0	0.38	0.2	5.3
	Total	2871	1	0	0	0	0	0	0	0	0	0	0.39	0.1	5.3
Sendai	Power Company	293	0	0	0	0	0	0	0	0	0	0	0.01	0.0	0.8
	Subcontractor	1390	0	0	0	0	0	0	0	0	0	0	0.13	0.1	2.5
	Total	1683	0	0	0	0	0	0	0	0	0	0	0.14	0.1	2.5
Total of commercial plants	Power Company	9619	270	90	39	23	16	9	10	2	2	1	7.91	0.8	54.1
	Subcontractor	47418	2164	1262	770	254	206	95	104	16	0	0	82.24	1.6	43.3
	Total	57037	2434	1352	809	277	222	104	114	18	2	1	90.16	1.4	54.1
Fugen	Power Company	116	0	0	0	0	0	0	0	0	0	0	0.01	0.1	2.8
	Subcontractor	402	5	0	0	0	0	0	0	0	0	0	0.13	0.3	9.4
	Total	518	5	0	0	0	0	0	0	0	0	0	0.15	0.3	9.4
Monju	Power Company	368	0	0	0	0	0	0	0	0	0	0	0.00	0.0	0.0
	Subcontractor	869	0	0	0	0	0	0	0	0	0	0	0.00	0.0	0.0
	Total	1237	0	0	0	0	0	0	0	0	0	0	0.00	0.0	0.0
Total	Power Company	10103	270	90	39	23	16	9	10	2	2	1	7.92	0.7	54.1
	Subcontractor	48689	2169	1262	770	254	206	95	104	16	0	0	82.37	1.5	43.4
	Total	58792	2439	1352	809	277	222	104	114	18	2	1	90.31	1.4	54.1

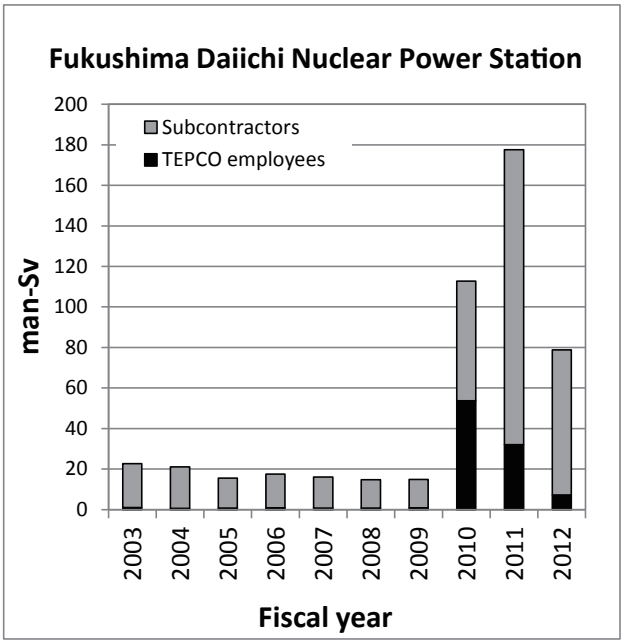
Table 2.
Unsubmitted data for TEPCO's Fukushima Daiichi and Daini Nuclear Power Stations

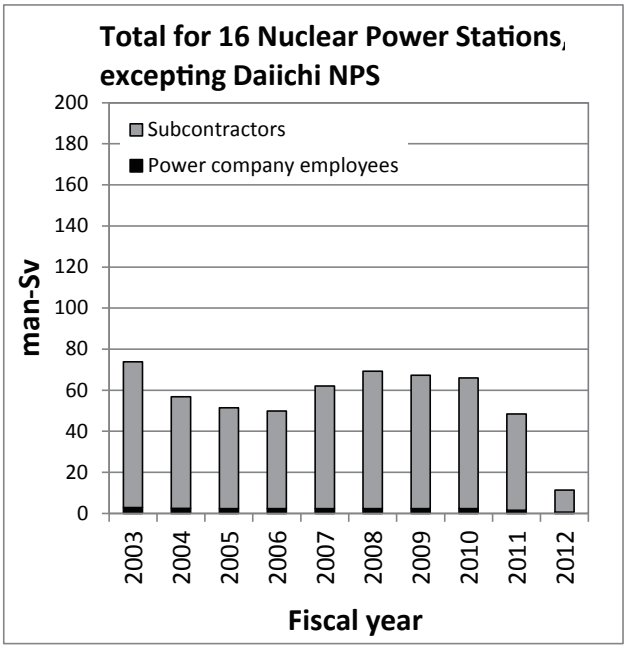
		Fukushima-1		Fukushima-2	
		Fiscal 2010	Fiscal 2011	Fiscal 2010	Fiscal 2011
Total number of workers	Power Company	1936	2903	1485	1155
	Subcontractor	12127	16993	6422	3634
	Total	14063	19896	7907	4789
Collective effective dose (man・Sv)	Power Company	53.66	32.01	0.39	0.18
	Subcontractor	59.14	145.54	4.43	1.86
	Total	112.8	177.56	4.82	2.04
Average effective dose (mSv)	Power Company	27.7	11	0.3	0.2
	Subcontractor	4.9	8.6	0.7	0.5
	Total	8	8.9	0.6	0.4

Data for the Daiichi Nuclear Power Station was submitted on April 26, 2013 and a revised version submitted on July 5, 2013. The revised version of the FY2010 data for the Daini Nuclear Power Station was submitted by TEPCO's subcontractors on Jan. 18, 2013. The report on the FY2011 data was under scrutiny on the same day.

