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Citizens' Nuclear Information Center

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International Symposium on the Truth of the Fukushima Nuclear Accident and the Myth of Nuclear Safety

August 30 & 31, 2012 University of Tokyo, Komaba Campus

Mr. Arnie Gundersen presenting at the Symposium

Purpose of the Symposium

The March 11, 2011 Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station accident is still ongoing, and radioactive material released from the Fukushima accident site continues to threaten people's lives and the ecosystem. Moreover, the causes of the accident and its subsequent development have not yet been clarified. This symposium was planned with the purpose of getting as close to the truth of the Fukushima nuclear accident as is possible at this point in time from scientific and engineering viewpoints. In addition, the intention of the organizers was also to demonstrate how Japan's nuclear power policies led to the occurrence of the accident.

Contents

Mr. Kotaro Kuroda presenting at the Symposium

The government is rushing to restart nuclear power plants despite the fact that the streets are filled with talk of a nuclear phaseout in Japan. We believe that it is the great responsibility of scientists and engineers to reveal the reality of the Fukushima nuclear accident and to transmit to the world the outcome of the inspection of the evidence concerning the accident. We hope that this activity will make it possible to form a core of scientists and engineers that is capable of opposing the government and the corporations, and that this will lead on to further action in the future.

Background to the Symposium

At the end of March, the co-sponsoring organizations* held a meeting to determine the outline of the planned symposium and the logistical preparations were pushed forward from that stage. The biggest problem was the number of seats in the auditorium. At first, a compact auditorium of 250 seats was prepared for the purpose of holding a gathering of scientists and engineers that would transmit their findings to the world. Since we wished to form a group of scientists that would be active after the symposium had taken place, we prepared a list of scientists and engineers we thought we would like to ask to take part in the Symposium and called on them to participate before taking advance reservations from the general public. When we did this, it turned out that many of the scientists and engineers were willing to attend and we soon found that this alone was likely to fill all available seats. Thus, on August 10, we quickly changed to a 400-seat auditorium, but were forced to end reservations the same day.

Around 380 people participated on the first day, and around 360 on the second day. Survey respondents numbered 71. Even for Session 5, three-minute declarations of resolutions by the co-sponsoring organizations, no one left the auditorium and we were very moved by the deep show of interest on the part of the participants.

Upcoming tasks are the preparation of the proceedings in bilingual English and Japanese, and we are also planning to produce for publication a video record of the symposium with English subtitles. We hope you will look forward to seeing these.

The email address for inquiries is <*symposium@takagifund.org*>

** Co-sponsoring organizations*
Group of Concerned Scientists and Engineers Calling for the Closure of the Kashiwazaki-Kariwa Nuclear Power Plant, Citizens' Nuclear Information Center (CNIC),
Research Center for Sustainable Development, Institute of Advanced Global Studies (IAGS), University of Tokyo,
Center for Development Research, Graduate Program on Human Security, University of Tokyo,
APAST (Union for Alternative Pathways in Science & Technology), The Takagi Fund for Citizen Science

Mr. Arnie Gundersen and Mr. Mitsuhiko Tanaka at the Symposium

■*Program and Invited Speakers*

Session 1: What Happened at the Fukushima Daiichi Nuclear Power Plant

Mitsuhiko Tanaka *"Getting to the Bottom of the Fukushima Nuclear Accident: Didn't the earthquake cause fatal damage to reactor facilities?"*
Arnie Gundersen *"What All Those Involved with Nuclear Power Must Learn from the Fukushima Daiichi Accident"*
Katsuhiko Ishibashi *"'Fukushima Genpatsu Shinsai' as an inevitable consequence of nuclear power plants in a seismic archipelago"*

Session 2: Current Status of Radioactive Contamination

Tetsuji Imanaka *"Radioactivity Release and Radioactive Contamination by the Fukushima Daiichi NPP Accident"*

Session 3: Japan's Nuclear Policy and Formation of the Safety Myth

Hitoshi Yoshioka *"Aspects of 'Public Policy Failure Disease' on Fukushima Nuclear Disaster"*
Philip White *"'Peaceful Use' of Nuclear Energy and Nuclear Weapons Development"*

