

Status of Investigation into the Failure to Disclose Information on Drainage Channel K at the
Fukushima Daiichi NPS

1. Membership of the Disclosure Subcommittee

- ✓ Chairman : Masafumi Sakurai, Member of the NRMC
- ✓ Members : Shiro Shida, attorney; Teruhiko Shiba, attorney;
Hisatoshi Fujito, attorney; Keisuke Kaneko, attorney
Akira Fujita (JGC Corporation); Hiroko Kondo (Accenture)

2. History

- ✓ March 6: Subcommittee established
- ✓ March 9: Commencement of review of internal investigation reports, meeting minutes and interviews with parties involved (seven people interviewed)
- ✓ March 21: Inspection of the Fukushima Daiichi NPS
(Masafuku Sakurai, Shiro Shida, Teruhiko Shiba, Akira Fujita)

3. Investigation Status

- ✓ Refer to attached document

End of Document

※ Internal investigation Reports:

Attachment 1: Appendix 1: Background on the Fukushima Daiichi Nuclear Power Station Drainage Channel K and Inspection Reports (Fukushima Daiichi Decontamination and Decommissioning Company)

Appendix 2: Investigation Report on the Fukushima Daiichi Nuclear Power Station Drainage Channel K(Quality Assurance and Safety Auditing Department)

March 30, 2015
Nuclear Reform Monitoring Committee
(Information Disclosure Subcommittee)

Status of Investigation into the Failure to Disclose Information on Drainage Channel K
at the Fukushima Daiichi NPS

1. In response to this problem this committee decided on March 6th to provide suggestions to TEPCO, establish an information disclosure subcommittee to examine the results of the internal investigation and conduct its own investigation if necessary. The subcommittee shall also give status reports to this committee and the board of directors, which will also be publicly disclosed.
2. The subcommittee is comprised of Committee Member Sakurai, who is to act as lead investigator, and six external experts (four attorneys, a communication expert and an expert in the field of engineering). On the 9th of this month the subcommittee began discussing the matter and reviewing internal investigation reports, the minutes from various meetings and attachments [reference materials], as well as interviewing the parties involved (at current time 15 hours of interviews have been conducted with seven parties). It is also engaged in an inspection of the Fukushima Daiichi NPS.
3. This investigation is still underway, but the following can be deduced from the information acquired to date.

(1) At current time there does not appear to be any large discrepancy between the facts collected by the subcommittee and the results of the internal investigation.

From around November 2013 until around March 2014 water was sampled from the drainage channels at least once a week in order to manage drainage. An official decision was made to establish a method for calculating three-month average radiation concentration levels and this decision was announced at the monitoring and assessment meeting held on the 31st of the same month.

In April of the same year regular sampling commenced officially, but the sampling results, which included the measurement data for drainage channel K, (hereinafter referred to as, "Data"), were only known by the workers taking the measurements until around the time of the Company (Fukushima Daiichi Decontamination and Decommissioning Engineering Company) Management

meeting on November 25 of the same year, and it was not disclosed publicly. Furthermore, whereas Company executive managers became aware of the existence and details of this data for the first time around the time of the aforementioned Company Management meeting the decision of whether or not to publicly disclose the Data was not discussed.

In other words, the subcommittee did not find evidence that any of the parties privy to the Data dedicated any significant time to deliberating whether or not the Data should be publicly disclosed during the period from when it was discovered that the roof of the Unit 2 R/B may be the source of the contamination, until the organization started in February 2015 to deliberate whether or not this issue should be publicly disclosed.

Furthermore, even after this point around the time of the aforementioned Company management meeting the SC Office and RCs were still not aware of the existence or details of the Data and therefore did not take action to publicly disclose it.

(2) Whereas the causes of, and factors that led to, this incident vary in accordance with the individuals involved and the period in time when they occurred, it is possible that the following interpretations of the events at hand, which are not necessarily consistent with the concerns of society and the general public, were perhaps shared unconsciously between the parties involved.

1. *At current time the drainage channels are not subject to radiation control.*
2. *Water in the drainage channel is from rainfall*
3. *The concentration [of radioactive substances] shown in the Data is not very high compared with contaminated water in the trenches, etc.*
4. *Since water is continuously discharged the Data only shows [radiation levels] for a small portion of water over a fleeting moment, and is not necessarily scientifically significant.*
5. *The main reasons why the Data was collected were to establish methods for calculating three-month average concentration levels and to confirm the efficacy of countermeasures, such as cleaning of the drainage channels. So, it is inadequate for reporting to regulatory agencies, and quite different in nature to measurements taken as part of regular environmental monitoring.*
6. *There is still time before March 2014, which is the deadline for achieving site border effective dose reduction objectives.*
7. *A portion of the drainage channel measurement data has already been disclosed by regulatory agencies or through press conferences.*

(3) However, at current time the subcommittee is more focused on the awareness of the parties involved as a cause, or underlying factor, of the incident, and on discovering why TEPCO was not able to adequately leverage its decision to, “*promptly disclose plans to measure radioactive substance concentrations and radiation dose rates, as well as these measurement results, when such measurements are taken,*” as was decided in the wake of the failure to disclose information on the leak of tritium into the bay in 2013 even though said decision had been publicly disclosed as a recurrence prevention measure.

In other words, at current time no evidence can be found to support that the details of the aforementioned recurrence prevention measures and the mindset of understanding of how important information disclosure is to society were taken seriously by upper management and Nuclear Power Division executives, or by workers in the field or the organization as a whole, or that sufficient effort was made to permeate said mentality after the decision was made and disclosed. In contrast, it is more apparent that the details and mentality behind these countermeasures were not shared by all parties within the organization. If there had been common awareness of this issue there would have been opportunities to realize that the disclosure of the Data should be discussed. Therefore, as far as this subcommittee is concerned, at current time this is an important underlying factor or cause of this incident.

(4) Of course, the underlying factors and causes mentioned above in (3) must be further examined, and it is possible that other additional underlying factors and causes will be uncovered during the remaining course of this investigation. The subcommittee shall continue to report these issues as they arise and make suggestions as necessary.