Table 3.
Distribution of radiation dose for Fukushima Daiichi Nuclear Power Station workers for each fiscal year. Published by TEPCO

Level (mSv)		～1	1～5	5～10	10～20	20～50	50～75	75～100	100～150	150～200	200～250	250～	Maximam effective dose	Average effective dose
From March 2011 to the end of fiscal 2011	Power Company	796	559	365	491	925	263	179	118	24	1	6	678.80	24.78
	Subcontractor	4672	4623	2555	2886	2654	256	64	20	2	2	0	238.42	10.01
Fiscal 2012	Power Company	586	579	266	129	62	1	0	0	0	0	0	54.10	4.50
	Subcontractor	4241	3326	1875	2000	675	0	0	0	0	0	0	43.30	5.90





Second list of signatures signed by anti-nuclear citizens submitted; total number of signatories rises to 8.38 million

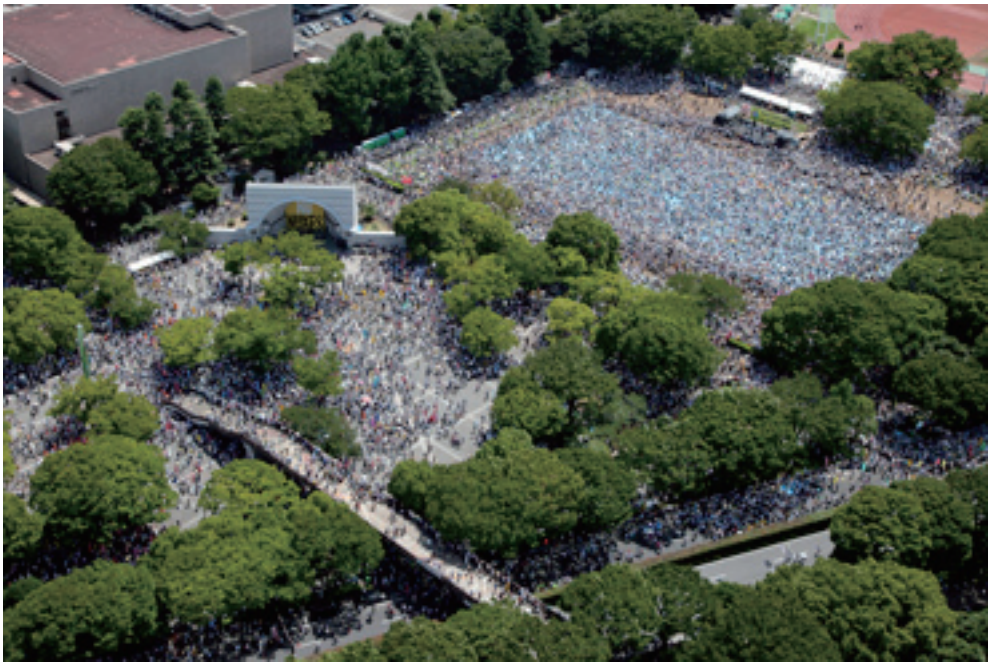
On November 26, 2013, as tension mounted in Japan over the controversial secrecy law to prevent leaks of state secrets, an anti-nuclear citizens' group aiming to collect signatures from 10 million people handed the second round of collected signatures to the Deputy Speaker of the House of Representatives and the Vice President of the House of Councilors, as well as to the Cabinet Office. As of November 20, the group named "Sayonara (Good-bye to) Nuclear Power Plants" had collected a total of 8,378,701 signatures, including those contained in the first round, which were submitted in June 2012. During and after the submission of the signatures, the group members held a meeting in the Diet building and a rally on the signature campaign in Hibiya Park, and then set out on an anti-nuclear march in downtown Tokyo.

In the meeting held in the Upper House members' office building prior to the submission of the signatures, Satoshi Kamata, one of the core promoters of the event, gave a speech that took into consideration the Special Secret Protection Bill which had been railroaded through the Lower House ad hoc committee the same morning. He emphasized the significance of the meeting, saying "It is extremely meaningful to hold this kind of meeting in this place on the day when the Japanese society is facing a historic crossroads where we must decide on whether or not to return to pre-war fascism." He went on to say that the fact that as many as 8.3 million or 8.4 million signatures have been collected shows, in a tangible way, how deep the ordinary citizens' anti-nuclear sentiment is. Chikako Chiba of the Fukushima Conference for a Nuclear Phaseout appealed to the audience for support by saying "The cries of the disaster-stricken people are screams demanding compensation from the government and TEPCO, neither of which has shown any sign of fulfilling their responsibilities."

Kenzaburo Oe, Japan's renowned Nobel Prize-winning author, is one of the core promoters of this signature-collecting campaign. Led by Oe and other promoters, the group headed for the Diet amid a situation where many protesters against the secrecy law had already surrounded the Diet building. The group handed the signatures directly to the Upper House vice president and the Lower House deputy speaker. They then proceeded to the Prime Minister's Office but were refused entry and were forced to abandon the plan to submit the signatures to the prime minister. Instead, the group delivered them to the Cabinet Office. In 2012, the group members entered the Prime Minister's Office and handed the signatures to the Chief Cabinet Secretary.

Following these actions, the group held a rally for the signature campaign in Hibiya Park from 6:30pm.

Oe, one of the speakers at the rally, said, "The people gathered here are engaged in various anti-nuclear activities with the same passion, the same sense of reality, and the same vision for the future, as those of the demonstrators surrounding the Diet building in protest against the secrecy law." Keiko Ochiai, a writer, translator, feminist and manager of Crayon House - a book store specializing in children's and women's literature, said "For us, there is no choice but to move



170,000 people gathered for the Sayonara (Good-bye to) Nuclear Power Plants rally on July 16, 2012. (cc) NODA Masaya / JVJA

Photos taken at the Sayonara (Good-bye to) Nuclear Power Plants rally, on June 2, 2013.

forward by uniting the thoughts and feelings of the signatories with those of the sufferers of the nuclear disaster in Fukushima Prefecture." Another speaker, Hisae Sawachi, a non-fiction writer, stressed that her opposition to the enactment of the secrecy law stemmed from the viewpoint of protecting the lives of the children in the future. Makoto Sataka, a political and economic commentator and magazine publisher, reminded the audience that Prime Minister Shinzo Abe had said earlier that things were under control, but in fact he was unable to control even the heads of the local governments backed by the ruling Liberal Democratic Party in the public hearing held in Fukushima Prefecture. Needless to say, it would be impossible for the prime minister to control Sataka and other anti-nuclear protesters, he added.