Session 4: The State of Nuclear Science and Technology

Tetsuya Takahashi *"A Sacrificial System – A Reflection on Responsibility"*
Miranda Schreurs *"The Ethics of Energy and the Responsibility of Scientists, Industry, Politicians, and Society: Experiences of the German Ethics Commission for a Safe Energy Supply"*
Satoru Ikeuchi *"Ethicality Problems of Nuclear Power Plants and the Social Responsibility of Scientists"*

Session 5: Summing Up – from the Perspective of Scientists and Technologists

Actions against Kori 1 Reactor Restart Spread in South Korea, ～ Closure Demanded ～

Satoshi Takano
Energy Justice Actions (South Korea)

12-minute station blackout

The controversy was initiated by a March 13 news release from the Nuclear Safety Commission, a governmental authority of the Republic of Korea. It reported that Korea Hydro and Nuclear Power (KHNP), a publicly run enterprise that operates nuclear power plants in South Korea, had had a station blackout accident at the Kori Nuclear Power Plant during a periodical inspection of the Kori 1 reactor. The enterprise tested the Kori 1 power generator protection relay with all of the three external power sources mistakenly disconnected due to staff error, the power supply being completely cut off. The diesel generator, which was supposed to start up automatically in this situation, was out of order and did not operate. The blackout continued for 12 minutes, and the temperature of the cooling water in the reactor rose from 36.9℃ to 58.3℃, a 21℃ increase. This accident calls to mind the meltdown of the Fukushima Daiichi nuclear power reactors following a station blackout. What makes this Kori 1 accident all the more serious is that it occurred on February 9, which means, to everybody's surprise, that KHNP had covered it up for more than a month.

Kori 1 is the oldest nuclear reactor in South Korea. It started commercial operation in 1978 and was scheduled to be shut down in 2007. Its service life was extended for ten years, however, and operation has continued until today.

Locals and people from other areas of the nation surround the reactor station together

In response to the news release of the accident and cover-up, the Busan Anti-Nuclear Civic Measures Committee, which consists mainly of environmental conservation organizations and citizens' groups in Busan, held a press conference in front of the main gate of the Kori Nuclear Power Plant on the day after the release, denouncing KHNP. On March 20, a press conference was held in front of the Busan District Prosecutors' Office. The Committee said, "KHNP has repeatedly claimed that 'Nuclear reactors are safe' every time there is an accident, and it has actually had many accidents. The enterprise has never accepted our demand for improvements in transparency and objectivity concerning the management and regulation of nuclear power reactors." The Committee sharply criticized the organizational culture of the enterprise in covering up a serious accident that could have jeopardized the lives and security of the South Korean population, and demanded serious punishment for the people concerned.

Nevertheless, neither the South Korean government nor KHNP show any sign of relenting on their policy of keeping Kori 1 in service and restarting it after a safety review. On April 28, in protest against this policy, citizens gathered at the Kori Nuclear Power Plant site from Seoul and all over South Korea by bus. A total of more than 600 people, including locals, created a human chain completely surrounding the plant, and called out for the closure of Kori 1.

Regulatory authorities and IAEA turn down locals

In May, the regulatory authorities, the Nuclear Safety Commission and the Korea Institute of Nuclear Safety, individually announced that they would perform safety reviews before June 20. However, both the review teams were highly exclusive in terms of personnel and failed to reflect local views.

At the request of KHNP, the International Atomic Energy Agency (IAEA) sent a team of eight experts, which reviewed the safety of Kori 1 from June 4th to 11th. Concurrently with the IAEA's visit and review, the Busan Anti-Nuclear Civic Measures Committee organized various events, such as an anti-nuclear film festival and anti-nuclear culture festival between June 1 and 9, designating this period it as an "anti-nuclear week." The culture festival criticized the IAEA for representing only parties that are promoting nuclear power and paying no attention to the opinions of local people.

"The plant is in good condition." The conclusion of the IAEA's investigation was, as expected, in favor of the government and KHNP. In response to this conclusion, locals in the vicinity of the Kori Nuclear Power Plant expressed their dissatisfaction, pointing out that the review was

neither thorough nor persuasive. "Four of the eight IAEA reviewers work for the nuclear industry, and only two are plant maintenance specialists. The period spent on the review was too short and the results are not reliable."

