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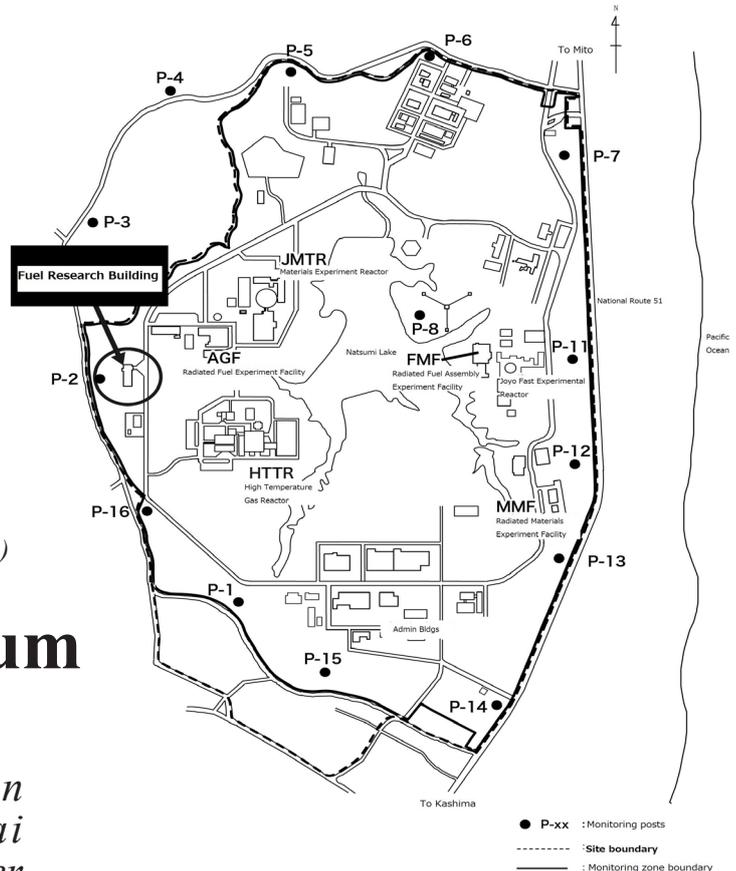


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Room 108 where the accident occurred. The hood (H1) is at the back and in the front right is the glovebox



Oarai Research and Development Center Facility Map

Disturbing Plutonium Exposure Accident

Plutonium Dust Release at Japan Atomic Energy Agency's Oarai Research and Development Center Fuel Research Building

At around 11:15 on June 6, 2017, a plutonium release and exposure accident occurred in an analytical lab (Room 108, a controlled area) at Japan Atomic Energy Agency's (JAEA) Research and Development Center Fuel Research Building. During work to inspect a storage canister (unopened in 26 years since 1991) containing plutonium and other nuclear fuel materials in laboratory fume hood H-1, the canister lid rose up after four of the six bolts were removed and the instant the remaining two bolts were removed the plastic bags inside the canister burst. The polyethylene container in which the nuclear fuel material was placed was double wrapped in two plastic bags. When these bags burst, the materials in the polyethylene container were abruptly released. The main person carrying out the task stated that he "felt wind pressure on his stomach." The five persons, who were wearing half-face masks to carry out the task, inspected themselves with an α radiation surface

contamination detector, confirming that they had all been contaminated.

While there are many unknowns regarding the accident and its cause, the exposure of the task personnel and other matters, we report here on what has become clear thus far and the problems that the accident poses. The Nuclear Regulation Authority (NRA) is scheduled to release the agency's "report" about a month after the accident.

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Table 1: Fuel Research Building Plutonium Exposure Accident Timeline

Date	Time	Accident Situation
6 June	11:15	During work to inspect a storage canister containing nuclear fuel materials in laboratory fume hood H-1 in an analytical lab (Room 108) in the Nuclear Fuel Research Building, plastic bags inside the canister burst, contaminating the five task personnel. The five persons were wearing half-face masks and three layers of gloves.
	11:20	The task personnel in Room 108 instructed the personnel in Room 101 (adjustment room) to suspend operation of the molten salt electrolytic furnace.
	11:23	Task personnel member A communicated the contamination incident to the facility management supervisor, head of the Fuel Materials Experiment Division, Mr. Fukushima.
	11:25	Two men from Radiation Control Department No.2 arrived at the Fuel Research Building. The two men checked that the plutonium dust monitor No.2 (Room 108) was indicating a normal reading.
	11:37	The five task personnel inspected themselves with an α radiation surface contamination detector, confirming that they had all been contaminated.
	11:54	The facility management supervisor instructed that a greenhouse be set up in the corridor at Room 108. At 12:00, the Oarai Local Countermeasures Headquarters was established.
	13:15	Five greenhouse installation personnel (2 from the Fuel Experiment Department, 3 from other facilities) enter controlled area and begin to set up the greenhouse at the entrance to Room 108.
	14:29	Completion of greenhouse at entrance to Room 108.
	14:30	Task personnel begin retreat from Room 108 (carrying out a body contamination test).
	14:44~	Task personnel member A contamination test conducted: Max 0.33 Bq/cm ² (α radiation, special work hat). After removal of protective clothing, no body contamination. Nasal smear contamination test result: No abnormality.
	14:59~	Task personnel member B contamination test conducted: Max 9.7 Bq/cm ² (α radiation, special work clothing). Result of contamination test after removal of protective clothing: body contamination present; ear 1.7 Bq/cm ² (α radiation). Nasal smear contamination test result: No abnormality. Shower taken.
	15:25~	Task personnel member C contamination test conducted: Max 3.3 Bq/cm ² (α radiation, special work hat). Nasal smear contamination test result: 13 Bq (α radiation). Shower taken.
	16:00~	Task personnel member D contamination test conducted: Max 5.8 Bq/cm ² (α radiation, special work clothing). Nasal smear contamination test result: 3 Bq (α radiation). Shower taken.
	16:07~	Task personnel member E contamination test conducted: Max 322 Bq/cm ² or more (α radiation, special work clothing). Nasal smear contamination test result: 24 Bq (α radiation). Shower taken.
	18:52	Completion of decontamination for all five task personnel. 18:55: All five task personnel complete retreat from controlled area.
	19:05	All five task personnel depart for Nuclear Fuel Cycle Engineering Labs in Tokai Village. Measurement by lung monitor begun on arrival.
22:05	Administration of chelating agent to task personnel to encourage plutonium elimination.	
23:33	Max 22,000 Bq of Pu-239 and 220 Bq Am-241 confirmed as detected by lung monitor measurement of all five task personnel (as of June 6).	
7 June	1:05	Chelating agent administration ended for all five task personnel.
	1:42	All five task personnel return to Oarai Research and Development Center.
	10:00	All five task personnel depart Oarai Research and Development Center for hospital of the National Institute of Radiological Sciences (NIRS).
	11:55	All five task personnel arrive at NIRS. After body contamination test and decontamination, measurement by lung monitor begins.
	13:27	Report that it had been judged necessary to make a legal report to the Nuclear Regulation Authority (NRA) (Time of judgment: 13:00)
	16:41	Two personnel enter controlled area to take contamination test (smear samples) in Room 108.
18:55	Completion of smear sample measurements. Room 108 contamination test results confirm max 55 Bq/cm ² (α radiation), 3.1 Bq/cm ² (β , γ radiation).	
13 June	11:51	All five task personnel discharged from NIRS and depart for Oarai Research and Development Center. Arrival at 13:52. After arrival, all five task personnel are interviewed.
	14:58	Optically stimulated luminescence (OSL) dosimeters recovered.
14 June	14:37	Digital camera SD card removed from controlled area.
16 June		Blood samples taken from all five task personnel at NIRS. Recommended that all five be rehospitalized due to detection of plutonium in urine of all five
18 June		All five task personnel rehospitalized at NIRS by June 18.