Shin Sugo, a third-generation Japanese-Korean and business operator, warned the demonstrators by saying, "The government deceived the public by forging a myth that nuclear power plants were safe. Now they are trying to deceive us by creating another myth that radioactivity is safe. The government is working hard to enact the secrecy law to conceal the truth from the public. Don't allow yourselves to be deceived."

Ryuichi Sakamoto, a musician, activist, composer, record producer and writer, and Hiroaki Koide, assistant professor at Kyoto University Research Reactor Institute, sent written messages to the rally along with their signatures. In the message, Sakamoto said, "A river of tears has been flowing at the bottom of our hearts since that day (when the nuclear accident occurred in Fukushima in March 2011), but we are nonetheless determined to go on living here." Koide said this would be the last chance for Japan to make a course correction, and that this was a turning point for this country.

Following the rally, the participants launched a protest march in the direction of Ginza, but it was just around that time that the secrecy bill was forced through the Lower House plenary session. After the march, some of the participants headed for the Diet and joined the people protesting against the railroading of the controversial bill through the Diet.

(Ikuko Kuwabara, CNIC)

Current State of Post-Accident Operations at Fukushima Daiichi Nuclear Power Station (July to December 2013)

State of the Plant

As a result of the accident, many of the measuring instruments installed in the Fukushima Daiichi Nuclear Power Station (FDNPS) measuring system are malfunctioning. There is doubt about the accuracy of values being measured, but if these values are taken as the premise, from the temperature of the containment vessel and from the release of Xenon-135, a noble gas that is released when nuclear fission takes place, it can be estimated that the state of the reactor is stable.

However, even now 10 million Bq/hr of radioactive substances are being continually released into the atmosphere (see Figure 1). (The leakage of contaminated water will be mentioned below.)

Additionally, the Tokyo Electric Power Company (TEPCO) board of directors' meeting on December 18, 2013 decided to decommission of Units 5 and 6, and the notification to decommission the reactors was delivered to the Minister of Economy, Trade and Industry on January 31, 2014.

Current State of Post-Accident Operations

1. State of Operations concerning Molten Fuel

The current state is that for each of the reactors a survey of the situation inside the reactor; surveys, research and remote-control removal of debris with a view to decontamination of the buildings; surveys to reveal the locations of leaks from the containment vessels, and other work is being implemented.

2. State of Operations concerning Spent Fuel Pools

The spent fuel pools at FDNPS were badly damaged by the earthquake and accident. In the case that aftershocks cause further damage to the buildings and coolant water leaks occur from the spent fuel pools (SFPs), in which a large number of fuel assemblies is stored (Table 1), there is the possibility that fuel assemblies could melt down. Because of this, it is necessary that the fuel assemblies be removed from the SFPs and transferred to the safe common pool at the earliest possible stage.

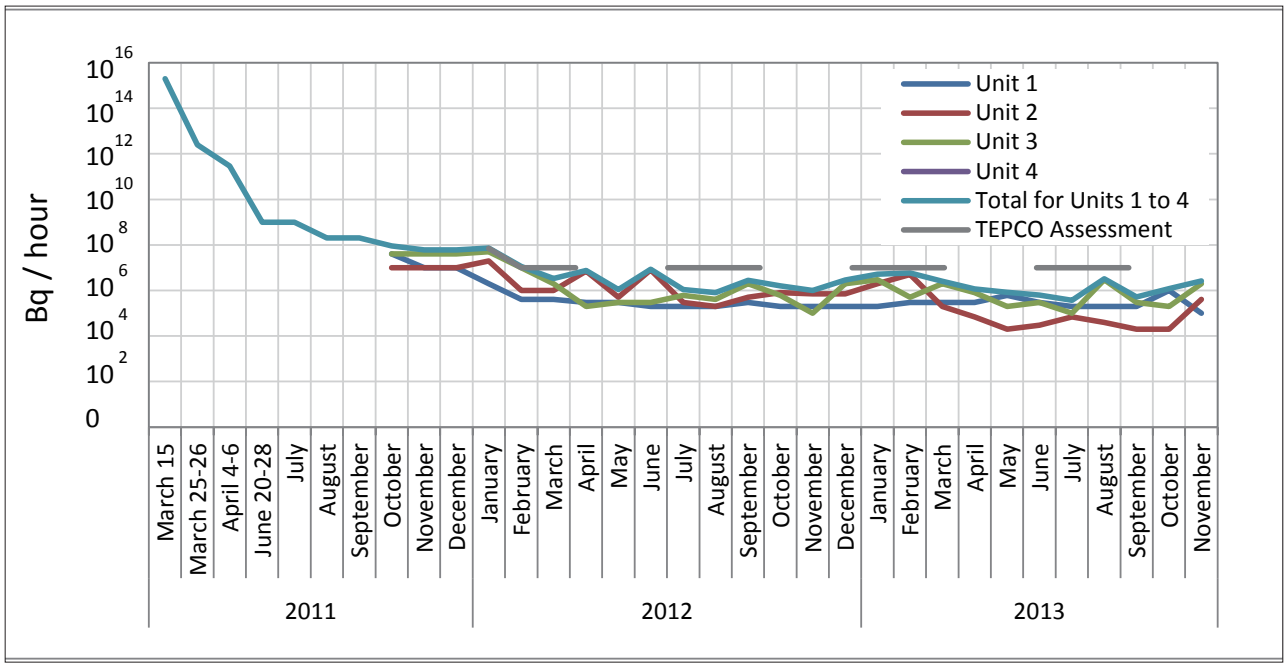


Figure 1; Releases of radioactivity from Units 1 to 4 of Fukushima Daiichi Nuclear Power Station

