7 Summary of Actual Manipulation Results

Results of manipulation such as implementing Isolation Condenser System, Reactor Core Isolation Cooling System, Primary Containment Venting System and Alternative Water Injection etc at the power station after the earthquake show at the chart 7.1(1)～(5). Manipulation results are summarized based on confirmed exchanged information between the Headquarter and the power station, and operator task journal etc. Hereafter, it is possible that as per detailed analyses of other parameters and clear attestation by persons involved, clarification of facts advances more and we may find information related to the movement of equipment, which is not confirmed at this report. In that case, we would like to announce that facts in each case.

①Manipulation results of Isolation Condenser System ②Manipulation results of Reactor Core Isolation Cooling System ③Manipulation results of High Pressure Core Injection System ④Manipulation results of Safety Relief Valve ⑤Manipulation results of Primary Containment Venting System are shown at the Chart ７．１（1）.

⑥Results of securing power and restoring power are shown as “” at the Chart “Status of Emergency Rehabilitation by power source car” ７．１（2） and “Status of Receiving power from the off site power” at the Chart ７．１（3）.

⑦Manipulation results of usage of fire pump and injection of alternative water injection as sweater injection are shown at the Chart separately as results of water injection for the reactor and the spent fuel pool at the Chart ７．１（4）.

⑧Treatment results of accumulated contaminated water at the turbine building, outdoors trenches and outdoors ducts are shown at the Chart ７．１（5）.

Chart 7. 1 (1)　Summary of Actual Manipulation ―― Results of Reactor Coolant System, Safety Relief Valve, Primary Containment Ventilating System

	1F1	1F2	1F3
① Manipulation results of Isolation Condenser System (IC)	・3/11 14:52　IC was automatically started ・3/11 18:10　IC(A)system 2A,3A Ventilating opened／confirmed steam ・3/11 18:25　IC(A)system3A Ventilating opened ・3/11 21:19　Implemented lineup by Diesel Drive Fire Pump (D/D-FP) ・3/11 21:30　IC 3A Ventilating opened ・3/11 21:35　Being supplied by D/D-FP ・3/12 01:48　Supply stoppage due to failure if the pump instead of out of fuel when confirming D/D-FP		
② Manipulation results of Reactor Core Isolation Cooling System (RCIC)		・3/11 15:02　RCIC started manually ・3/11 15:28　RCIC tripped(L-8) ・3/12 02:55　confirmed the status of RCIC (discharge pressure at the site) ・3/12 04:20～5:00　Switched the source of RCIC from Condensate Storage Tank to suppression chamber ・3/14 13:25　RCIC stopped (presumption)	・3/11 15:06　RCIC started manually ・3/11 15:25　RCIC tripped(L-8) ・3/11 16:03　RCIC started manually ・3/12 11:36　RCIC tripped
③ Manipulation results of High Pressure Core Injection System (HPCI)	No operation	No operation	・3/12 12:35　HPCI started (L-2) ・3/13 02:42　HPCI stopped
④ Results of opening and closing of Safety Relief Valve (SRV) (manipulation to decrease reactor pressure)	No operation	・3/14 16:34　Started manipulation to decrease the pressure of Reactor Pressure Vessel (SRV opened) ・3/14 approx. 18:00　Confirmed decrease in pressure of Reactor Pressure Vessel　Hereafter, due to the problem of maintaining excitation of electromagnetic valve of SRV drive air pressure and air pressure supply line, SRV closed and reactor pressure increased presumably. ・3/14 21:20　SRV 2 valve was opened and pressure in the Reactor decreased. Recovered water level.	・3/13 approx. 09:08　Started to opened SRV　Hereafter, due to the problem of maintaining excitation of electromagnetic valve of SRV drive air pressure and air pressure supply line, SRV closed and opened presumably