Occurrence of the plutonium dust release

Table 1 shows a timeline of the events based on releases by the JAEA, NRA and news media.

Several black lumps fell onto the floor in Room 108, from which a maximum of 55 Bq/cm² were detected. The facility management supervisor instructed that a greenhouse (a temporary enclosure to implement detection and decontamination when retreating from the contaminated area) be set up at 11:54, and it is reported that this was completed at 14:29. More than three hours passed between the time of the accident and the time when the five task personnel exited the greenhouse. Concerning the delay in setting up the greenhouse, JAEA explained to NRA that “(The delay occurred because) the main work personnel in the Fuel Research Building were carrying out this work and other staff were engaged in stabilizing procedures for nuclear fuel materials (and could not leave their positions).”

As a result of a nasal smear (to detect contamination in the nostrils) taken inside the greenhouse, contamination of a maximum of 24 Bq (α radiation) was detected in the nostrils of three of the five personnel.

The five task personnel finally exited the controlled area at 18:55. Since α radiation had been detected in their nostrils and there was a strong possibility that the five people had inhaled plutonium, they were transported to the Nuclear Fuel Cycle Engineering Labs in Tokai Village, where measurement of plutonium inside their lungs was carried out using a lung monitor. Lung monitors detect the weak X-rays emitted by plutonium-239 and the gamma radiation emitted from americium-241 inside the lungs from outside the body. However, not only is this detection extremely difficult, it has poor sensitivity. The JAEA measurement results are shown in Table 2. If plutonium were to be detected, it would have to be around 10,000 Bq or more. The task personnel were men in their 20s to 50s, two of whom were JAEA personnel, one was a dispatched staffer, and two were subcontracted company personnel. The person in whom 24 Bq of contamination was detected by nasal smear was a JAEA staff member and the main person carrying out the task.

Chaotic task personnel exposure assessment

JAEA gave the result of the effective dose (committed dose over 50 years) measurement on the assumption that the 22,000 Bq of Pu-239 detected 0.4 days (9.6 hours) after the accident was the total amount of plutonium remaining (deposited) in the lungs. At that time, the parameters are assumed to be as follows.

Proportion remaining in the lungs after 0.4 days: 6.06×10^{-2}

(Residual dose/ingested dose)

Effective dose coefficient: 3.2×10^{-5} [Sv/Bq]

(Value for compounds other than insoluble oxidized Pu-239)

From this, the ingested dose is

$22,000 \text{ [Bq]} / 6.06 \times 10^{-2} = 3.6 \times 10^5 \text{ [Bq]}$

And the committed dose is estimated to be

$3.6 \times 10^5 \text{ [Bq]} \times 3.2 \times 10^{-5} \text{ [Sv/Bq]} = 12 \text{ [Sv]}$

The maximum exposed dose due to the plutonium inhaled in the accident is thus said to be 12 Sv.