Operations to remove fuel assemblies from the SFPs have started with Unit 4. Large pieces of fallen debris in the upper part of the building and in the SFP itself have been cleared away, and removal of the fuel assemblies began in November 2013, following the construction of a cover and crane for the fuel removal operation.Elimination of debris from the upper part of the Unit 3 building is almost complete and the plan is now to implement dose reduction measures on the 5th floor of the building, the operating floor, where the dose is currently too high to allow access by human workers, and then remove large pieces of debris from inside the SFP.

In order to carry out debris removal from the upper part of Unit 1 around mid-2014, it is now planned to begin demolishing the reactor building cover currently in place, and as a preliminary to this the ventilator equipment collecting and filtering out the radioactive substances inside the building cover has been stopped since September.

Further, the dose inside Unit 2 is too high to allow inspection of the detailed situation inside the building.

For the fuel assembly removal operation, 22 fuel assemblies stored in the SFP are placed at one time in the previously existing transfer vessel used for transferring the assemblies onsite. This is then lowered a maximum of 32 m using the crane installed inside the fuel removal cover and transferred to the common pool, which is used for storing spent fuel in a separate building on the FDNPS site.

There are however, many problems with this plan. Especially grave is the fact that the repeated tendency of TEPCO to play down safety aspects due to overoptimistic assumptions are also apparent in these operations.(1)

An example is that despite the fact that what we have witnessed at FDNPS is a situation brought about by the simultaneous destruction of multiple pieces of equipment caused by the related actions of the earthquake and tsunami, TEPCO is still maintaining the single-breakdown assumption to the securing of safety in these removal operations. Moreover, we are unable to confirm an emergency contingency plan for the case where an onsite transfer vessel is dropped in the course of these operations. There are also concerns over corrosion of the fuel associated with the injection of seawater into the Unit 4 SFP at the time of the accident and over fuel damage due to debris remaining in the SFP interfering with the removal of the fuel assemblies.

There is also the problem of fuel damaged before the accident, which is still stored in the SFP. There are three damaged fuel assemblies stored in the Unit 4 SFP. These cannot be inserted into the onsite transfer vessel. TEPCO is considering ways of handling this, but one of the assemblies is seriously damaged, cracks having appeared in the channel box (the long, square metal box fitted around the fuel assembly).

In parallel with these operations, the fuel loaded into the reactor cores of Units 5 and 6 is also being transferred to the respective SFPs. The opening (removing the lid and so on of the reactor vessel) of the Unit 6 reactor began in September 2013 and the transfer of the fuel was completed on November 29.

Since the FDNPS common pool is almost completely full, from June older fuel assemblies stored there have been transferred, in order of age, to dry casks, and these have been moved to a temporary storage facility that has been newly constructed on the site.

Table1; State of the fuel assembly removal operation (as of Nov. 20, 2013)

	Reactor	Spent fuel pool						Transferred fuel	
		Full storage capacity(*1)	Stored fuel	%	Spent fuel	Damaged fuel	New fuel	Spent fuel	New fuel
Unit 1	400	900	392	44%	292	70	100	0	0
Unit 2	548	1,240	615	50%	587	3	28	0	0
Unit 3	548	1,220	566	46%	514	4	52	0	0
Unit 4 (as of Dec. 22, 2013)	0	1,590	1,401	88%	1,221	3	180	110	24
Unit 5	548	1,590	994	63%	946	1	48	0	0
Unit 6 (as of Nov. 29, 2013)	(*2) 0	1,770	1,704	96%	1,640	1	64	0	0
Common Pool	-	6,840	5,718	84%	5,716	0	2	-	348
Temporary dry cask storage facility	-	(*3) 2,930	(*4) 1,067	26%	1,067	0	0	-	-

(*1) However, there is some spare capacity over and above the "full storage capacity" for the number of assemblies to be loaded into the reactor core. This is for the storage of reactor core fuel during regular maintenance. (*2) Fuel assemblies in Unit 6 reactor transferred to spent fuel pool by Nov. 29, 2013. (*3) Number of installed dry casks is 23 (dry cask capacity is 50) .(*4) 408 dry casks which became unusable due to the tsunami on March 11, 2011 have been transferred here from the dry cask storage building in FDNPS. Units: Number of fuel assenblies

(1) A statement issued by CNIC concerning the removal of fuel assemblies from Unit 4 can be seen at http://www.cnic.jp/5475 (in Japanese)

Spent fuel pool

Transfer vessel

Loading the transfer vessel onto a trailer

Photos by TEPCO

3. Contaminated water problem

Measures planned against the continually increasing amounts of contaminated water are as follows: Establishment and operation of the "ground water bypass" to pump up ground water and release it into the sea; water level management by restoration of the pumping wells, that became unusable due to the accident, in the vicinity of the reactor buildings (scheduled to resume operation in mid-FY2014); construction of a water barrier on the land side of the reactors (scheduled to be usable during the first half of FY2015); waterproofing of holes and so on in the outer walls of the Unit 1 to 4 buildings (scheduled to be completed in FY2017); work to decrease the volume of contaminated water through operation of the multi-nuclide removal equipment (ALPS) (scheduled for full operation around mid-FY2013); and increased storage tank installations. However, as we have already reported in NIT156, the gravity of the situation is continuing to increase, for example, with contaminated water leakages from the water storage tanks and from the turbine buildings.