4. This committee has received progress reports from TEPCO on various types of work improvements that have been made, and it is in the process of reviewing the details of various work improvement suggestions that have been made as a result of the investigation into this incident.

However, going forward it is vital that TEPCO plans work improvements (*Plan*), executes the plans (*Do*), verifies issues with execution (*Check*) and makes improvements based on the results of this verification (*Act*).

Furthermore, this committee feels that it is important to continue to verify that TEPCO is effectively utilizing the PDCA cycle when implementing work improvements, as well as when investigating this incident and accidents.

End of Document

March 6, 2015

Fukushima Daiichi Decontamination and Decommissioning Engineering Company

Background on the Fukushima Daiichi Nuclear Power Station Drainage Channel K and Inspection Reports

Overview

(1) Due to the leak from a contaminated water tank in August 2013 waste water from general drainage channels, which had up until that point been “unmanaged”, has become a problem. Drainage channel K was included in the discussions about the leak and in February of 2014 regulatory agencies instructed that the concentration of wastewater be reduced in approximately one year.

(2) In February of 2014 the drainage channels were cleaned, debris was removed, and the slope of the mountain was subjected to as part of the aforementioned countermeasures. However, this had no effect in reducing the concentration of wastewater in drainage channel K,

(3) Due to increases in concentration levels during rainfall and the fact that overall concentrations in all drainage channels did not decrease even though reduction was seen in water flowing from the mountain side, in November of 2014 a special inspection of contamination sources on the building side commenced and in January 2015 it was found that the concentration of radioactivity in puddles on top of the roof of the truck bay of the Unit 2 reactor building was high.

(4) The data obtained through this inspection has been used as follows.

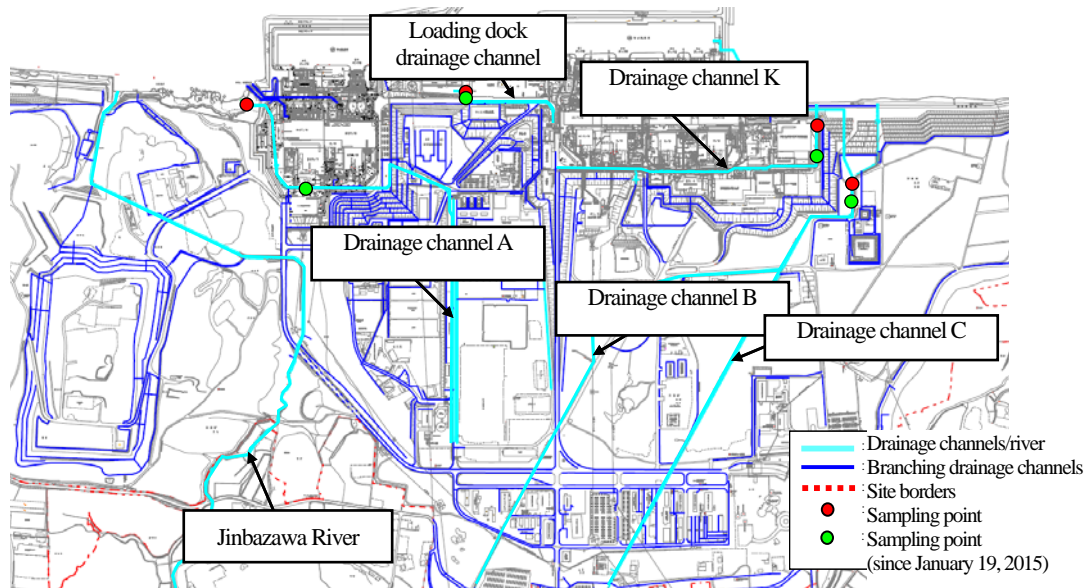
1. Data from January and February 2014 was reported and disclosed to the Meeting of the Nuclear Regulatory Agency’s Supervision and Evaluation Committee for the Specified Nuclear Power Facilities, and Local Adjustment Meeting of Decommission and Measures for Contaminated Water.

2. Whereas data sampling continued during the countermeasure implementation period from April 2014, this data was not reported and rather used to confirm the efficacy of countermeasures. The information was shared through meetings within the FDEC in November 2014 and in December it was shared with the Fukushima Revitalization Headquarters, Plant Siting & Regional Relations Department, and the Agency for Natural Resources and Energy (ANRE).

3. After highly contaminated water was found on the roof of the Unit 2 reactor building truck bay in January 2015 the information was reported to the Nuclear Regulatory Agency and disclosed to the public on February 24, 2015.

I. Management of general drainage channels

- Before the accident, since the rainwater in the general drainage channels including the K-drainage channel did not go through the Radiation Controlled Area, they were not being controlled, and the rainwater flowed into the area and discharged into and out of the port naturally.



Location map of the drainage channels within the premises.

- Immediately after the accident, the radiation levels on the entire site went up. With respect to the rainwater in the general drainage channel, the concentration of radioactive materials became higher due to the fallout impact. However, as we were reviewing measures with high priority including for the contaminated water, we maintained the previous management condition, and did not develop regulations for the measurement and management of drainage water. Although it was estimated that the concentration was at a certain high level, we did not pay special attention to it.

II. Enhancing the management of general drainage channels with the leak phenomenon in the H area tank

- When the leak occurred in the H area tank in August 2013, the drainage water from the C-drainage channel (which is the general drainage channel) presented a problem, and the B/C drainage channels in the tank area were cleaned with priority, and we planned and implemented the measures such as consecutive monitoring, setting up the emergency gates, and changing the route into the port.