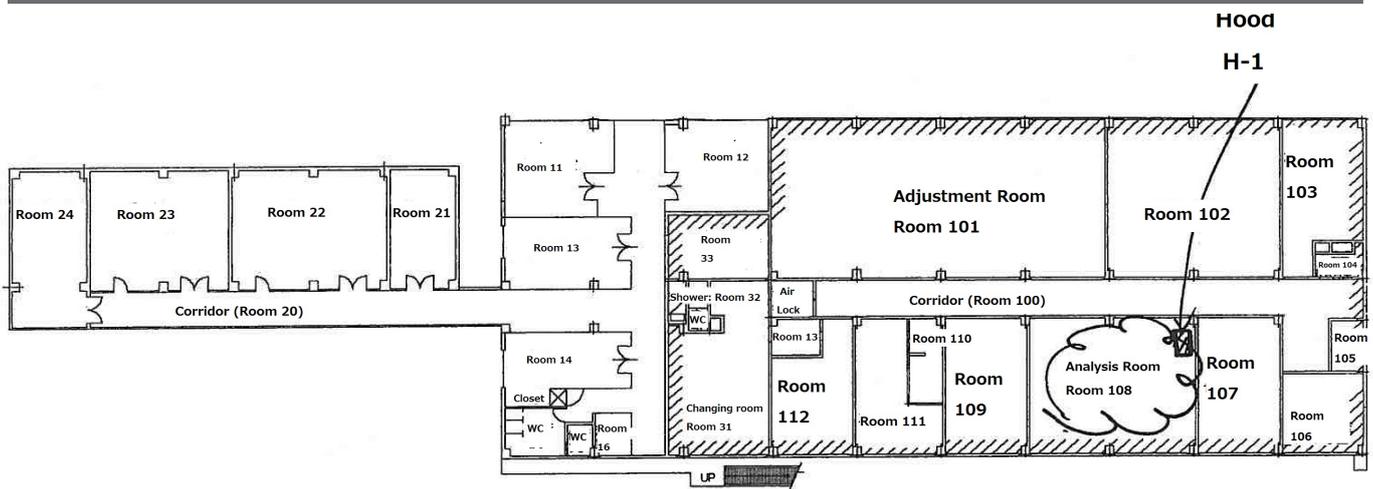
The materials in the storage canister were said to be, according to a JAEA explanation to NRA on June 8 and a “Follow-up Report 4” on June 15, “Pu oxide, U oxide and others used in experiments, etc. for developing fast reactor nuclear fuel,” and the details of the contents “confirmed to be 26.9% Pu, 73.1% U, after converting the total nuclear fuel materials to metal weight.” However, while stating that the remaining composition and constituents, other than the above, were being examined, JAEA said, “In the current situation, we would like to refrain from public disclosure from the viewpoint of nuclear non-proliferation.”

The Fuel Research Building (completed in 1974, decided in 2013 to discontinue use) is a facility for the manufacture of new nuclear fuels and research into the properties of fuels such as mixed uranium-plutonium carbide fuel and nitride fuel for use in fast reactors. The material causing the generation of gas by radiation decomposition that has been reported by the media is thought to be a material containing plutonium compounds solidified possibly using an epoxy-type adhesive bond for storage.

The five persons thought to have suffered internal exposure to plutonium were admitted to the hospital of the National Institute of Radiological Sciences (NIRS) on June 7 and measurement using a lung monitor

Table 2: Levels of radiation detected by nasal smear and lung monitoring

Task personnel	Nasal smear results (Bq)	Lung monitor results (JAEA)		Pocket dosimeter (μ Sv)
		Pu239	Am241	
A	-	<2,200	<7.1	-
B	-	<5,600	8.5	2
C	13	<6,000	12	-
D	3	<14,000	130	3
E	24	22,000	220	60



First Floor Plan

Shaded area indicates controlled zone

Fuel Research Building Plan

was carried out after decontamination. According to the lung monitor measurement at NIRS, plutonium was detected from none of the task personnel (though americium was detected). At the same time, tests to detect plutonium in excreta were also carried out.

Since plutonium was not detected by the lung monitor and thus there was apparently no bodily contamination, the five task personnel were discharged from the NIRS hospital on June 13. NIRS met with the five persons on June 16 to take blood samples, and when they were told that plutonium had been detected in the urine of all five persons, it was recommended that they be rehospitalized. The amounts of plutonium and other substances detected in the urine have not been disclosed. The task personnel in whom plutonium was undetected by the lung monitor had, in fact, inhaled plutonium. All five were rehospitalized by June 18 and an intravenous drip of a chelating agent and other treatments were given.

JAEA has explained that “bursting of the plastic bags during the task was not foreseen” and therefore a fume hood rather than a sealed glovebox was used for the work. However, it is common sense for a glovebox to be used for a task where a special substance such as plutonium is to be handled. It is extremely hard to understand why the facility had adopted this procedure for the work.

Inappropriate long-term storage of nuclear fuel materials

An important reason for the implementation of this task is found in the problems uncovered for the first time by a safety inspection last year.

In the safety inspection carried out with respect to JAEA’s Nuclear Science Research Institute (Tokai Village) in the third quarter of fiscal year 2016, it was discovered that, in violation of classifications provided in the safety regulations, nuclear fuel materials had been cited as being “in use” and stored in cells and gloveboxes for long periods of time. As a result, NRA



The storage canister in the fume hood (H1) straight after the plutonium it contained burst out (Photo from JAEA)

instigated checks through safety inspections on the possibility that there might be similar violations at other nuclear-related facilities, including other JAEA facilities.

According to NRA materials of February 2017, a total of ten facilities engaging in reprocessing, processing and use of nuclear fuels had been carrying out inappropriate long-term storage of nuclear fuel materials: The JAEA Nuclear Fuel Cycle Engineering Labs, Nuclear Science Research Institute, Oarai Research and Development Center (northern section), Oarai Research and Development Center (southern section), and Ningyo-toge Environmental Engineering Center, as well as Japan Nuclear Fuel Ltd. (reprocessing facility), Nuclear Development Co., Ltd., the Rokkasho Nuclear Material Control Center, and others.

Are “use facilities” low-risk?

With reference to these facilities, NRA points out that

“Management in accordance with the classifications (use, storage, disposal) provided for in the safety regulations was not strictly carried out,” and at the same time, essentially recognizing inappropriate management. NRA stated, “The reality is that materials were being stored in what are known in the safety regulations as use facilities – cells, gloveboxes, fume hoods, etc. – but taking into account the amount and types of nuclear fuel materials, the storage situations were not highly dangerous. Safeguard management was also appropriately performed,” “The facility operators... have drawn up a work plan (plan for corrective measures) to implement use, storage and disposal of nuclear fuel materials according to the safety regulations and are gradually implementing the work based on the plans for corrective measures.”