Nuclear power advocates have no reactor decommissioning policy

While nuclear power advocates and those against nuclear power have few opportunities to exchange opinions, both sides were represented at a symposium organized by the Parliamentary Members' Study Group for a Nuclear-free Future for Children in Seoul on June 22.

Mr. Lee Heonseok, who is special assistant to the Unified Progressive Party diet member Kim Jenam, said: "If the Kori Nuclear Power Plant is closed, issues concerning reactor decommissioning, such as the procedures, methods, economic cost, and radioactive waste disposal sites would need to be discussed." This argument precisely identifies the disadvantageous truth for the KHNP, which unquestionably wants to avoid such discussion.

Specifically, the Ministry of Knowledge Economy (MKE) estimated the cost for decommissioning Kori 1 to be 325.1 billion won (290 million USD) in 2003. However, even the IAEA estimates the cost to be 1 trillion won (roughly 890 million USD), more than three times the MKE estimate. These estimates do not include the cost of radioactive waste disposal and compensation for local residents. The reason why the South Korean government and KHNP are so insistent on restarting the reactor may possibly be because they fear that their political failure will become apparent; they have totally failed to establish the legal and systematic procedures for decommissioning and have not correctly calculated the economic cost.

Responding to Mr. Lee's argument, a KHNP representative boldly revealed its surprisingly slack risk management culture at the symposium: "We have never had an accident but have only experienced machine failures." "Kori 1 has had components replaced many times and can actually be compared to a new reactor." "No one has died of radioactivity as a result of the Fukushima nuclear accident."

The Nuclear Safety Commission eventually approved the restart of Kori 1 on July 4. This means that MKE can restart it at anytime. The MKE has not yet restarted it, however, stating that it is necessary to gain the understanding of local people (as of July 11). According to a poll, 72.4% of the Busan population is frightened about the restart, and 66.9% is in favor of the closure of Kori 1.

The ultimate question is whether MKE will be able to resolve the disbelief and anxiety about Kori 1 that now weigh heavily upon the shoulders of the local people.

Continued from page 12

following a decision by the Cabinet-formed Energy and Environment Conference. The Strategy included wording such as "zero operating nuclear plants," which the Japan Business Federation fiercely opposed, and a planned Cabinet decision did not take place. While the September 19 Cabinet meeting was based on the contents of the Strategy, the Strategy itself was not the subject of a decision, and it was simply decided "to have responsible discussions with related municipalities and the international community, gain the understanding of the public, and to accomplish this with flexibility, and continual verification and revision." Uncertainty also marks the contents of "zero nuclear plant operation," which is referenced as "we will employ all policy resources required to make zero nuclear plant operation a possibility in the 2030s." Also included is a continuation of the contradictory reprocessing efforts. Having once decided on the "Strategy for a National Debate," it is impossible to ignore the voices of the overwhelming majority of citizens, who have demanded realization of the "zero option." At the same time, the business world and municipalities with nuclear facilities also have intentions that cannot be ignored. The Strategy has thus become incoherent, and the fact that it was not finalized by a Cabinet decision only serves to increase misunderstanding.

Nuclear Safety Commission Finally Inaugurated

On September 19, the Nuclear Regulatory Commission was inaugurated, and the nuclear regulatory arm finally achieved independence from METI. Even so, the Commission got off to a highly irregular start with the Prime Minister personally appointing the committee chairman and committee members without the agreement of both the Upper and Lower House. There is also strong opposition regarding the committee chairman and two of the committee members, who have just resigned from organizations that they will now have to regulate, and it was not possible to reach agreement on this. The Nuclear Regulatory Commission began activities together with its new secretariat, the Nuclear Regulatory Authority, of which about 350 of the 460 workers have largely moved in a group from NISA's nuclear regulatory section, and it is thought uncertain that the Authority will be able to instigate a regulatory administration differing from that of the past.

Report on the National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (NAIIC)

～ What kind of panel was the NAIIC, and what was clarified by its investigation? ～

Mitsuhiko Tanaka

Mission Impossible

The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) was established on December 8, 2011. It was probably a mere coincidence that this commission, the first Diet investigation panel comprised of private-sector experts in the history of Japan's constitutional government, was set up on the anniversary of the outbreak of the Pacific War.