	1F1	1F2	1F3
		Hereafter, due to the problem of maintaining excitation of electromagnetic valve of SRV drive air pressure and air pressure supply line, SRV closed and opened presumably	
⑤ Results of opening and closing of Containment Ventilating System	■ 3/12 10:17 Operated AO valve located suppression chamber side at main control room ・Before the above operation 3/12 approx. 09:15 Manually MO valve ventilating opened at the site (25%) 3/12 approx. 09:30 Tried manually AO valve ventilating, but abandoned due to high dose ・Because it was difficult to maintain opening due to the problem of AO valve ventilating drive air pressure, opened operation was implemented multiple times presumably. ・3/12 approx. 14:00 Set the AO valve ventilating drive temporary air compressor, hereafter, at 14:30, confirmed the decrease in pressure of Containment Vessel.	■ 3/13 11:00 Finished suppression chamber ventilating composition (Hydrogen explosion at Unit 3 of the reactor building (3/14 11:01) , confirmed valve was closed and impossible to open) . ・So, ventilating was tried multiple times presumably. 3/14 approx. 21:00 Operated valvelet open at the suppression chamber side. (3/15 0:02 confirmed close of its valvelet) ■ 3/15 0:02 Operated valvelet open at the drywell side (confirmed close of its valvelet after few minutes) Against the 2 ventilating operation above, decrease in pressure of containment vessel was not confirmed and ventilating status is unclear. In order to smoothly precede the operation to reduce of pressure of reactor pressure vessel, following operations were conducted to reduce pressure and temperature of suppression chamber, which SRV exhaust comes in. ・3/14 approx. 16:00 Operate valve open at the suppression chamber side (Same day, approx. 16:20 confirmed close of its valve)	■ 3/13 8:41 Finished ventilating composition by AO valve operation at the suppression chamber. With regard to this operation, ・3/13 approx. 9:08 Reduce pressure of reactor pressure vessel by Safety Relief Valve (pressure of primary containment vessel increased) ・3/13 approx. 9:20 confirmed decrease in pressure of reactor containment vessel. ・3/13 11:17 Confirmed ventilating AO valve closed due to the outlet of drive air pressure. ・Hereafter, due to the problem of maintaining excitation of electromagnetic valve of AO drive air pressure and air pressure supply line, it was difficult to maintain opening, and multiple times of opening operation were implemented. - 3/13 12:30 opening operation／3/15 16:00 confirmed close - 3/15 16:05 opening operation／3/17 21:00 confirmed close - 3/17 approx. 21:30 opening operation／3/18 5:30 confirmed close - 3/18 approx. 5:30 opening operation／3/19 11:30 confirmed close - 3/20 approx. 11:25 opening operation／4/8 approx. 18:30 confirmed close ■ 3/14 5:20 Operated AP valve at the suppression chamber side and at 6:10, confirmed its valve opened. Next day, at 16:00, confirmed the status as closed. Hereafter, due to the problem of maintaining excitation of electromagnetic valve of AO drive air supply line, it was difficult to maintain AO valve opened, and opening operation were implemented presumably. - 3/16 1:55 opening operation／4/8 approx. 18:30 confirmed close

Chart 7. 1 (2)　Summary of Actual Manipulation ―― Securing the power source and results of rehabilitation (status of emergency rehabilitation by power source cars)

	1F1	1F2	1F3	1F4	1F5	1F6	Common Spent Fuel Pool Centralized RW
・3/11 approx. 17:00	Requested power source cars to the Distribution Department from Nuclear Power Department at Headquarter meeting						
・3/11 approx. 17:00	Distribution Department instructed to secure power source cars to all branches of the company						
・3/11 approx. 18:20	Requested to Tohoku Electric Power Company to dispatch high voltage power source car (We received information that our power source cars of each branch cannot go to Fukushima due to damage of roads and traffic congestion)						
・3/11 midnight	Prepared receiving power source cares ・ Deliberate the location of power source cars ・ Deliberate the cable line route (power source cars and load (P/C 2C (alternative water injection)) connection) ・ Arrange workers who lines cable and explained the operation ・ Procure cables (they were stored at the site for the outage work (prepared to procure cables from other place (Ibaraki prefecture), but we could procure required cables for a time)						
・3/11 approx. 23:00	First power source car (Tohoku Electric Power Company) arrived at Fukushima Daiichi Nuclear Power Station						
・3/12 before dawn	Lined cables and connection operation ・ Operation involved difficulties due to poor working condition (darkness, water puddle due to Tsunami, obstacles, missing hatches of manhole etc) ・ During operation, evacuation to the upland due to Tsunami warning						
・3/12 as of 3:00	11 power source cars at the site						
・3/12 approx. 7:00	3 power source cars of self-defense force arrived at the site						
・3/12 approx. 15:00	Completed the cable connection to the load (power center 2C) and preparing receiving power						
・3/12 15:36	Explosion occurred at the reactor building of Unit 1. Lined cables were damaged due to the rubbles caused by the explosion. High voltage power source cars were automatically stopped.						
・After the explosion of Unit 1～just before the explosion of Unit 3	Prepared cables and conducted re-lining cables						
・3/14 11:01			Explosion occurred at the reactor building of Unit 3. Power source cars were damaged due to the rubbles caused by the explosion.				