Further, “Taking into account the facts that nuclear fuel materials underwent long-term storage in what are use facilities under the safety regulations, and the fact that present and past regulatory authorities had not communicated to the facility operators their view that a breach of safety regulations had occurred, and that the facility operators are taking corrective measures within a rational time period, NRA has responded flexibly by requesting that improvement be made in accordance with the matters pointed out.” The background to this is that nuclear fuel facilities, use facilities, etc., for which the establishment of severe accident response facilities are not mandated, are considered “low-risk.” The basis for this is the NRA’s “safety myth; the judgment that it is fine for these facilities to be treated in a different manner from nuclear power plants and other facilities in terms of safety inspections.

This inappropriate long-term storage problem clearly shows, if one looks back at the historical series of organizations – the Nuclear Safety Commission, the Nuclear and Industrial Safety Agency and the NRA, that for 30 years or more none of these organizations made any public announcements on the issue, or knew what was happening and simply turned a blind eye. The regulatory organizations’ neglect thus far and the defensive awareness that they do not want this to be aired in public has undoubtedly been one of the remote causes of the accident at Oarai. This extremely facile method of dealing with plutonium and nuclear

fuel materials is apparent from the notion that, since no serious accident has taken place up to now, it is fine to have the facility operators quickly sweep the problem under the carpet.

The actual state of the Fuel Research Building safety regulation violations

According to the materials submitted to NRA by JAEA (Oarai Research and Development Center), the nuclear fuel materials not actually in use but cited as being in use and stored in cells and gloveboxes, etc. were:

Fuel Research Building: 101 samples (maximum storage period 25 years or more)

Irradiated fuel experiment facility (AGF): 827 samples
Irradiated fuel assembly experiment facility (FMF): 1,279 samples, maximum storage period 36 years or more.

Of the inappropriately stored nuclear fuel materials in the Fuel Research Building, those to be stored in the future are 95 solid samples and those to be disposed of are six liquid samples, thus almost all are due to be stored, including those to be stored in other facilities. JAEA has put together a remedial plan that consists of 1) storage or disposal in existing facilities under the current permission, 2) implementation of treatment under the current permission with storage or disposal in existing facilities, and 3) altering the safety regulations and gaining permission to make the cells and gloveboxes where the materials are kept into new storage facilities.

At the Fuel Research Building, the work on solid fuel mentioned in 1) (77 samples) began in January 2017 and storage was said to be complete by the end of June. Regarding the work, NRA has communicated to JAEA that “it is important that safety is the top priority, unnecessary investments are not to be made and the work should be done as quickly as possible.” The task that was being carried out on June 6 was an inspection task implemented on the basis of this plan. The idea was to check to see if there was any extra space in the canister, the contents of which were not well understood. It is quite clear that JAEA, instructed by NRA, over and over again to “implement the work as quickly as possible” did not place top priority on securing safety.

<Chihiro Kamisawa, Masako Sawai, CNIC>

Reference articles:

<http://www.asahi.com/ajw/articles/AJ201706080045.html>

<http://www.japantimes.co.jp/news/2017/06/07/national/five-workers-exposed-radioactive-materials-ibaraki-nuclear-facility/#.WVTNdoTyiHs>

<http://www.japantimes.co.jp/news/2017/06/08/national/ibaraki-plutonium-exposures-baffle-japanese-nuclear-experts/#.WVTNwoTyiHs>

First Court Day of TEPCO Executives Criminal Trial

~Description of the Hearing

The first court day of the case against former TEPCO executives Tsunehisa Katsumata, Ichiro Takekuro and Sakae Muto for professional negligence leading to fatalities was held on June 30, 2017 in Tokyo District Court.

Here, basically from the standpoint of an observer, I will describe what I saw and heard during the first day of court case, focusing on matters with little media coverage.

Courtroom Conditions

About half of the observers' seats had white covers, indicating they were reserved for use by the press. From what I heard, the Fourth Criminal Affairs Department of Tokyo District Court provided two advantageously located seats to reporters from each news organization that requested them. Favorable treatment of news organizations cannot as a rule be called unfair, but there had to have been many news organizations arranging part-time help to observe the trial, and it was foreseeable that many victims coming all the way from Fukushima and other distant prefectures to observe the trial would be denied a seat to due to lack of space. That they nevertheless favored news organizations has to be considered suspicious. Incidentally, there were many reporters who left their seats early, having another reporter take their places, to provide breaking news just on defendants' pleas in the arraignment.

General observers who'd been lucky to be admitted, spending a lot of time just undergoing stringent inspections of their belongings and bodies, found the observers' seats to be under continuous monitoring by 10 security guards. While we cannot call this discrimination against the nuclear accident victims and people opposed to nuclear energy, the precautions seemed a little overblown.

On the other hand, the three defendants are thought to have been allowed into the courtroom via a back passage without undergoing inspections after being filmed for television prior to the court session. The difference between their treatment and that of the general observers was palpable.

Appearance of the Defendants

This was my first time to see the defendants in person, but they did not seem to have any health problems. They made their court appearance in suits with neckties, dressed in shades of black. True to my image of him, Katsumata was of small stature, but I was a bit surprised to see that Muto was larger than I'd thought.

Incidentally, when they entered the courtroom Katsumata came in first, followed by Takekuro and then Muto, in the order of smallest to largest, but this was more a reflection of the order of their ranking back when they were TEPCO officials.

After the opening procedures, the three men took their seats in the front row with their lawyers. You could tell they had real concerns about the outcome of the trial.

Of the three men, Muto would occasionally rock his large body while seated. He seemed somewhat ill at ease.

When the designated attorney presented the summary of evidence in the afternoon, if my eyes did not deceive me, Muto had gone to sleep in his chair. Because Katsumata's face was downward at an angle, it was hard to tell, but he too appeared to be asleep. The trial was taking a long time, so they seemed to have relaxed and succumbed to their fatigue.

The Prosecutor's (Designated Attorney's) Opening Statement

The presiding judge announced that the designated attorney performing as prosecutor would be referred to as "the prosecutor," so here I will call him "the prosecutor." (More importantly, the defense counsel's referring stubbornly to the counsel for the prosecution as the "designated attorney" seemed designed to send the cryptic message, "The guy who was supposed be the prosecutor threw the case out.") After the initial proceedings, the prosecutor, Hiroshi Kamiyama, spent about 80 minutes giving his opening statement that morning.