Situation of the B-drainage channel with culvert

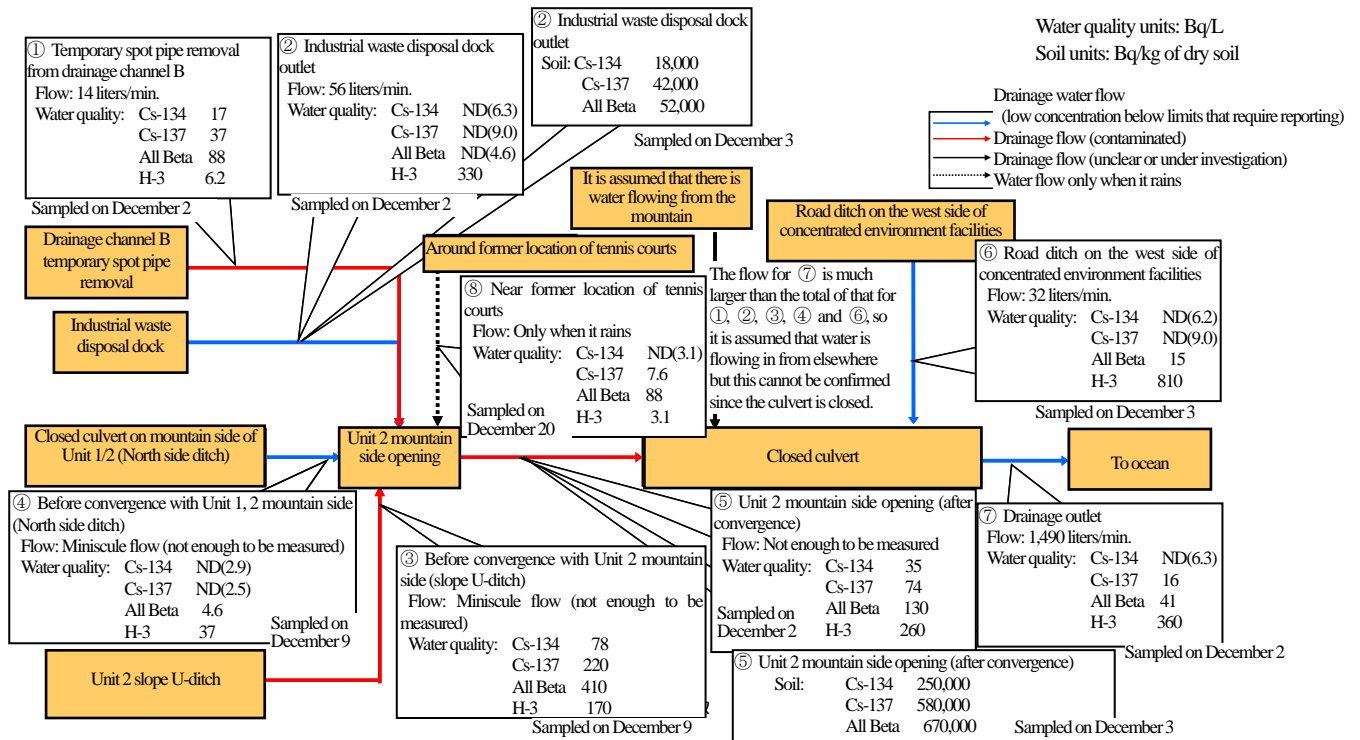
- In this process, the control method of other general drainage channels also became a topic of discussion. After November 2013, in addition to the B/C drainage channels, we measured each drainage channel in the A/K/unloading wharf as well as the Jimba-sawa river flowing within the premises, and they were reported at the on-and-off meetings at the Agency for Nuclear Regulation Authority and at the Decommissioning Contaminated Water Team Meetings (held on December 12, 19 and 26 in 2013).
- This situation was also reported at the Stabilization Review Meetings (on Dec. 2, 4 and 13 in 2013) with the purpose of sharing the information internally.
- In addition, there was an instruction to report this at the Review Meeting of the Supervision and Evaluation for the Specified Nuclear Power Facilities of the Nuclear Regulation Authority. Therefore, at the Review Meeting and the WG in January and February 2014, we reported and announced this including the measured values of the K-drainage channel (during the clear sky days) and the content was reported and announced at the on-site planning meeting in February as well.

(e.g., Contaminated water measure review WG at the 10th Review Meeting of the Supervision and Evaluation for the Specified Nuclear Power Facilities)

At the drain port of the K-drainage channel, Cs134 ; 6.3Bq/ or below, Cs137 ; 16Bq/L, Total beta levels ; 41Bq/L, Tritium ; 360Bq/L, (it appears to be the data without rainfall), On the soil on the upstream side: Cs134 ; 250,000Bq/L,

Cs137 ; 580,000Bq/L and Total beta levels ; 670,000Bq/L.

- All the documents for the Review Meetings, WG, and on-site planning meetings were to be released, therefore, the concerned parties including the Agency for Nuclear Regulation Authority and the Agency for Natural Resources and Energy acknowledged that fact that the concentration of radioactive materials at the K-drainage channel being high has been already announced for the time being.



Result of investigation at the K-drainage channel (on January 24, 2014)

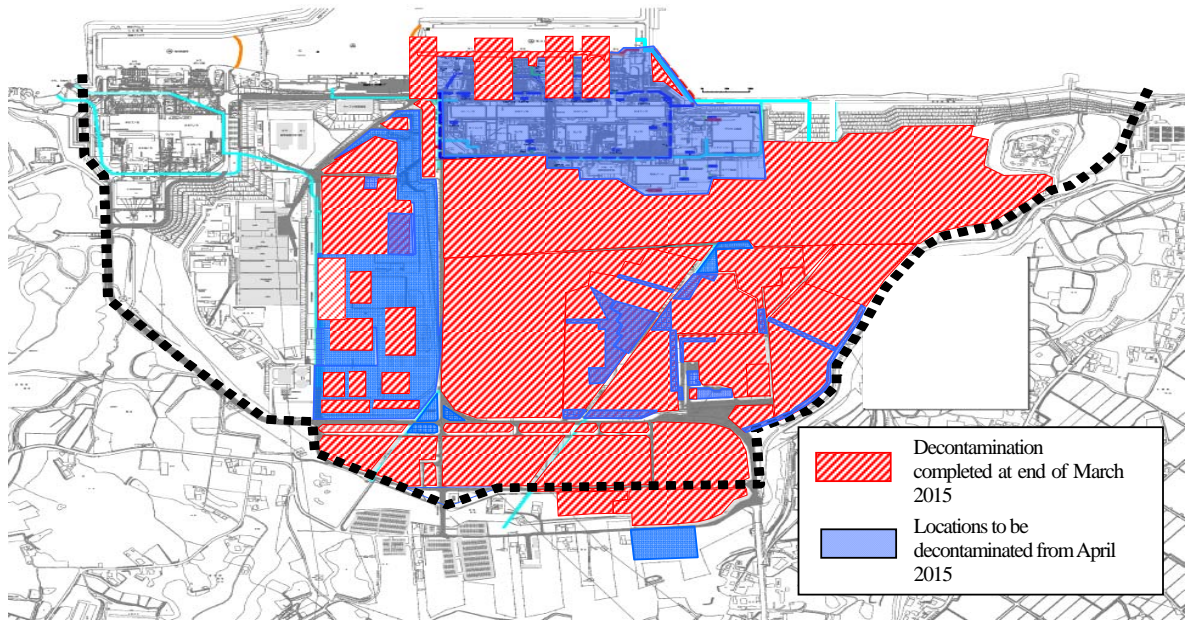
III. Measures and management of the K-drainage channel