[Replaced on June 13, 2011]

Table 7.1(3) Summary of Operation Results -- Result of securing power source and restoration (Restoration by receiving external source of power)

1F1	1F2	1F3	1F4	1F5	1F6	Common pool Centralized RW
■ 480V P/C2C power received. (3/20 15:46) ・ Temporary power from Toden Genshiryoku line of Tohoku Electric. ■ MUW system insulation checked (3/21 zero Ω) ■ Main BUS panel for instruments power received. AC120V（3/23 1:40） ■ Main control room lighting restored (3/24 11:30) ■ Monitoring Post (MP-5～8) restored ■ 1/2u – 3/4u tie line cabled (Toden Gensiryoku line – Okuma line mutually available)(4/19 10:23) ■ 5/6u tie line cabled btw transmission BUS. (4/25) ■ 3/29 8:32 Reactor water injection switched from fire pump to temporary electricity pump. ■ 4/3 11:50 Reactor water injection temporary electricity pump power source switched from temporary power to main power. ■ 4/11 17:16 Reactor water injection pump 1u to 3u tripped due to external power shutdown of 1/2u (Toden Genshiryoku line of Tohoku Electric) by earthquake. ■ 4/11 17:56 1/2u external power (Toden Genshiryoku line of Tohoku Electric) restored. ■ 4/11 18:04 Reactor water injection pump of 1u to 3u restarted. (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi	■ 480V P/C2C power received. (3/20 15:46) ・ Temporary power from Toden Genshiryoku line of Tohoku Electric. ■ T/B MCC 2A-1 power received. (3/26 16:40) ■ Main control room lighting restored.(3/26 16:46) ■ 1/2u – 3/4u tie line cabled (Toden Gensiryoku line – Okuma line mutually available)(4/19 10:23) ■ 5/6u tie line cabled btw transmission BUS. (4/25) ■ 3/27 18:31 Reactor water injection switched from fire pump to temporary electricity pump. ■ 3/29 16:30 SFP water injection switched from fire pump to temporary electricity pump. ■ 4/3 11:50 Reactor water injection temporary electricity pump power source switched from temporary power to main power. ■ 4/11 17:16 Reactor water injection pump 1u to 3u tripped due to external power shutdown of 1/2u (Toden Genshiryoku line of Tohoku Electric) by earthquake. ■ 4/11 17:56 1/2u external power (Toden Genshiryoku line of Tohoku Electric) restored. ■ 4/11 18:04 Reactor water injection pump of 1u to 3u restarted. (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)	■ P/C(4D) power received (3/22 10:36) ・ Temporary power from Yonomori line 1L via Okuma line. ・ 3/18 14:28 3/4u M/C vehicle testing charge completed. ・ 3/19 installing multi circuit switching gear and cabling completed. ・ 3/20 cabling site inspection from switching gear to ・ 3/21 cabling completed. ・ Power shut down due to 3/4u external power reinforcement plan (upgrading 66kv)(4/26 10:23～15:27) ■ T/B MCC 3C-2 power received. (3/22 22:10) ■ T/B MCC 3C-1 (3/22 22:21) ■ Main BUS panel for instruments power received. AC120V(3/22 22:28) ■ Main control room lighting restored (3/22 22:46) ■ T/B MCC 3D-1 power received.(3/29) ■ T/B MCC 3A-1 power received (3/30) ■ 1/2u – 3/4u tie line cabled (Toden Gensiryoku line – Okuma line mutually available)(4/19 10:23) ■ 3/28 8:30 Reactor water injection temporary electricity pump power source switched from temporary power to main power. ■ 4/3 11:50 Reactor water injection temporary electricity pump power source switched from temporary power to main power. ■ 4/11 17:16 Reactor water injection pump 1u to 3u	■ P/C(4D) power received (3/22 10:35) ・ Power shut down due to 3/4u external power reinforcement plan (upgrading 66kv)(4/26 10:23～15:27) ■ Main BUS panel for instruments power received. AC120V(3/23 1:40) ■ Main control room lighting restored (3/29 11:56) ■ 1/2u – 3/4u tie line cabled ■ (Toden Gensiryoku line – Okuma line mutually available)(4/19 10:23) (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)	■ Power supply using sound part of Yonomori line (1L, 2L). ■ Power received from Str 5SA to M/C(6C)(3/21 11:36), from M/C6C to P/C(5A-1)(3/22 20:13) ・ Power supply sound part of Yonomori line (1L, 2L). ■ Normal line 5A, 5B unavailable. ■ Temporary pumps(RHRS) installed and operating(powered by P/C) ■ Main Anti-Earthquake Building received power (3/24 8:48). ■ Water treatment building received power (3/24 9:10) ■ Monitoring Post(MP-1～4), temporary cable installed and connected.(3/26) ■ T/BMCC5D-2 received power.(3/31) ■ 5/6u tie line cabled btw transmission BUS. (4/25) ■ 3/19 5:00 RHR(C) started up. ■ 3/23 17:24 Temporary RHRS tripped at commissioning after power source switched from temporary power to main power. ■ 3/24 16:14 Temporary RHRS restarted. RHR pump started up by SHC mode. (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)	■ Power supply using sound part of Yonomori line (1L, 2L). ■ Power received from Str 5SA to M/C(6C)(3/21 11:36), from M/C(6D) to P/C(5A-1)(3/22 19:17) ・ Power supply sound part of Yonomori line (1L, 2L). ■ Normal line 6A, 6B unavailable. ■ Temporary pumps(RHRS alternative) installed and operating(powered by P/C) ■ Installed cable testing.(3/20) ■ Monitoring Post (MP-1～4) ■ 5/6u tie line cabled btw transmission BUS. (4/25) ■ 3/19 4:22 D/G(A) started up. ■ 3/19 5:11 FPC started up. ■ 3/19 21:26 Temporary RHRS pump started up. ■ 3/19 22:14 RHR(B) started up. ■ 3/25 15:38, 42 two RHRS pumps power switched from temporary power to main power. (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)	■ Common pool temporary power restored.(3/24 18:05 15:37) ・ 3/24 18:05 Fuel pool cooling pump started up. ・ Common pool temporary power tripped (4/17 14:36～17:30. Cooling function restored at 17:44. Short circuit of Takaido switching gear 1L925 due to operation practice for next day operation of isolation suspected(actually L921 has tripped). (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)