Barriers have been established around the contaminated water storage tanks, and valves have been installed to allow for the release of rainwater and so on. However, at first these valves were left permanently open out of concern that rainwater might overflow the barriers. Since the contaminated water leakage incident that took place in August 2013 the valves have been kept permanently closed, but the necessity for countermeasures in the case that rainwater overflowed the barriers was pointed out from the time when this operational change was put into effect. It was decided that water inside the barriers would be first transferred to a storage tank and then released only after the level of contamination has been confirmed. However, the preparation of hoses for the transfer of the water to tanks was not carried out smoothly, and when heavy rain occurred on September 17, rainwater overflowed the barriers, but TEPCO released the water after only a simple measurement. At first, the results of these simple measurements were said to be 2 Bq/l total beta radiation when the releases were begun, but it later became clear that this was in fact a misreading of 24 Bq/l.

Looking at the accident list (Table 2), it seems that a large number of other operational mistakes have also occurred. This gives us a very strong impression not only of the severity of the post-accident operations at FDNPS but also of the limits of TEPCO's accident management capabilities.

(Hajime Mastukubo, CNIC)

Table 2; List of Accidents, July to December 2013 (Excerpted from TEPCO website and Nucia, the nuclear facility information disclosure library) 1 of 3

Date	Location	Content
July-4	Unit 2 CST reactor water injection system line	When carrying out the changeover work from the elevated reactor water injection system to the CST (condensate storage tank) reactor injection system, the reactor injection line valve in the turbine building, which should normally be in the closed position, was in the open position and some of the water which should have flowed to the reactor core spray system flowed into the feedwater system.
July-5	Unit 5 D/G (B) alert malfunction lamp	The Unit 5 emergency diesel generator B (D/G (B)) alert malfunction lamp (which shows that the D/G is not in a state of alert) came on. It is thought that this occurred due to the position of a fuel bundle shifting from its normal position.
July-5	Unit 5 D/G (B) air storage tank pressure	It was confirmed that the pressure in the air storage tank was reduced when the Unit 5 D/G (B) was operated. It was thought that the solenoid valve pilot sheet, a consumable item, had hardened, that air was escaping from the sheet due to deformation, and that the solenoid valve was unable to close completely.
July-10	Unmanned crane removing debris from the upper part of the Unit 3 reactor building	Hydraulic oil was confirmed to be oozing from the joint on the hydraulic hose on the hydraulic cutter on the unmanned crane being used in debris-removal work on the upper part of Unit 3 reactor building.
July-18	Center of Unit 3 reactor building 5th floor (equipment storage pool side)	Something appearing as steam was confirmed to be drifting around in the vicinity of the center of Unit 3 reactor building 5th floor (equipment storage pool side). (This later appeared continually in low temperature, high humidity conditions.) There was no significant change seen in main plant-related parameters, monitoring posts or continuous dust monitors, or in the atmospheric dose above the reactor building spent fuel pool.
July-23, 24	Dust radiation monitor in the ventilation equipment outlet in Unit 2 reactor building	An alarm sounded indicating an abnormality in the equipment in the absorbtion pump in the Unit 2 dust radiation monitor system B and the dust monitoring B system was stopped. There was no significant change in the plant data, etc. It is thought that the dust absorption pump stopped when the alarm sounded indicating equipment abnormality due to a shift in the position detector on the (motor driven) airtight device which locks in place the dust measurement filter paper by pinching it. The equipment abnormality alarm also sounded on July 24.
July-25	Unit D/G6A	As a test of automatic startup of the Unit 6 D/G(A), when the Unit 6 6.9 kV electricity distribution board C was shut down, the residual heat removal system B, which was cooling the reactor, ceased operation.
July-30	Second cesium absorption device (SARRY)	The "booster pump stopped/leak detected" alarm sounded in the second cesium absorption device (SARRY), which was currently in the process of treatment operations, and shut down automatically.
August-10	Underground water storage tank Nos. 3 and 4	A bulge of maximum height of approxiately 40 cm and to an extent of approximately 30 m × 20 m occurred around the center of the embankment of the No.3 underground water storage tank. A buldge also occurred around the center of the upper surface of No.4 underground water storage tank, with an extent of approximately 10 m × 10 m. It is thought that the cause is the tendency for the ground water to rise in the vicinity of the underground water storage tanks since mid-July.
August-12, 19	Important anti-seismic building	An alarm sounded to indicate a high level of radiation in a continuous dust monitor at the front of an important anti-seismic building on August 12. It was confirmed that 10 out of 16 people who had boarded an onsite bus from the important anti-seismic building had bodily radioactive contamination. Two out of three people who boarded an onsite bus at the important anti-seismic building on August 19 were also confirmed to have bodily contamination. It is thought that this problem was due to dust drifting on the wind when debris was amassed and removed after removal of a ceiling crane girder during the debris removal operations in the upper part of Unit 3 reactor building.

Table 2; List of Accidents, July to December 2013 (Excerpted from TEPCO website and Nucia, the nuclear facility information disclosure library) 2 of 3