What caught my attention in the prosecutor's opening statement was that the reference period of the negligence, in other words, "from when should measures have been taken to avoid the outcome," had been established as early March, 2011. The reference periods in most cases where victims of the Fukushima nuclear accident have sought compensation for damages have run from about 2002 to 2008, but this time it was set considerably later. I took it that the reason for this was that the measures to avoid the outcome that the prosecutor was claiming basically centered around the construction of a 10-meter-high seawall along the eastern side of the platform, facing the ocean, on which the reactors and associated equipment sit, which is at 10 meters above sea level, with the nuclear power plant being shut down until this construction was completed. (Other measures, though, such as making the buildings water-tight or



Rally before the trial, outside the Tokyo District Court, Left: Kazuyoshi Sato, head of the trial support group. Right: Ruiko Muto, Chair of the Fukushima Nuclear Disaster Plaintiffs

transferring the backup equipment to higher ground were included in his claims.)

The Defense Counsel's Opening Statement

In the afternoon, the defense gave its opening statement. First, Muto's defense attorney, Keita Miyamura, presented claims common to all three of the defendants.

Attorney Miyamura is a lay-judge trial criminal lawyer and well known as an up-and-coming young attorney, but the main claim he presented, similar to that of the government in national compensation cases, was that the earthquake that occurred off the Pacific coast of the Tohoku region was so enormous that it greatly exceeded expectations. The claims, in order, were (1) TEPCO's tsunami simulation in 2008 for plant design was nothing more than a trial calculation, and would not give rise to the possibility of prediction, and (2) countermeasures based on the 2008 simulation involved nothing more than construction of a seawall on the south side, so the outcome could not have been avoided anyhow.

The defense had nothing to say about the plans to build a 10-meter-high seawall atop the 10-meter platform. Whether defendant Muto had any awareness

of these plans will be of interest in the details of explanations to come.

Katsumata's defense attorney pleaded that as chairman his client had lacked authority to execute official business duties, with his role limited to that of advisor with neither authority nor responsibility. Likewise, Takekuro's defense attorney pleaded that his client had also lacked authority to execute official business duties as a fellow.

Aside from whether these claims are true or false, meetings attended by defendant Katsumata were called "Imperial Councils," insinuating unquestioned authority, and at the time of the accident he was seen by the Prime Minister as being the most influential person at TEPCO. Thus the claim that he had neither authority nor responsibility came across as really disgusting. It is often said that to earn respect as a superior, one condition is to take responsibility for the shortcomings of one's subordinates, but it would appear that Katsumata has no intention of doing that.

Revelation of Results and Examination of the Evidence

The presiding judge explained that it would take some time to perform the revelation of results of the pretrial arrangement procedures and draw up the trial examination plan through to the conclusion of the trial, that this was being done because it is a complicated, highly technical case and that in view of the particular circumstances of the case, examining the basic evidence in advance would facilitate the trial's progress.

The presiding judge's remarks hinted at the existence of evidence being withheld pending a decision on whether to adopt it or not, but failed to clarify the details of what evidence was being requested to begin with and what opinions would be presented. This was due to lack of time that day to conduct requests for evidence, opinions on the evidence and procedures to adopt or reject evidence.

The prosecutor announced a summary of the 183 items of Section A evidence (documentary evidence and articles of evidence), followed after a recess by a summary of the 55 items of Section B evidence (the investigator's record of oral statements). Through this trial, several of TEPCO's internal documents regarding tsunami countermeasures that had not been released before will be made public. It is amazing and disgraceful that while so much important evidence on TEPCO's tsunami countermeasures exists and moreover that they agreed to have it examined at a criminal trial, this evidence has thus far been hidden at all costs from civil trials.

The defense announced a summary of 45 items of documentary evidence (defense evidence). Characteristically, many of the items were from the investigator's record of oral statements and, moreover, they were the same items from the investigator's

record of oral statements that the prosecutor had requested. For example, the late Professor Katsuyuki Abe (professor emeritus at the University of Tokyo), who famously (perhaps) counseled TEPCO that another option for them was to disregard long-term earthquake outlooks, apparently said, “I thought that as a nuclear power plant operator, they should have been implementing countermeasures presupposing the long-term outlook,” in the record requested by the prosecution, but in the records requested by the defense he said, “I thought that the ‘long-term outlook’ was just another point of view, so by ignoring it, I was simply refraining from adopting an opposing opinion.” What a shame he is dead now, and unable to tell the court what he really meant.

Adjournment and Impressions

The presiding judge announced that an interim briefing session would be held, and without setting the next court date, he adjourned the court at 4:30 p.m. A sigh of disappointment could be heard from the observers’ seats as it seemed that this trial too would go into a closed-room discussion.

I predict, based on my own arbitrary judgments and biases, that the next court date will be in about three to six months and that the initial decision will come

the year after next or thereafter. If this were a trial by lay judges, examination of the witnesses’ testimonies would be completed in about two weeks, and the judgment rendered in about a month, so this is strange. Regarding the presiding judge, Kenichi Nagafuchi, in as far as you look at his career, he can be seen as an elite who was sent to preside over this trial, but in as far as you look at the first court date, he presents a relatively moderate ambience (most of all, though, it is those sorts of judges that you have to be careful about.) All kinds of speculations are flying about as to whether the defendants will be found guilty or not, but at this stage it is impossible to tell from the judge’s speech and actions, and I will leave it at that.

The future direction of this trial will be noteworthy if only as an important case regarding how the judiciary can fulfill its function of acting as a restraining influence on the national government’s pro-nuclear policies.