The commission was set up under the Law on the Fukushima Nuclear Accident Independent Investigation Commission of the National Diet of Japan. The commission is required to submit to the presidents of both houses of the Diet the report on the results of its investigation and recommendations within around six months from the appointment of the commission chairman and its members.

In the press conference held immediately after the swearing-in ceremony for the commission members, Chairman Kiyoshi Kurokawa expressed his bewilderment at the extremely short period of merely "six months" provided in the law for investigating the nuclear accident and compiling the report on the results. He described this difficult task as "a virtual mission impossible."

The amazingly short period was not the only concern for me. Another source of concern which seemed much greater and more serious was the fact that there were no experts on nuclear power plants among the commission members. Although the commission was tasked with the unprecedented job of investigating the disastrous accident at the Fukushima nuclear power plant, could its members manage to complete the job as scheduled?

The mass media described me as the only expert on nuclear power plants among the commission members. But this is not correct. Admittedly, I was engaged in the design of pressure vessels for boiling-water type nuclear reactors for several years up until the mid-1970s. During that time, I was charged with the detailed design of the No. 4 reactor at the Fukushima Daiichi Nuclear Power Station, and the basic design of the reactor pressure vessel at Tokai Daini Nuclear Power Station. But I resigned from the company shortly after that, and 35 years have already passed since that time.

In addition, there was another problem. I felt I was under great pressure concerning the issue of the causal relationship between the massive earthquake and the Fukushima nuclear accident. At the time when I became a member of the commission, it was already evident that I was regarded as having a conviction that the earthquake had triggered the disaster.

This, however, was more than natural because I began pointing out, two weeks after the hydrogen explosion occurred in the Unit 1 reactor at the Fukushima nuclear power plant, the possibility that the earthquake had damaged the reactor system piping and caused a loss of coolant.[1] Since then, I have written about my conviction in many books and magazines and talked about it in meetings and lectures on numerous occasions.[2]

But I thought that, depending on the circumstances, while investigating as a member of the commission, I might be forced to deny my own belief. This would mean that I might have to hand down the final judgment on my own belief in the full view of the public, and this would not be a pleasant thing to do.

Confidentiality

Article 5 of the abovementioned Law regarding the Fukushima Nuclear Accident Independent Investigation Commission

stipulates that the commission chairman and its members are bound to maintain the confidentiality of any facts they have learned in the course of performing their duties. It also states that the condition of confidentiality continues even after the members resign from the commission.

This means that the members are not allowed to leak any information to third parties, including both facts they have learned through the hearings, or through reading the documents submitted to the commission. A member who is well versed in legal affairs said it is not a violation of confidentiality to write down the results of the investigation in the commission's report because the members are required to compile the report. However, the members are not allowed to disclose facts not included in the report, and must maintain the confidentiality of such facts for good.

The report can be downloaded from NAIIC's Website:
Japanese ***http://naiic.go.jp/report/***
English ***http://naiic.go.jp/en/report/***
Most of English language version is still being prepared.

In connection with confidentiality, I have received admonitions and warnings from the commission's secretariat several times. For example, when I made a two-day trip to Shimane to give a lecture on nuclear power plants in a study meeting, after I flew back to Tokyo a secretariat official showed me a local newspaper article of the study meeting and asked me if I had maintained confidentiality during the lecture.

One of the staff members supporting the commission's investigation was accused of violating confidentiality, and his contract with the commission was suddenly cancelled in mid-February. He had talked about the investigation method to be adopted by the commission in a lecture. He never thought that the investigation method corresponded to a secret he had learned in the course of performing his duties. Unfortunately for him, a video of the lecture meeting was posted on the Internet. It would seem that, the secretariat attached greater importance to the maintenance of order than to the possible damage the commission might suffer from the loss of the staff member.