[Replaced on June 13, 2011]

1F1	1F2	1F3	1F4	1F5	1F6	Common pool Centralized RW
NPS”)		tripped due to external power shutdown of 1/2u (Toden Genshiryoku line of Tohoku Electric) by earthquake. ■ 4/11 17:56 1/2u external power (Toden Genshiryoku line of Tohoku Electric) restored. ■ 4/11 18:04 Reactor water injection pump of 1u to 3u restarted. (Current power condition, as of 4/26, will be shown in “single-line diagram of Unit 1 to 4 of Fukushima Daiichi NPS”)				

Chart 7. 1 (4) Summary of Actual Manipulation —— Manipulation results of Fire pump usage and alternative water injection such as sweater injection etc.

	1F1	1F2	1F3	1F4
Results of water injection to the reactor	・3/12 from 05:46, started fresh water injection by the fire pump and continued 80t of injection until at 14:53 on the same day. ・3/12 from 19:04, started sea water injection and stopped at 19:25. ・3/12 from 20:20 started sea water injection and including boric acid. Please refer to Reference-1, including above manipulation results	・3/14 at 16:34, started sea water injection by fire protection system line ・3/14 at 19:20, fire pump was stopped due to the out of fuel, but each at 19:54 and 19:57, started-up each fire pump and started seawater injection ・Approx. 21:20, confirmed recovery trend of the reactor water level Please refer to Reference－1 including above manipulation results	・3/13 at 09:25, started fresh water injection with boric acid ・3/13 at 13:12, switched from fresh water injection to sea water injection. 3/14 1:10～3:20, stopped injection, for refilling water to the water source pit. Please refer to Reference－1 including above manipulation results	
Results of water injection to the spent fuel pool	・Implemented water injection by the concrete pumping vehicle Please refer to Reference－2 as results of operation	・Implemented water injection accordingly with FPC(Fuel Pool Cooling and Filtering System) by using temporary driven motor Please refer to Reference－2 as results of operation	・In the early stage, water injection was implemented by helicopter, high-pressure water truck, bending spray tower vehicle. Then, periodic water injection was implemented by the concrete pump vehicle Please refer to Reference－2 as results of operation	・In the early stage, water injection was implemented by high-pressure water truck. Then, periodic water injection was implemented by the concrete pump vehicle. Please refer to Reference－2 as results of operation

Chart 7．1（5）　Summary of Actual Manipulation ―― Results of water treatment at turbine building, outside trench・duct accumulated water