Date	Location	Content
August-19	H4 area tank	It was confirmed that the water level in the H4 area No.5 (H4-I-5) tank had fallen by about 3 m (roughly 300 m^3). It was confirmed that the wall of the drainage channel to the east side of the H4 area tank had evidence of streak-like flow marks (surface dose equivalent rate 6.0 mSv/h (gamma + beta radiation (70 μm dose equivalent rate)) and thus there was a possibility that contaminated sludge, etc. had flowed into the drainage channel. Tanks in several areas were later confirmed to have places with high radiation doses.
August-24	Gas management system of the Unit 2 reactor containment vessel	A fall in pressure in the Unit 2 reactor containment vessel and reduction in ventilation flow of the gas management system of the reactor containment vessel occurred. The amount of radioactivity of the gas released was assessed as around 2×10^4 Bq.
September-5	Large crane for debris removal on the upper part of Unit 3 reactor building	The jib (crane arm) of the 600 ton crawler crane being used in the debris removal operations on the upper part of the Unit 3 reactor building collapsed sideways and it was confirmed that the part where the jib joins the main mast was damaged.
September-12	Units 5 and 6 RO (reverse osmosis membrane) device	Water was discovered leaking from the Unit 5 and 6 retained water treatment device. The estimated amount of the leakage was around 65 l of water treated by the RO device.The radiation concentration of the leaked water was below the detection limit for Cs-134, 4.2×10^{-3} Bq/cm^3 for Cs-137, and below the detection limit for total beta.
September-15	B South tank area dike	Water accumulated behind the B area tank dike overflowed and the water that had accumulated behind the dike was transferred to a B area tank. The water that had overflowed had a total beta value of 37 Bq/l. The level of water behind the tank dike rose due to rain associated with an approaching typhoon on September 16. The water well below the notification criterion for Sr-90 of 30 Bq/l was released outside the tank dike (7 areas, total volume approximately 1,130 m^3). Water other than this was pumped into a tank within the area (12 areas, total volume approximately 1,410 m^3).
September-18	Central section of Units 1 and 2 exhaust stack	During a seismic safety assessment of the Units 1 and 2 exhaust stack, it was confirmed that the steel material in the exhaust stacks (bents) showed damaged locations such as with subsidiary fracture, seeming subsidiary fracture or rusting. Since there are places with high dose rates in the area of these exhaust stacks, it is planned to begin an investigation after detailed investigation method, etc. has been considered.
October-1	H6 area notch tank	When transferring rainwater behind the H6 area dike to the H2 south area dike, part way along the hose used to transfer the water the water overflowed from a notch tank. The volume of water leaked was about $5m^3$ and radiation in the water in the notch tank was Cs-134: 8.0 Bq/l, Cs-137: 16 Bq/l, Total beta: 390 Bq/l (Sampled on October 1).
October-2	H8 south tank area	Due to the impact of a typhoon, the water level behind the H8 south tank area dike rose and overflowed the dike. The result of radiation measurement of the water accumulated behind the dike showed Cesium-134 and 137 to be below the detection level and total beta to be 15 Bq/l.
October-2	G3 east tank area	It was confirmed that rainwater had reached the upper part of the dike in the G3 east tank area (welded tanks). Water that had accumulated behind the dike was transferred to a tank in the same area. Radiation measurement results showed that the water that had accumulated behind the dike had Cesium-134, 137 and total beta of below the detection limit.
October-2	B south area tank	To prevent the overflow of rainwater from the typhoon, when rainwater behind the B south area dike was transferred to tanks in the same area and in other areas, around $17m^3$ of water leaked into the area behind the dike from between the roof panel and the side panel of the tank because it had been constructed on sloping land, and approximately 430 l of water leaked outside the dike. The leaked water was water that had already undergone the water conversion treatment process (total beta: 580,000 Bq/l, Cesium-134: 24 Bq/l, Cesium-137: 45 Bq/l (sampled on October 2)). It is possible that the water flowed into the sea through the gutters and drainage channels.

Table 2; List of Accidents, July to December 2013 (Excerpted from TEPCO website and Nucia, the nuclear facility information disclosure library) 3 of 3

Date	Location	Content
October-3	Unit 5 floor drain collector pump gland water outlet pipe	Water leaked from the floor drain collector pump water outlet pipe in the Unit 5 waste treatment building. The volume of the water was approximately 500 ml.
October-9	Water conversion device RO-3 temporary house	A leak occurred in the temporary house while during work to change to PE pipes was being carried out when the cam-lock (joint) for a pressure hose in a location other than that to be changed during the work was mistakenly removed. The volume of water leaked was approximately 7m^3.
November-15	G6 south area tank	Leakage was confirmed from the lower two tank side wall joints (flanges) of the steel tube type tank G6-C3 in G6 south area. The result of the radiation measurements was that the water dripping down and accumulating in the horizontal flat part of the flanges showed 35 mSv/h (gamma + beta (70 μm dose equivalent rate)), 0.03 mSv/h (gamma) (at a distance of 5 cm).
November-19	Emergency nitrogen gas separation device	The air-operated valve on the emergency nitrogen gas separation device supply line failed to operate.
November-23	Nitrogen gas separation device (A)	While running the two (A and B) Nitrogen gas separation devices, which pump nitrogen into the Units 1 to 3 reactor pressure vessels and reactor containments, the "dryer abnormal current or dryer high pressure cut" alarm sounded and the nitrogen gas separation device (A) ceased operation.
November-26, December-9	GIS interface board	The "South 66 kV onsite transformer 2B abnormal GIS" alarm sounded and at the same time the same alarm automatically reset itself. Evidence that a small animal had entered this GIS interface board (a relay board which collates information from the control boards at the site and sends it to the switching station system) was discovered. On December 9, the alarm "South side 66 kV Ōkuma line 3 L light malfunction" also sounded (this alarm automatically reset). It was confirmed that a small animal had entered the interface board.
December-11	Unit 3 spent fuel pool alternative cooling system secondary system (system A)	It was confirmed that filtered water at the rate of about one drip per five seconds was dripping from the metal flexible hose joint in the Unit 3 spent fuel pool alternative cooling system secondary system (system A). The extent of the leakage was approximately 50 cm × 40 cm.
December-18	F area C5-C6 tank connecting pipe	It was discovered that water was leaking at a rate of approximately one drop each minute from the joint (on the C5 tank side) of the C5 and C6 tank connecting pipe in the F area tanks (north of Units 5 and 6). The extent of the dripping was approximately 30 cm × 5 cm × 1 mm (thickness).
December-22	H5, G6 tank area	Water was confirmed to be leaking from the lower part of the dike on the west side and the seam of the dike on the northeast side of the H5 tank area. Leaks were also confirmed from the lower part of the dikes on the north and west sides of the G6 north tank area. Leaked volumes of water (volume of water that seeped into the soil) were estimated to be approximately 1.0 m^3 in the northeast side of the H5 tank area and approximately 0.8 m^3 in the G6 north tank area.
December-24	H4 tank area and H4 east tank area	The water level behind the dikes in the H4 tank area and H4 east tank area fell. Leaks occurred. The leaked volume from the H4 tank area was estimated at approximately 116 m^3 (Strontium-90: 20 Bq/l, Cesium-134: below detection limit, Cesium-137: below detection limit), and from the H4 east tank area the leaked volume was estimated at approximately 10^9 m3 (Strontium-90: 440 Bq/l, Cesium-134: below detection limit, Cesium-137: below detection limit).