<Kazuki Homori, Lawyer for the Fukushima Nuclear Disaster Plaintiffs>

Ex-nuclear worker suffering from leukemia files lawsuit for industrial accident compensation

Developments up to the trial

In 2011, a 42-year-old welder from Fukuoka Prefecture nicknamed “Arakabu-san¹” went to Fukushima Daiichi Nuclear Power Station (FDNPS) with an ardent desire to help the people in the disaster-hit Tohoku and Fukushima region. His family strongly opposed his decision because they were worried about the exposure risk, but he refused to listen.

At the nuclear plant, he was engaged mainly in welding work. He participated in various kinds of operations during the period October 2011 to December 2013, including the construction work to strengthen water-tightness (anti-tsunami project) of the Fukushima Dai-ni Nuclear Power Station, a regular inspection at the Genkai nuclear complex in Saga Prefecture, and the nuclear-accident cleanup and decommissioning operations at FDNPS. His officially-recorded exposure dosage during the two-year period totaled at least 19.78 millisieverts (mSv), which is close to the official annual limit of 20mSv.

Around December 2013, he began to show flu-like symptoms, such as fever and coughing. In June 2014, he took the regular ionizing-radiation test and was diagnosed with acute myeloid leukemia. The

doctor told him that a few more weeks’ delay in discovering this illness could have resulted in his death. He received a bone marrow transplant and then anticancer drug treatment. Due to the side-effects of the anticancer drugs, he lost his hair and suffered intense nausea and vomiting, diarrhea, and high fever. At one time, he fell into a critical condition caused by blood poisoning. For fear of dying soon and leaving behind his wife and three small children, he began suffering from insomnia combined with depression. Luckily, he recovered from this sickness after enduring the painful treatment, and was released from hospital in August 2014.

In October 2015, Arakabu-san became the first FDNPS worker engaged in the plant’s accident cleanup and decommissioning operations to receive the Ministry of Health, Labour and Welfare (MHLW) recognition of a causal relationship between his illnesses (leukemia and depression), and his exposure to radiation at his former workplaces. After examining his case very closely, the ministry’s panel of medical experts determined that his work at the nuclear plant had caused his illnesses.

TEPCO, however, who carries responsibility for the management of the safety of plant workers, refused to comment on the ministry's decision to grant him industrial accident compensation, saying the utility was not in a position to make such a comment. The company's attitude drove Arakabu-san into a fury. He alleged that the utility was unfairly treating the workers engaged in the cleanup and decommissioning operations. He expressed his intention of helping and supporting other workers doing jobs at dangerous nuclear plants construction sites despite the great exposure risks. He said he would work hard to awaken the world to the danger of nuclear power plants, and to the fact that such facilities are unnecessary. With this sense of urgency in his mind, he filed a lawsuit against TEPCO and Kyushu Electric Power Co. (KEPCO) with the Tokyo district court on November 22, 2016, demanding apologies and compensation. The first hearing of this trial was held on February 2, 2017, at which Arakabu-san made oral statements. The two defendants, TEPCO and KEPCO, are defiant and determined to fight the case against him.

Appalling work environment

In the anti-earthquake construction work at the Unit 4 building at Fukushima Dai-ichi plant, the workers were not given active personal dosimeters (APD) that are mobile and equipped with an alarm. The field supervisor from the first-level subcontractor was the only one that carried an APD. The alarm on his device sounded frequently, but he just said, "It's OK, it's OK," and returned the APD to the rental office after disarming its alarm system. The team then resumed the construction work without any APDs.

In the regular inspection of Unit 4 at the Genkai nuclear plant, the workers carried out pipe-cutting work among other types of demolition work. Workers were given only half-face masks or no masks at all in the hazardous environment where the air was filled with radioactive substances.

At FDNPS's Unit 4 building, where Arakabu-san suffered the greatest exposure, he was engaged in work to create the covering for a crane that was hung from the ceiling to remove the nuclear fuel assemblies from the pool. His work was to weld a mount that would serve as the base for the crane on the side of the pool which was damaged when a hydrogen explosion blew the roof off the building in 2011. While doing this job, he wore two layers of Tyvek protective clothing and a full-face mask, with all small gaps between his face and the mask sealed with tape. He thus had difficulty breathing.

He also claimed that, during the summer time, his sweat accumulated in his long rubber boots reaching nearly halfway up the boots, and that many other workers collapsed with heat stroke.

Moreover, he and other workers occasionally did their work without wearing a lead jacket, weighing 15 kilograms, designed for blocking radiation. They

were supposed to wear the jacket on top of the already tightly sealed protective gear, but the number of such jackets was insufficient. The supervisor forced them to sneak into the construction site without wearing the lead jacket. This jacket covered only the upper half of the workers' bodies, their arms and the lower half of their bodies being left exposed to radiation. The lead jackets were used repeatedly and were not decontaminated each time they were used. Despite these facts, TEPCO alleged that its workers' health management was conducted properly, and insisted that the situation mentioned above did not exist. This remark made Arakabu-san very angry.

Furthermore, Arakabu-san was engaged in the work to place a cover over the FDNPS Unit 3 building. He was involved in the demolition work, in which he cut off the arm of the 600-ton crane using gas. In each of these workplaces, he is believed to have been exposed to a greater amount of radiation than the officially recorded levels. That is, he was forced to work in environments where worker safety management was sloppy.

TEPCO denies causal relationship between the defendant's leukemia and plant work

The second hearing of the trial was held on April 27. Two defendants, TEPCO and KEPCO, argued against the plaintiff's claims. The written arguments they prepared for the trial denied the causal relationship between the plaintiff's illness and his exposure at their nuclear plants.

TEPCO maintained that it has not been proven that exposure below 100mSv will damage human health. They also argued that other factors may raise the risk of cancer as well.

Furthermore, they insisted that the plaintiff's external exposure dosage from his work at TEPCO's nuclear plant totaled merely 15.68mSv, and that even if this figure is combined with the accumulated exposure dosage from his work at KEPCO's plant, the total still remains within the legal exposure limit. They then concluded that the MHLW recognition of his leukemia as work-related illness does not mean that the causal relationship between his exposure and his sickness was proven. Thus, they demanded that the court dismiss the suit filed by the plaintiff.