TEPCO lied in official announcements about the time when the tsunami hit the Fukushima NPP

In conducting the investigation, the commission members were divided into four groups. Working Group 1 was in charge of investigating the nuclear accident, Working Group 2 was in charge of investigating the damage, Working Group 3 was in charge of reviewing related policies, and Working Group 4 was in charge of proposing new policies. The first three groups were composed of two members each, both members serving as co-chairman.[3] The horizontal relationship among the working groups was rather weak, and the result was that they took the form of typical vertically

divided domains.

With regard to the relations between the huge earthquake and the Fukushima nuclear disaster, the commission came to the conclusion that it is difficult to rule out the possibility of the earthquake causing damage to major safety-related equipment in the nuclear power station. In particular, the commission referred to the possibility of a small-scale loss-of-coolant accident (LOCA) in Unit 1, saying that it is difficult to deny that this accident could have occurred. I am one of the commission members who were responsible for this text, and I would like to summarize the main points of this conclusion. Yoshinori Ito, a lawyer supporting the commission's investigation and who is well-informed about nuclear power plants, probed very carefully and closely into the allegation that the failure of the Fukushima Daiichi plant's backup diesel generators (D/G), and ensuing station blackout (SBO), were caused by the tsunami tidal waves alone. These two incidents are believed to be the root causes of the nuclear disaster at the plant.

His probe disclosed the fact that the times of arrival of the first tsunami wave, at 15:27 on March 11, and the second wave, at 15:35, as announced by TEPCO, were not the times when the waves reached the Fukushima Daiichi Nuclear Power Station. These were the times when the waves hit the wave-height meter installed at a point 1.5 kilometers offshore from the nuclear power plant. Mr. Ito pointed out that the second tsunami wave reached the coast where the nuclear power plant is located, at least about two minutes later, at around 15:37.

In the commission's hearing conducted earlier with a TEPCO reactor operator, it was confirmed that the emergency D/G 1A, one of the two backup generators for the Unit 1 reactor, had tripped at 15:36 or earlier. If the actual arrival time of the second, and larger, tsunami wave was two minutes later than the time released by TEPCO, at 15:37, the tripping of the stand-by generator could not have been caused by the second tsunami wave but must be due to some other reason. Moreover, there is a possibility that the Unit 1 reactor emergency D/G 1B and the Unit 2 reactor emergency D/G 2A also tripped before the tsunami waves hit the plant.

The commission asked TEPCO about this time difference in writing. The utility company replied that the arrival time of the second tsunami wave released by the company, at around 15:35, was the time when the waves hit the offshore wave-height meter, and that the actual time when the wave arrived at the premises of the nuclear power plant is presumed to be about two minutes later, at 15:37 or 15:38.

Despite this reply to the commission, TEPCO's final report on the nuclear accident released on June 20 said the arrival time of the first tsunami wave was 15:27, and that of the second wave was 15:35.

Fault Tree Analysis

In the commission's report, there is a description of the fault tree analysis (FTA) on page 217. FTA is one of the methods used for identifying the root cause of an accident (e.g. an explosion), or some special phenomenon (e.g. a sudden fall in pressure).

For example, when some incident such as an explosion (the top event) has occurred, you enumerate the potential causes of the accident, and then list the thinkable causes of those causes. While continuing this process, you add branches to a tree diagram. This is called the "Fault Tree". Whenever you add a branch that indicates another possible cause, you analyze the probability of a causal relationship between the added cause with the top event and evaluate each cause until you find the most likely cause of the accident.

The biggest obstacle hampering the investigation into the disastrous accident at Fukushima Daiichi Nuclear Power Station was the fact that no one can go into the reactor containment vessels to carry out a detailed inspection of the situation inside. However, this provides us with a good opportunity to use FTA effectively. In the commission's report, on pages 220 – 223, there is a description of the FTA analysis carried out to determine whether the seismic ground motions had caused damage to the piping of the Unit 1 reactor. This analysis was made by the Incorporated Administrative Agency Japan Nuclear Energy Safety Organization (JNES). As a result of a series of analyses, they arrived at the perception that they could not deny small-scale damage to the piping (i.e. small-scale loss of coolant).

This is a notable result.

No operating noise heard from the main steam radiator safety valve of the Unit 1 reactor!