- In February 2014, based on the previous discussion at the Review Meeting of the Supervision and Evaluation for the Specified Nuclear Power Facilities, etc., we were given instructions to reduce the concentration of radioactivity in drainage water by improving, cleaning and purifying the surrounding environment within about one year.
- Pursuant to this instruction, we made a plan for cleaning drainage channels, etc., and presented and announced the plan at the Review Meeting of the Supervision and Evaluation for the Specified Nuclear Power Facilities in March.

		FY2014				FY2015			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Gaseous waste		Unit 1: Dispersion of dispersion prevention agents during removal of building cover							
		Unit 3: Construction of dose reduction countermeasures/fuel removal cover							
Liquid waste	Establishment of assessment method	Selection of isotopes for assessment							
		Establishment of method for calculating three-month average concentration.							
		Measurement of drainage, flow and radiation concentration							
	Improvement of drainage channel conditions	Road cleaning (B/C/K/loading dock drainage channels)				Road cleaning (A/newly constructed drainage channels)			
		Drainage channel cleaning							
	Equipment countermeasures to manage drainage channels properly	Sludge flow prevention							
		Installation of drainage channel flow meters				Installation of drainage channel flow meters			
Effective dose from a direct radiation from facilities within the site and from skyshine	Re-examination of radiation source conditions in accordance with the situation								
	Changes to maximum limits for storage area receiving (surface dose rate)								

Schedule for achieving targets concerning the effective dose limit at the site boundary.

- Then, on April 7, 2014, with the participation of the people involved in the drainage channel issue from the headquarters and 1F, as the future monitoring plans, we investigated contaminated source, and a decision was made that we would measure several locations at each drainage channel to check the effect of cleaning on a regular basis (once a week, the locations to be measured were each drainage channel at the A/C/K/unloading wharf, and the nuclides to be measured were Cs134, Cs137, total beta levels, etc.). However, the person in charge of obtaining data as well as the manager at the headquarters were not aware of this.
- Based on the decision, the Environmental Radiation Monitoring Group of the Radiation Protection & Environment Department at the Fukushima Daiichi Nuclear Power Station began sampling on April 16 in 2014. The results were accumulated in the database that can be shared by the power station and the Project Planning Department at the headquarters, however, the person in charge of obtaining data as well as the manager at the headquarters were not aware of the presence of periodic data and the database.
- The above mentioned data manager at the headquarters took up his position in April 2014. According to the handover, the manager checked the data stored in the designated folder on a daily basis, however, the relevant data was not stored in the designated folder.
- The work to improve, clean and purify the K-drainage channel began in April 2014. However, the operation inside the K-drainage channel, which was performing culvert work, could be dangerous when it rained. Therefore, up to the typhoon season (September 2014), we prioritized the work outside the channel, such as removing high dose debris and felling of trees on the slope face of the mountain, removing surface soil, facing, cleaning the surrounding roads, etc. The cleaning work inside the K-drainage channel with culvert began in November 2014, most of which was finished in mid-December. Prior to the cleaning the K-drainage channel, on October 3 and 16 in 2014, we measured the water quality during the normal time, and on October 6 and 22 in 2014, we measured the water quality during rainfall as the preliminary investigation for cleaning separately.