Who's who

"Citizen science for the benefit of citizens!"

Yugo Ono, A Geographer Who Fights

Satoko Jin*

Yugo Ono is a cousin of Yoko Ono. This is not widely known, and before I learned about this, I had not known much about him. After the March 11, 2011 earthquake, I organized a gathering with friends to discuss the potential danger of the Tomari Nuclear Power Station in Hokkaido. We invited Dr. Ono as a speaker for the gathering. I remember that I was looking forward to seeing the cousin of Yoko Ono.

On the day of the gathering, Dr. Ono, wearing a hunting cap, which is his trademark, seemed to me like a tall, thin "daddy-long-legs." In spite of this appearance and a quiet speaking voice, he delivered a talk backed up by strong beliefs and scientific evidence, keenly impressing the audience.

Dr. Ono is deeply influenced by the late Jinzaburo Takagi. Through one of Takagi's books, Living as a Citizen Scientist, Dr. Ono learned the way of living as a citizen scientist and became convinced of what he was trying to achieve.

Dr. Ono came to be involved in the issue of nuclear power when he became aware of the problem of high-level radioactive waste disposal. What technocrats asserted contradicted what he had written in a geography textbook. The Atomic Energy Society of Japan sent objections about the descriptions concerning nuclear power in the junior and senior high school geography textbooks, pointing out minute details that sounded critical of nuclear power. As a geographer, he could not remain silent and started to speak up. Thus Dr. Ono became a geographer who fights.

After the Fukushima Daiichi Nuclear Power Station accident, Dr. Ono was extremely concerned about the behavior of the government, and promptly spoke to the Science Council of Japan to encourage scientists to speak up. He also believed that Sapporo, which was not damaged by the accident, should support victims, and established the Citizens' Network for Support of Victims of the Great East Japan Earthquake (dubbed "Musubiba"), to offer support to the areas hit by the quake and accident. He also later started to support evacuees from Fukushima at the same time.

Dr. Ono estimates that if an accident occurred at the Tomari NPP, Hokkaido, where winds blow from the west, would be totally devastated. "In the 1993 southwest Hokkaido offshore earthquake, it was learned that an active fault runs very close to the Tomari NPP," he stresses. "The NPP must not be restarted." He established the Group for Decommissioning the Tomari NPP, and has filed a lawsuit aimed at the decommissioning of the NPP. To gather plaintiffs, he made a speaking tour around Hokkaido, giving 15 talks in three months. The gathering we organized, mentioned above, was one of them, and of course I joined the group as a plaintiff.

Dr. Yugo Ono

Dr. Ono also emphasizes that the precautionary principle should be applied to nuclear power plants. According to this principle, the entity that is responsible for any conduct must prove that it does no harm, and if harm or damage does arise, the entity is then responsible for making reparations; the entity must prove that the conduct is not associated with the harm.

Dr. Ono also studies rivers, and as part of the activities as a river researcher, he participates as an environmental scientist in the action against the Chitosegawa River water discharge channel construction project. In addition, he participates in the movement to restore the rights of indigenous Ainu people and the movement against the Sanru Dam construction. He is active in many fields.

Dr. Ono was born in Tokyo in 1948. He specialized in geological science at university. Today, he is professor emeritus at Hokkaido University, and professor at Hokusei Gakuen University, Sapporo, Hokkaido.

**Representative of Otaru Group of Parents Concerned about Children's Environment*

NEWS WATCH

Fukushima Daiichi Units 5 and 6 to be decommissioned

On December 18, 2013, Tokyo Electric Power Company made the decision to decommission Fukushima Daiichi Nuclear Power Station (FDNPS) Unit 5 (BWR, 784 MW) and Unit 6 (BWR, 1,100 MW) reactors as of January 31, 2014, and delivered notice of the decision to the Ministry of Economy, Trade and Industry (METI). Fukushima Daiichi reactors, Unit 1 (BWR, 460 MW), Unit 2 (BWR, 784 MW), Unit 3 (BWR, 784 MW), and Unit 4 (BWR, 784 MW) were decommissioned on April 19, 2012. Units 5 and 6 will not be dismantled in the immediate future, but will be used as research and training facilities for the decommissioning of Units 1 to 4.

The Fukushima Prefectural Assembly has demanded that Fukushima Daini Nuclear Power Station reactor Units 1 to 4 (BWR, 1,100 MW each) also be decommissioned. The municipal assemblies of Tomioka and Naraha, where the Fukushima Daini NPS is located, adopted the proposal demanding the decommissioning of Fukushima Daini on December 11 and 12, 2013, respectively. On December 20, the municipal assemblies of Ōkuma and Futaba, where Fukushima Daiichi is located, also adopted the proposal.