In the course of the investigation, Working Group 1 was confronted with another problem which was as serious as the abovementioned arrival times of the tsunami waves. This was the problem involving the testimonies by some TEPCO operators in Unit 1. They testified that they did not hear any operating noise from the main safety relief (SR) valve, not only in the central operation room but also in the nuclear reactor building as well (cf. page 239-243 of the report).

In the case of Units 2 and 3, the SR valves operated repeatedly from a time immediately after the massive earthquake hit the nuclear power plant. The reactor operators in the central control room told Working Group 1 that they clearly heard the noise from the SR valves whenever the valves resumed operation.

As for Unit 1, the manual operation of the isolation condenser (IC), which requires electricity for operation, became impossible during the SBO. (The IC is a device used when pressure within the reactor rises, and changes steam inside the reactor into water to reduce the pressure). Because it was not possible to operate the IC manually, the SR valves should have started to work frequently, just as in Units 2 and 3. The operators of Unit 1, however, testified that none of them heard any operating noise, despite the fact that it was extraordinarily quiet all around at that time. What made this difference? Does it happen sometimes that the SR valves resume operation without making any noise?

In an attempt to get answers to these questions, we sent questionnaires to the officials in charge of reactor operations at the Fukushima Daini Nuclear Power Station (Units 1 to 4), the Onagawa Nuclear Power Station (Units 1 to 3), and the Tokai Daini Nuclear Power Station, and asked if they had heard any noise when the SR valves started operation on March 11, 2011. The operation records of the Onagawa Nuclear Power Station and the Fukushima Daini Nuclear Power Station show that the SR valves worked very frequently on that day. Despite these data, the reactor operators at the Fukushima Daini Nuclear Power Station said they did not hear operating noises from the valves. On the other hand, the reactor operators at the Onagawa Nuclear Power Station said no valve-operation noises were heard in the central control room but such noises were heard in the reactor buildings.

How was this operating noise generated? It is believed that a hydrodynamical load was generated when a massive amount of steam flowed into the donut-shaped pressure suppression chamber, which is peculiar to the Mark-1 type containment vessel, and shook the huge pressure suppression chamber. Although the Onagawa Nuclear Power Station has the improved model of the Mark-1 type containment vessels, the basic structure of the pressure suppression chamber is the same. Meanwhile the four reactors at the Fukushima Daini Nuclear Power Station have the Mark-2 type containment vessels. Because the Mark-2 type has a different structure, it seems that vibration of the pressure suppression chamber does not occur so easily.

It is seldom that the SR valves become operational and very few reactor operators are familiar with the operational noise from the valves. An operator at the Fukushima Daiichi Nuclear Power Station Unit 5 told us that he had previously opened the SR valves at Unit 4 on an experimental basis, and that he remembered a loud vibration was felt the moment the steam flowed into the pressure suppression chamber.

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1. Mitsuhiko Tanaka “The Fukushima Daiichi Nuclear Power Plant Accident was Never Beyond Assumption,” Sekai, May 2011.
2. Katsuhiko Ishibashi (ed.), “Abolishing Nuclear Power Plants,” Iwanami Paperback, 2011
3. In WG1, Mitsuhiko Tanaka and Katsuhiko Ishibashi jointly served as co-chairmen.