KEPCO alleged that the workers in the managed areas are required to wear protective gear and that the supervisors are checking them. They also insisted that each worker's external exposure dosage never surpassed the recorded level of 4.1mSv. They therefore concluded that the plaintiff's claim was incorrect. As for the causal relationship between his leukemia and exposure at his workplaces, they denied such a connection, saying his accumulated exposure level was below the five-year limit of 100mSv which is provided for in the official regulations for preventing injury from ionizing radiation.

In response to the utilities' claims, the complainant asserted that Arakabu-san's exposure dosage during the five months from October 2012 through March 2013 alone totaled 10.7mSv, far greater than the annual minimum of 5mSv, above which workers with leukemia are granted industrial accident compensation. In addition, his working environment was of such a poor and harsh nature that his total exposure dosage could have been much greater than the recorded level. He was also exposed to radiation in the dormitory or other environments where he was living at that time. There is a large body of scientific data which indicates that the number of acute myeloid leukemia patients increases significantly even if their total exposure dosage is below 100mSv.² These facts prove that there is a quite strong causal relationship between the plaintiff's exposure at his worksites and his leukemia, and that the claims of the two utilities are mistaken.

Excessively severe screening of industrial accident compensation

To date, MHLW has granted recognition of work-related injuries or illnesses to 19 nuclear plant workers³, including the three victims of the 1999 criticality accident at the Japan Nuclear Fuel Conversion Co. (JCO) plant at Tokai-mura, and two FDNPS workers⁴ who gained recognition after Arakabu-san. Some other workers have also had industrial accident compensation claims recognized by

the government after filing suits with local courts, but thus far no workers have received compensation from the nuclear plant operators in their court battles.

In the current multi-layer subcontractor system at nuclear power plants, it is extremely difficult for workers to file complaints against plant operators because such legal actions could cause trouble for their co-workers or their employers. Of the retired workers who had been engaged in the nuclear-accident cleanup operation, the state provides the official health examination merely to the emergency operation workers with a total exposure dosage of 50mSv or higher. From now on, the workers engaged in various kinds of operations immediately after the nuclear accident may begin to complain about health effects. Even if they are able to gain MHLW recognition and receive industrial accident compensation, the amount may not be sufficient, being around 80% of the treatment costs or wages.

Amidst this difficult situation, Arakabu-san stood up and filed this lawsuit. He must win this case to restore his dignity, and also for the purpose of providing safety and compensation to 60,000 or more workers engaged in the cleanup and decommissioning operations at FDNPS, as well as many other exposed workers elsewhere.

< Ryohei Kataoka, CNIC >

Footnotes

1. In Kyushu, the marbled rockfish is dubbed "arakabu." The reason why the plaintiff was given this nickname was because he likes fishing.
2. Written Statement by Hisako Sakiyama (June 1, 2016)
Suit filed against TEPCO and the state regarding the Fukushima nuclear plant accident being tried in the Tokyo District Court.
3. CNIC Almanac 2016-17. The number of workers' compensation claims filed by nuclear power plant workers and cases approved by the government as of December 2016
4. In one of the two cases, 1) compensation was paid in August 2016 to a worker with a total exposure dosage of 54.4mSv who was suffering from leukemia. In the other case, 2) in December 2016 money was paid to a worker suffering from thyroid cancer with a total exposure dosage of 149.6mSv. .

NEWS WATCH

Decommissioning Plans for Tokai Reprocessing Plant

The Japan Atomic Energy Agency applied to the Nuclear Regulation Authority on June 30 for approval of its plans for decommissioning the Tokai Reprocessing Plant. The plant is located in Tokai Village, Ibaraki Prefecture. It was test operated in 1977, and began full operation in 1981, but its utilization rate stagnated. It processed a total of 1,140 tons of spent nuclear fuel (equal to 5.4 years of its claimed processing capacity). The decision to decommission the plant was made in 2014.

The decommissioning will take about 70 years to complete, at a total cost of about 1 trillion

yen. That comes to over five times the cost of its construction, which was about 190 billion yen. Seismic reinforcement of the facilities and vitrification of the plant's high-level radioactive liquid wastes (see below) will take about 217 billion yen; decontamination and dismantling, about 140 billion yen; solidification of low-level radioactive liquid waste, about 250 billion; and the transport and underground storage of radioactive wastes, about 380 billion yen, but the siting of the underground storage has yet to be determined. In addition, as of the end of March 2017, the plant had 272 vitrified high-level waste canisters and 370 m³ of high-level liquid waste, but no place for their underground storage has been

found, nor have the costs of that been considered.

Furthermore, the vitrification of high-level wastes has continued to be fraught with problems, resulting in delays and lack of progress. In addition, the plant is storing 265 spent fuel assemblies from the Fugen Prototype Advanced Thermal Reactor in a pool. Those are to be shipped to France, but that has yet to be actualized.

Both the required number of years and the cost estimates have been criticized as excessively optimistic, and the possibility of those being further extended and increased is extremely high.

Project Cost Estimate for the Rokkasho Reprocessing Plant

On June 30, the Nuclear Reprocessing Organization (NuRO) received approval from the Minister of Economy, Trade and Industry for the value of the unit contribution that will be levied against utilities in order to pay for reprocessing of spent nuclear fuel (including reprocessing, fabrication of MOX fuel, etc.). The unit contribution is different for each utility, but the amount has been kept in the range of 662-675 yen per gram of spent fuel.

The cost estimate, which the calculations are based on, sets the total cost of reprocessing and transporting back to Japan and managing the high level radioactive waste, which is at present overseas, at 13.9 trillion yen and fabrication of MOX fuel at 2.3 trillion yen.

In 2003, the Federation of Electric Power Companies estimated the costs at 12.1 trillion yen and 1.2 trillion yen respectively. This is a substantial increase, but there is no guarantee that even the revised amount will be sufficient.