Area of performing facing work



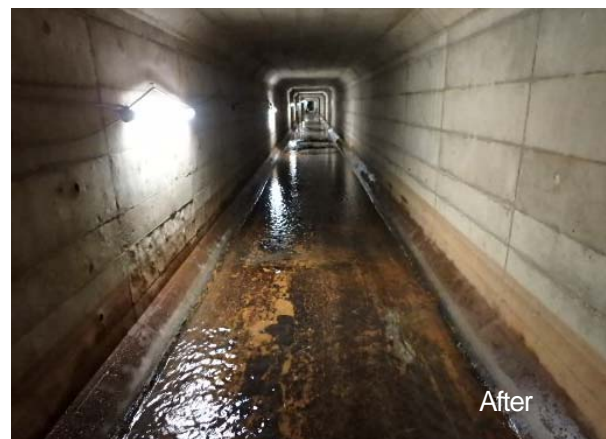
Situation of performing the facing work



Situation of spraying on the sloped surface



Situation of cleaning the side drain at the K-drainage channel

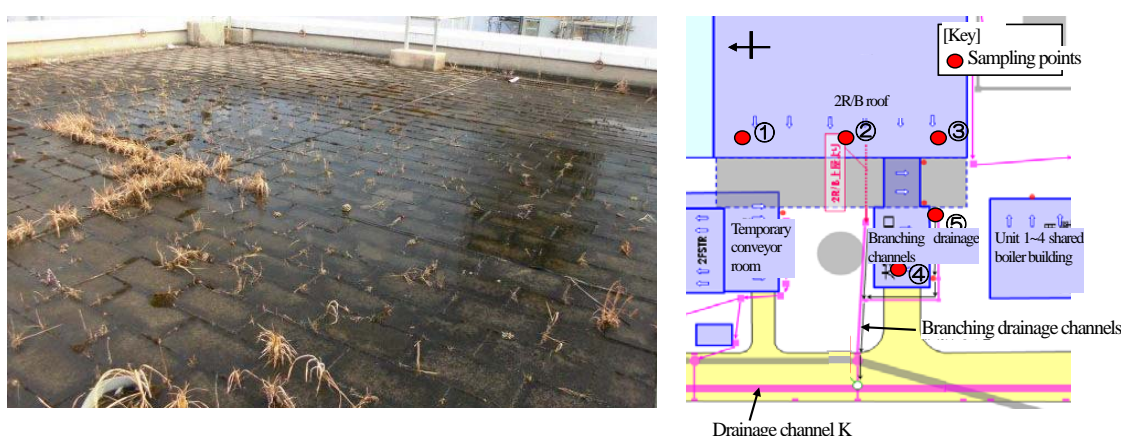


Situation of cleaning the K-drainage channel

- After the cleaning, concentrations in the water flowing in from the mountainside were reduced, but not notably, and the concentration during rainfall tended to be high. The decline in the concentration after cleaning was reported at the Company Operation Committee on November 25, 2014, and this information was also shared broadly including among the management within the Company. In the document, the unreleased data mentioned above was also attached as a reference, but no one had “an attitude to ask questions” about the details of collecting and accumulating the data, or the announcing and handling of the data.
- The information was also shared with the Fukushima Revitalization Headquarters, the Plant Siting & Regional Relations Department, and the Agency for Natural Resources and Energy in early December.
- In December 2014, we gradually made progress in measuring the concentration on the ocean side (building side) where it was difficult to measure without the inflow

during the clear sky condition, and it turned out that there may be the source of contamination on the ocean side (building side) as well. Therefore, we narrowed down candidate locations and conducted the investigation on them starting January 2015.

- When it rained in January, we gathered the rainwater data from the rooftop of the truck bay of the Unit 2 reactor building for the first time, and there was an inconsistency in the ratio of the total beta levels of the Strontium. With this, on February 19, we collected samples again during rainfall for its analysis. We analyzed the sample, and had the result of high concentration on February 24, thus, we reported it to the Agency for Nuclear Regulation Authority, which led to the announcement of the data.



Status of the truck bay rooftop of the Unit 2 reactor building and the locations for collecting data

Results of data collected (Unit: Bq/L)

No.	Water quality survey location	Cs134	Cs137	All Beta	Sr90	H-3	Sampling Date
①	Unit 2 R/B roof (North)	200	650	920	10	ND(< 100)	H27.1.16
②	Unit 2 R/B roof (Middle)	340	1,100	1,900	12	ND(< 100)	H27.1.16
③	Unit 2 R/B roof (South)	300	990	1,900	20	ND(< 100)	H27.1.16
④	Truck bay entrance roof	6,400	23,000	52,000	Being analyzed	600	H27.2.19
⑤	Truck bay entrance gutter (East)	920	3,200	9,700	Being analyzed	ND(< 100)	H27.2.18

- During this, the Agency for Nuclear Regulation Authority demanded that we submit data that could show the tendency in the drainage channel as well, and we submitted the data we had been accumulating after April, which had been shared at the Company Operation Committee, but this data was not publicly disclosed.

Concerning the released data, three days before the announcement, we reported to the President and management about the details of K-drainage channel measure, as well as on the possibility of identifying the highly contaminated source (the rainwater data on

the roof of the truck bay of Unit 2 reactor building), however, the fact that the data that had been accumulated since last April had not been released was not shared with them.

● The drainage channel K history and possibility of identifying the source of highly contaminated water (data for rainwater on the top of the Unit 2 R/B truck bay entrance) was reported to management below the president three days prior to disclosure. However, the fact that the data had not been disclosed even though measurements had been taken in April of the previous year was not discussed. The SC Office and Corporate Communications Dept. confirmed the existence of the data for rainwater on the top of the Unit 2 R/B truck bay entrance on the day before it was reported to management as mentioned above. However, similar to the situation with management, the fact that the drainage channel K data had not been disclosed since April of the previous year was not discussed.

March 13, 2015
Quality Assurance and Safety Auditing Dept.

Investigation Report on the Fukushima Daiichi Nuclear Power Station Drainage channel K

1. Purpose of the Investigation

Measurement data for radiation concentrations in water from drainage channel K, which has been collected since April 2014, was not disclosed until February 24 of this year. This has resulted in criticism of TEPCO's entire concept of information disclosure. Hence, the objective of this investigation is study the circumstances and the underlying causes of the disclosure failure to verify whether or not rules were violated and if there was deliberate action to conceal the information.

2. Method of Investigation

Interviews were conducted and documents reviewed (from February 26 to March 13, 2014)

3. Results of the Investigation (Overview)

- (1) Due to the facts that ① the document entitled "Fukushima Daiichi NPS Site Drainage Channel Conditions" was distributed and explained during the regular press conference, and uploaded to the TEPCO website, on December 23, 2013, and ② as of March 2014 a report had been submitted to the national government notifying it that contaminated rainwater from drainage channel K was leaking into the ocean, this committee has determined that there was no intention whatsoever to conceal this incident.
- (2) From April 2014 onwards, the radiation concentration of the water from drainage channel K was measured and the channel was cleaned and decontaminated in accordance with the implementation plan. At this point in time it was ascertained that the concentrations increased when it rained. However, due to the facts that ① rainfall had always had an impact on measurements, and that ② the measurements were taken to establish assessment methods for managing liquid waste and to confirm the efficacy of cleaning, there was no awareness that measurement data should be disclosed.
- (3) After November 2014 information on the high radiation concentrations in drainage channel K were discussed during meetings between the Fukushima Decontamination and Decommissioning Engineering Company (hereinafter referred to as, "FDEC") management council etc., however due to the facts that ① all efforts were being

devoted to cleaning and contamination source identification, and that ② it was decided that the method and timing for explaining the situation to the public needed to be discussed separately since the countermeasures were ongoing, the numerical data was not disclosed.