Events of the Fukushima Daiichi Nuclear Plant accident

	Evacuation Orders	Unit 1: 460MW, Online	Unit 2: 784MW, Online	Unit 3: 784MW, Online	Unit 4: 784MW, Down for maintenance
2011 3/11		M 9.0 Earthquake occurence			
		Automatic Reactor Scram	Automatic Reactor Scram	Automatic Reactor Scram	
		Loss of external power (Automatic activation of emergency diesel generator)			
		Arrival of first tsunami wave			
		Emergency diesel generator stops due to breakdown			
		Core cooling commences	Core cooling commences	Core cooling commences	
		15:37～38 Arrival of highest tsunami wave			
		Energency core cooling system inoperable	Energency core cooling system inoperable	ECCS (HPCI) activated	
		Loss of all electricity		Total loss of AC power (Station blackout)	Loss of all electricity
	20:50 Order to evacuate from area within 3km radius of Fukushima Daiichi NPP, remain indoors from 3km to 10km radius.	18:10 Core exposure begins 18:50 Core damage begins 21:51 Entry to reactor building area prohibited due to rise in radioactivity in the building. 23:00 Radioactivity in turbine building rises			
3/12	05:44 Evacuation order for all residents within 10km radius of Fukushima Daiichi NPP.	05:46 Freshwater injection begins 14:30 Vent (One worker recieves over 100mSv exposure when entering reactor building to operate vent.) 15:36 Hydrogen explosion in reactor building. 19:04 Seawater injection begins		11:36 Reactor core isolation cooling system (RCIC) stops automatically. 12:35 High pressure injection cooling system (HPIC) activates automatically.	
3/13				02:42 HPIC stops Around 09:10 Core exposure begins Around 09:20 Vent 9:25 Freshwater injection begins Around 10:40 Core damage begins 13:12 Seawater injection begins Around 14:45 Site evacuation begins due to rise in radioactivity and heightened danger of explosion.	Hydrogen from Unit 3 backs up into Unit 4
3/14			17:17 Reactor water level reaches TAF. Around 19:20 Core damage begins. 19:54 Seawater injection begins.	11:01 Hydrogen explosion in reactor building.	04:08 Water temperature in Unit 4 spent fuel pool rises to 84℃
3/15	11:00 Order for all residents in area from 20km to 30km radius of Fukushima Daiichi NPP to remain indoors.		Around 06:00 to 06:10 Sound of severe shock heard - S/C damage? Large amount of radioactive material released. 07:00 Order for all personnel except those necessary for supervision and operations to evacuate temporarily to Fukushima Daini NPP communicated to government agencies, etc. 08:25 White smoke (possibly steam) confirmed emanating from wall around reactor building 5F		Around 06:00 Sound of severe shock heard - Hydrogen explosion in reactor building. 06:55 Damage confirmed in vicinity of reactor building 5F. 09:38 Fire breaks out in Unit 4 reactor building.

Chart created by CNIC based on attachements to NAIIC and TEPCO reports.

Group Introduction

Fukushima Nuclear Disaster Criminal Complainants Group

by OHGA Ayako*

The Fukushima Nuclear Disaster Criminal Complainants group was established on March 16, 2012, just one year after the occurrence of the Fukushima Daiichi nuclear disaster. Because the Japanese police and prosecutors have showed no sign of initiating a criminal investigation into this disaster, we decided to file a group lawsuit to criminally prosecute those responsible for causing the disaster and for allowing the damage to expand, and began to call on others to join our group. We received enthusiastic responses from within Fukushima Prefecture, where the anxiety of the people has no end in sight as the nuclear disaster continues to unfold, as well as from many other areas where Fukushima evacuees are living. On June 11, 2012, 1,324 complainants from Fukushima presented a letter of accusation to the Fukushima District Public Prosecutors' Office. The letter accuses Tokyo Electric Power Company board members, specialists at the Nuclear and Industrial Safety Agency and the Nuclear Safety Commission of Japan, both of which have been associated with Japan's nuclear administration, and many others, for involuntary manslaughter and bodily injury resulting from professional negligence under the criminal code, violation of the environmental pollution offense law, and the crime of causing explosions as a result of professional negligence. (It is legally impossible to file a complaint against reactor producers for product liability.)

We are planning to bring a second lawsuit in November 2012 with many of those who have suffered from the disaster, whether from Fukushima or from other areas, and are opening offices nationwide in preparation for this.

Ruiko Muto, the leader of this group, says: "What we are aiming at through these lawsuits is to create a society where no individuals are forced to sacrifice themselves, to restore the links between us that have been cut off by the disaster, and to enable the victims, who are hurt and feel completely powerless, to recover their dignity. Achieving these aims is our responsibility for the sake of the children and youth." She also indicates: "How unreasonable it is that Tokyo Electric Power Company, which caused the disaster, has created the standards and limits for compensations, and demands that those who suffered from the disaster should abide by them! And how dishonestly the word 'unexpected' is used to evade responsibilities! We hope that by reading the statements of facts written by the complainants, those who are evading responsibility will come to have a deep understanding of how much pain people from Fukushima have been forced to suffer.