1F1	1F2	1F3	1F4	1F5	1F6	Common Fuel Spent Pool Centralized RW
・Underground of T/B→H/W（3/24 17:10～3/29 17:30） ・Transferring from CST→SPT（3/31 12:00～3/31 14:24，3/31 15:25～～4/2 15:26） ・Transferring from H/W→CST(4/3 13:55 started～4/10 9:30 finished) Trench discharging operation ・Trench→Centralized R/W pellet storage（3/31 9:20～11:25）	・Transferring CST→SPT（3/29 16:45～3/31 14:24，3/31 15:25～4/1 11:50） ・Transferring H/W→CST（4/2 17:10～4/9 13:10） Trench discharge operation ・Confirmed stoppage of water inflow（4/6 approx. 5:38） ・Implemented covering with rubber plate and jack base to the part, which water leaked of the pit.(4/6 approx. 13:15) Poured liquid chemicals as a countermeasure for water stop.(4/7～4/10) ・Transferring from Vertical shaft→H/W 4/12 19:35～4/13 11:00 4/13 15:02～17:04 finished ・Transferring from vertical shaft→centralized R/W 4/19 10:08～being implemented	・Transferring CST→SPT surge tank(A) 3/28 17:40～3/31 8:37	・Transferring from centralized RW→T/B（4/2 14:25 started） ・Increased number of transferring pump from 1 to 5. Transferring pump is used from Centralized RW to T/B（4/3 10:00～4/4 9:22）Stopped transferring due to the increase of water level at the vertical shaft of 1F3	・Discharging contaminated water from sub-drain to the sea. Amount of discharge：950m3 (4/5 started at 17:25～4/8 finished at 12:14) ・RHR pump room、draw accumulated contaminated water at CS pump room to torus room(3/28～continuing) ・R/B discharge operation Transferring from CS room→torus room (3/28～continuing)	・Underground of R/W→discharge to H/W（4/1 13:40～4/2 10:00） ・Discharging contaminated water from sub-drain pit to the sea. Amount of discharge：372.6m3 (4/4 started at 21:00～4/9 finished at 18:52) ・T/B→H/W 移送 (4/19)	・Discharging accumulated contaminated water at centralized RW（4/4 started at 19:03～4/10 finished at 17:40）. Amount of discharge：9070m3 ・Countermeasure for water stop at process building. Preventing underground water inflow to the building. 4/16～4/18 Completed concrete installation ・Transferring high doze water of Unit 2 to centralized RW. (4/19 10:08～)

[Replaced on June 13, 2011]

Attachment-2

(Exhibit-1)

Volume of water injected into the reactor of Unit 1 to Unit 3 of Fukushima Nuclear Power Station <Estimation>

(Start of seawater injection*) ～ May 15, 2011

* For Unit 1, there were 80 kl of fresh water injected before injecting sea water. For Unit 3, there were uncertain amount of fresh water injected before swithing to seawater during May 12 to 13.

(Note) Volume stated above contains result of calcuration using temporary flow meters and not taking instantaneous variance of flow into consideration and may different from actual volume of water injected into the reactor.