- (4) It has been determined that the failure to disclose the data was not a clear violation of “Methods and Standards for Notification and Disclosure”
- (5) In response to the delay in the disclosure of data pertaining to the detection of high concentrations of tritium in 2013, it had been declared that the role of the Social Communications Office (hereinafter referred to as, “SC office”) would be clearly defined and a Radiation & Radioactivity Measurement Control Manager would be appointed to ensure speedy disclosure. However, it has been determined that neither of these efforts has been adequate.

4. Results of Investigation (Detailed)

(1) Sequence of events until March 2014

In November 2013, instructions were given by the Nuclear Regulation Authority (hereinafter referred to as, “NRA”) to sample water from all drainage channels except drainage channels B and C and to report the radiation concentration measurement results. Measurements for the water in drainage channel K were reported in November and December of the same year.

On January 24, 2014, TEPCO reported on the investigation into the state of contamination of drainage channels and the status of countermeasures during the Meeting of the Specified Nuclear Power Facilities Monitoring and Assessment Committee Meeting - Contaminated Water Measures Working Group. Specifically, it was reported that, *“Although the radiation concentration from the outlet of drainage channel K is high enough to require notification, a branching channel with comparatively higher radiation levels was discovered farther upstream. Since the drainage channel is located in a high dose area it is included in site internal decontamination plans and therefore will be cleaned and decontaminated without fail.”* (The minutes of meetings and reference documents distributed have been posted on the NRA’s website, and the reference documents distributed have been posted on the TEPCO website). On the 31st of the same month during the Specified Nuclear Power Facilities Monitoring and Assessment Committee Meeting it was reported that the notified concentration ratio at the outlet of drainage channel K was 0.75. (Notified concentration ratio is the ratio with the concentration limit of the surrounding monitored areas stipulated in Article 9 of the “Notice Stipulating Dose Limits based on the Provisions of the Ministerial Ordinance on

the Installation and Operation of Commercial Nuclear Power Reactors”). The NRA instructed that all water, including drainage channel water, be handled in the same manner as radioactive liquid waste, which is subject to effective dose regulations. And, that the effective dose objectives at power station site borders (including doses originating from solid and gaseous waste) be reduced to below 2mSv/year by the end of March 2015, and reduced to below 1mSv/year by the end of March 2016 (meeting minutes and distributed documents are available on the NRA website). During the Specified Nuclear Power Facilities Monitoring and Assessment Committee meeting held on February 14, 2014, TEPCO explained the measures being taken to reduce dose rates at site borders and for reducing dose rates to less than 1 mSv/year. Specifically, it was explained that ① radiation concentration levels in drainage water around each drainage channel shall be measured regularly and that the results will be used to ascertain average concentrations; ② it is necessary to develop new methods for assessing three-month radiation concentration averages; and, that ③ drainage channels and the surrounding areas will be cleaned in a planned manner in order to improve contaminated water conditions. At that time, the notified radiation concentration ratio at the outlet of drainage channel K was 0.48. (The minutes of the meeting have been posted on the NRA website)

Furthermore, these documents were also reviewed at the meeting of the On-site Coordination Council for Reactor Decommissioning and Contaminated Water Countermeasures (Chairman Akaba, Minister of Economy, Trade and Industry), which was held on February 18, 2014. (The minutes of the meeting have been posted on the Ministry of Economy, Trade and Industry (METI) website and the documents distributed at the meeting have been posted on the TEPCO website)

During the meeting of the Specified Nuclear Power Facilities Monitoring and Assessment Committee Meeting held on March 31, 2014, TEPCO gave an overview of the implementation plan for controlling site border effective dose rates at the Fukushima Daiichi NPS. It was explained that liquid waste is measured initially for Cs-134, 137, Sr-90 (or total beta), and H-3. And, that the sampling frequency of radiation concentrations in drainage water, and of flow measurements, will be decided by December of 2014, and that methods for calculating three-month average concentrations will be established.

Therefore, TEPCO was under the assumption that the world was aware of this issue at the point in time when the fact that contaminated rainwater from drainage channels was leaking into the ocean was reported in formal settings, and when concentration ratios required to be reported by law were publicly announced in regard to the radiation concentrations of water in drainage channel K and other drainage channels. Also, at this point in time reports had been made to the Manager of the Nuclear Power & Plant Siting Division (CNO Aizawa). Therefore, we have determined that there was no deliberate

intention to conceal information.

Furthermore, in addition to the facts mentioned above, during the regular press conference (Tokyo) held on December 13, 2013 the results of the investigation into drainage channel K entitled “Condition of Onsite Drainage Channels at the Fukushima Daiichi NPS” was distributed and explained, and this document was disclosed via the TEPCO website on the same day as materials distributed to the press. During the press conference, a reporter asked, “While the outlet of drainage channel K is located outside the port, its radiation concentration is high. How high above sea level is the outlet?” This proves that the media was aware that radiation concentrations at drainage channel outlet K were high. However, none of the newspaper articles from December 14th or 15th mentioned drainage channel K. This is because at the time contamination of groundwater on the east side of the turbine building, which was assumed to be caused by a leak from the ocean side trench, and the report at the regular press conference on December 13th that 1.8 million Bq/l of total Beta isotopes had been detected, were the main focuses of media coverage.

(Part of the investigation into whether or not the information was disclosed, and the details/timing/format of such disclosure are ongoing)

(2) After April 2014

From April 2014 regular measurements (once a week) of the radiation concentrations in drainage channel K commenced along with cleaning and decontamination of the drainage channel. The water flowing through drainage channel K is assumed to be rainwater and not water leaking from malfunctioning equipment (which would obviously have been disclosed immediately). Furthermore, information acquired through interviews has shown that ① since it had already been publicly disclosed that the [radiation concentration] measurements were being conducted to establish assessment methods in order to manage liquid waste, ② that the measurements were being used to confirm the efficacy of cleaning, and ③ that the channel was being cleaned because it is contaminated, it was assumed [that it was acceptable] to disclose radiation concentration information after all cleaning had been completed.