The Fukushima Nuclear Disaster Criminal Complainants office regrets that it has been unable to release announcements in languages other than Japanese. Anyone who wishes to join the group as a complainant will be required to fill out documents in Japanese, including a letter of attorney, in which the reading of his or her name should be indicated in Japanese kana letters, and to send the membership fee of 1,000 yen to the group's Japan Post Bank account. Please let us know if you live or lived in a heavily damaged area and need multilingual assistance.

Documents can be downloaded from *http://bit.ly/PWUyH8*.
Our Japan Post Bank transfer account number: 02260-8-118751
Name of account: Fukushima Gempatsu Kokuso-dan (福島原発告訴団)
Email: 1fkokuso@gmail.com (Please note that it may be necessary to wait a few days for a reply.)

Sending letters and statements requesting prompt and strict investigation of criminal negligence in the nuclear disaster to the Fukushima District Public Prosecutors' Office and other authorities concerned will influence prosecutors, and we would appreciate very much your sending such letters and statements. The prosecutors are able to read Japanese and English.

Please address such letters or statements to: Fukushima District Public Prosecutors' Office, 17, Kitsune-zuka, Fukushima-shi, 960-8017, Japan.

You can also submit opinions by using the opinion submission form available at the Fukushima District Public Prosecutors' Office website at *http://bit.ly/RyepkB*.

* Member of Fukushima Nuclear Disaster Criminal Complainants

NEWS WATCH

Restart of Ohi Reactor Units 3 and 4

Kansai Electric's Ohi Unit 3 (PWR 1,180 MW) was reactivated on July 1. Electrical power generation began on July 5, and commercial operation started from August 3. Also at Ohi, Unit 4 (PWR 1,180 MW) was reactivated on July 18, started electrical power generation on July 21, and commercial operation on August 16. During this time there were successive occurrences of various kinds of problems on the site, but nothing very serious. Scheduled inspections are required by law after thirteen months of operation, but governors in the Kansai area say that once the peak summer demand for power is over the reactors should be shut down. Moreover, as this long summer of intense heat continues, it has become clear that the electrical supply from Ohi Units 3 and 4 was not actually needed.

Government Presents Twelve Candidate Areas for Contaminated Soil Storage from Decontamination Work

On August 19, the government presented to towns in the vicinity of the Fukushima Daiichi nuclear power plant, Okuma and Futaba Towns, and Naraha Town, nearby Fukushima Daini NPP, twelve candidate locations to be investigated as "mid-term storage facilities" for contaminated soil from the decontamination work in the prefecture. Plans exist to dispose of waste and incinerated ash from the earthquake disaster at the industrial waste disposal facility in Tomioka Town, where Fukushima Daini NPP is located. There is strong resistance from each of the towns, and whether or not an investigation will take place is uncertain. Moreover, according to a television broadcast on August 27, the town of Minami Osumi in Kagoshima Prefecture became a candidate for a final disposal site after "mid-term storage," and voices of opposition are rising from the surrounding cities and towns.

Shizuoka Prefecture Citizens' Referendum Request on Hamaoka Nuclear Plant Restart

On August 27, a request from a citizens' movement with 160,000 attached signatures to enact a prefectural referendum ordinance on the question of the Hamaoka Nuclear Power Plant restart was handed directly to Heita Kawakatsu, the prefectural governor of Shizuoka. Similar requests were made to the Tokyo governor and Osaka mayor, who both opposed referenda, which were also rejected in the assemblies. On September 19, Governor Kawakatsu submitted the proposal for the ordinance to the Prefectural Assembly, attaching his argument for enactment of the ordinance. However, his party holds only a minority in the assembly and the chances of approval are low.

Nuclear Abolition Law, Proposal in Parliament

On September 7, a proposal from 13 Diet members for a nuclear phaseout was submitted to the Lower House. Stipulations include no new construction of nuclear plants, decommissioning after forty years of operation, and decommissioning of all plants at the latest in the 2020 to 2025 period. The outlook during the current parliament is unfavorable, but since the proposal is likely to become a point of contention in the upcoming Lower House election, one aim of the proposal is to increase the number of Diet members who support such a nuclear phaseout.

"Innovative Energy and Environment Strategy" Announced

On September 14, the "Innovative Energy and Environment Strategy" was announced

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