Completion of Rokkasho Reprocessing Plant and Mutsu Spent Nuclear Fuel Intermediate Storage Facilities postponed

On December 19, 2013, Japan Nuclear Fuel Ltd., owner of the Rokkasho Reprocessing Plant (RRP) and Recyclable-Fuel Storage (RFS), owner of the intermediate storage facility for spent fuel now under construction, informed the governor of Aomori Prefecture that the completion of the individual facilities would be postponed. The completion of the RRP was postponed from October 2013 to October 2014. This was the 20th postponement from the original plan. Completion of the intermediate storage facility was postponed from October 2013 to March 2015, the third postponement thus far.

On the same day, both facilities announced that the seismic motion to be considered for aseismic design will be increased from 450 gal to 600 gal. The Nuclear Regulation Authority's new regulation standards for nuclear fuel cycle facilities took effect on the previous day, December 18, and the changes in completion dates were based on the new standards. The RRP applied for the examination of conformity to the new standards on January 7, 2014, and the RFS followed suit on January 15. However, it is extremely unlikely they will obtain permission soon, and further postponement is likely.

Successive applications for examination of NPPs conformity with the new regulatory requirements submitted

On December 25, 2013, Chugoku Electric Power sent the Nuclear Regulation Authority an application for examination of its Shimane Nuclear Power Plant Unit 2 (BWR, 820 MW) reactor for conformity with the new regulatory requirements. Tohoku Electric Power also submitted a similar application concerning its Onagawa Nuclear Power Plant Unit 2 (BWR, 825 MW) reactor on December 27. More specifically, the companies have applied for the Permission of Changes in Reactor Installation, for the Approval of the Construction Plan, and for the Approval of Changes in Nuclear Power Facility Security Regulations.

The application concerning Onagawa Unit 2 is the first for a nuclear power plant damaged by the Great East Japan Earthquake. After submission of the application, Shigeru Inoue, Executive Vice President of Tohoku Electric Power, said, "There was minor damage due to the earthquake, but onsite inspections have confirmed the integrity of the facility." Just exactly what the "minor damage" consists of has not been made public, and it is unknown why the application for Unit 2 was sent first. Tohoku Electric Power announced that they will submit the applications for Unit 1 (BWR, 524 MW) and Unit 3 (BWR, 825 MW) soon.

The quakes Onagawa Unit 2 was exposed to during the great earthquake and aftershocks were greater than expected, and the seismic motion to be considered for aseismic design was increased from 580 gal to 1000 gal, the aseismic construction being based on this criterion. Because the plant buildings were flooded after the great earthquake, a wave barrier of about 29 meters above sea level was also built.

Unprecedented process used to formulate The Basic Energy Plan

The Basic Policy Subcommittee, under the Advisory Committee for Natural Resources and Energy, METI, drew up a conclusive report, Opinions Concerning the Basic Energy Plan (draft), in December 2013, and public comments on the report were solicited up to January 6, 2014. After the publication of the report, the parenthesized word "(draft)" was deleted before the end of the comment period: After the start of the comment period on December 6, the report was corrected on December 13, and it was corrected again on the 17th, deleting the word "(draft)".

The Basic Energy Plan was formulated through an unprecedented process. The Fundamental Issues Subcommittee originally held discussions under the Advisory Committee for Natural Resources. In September 2012, the Democratic Party of Japan, the ruling party at the time, decided on an energy policy that would invest all possible policy resources into phasing out all operating nuclear power plants in the 2030s (See Nuke Info Tokyo151). However, the chairperson of the subcommittee was dissatisfied with the decision, and did not call further subcommittee meetings after that time. Such procrastination was unprecedented. After the Liberal Democratic Party was returned to power, the chairperson formed another subcommittee to draw up the report, this time including fewer antinuclear committee members. This was also unprecedented.

In the released Basic Energy Plan, nuclear power is positioned as an important base power that will support the secure framework of energy supply and demand, and will be continually used on condition of the assurance of safety. Whatever expressions may be used in the report, it was predictable that nuclear power would be positioned as such, based on the process of the formulation of the Plan.

Nuclear power plants have now returned to almost the same position as before the Fukushima accident. What is different is that the newly formed Subcommittee presented the report to the government not as a "Draft Basic Energy Plan" but as Opinions Concerning the Basic Energy Plan. In the past, such a subcommittee drew up a report by the name of a "Draft Basic Energy Plan" and the cabinet approved it as it was, with few changes. This time the report says: "We strongly urge that the new Basic Energy Plan be decided based on these opinions." When the report was corrected on December 17, an addition was made to the effect that the Subcommittee would entrust the determination of the ratios of energy sources to the government. The Subcommittee probably means that the government is better able to state clearly that it will further promote nuclear power plants.

Better or worse, the Opinions Concerning the Basic Energy Plan includes no indication of further nuclear power promotion. It is simply a mirror of government policy.

Toshiba reaches agreement on the purchase of NuGen shares

On December 21, 2013, Toshiba and Iberdrola, a Spanish electricity utility company, agreed that Iberdrola would sell Toshiba its 50% share in NuGen, a UK company, for 8.5 million pounds. NuGen's Moorside project, a plan to build three nuclear power plants close to Sellafield, will go ahead, but one of the initial investors, Scottish and Southern Energy, which owned 25%, withdrew after the Fukushima accident. The remaining two, Iberdrola and the French company GDF Suez, took up the shares on a fifty-fifty basis and thus each owned 50% of the total investment. Toshiba will also obtain part of the shares that GDF Suez owns, and aims to ensure that AP1000 pressurized water reactors (PWR) will be ordered from Westinghouse, Toshiba's subsidiary, for the project. Toshiba is likely to sell most of its shares to power generation companies thereafter, in a similar manner as Hitachi, which purchased Horizon Nuclear Power.

Nuke Info Tokyo is a bi-monthly newsletter that aims to provide foreign friends with up-to-date information on the Japanese nuclear industry as well as on the movements against it. It is published in html and pdf versions on CNIC's English website: http://cnic.jp/english/

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