MOX Fuel Shipped for Takahama NPP

The nuclear fuel carrier Pacific Egret departed the port of Cherbourg on July 5, carrying 16 MOX fuel assemblies produced at the Melox fuel fabrication plant in France for Kansai Electric Power Co.'s Takahama Unit 4 reactor (PWR, 870 MW). The fuel contains more than 700 kg of plutonium (total-plutonium). The ship is expected to arrive at the Takahama NPP's exclusive port in early September.

Toshiba Agrees on Upper Limit to Compensation for Vogtle Nuclear Plant Construction

Toshiba reached an agreement with Southern Company on June 10 on an upper limit to parent company compensation of 3.68 billion dollars over the construction of two reactors (PWR, 1100 MW each) for the A.W. Vogtle Electric Generating Plant in America. The plant's construction had been ordered by Toshiba's former subsidiary, Westinghouse. Southern Company will take over management of the project for constructing the NPP, and with the establishment of an upper limit, Toshiba avoids liability for amounts above that. Its negotiations with SCANA Corp. over reactors for the V.C. Summer nuclear plant (PWR,

1100 MW each) were concluded on July 31 with a decision to halt construction and abandon the project on which 9 billion dollars has already been spent.

Trial Begins for Children of Hibakusha

The first round of oral proceedings got underway in the Class Action Suit Seeking Assistance for Second Generation Hibakusha (atomic bomb survivors) on May 9 in the Hiroshima District Court and on June 5 in the Nagasaki District Court. Thus has this historical legal inquiry into the genetic effects of atomic bomb radiation begun. The suit seeks payment of 100,000 yen per plaintiff as compensation for mental suffering incurred by second-generation hibakusha, deeming the exclusion of second generation hibakusha from assistance for atomic bomb survivors a constitutional violation, and the lack of legislative action by the Diet, which failed to revise the Atomic Bomb Survivors Assistance Act to expand the scope of its applicability to include second-generation hibakusha, a violation of the State Compensation Act. This sum is not intended as compensation for damages, but to make it clear to society through the lawsuit that the problem exists. It signifies a request for legal measures by the state.

There is said to be anywhere from 300,000 to 500,000 second-generation hibakusha living throughout Japan, and they have to live with uncertainty over the genetic effects of atomic bomb radiation, which are undeniable. During the 30 years since the establishment of the National Liaison Council of Second-Generation Hibakusha in 1988, it has made requests to the government (Ministry of Health, Labour and Welfare) and the Diet for measures to assist second- and third-generation hibakusha. Even now, however, none have materialized. Therefore, as an inevitable means of seeking a resolution in a court of law, 22 second-generation hibakusha filed a class action suit in Hiroshima on February 17 and 25 others filed one in Nagasaki on February 20 this year.

In the first round of oral proceedings in both district courts, the plaintiffs described their health concerns and actual health damage, seeking a ruling that would lead to legal assistance, while the state sought to have their request dismissed.

Possible sighting of fuel debris at Fukushima Daiichi Unit 3

On July 21 and 22, an underwater robot was able to take photographs of what appears to be melted fuel debris in the containment vessel of Unit 3 of Fukushima Daiichi Nuclear Power Station. Even so, there is still a very long way to go before the whole picture is understood and these photographs show once again how difficult it will be to recover the melted fuel. The International Research Institute for Nuclear Decommissioning has said it will formulate a plan for removing the melted fuel in Units 1 to 3 by the end of this summer, but there has not been enough information obtained to achieve this goal.

Who's Who

Atsuo Nakamura: Actor/Activist

Actor Atsuo Nakamura rose to stardom when he played the hero in a popular TV drama series in 1972. In the drama, set in the Edo era, he played a lone-wolf gambler, whose pet phrase was “It’s not my business” — some trouble occurs in the local community, and at first the hero avoids getting involved in it, saying this phrase. Later, however, he fights against and crushes the villains to save the oppressed. Mr. Nakamura’s career as an actor after the end of this series includes a great many appearances in films and TV dramas. He also worked actively as a journalist and mystery novel writer. He also served as a member of the Japanese House of Councilors for one term, from 1998 to 2004, during which, in 2000, he became president of the group of lawmakers who monitored the propriety of public investment projects, and strongly supported citizens who acted against the construction projects of airports and dams across the country.

In 2007, he became Chairperson of the Environment Committee of the the Japan PEN Club, and after the Fukushima Daiichi NPS accident in 2011, he invited CNIC co-directors Hideyuki Ban and Baku Nishio to deliver a talk to writers about the problems of nuclear power development.

“This will be my final work and lifework.” Having turned 77, Mr. Nakamura started on the project of a solo reading play, entitled *Senryōkei ga Naru* (“The Dosimeter Beeps”), which he wrote alone. The play is a monologue of an aged man, who was born and raised in a town hosting a nuclear power station, who worked for the station, but lost everything due to a nuclear accident. Currently Mr. Nakamura himself appears on the stage, but hopes that many people will raise their hands and perform and deliver this play nationwide. It seems that he has produced a reading play having this hope in mind; performers can present the reading show without memorizing the script.

Mr. Nakamura was born in Tokyo, but to avoid bombing raids by U.S. forces during the Second World War, he moved to Iwaki City, Fukushima



Prefecture, where his father was from. Probably because of this experience, he has special feelings about the Fukushima Daiichi NPS accident. “I wanted to complete the play immediately after the accident, but the problems are complicated and multifaceted. A long period of time passed while I visited Fukushima repeatedly, visited Chernobyl, and collected information,” he says.

In autumn 2016, he finally completed the play, which is a one-act play in four scenes. Mr. Nakamura calls this play an “enlightening drama.” Instead of moving the emotions of the audience by inspiring feelings, the play points out the problems, enabling the audience to wake themselves up and acquire a new point of view. The stage view of this play is simple — an actor and a screen, the only stage set, on which data is shown to compensate for the script. The attention of the audience concentrates intensely on the simple stage. Each performance of the play attracts a great many people.

<Baku Nishio, CNIC>

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