With respect to notification guidelines, the Nuclear Power Division felt that since the contamination of rainwater is caused by fallout (radioactive materials discharged at the time of accident), which is not subject to control, and not the result of a new accident or other trouble, it need not be reported and did not discuss the need to disclose the information with the Social Communications Office and RC. (Related to (4) mentioned below)

(3) After November 2014

At the FDEC management meeting held in November 25, 2014 it was reported that ① since regular measurements of radiation concentrations in drainage channel K commenced, the notification concentration ratio of the radiation concentration at the drainage outlet exceeded 1 during rainfall (the first time data was sampled during rainfall was on May 1, 2014), ② that the three-month average concentration estimates for April~June, July~September and October were 5.2, 5.6 and 3.1, respectively, and ③ that these concentrations greatly exceed the notification concentration ratio of 0.22, which is the maximum value that radiation concentration levels at drainage channel outlets can be if effective dose levels are to be lowered to below 2mSv/year by the end of March 2015. Based on these results, in order to hit site border effective dose rate targets it was decided that the source of the contamination would be identified, that a reinvestigation plan and countermeasures would be drafted, and that dose reduction measures would be implemented by the end of the year. However, at this time it was not discussed whether or not the radiation concentration data for drainage channel K should be disclosed.

Interviews revealed that the reasons why the aforementioned measurement data was not disclosed were because ① at the time the discussion on the method of assessing three-month average concentration levels was ongoing, ② focus was being put on countermeasures, such as cleaning the channels and identifying the source of the contamination, etc., in order to reduce dose levels at site borders, ③ it was true that concentration levels increased during rainfall, but it was assumed that this was caused by fallout, ④ rainfall drainage was not subject to regulation as of the end of March 2015, and because, ⑤ due to reasons ①~④ there was no awareness about the need to disclose the data. Furthermore, the FDEC CDO, who also attended the FDEC management meeting, concurred with this thinking.

Moreover, around the same time, a discussion about drainage channel K was held attended by the CDO of the FDEC, the Vice-president and the General Manager of the Project Planning Department, Siting Consultant, and General Manager of the Plant Siting & Regional Relations Department and all parties were aware that the radiation concentration levels for drainage channel K were high. However, at the time discussions that included the national government were still being held in regard to how to reduce radiation levels at drainage channel outlets and a conclusion had not yet been reached. So, it was decided that the details that were to be explained, and the timing of such explanation, should be examined internally in order to enable the fishery cooperatives to fully understand the situation when it was explained to them during negotiations over sub drains. Therefore, there was not deliberate intention to conceal the information. However, it is apparent that consideration was given to the impact that disclosure of the information would have on the negotiations with the fishery cooperatives.

(4) Was radiation concentration measurement data for drainage channel K subject to public disclosure in accordance with company rules?

Interviews with the SC Office and the Corporate Communications Department revealed the following. The “Notification Guidelines and Methods for Disclosure of Accidents or Problems that occur during Operation of the Fukushima Daiichi Nuclear Power Station” stipulate notification standards and disclosure methods in the event of a “*significant increase in radiation doses detected at monitoring posts (MP)*”, “*If the concentration of a discharge of radioactive waste exceeds the concentration limit specified in the laws and regulations*”, and in the event of “*a leak of nuclear fuel material or substances contaminated by nuclear fuel material outside of radiation control areas*”, however all of these instances are the result of some kind of [equipment] trouble. Since the rainwater had been flowing out from drainage channel K before the disaster occurred (although the rainwater was contaminated due to fallout from the accident) and was not a leak caused by a problem with power station equipment, and because rainwater did not fall within the scope of information to be disclosed, the act of not disclosing the measurement data from the drainage channel K outlet was not in conflict with the aforementioned rules.

(5) Degree of information sharing within the company and the adequacy of the process for determining what should be disclosed

A. Improved control by the Radiation & Radioactivity Measurement Control Manager

In response to the delay in disclosure about the discharge of highly concentrated tritium from the groundwater on the eastern side of the Fukushima Daiichi NPS Unit 1/2 turbine building into the bay on July 22, 2013, it was clearly explained in the press release entitled “RE: Failure to Disclose Information about Contaminated Water Leaking into the Bay” on July 26, 2013 that the following measures would be taken.

-Information on radioactive substance concentration and radiation dose rate measurements shall be disclosed during the planning stages of such measurements, and the results shall be quickly disclosed.

-During the planning stages of radioactive substance concentration and radiation dose measurements, action levels shall be stipulated in advance and the parties responsible for radiation and radioactivity measurements at the Fukushima Daiichi NPS and at the Head Office shall be clarified. If the measurement results exceed, or are in danger of exceeding, the action levels, the department taking the measurements shall immediately notify the aforementioned parties responsible, and those parties shall quickly assemble all departments involved in order to manage the issue with company-wide involvement.

In the process of investigating why the drainage channel K measurement data was not disclosed sooner an audit was performed to confirm that the aforementioned

countermeasures that were announced on July 26, 2013 were indeed being implemented adequately.

The results revealed that in response to the public statement mentioned above, the Head Office (the current FDEC Project Planning Department) and the Fukushima Daiichi NPS appointed radiation/radioactivity measurement managers, and decided at the internal Stabilization Deliberation Meeting on August 30, 2013 that an Analysis Process Scheduling Committee would be established at Fukushima Daiichi and that it would commence operation from September 9, 2013.

The objective of the Analysis Process Scheduling Committee, which is headed by the Radiation/Radioactivity Measurement Manager and meets in the Fukushima Daiichi Analysis Assessment GM's office every weekday, was to establish and debate analysis priorities and action levels, and to report the results of such debate to the Head Office Radiation/Radioactivity Measurement Manager.

An investigation into whether or not the drainage channel K radiation concentration measurements were discussed by the Analysis Process Scheduling Committee revealed that in response to a direct request from the Head Office based on the implementation plan said measurements were immediately made the highest priority without being examined by the Analysis Process Scheduling Committee. Therefore, discussions by the Analysis Process Scheduling Committee over the disclosure of the analysis data or the adequacy of action levels did not take place. As a result the analysis results were reported by the Fukushima Daiichi Radiation and Environment Dept. Environment Monitoring G directly to the Head Office Project Planning Dept. Radiation and Environment G (hereinafter referred to as, "Head Office Rad/Env. G") who made the request, and not conveyed to the Head Office Radiation/Radioactivity Measurement Manager.

Furthermore, a look into the operations of the Analysis Process Scheduling Committee revealed that the Fukushima Daiichi Radiation/Radioactivity Measurement Manager, who is supposed to be the chief examiner, was not in attendance and the meeting was conducted by only the Fukushima Daiichi Analysis Assessment G and requesting G, and that the results of the meeting were not being reported to the Head Office Radiation/Radioactivity Measurement Manager. Furthermore, the Fukushima Daiichi Radiation/Radioactivity Measurement Manager was under the impression that "action levels" referred to "*standards for immediately conveying analysis results to the requesting G if the action levels were exceeded*" and therefore lacked the awareness that they were rather "*standards for immediately taking company-wide action if the action levels were exceeded,*" which was the intention of the Stabilization Deliberation Committee.

Furthermore, even though the Analysis Process Scheduling Committee was supposed to meet every day, due to the subsequent introduction of Sr analysis equipment (September 27, 2013) done to improve efficiency, it was not longer necessary to have the Analysis Process

Scheduling Committee determine analysis priorities, so issues that needed to be confirmed by the office were done so via telephone with the requesting G and the Analysis Process Scheduling Committee lost substance.

As mentioned above, the direct cause of the failure to disclose information on the radiation concentrations of drainage channel K was the fact that it was never discussed by the Analysis Process Scheduling Committee, with which there were operational problems to being with.

B. Enhancing the function of the SC Office

In the press release entitled “RE: Failure to Disclose Information about Contaminated Water Leaking into the Bay” issued on July 26, 2013 it stated clearly that “*the SC Office shall check for problems related to the details or stance of the disclosure before and after the disclosure of risks related to radioactive substances and contaminated water leaks, etc., and take immediate corrective action if problems are identified.*” Interviews were conducted to check whether or not the SC Office was fulfilling this responsibility.

The Social Communications Office learned that rainwater containing high concentrations of radioactive materials was being discharged from the outlet of drainage channel K on February 20, 2015. But, since the fact that contaminated rainwater (low concentration) from drainage channel K was leaking into the ocean outside of the bay had been disclosed, the department did not realize that information concerning high concentration levels had not been disclosed. If the RC had been told that water with high concentrations [of radioactive substances] was leaking into the ocean outside of the bay when it rained, the RC would have replied that this information should be disclosed. It is not the case that the RC was careless and or that there was deliberate intent to conceal information.

According to notification guidelines the information did not have to be disclosed since the cause was rainfall, but there was awareness that high contamination levels should be disclosed in consideration of the impact on society.

The Nuclear Power Division had repeatedly given instructions to consult with the SC Office if there is even the slightest bit of doubt, but this did not take place. On the other hand, the roles of the RC are risk communication, prevention and incident resolution, but due to the number of personnel, attention to prevention was only able to be given after around July 2014 when the number of Fukushima Daiichi RC was increased from one to three after which time they were able to attend various meetings and proactively gather information. The SC Office manager and SC Office GM attended the Stabilization Deliberation meetings and the FDEC management meetings, and the Fukushima Daiichi RC attended the Stabilization Deliberation meetings, meetings at the station, and trouble review meetings, but not the FDEC management meetings where line division work is reported and discussed.

5. Findings

(1) Because the information had been disclosed to the government, and because the facts that the outlet of drainage channel K is outside the bay and that the radiation concentration of the discharged water is high had been disclosed at press conferences (and had been posted on the website as materials distributed to the press) it cannot be said with certainty that the information was concealed on purpose.

(2) However, disclosure of information (explanation to Fukushima Prefecture officials (including fishery cooperatives) and the press) on plans to regularly measure radiation concentrations in drainage channel K after April 2014, and the subsequent results was delayed. The reasons for this are as follows:

① TEPCO's policy of *"quickly and frankly conveying risks and worst case scenarios without fearing the repercussions even if the assessment results do not sufficiently provide clear proof"*, which was declared on July 26, 2013, had not sufficiently permeated throughout the company. Furthermore, there were parties that feared the impact that such disclosure would have on negotiations concerning sub drains with the fishery cooperatives.

② The SC Office was not attending meetings in a planned and systematic manner which resulted in insufficient information gathering.

a. Various meetings were being attended but the right meetings for ascertaining the status of technical deliberation by line divisions were not being selected for attendance.

b. The Head Office SC Office and the Fukushima Daiichi RC were attending the same meetings, thereby resulting in an inefficient use of time.

③ The roles of the Radiation/Radioactivity Measurement Manager and the Analysis Process Scheduling Committee, the creation of which was announced as an improvement measure in July 2013, were not being fulfilled.

④ The "Methods and Standards for Notification and Disclosure" were created to handle equipment troubles and did not stipulate how they were to be directly applied to leaks of radioactive substances caused by fallout.

6. Suggestions for Improvement

(1) Thorough review and reinforcement of basic policies

Reaffirm that the basic policy of *"quickly and frankly conveying risks and worst case scenarios without fearing the repercussions even if the assessment results do not sufficiently provide clear proof"* has permeated throughout the organization.

(2) Improve the ability to gather information by reexamining what meetings are to

be attended by the SC Office.

Up until now meetings had been attended to gather information that should be conveyed to management and information on troubles, but in order to gather information on a wider scale in consideration of the nature of the meeting, the criteria for selecting what meetings to attend should be revamped. In conjunction with this the division of responsibility for attending meetings within the SC Office should be clarified and efforts should be made to make information gathering more efficient, such as by ensuring that the Head Office SC Office and site RC do not attend the same meetings.

(3) Steady implementation and improvement of the mechanism for disclosing radiation & radioactivity measurement data

If there is anything unreasonable about the mechanisms for disclosing radiation & radioactivity measurement data, or the operation of the Analysis Schedule Coordination Committee, which was discussed by the stabilization planning conference in August 2013, rules should be clarified upon making improvements and executed without fail.

(4) Continual revision of disclosure standards in consideration of the changing circumstances at the power station and society's priorities

As contamination conditions at the power station gradually improve, disclosure standards should be continually revised so as to anticipate society's priorities and incorporate such events as the leakage of radioactive substances caused by fallout.

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