Date	Unit 1 Fukushima Daiichi NPS			Unit 2 Fukushima Daiichi NPS			Unit 3 Fukushima Daiichi NPS		
	volume (per day)	accum. (seawater)	accum. (fresh water)	volume (per day)	accum. (seawater)	accum. (fresh water)	volume (per day)	accum. (seawater)	accum. (fresh water)
2011/3/12	approx. 31 kL (seawater)	approx. 31 kL					approx. 390 kL (seawater)	approx. 390 kL	
2011/3/13	approx. 259 kL (seawater)	approx. 290 kL		approx. 416 kL (seawater)	approx. 416 kL		approx. 319 kL (seawater)	approx. 709 kL	
2011/3/14	approx. 56 kL (seawater)	approx. 346 kL		approx. 1,872 kL (seawater)	approx. 2,288 kL		approx. 774 kL (seawater)	approx. 1,483 kL	
2011/3/15	approx. 259 kL (seawater)	approx. 605 kL		approx. 1,872 kL (seawater)	approx. 4,160 kL		approx. 864 kL (seawater)	approx. 2,347 kL	
2011/3/16	approx. 259 kL (seawater)	approx. 864 kL		approx. 1,157 kL (seawater)	approx. 5,317 kL		approx. 490 kL (seawater)	approx. 2,836 kL	
2011/3/17	approx. 294 kL (seawater)	approx. 1,158 kL		approx. 802 kL (seawater)	approx. 6,119 kL		approx. 360 kL (seawater)	approx. 3,196 kL	
2011/3/18	approx. 475 kL (seawater)	approx. 1,633 kL		approx. 711 kL (seawater)	approx. 6,830 kL		approx. 494 kL (seawater)	approx. 3,691 kL	
2011/3/19	approx. 449 kL (seawater)	approx. 2,082 kL		approx. 480 kL (seawater)	approx. 7,310 kL		approx. 393 kL (seawater)	approx. 4,083 kL	
2011/3/20	approx. 48 kL (seawater)	approx. 2,130 kL		approx. 384 kL (seawater)	approx. 7,694 kL		approx. 24 kL (seawater)	approx. 4,107 kL	
2011/3/21	approx. 38 kL (seawater)	approx. 2,167 kL		approx. 261 kL (seawater)	approx. 7,955 kL		approx. 24 kL (seawater)	approx. 4,131 kL	
2011/3/22	approx. 42 kL (seawater)	approx. 2,209 kL		approx. 279 kL (seawater)	approx. 8,234 kL		approx. 24 kL (seawater)	approx. 4,155 kL	
2011/3/23	approx. 301 kL (seawater)	approx. 2,510 kL		approx. 278 kL (seawater)	approx. 8,512 kL		approx. 69 kL (seawater)	approx. 4,225 kL	
2011/3/24	approx. 226 kL (seawater)	approx. 2,736 kL					approx. 271 kL (seawater)	approx. 4,495 kL	
2011/3/25	approx. 106 kL (seawater)	approx. 2,842 kL		approx. 478 kL (seawater)	approx. 8,990 kL				
	approx. 60 kL (fresh water)		approx. 60 kL				approx. 88 kL (fresh water)		approx. 88 kL
2011/3/26	approx. 173 kL (fresh water)		approx. 233 kL	approx. 207 kL (seawater)	approx. 9,197 kL		approx. 336 kL (fresh water)		approx. 424 kL
				approx. 245 kL (fresh water)		approx. 245 kL			
2011/3/27	approx. 169 kL (fresh water)		approx. 402 kL	approx. 382 kL (fresh water)		approx. 627 kL	approx. 311 kL (fresh water)		approx. 735 kL
2011/3/28	approx. 169 kL (fresh water)		approx. 571 kL	approx. 169 kL (fresh water)		approx. 797 kL	approx. 295 kL (fresh water)		approx. 1,030 kL
2011/3/29	approx. 196 kL (fresh water)		approx. 767 kL	approx. 168 kL (fresh water)		approx. 965 kL	approx. 241 kL (fresh water)		approx. 1,271 kL
2011/3/30	approx. 192 kL (fresh water)		approx. 958 kL	approx. 192 kL (fresh water)		approx. 1,157 kL	approx. 167 kL (fresh water)		approx. 1,438 kL
2011/3/31	approx. 192 kL (fresh water)		approx. 1,150 kL	approx. 216 kL (fresh water)		approx. 1,373 kL	approx. 167 kL (fresh water)		approx. 1,605 kL
2011/4/1	approx. 184 kL (fresh water)		approx. 1,334 kL	approx. 216 kL (fresh water)		approx. 1,589 kL	approx. 167 kL (fresh water)		approx. 1,772 kL
2011/4/2	approx. 165 kL (fresh water)		approx. 1,499 kL	approx. 213 kL (fresh water)		approx. 1,802 kL	approx. 167 kL (fresh water)		approx. 1,939 kL
2011/4/3	approx. 147 kL (fresh water)		approx. 1,646 kL	approx. 192 kL (fresh water)		approx. 1,994 kL	approx. 173 kL (fresh water)		approx. 2,112 kL
2011/4/4	approx. 144 kL (fresh water)		approx. 1,790 kL	approx. 192 kL (fresh water)		approx. 2,185 kL	approx. 168 kL (fresh water)		approx. 2,280 kL
2011/4/5	approx. 144 kL (fresh water)		approx. 1,934 kL	approx. 192 kL (fresh water)		approx. 2,377 kL	approx. 168 kL (fresh water)		approx. 2,448 kL
2011/4/6	approx. 144 kL (fresh water)		approx. 2,078 kL	approx. 192 kL (fresh water)		approx. 2,568 kL	approx. 168 kL (fresh water)		approx. 2,616 kL
2011/4/7	approx. 144 kL (fresh water)		approx. 2,222 kL	approx. 187 kL (fresh water)		approx. 2,755 kL	approx. 168 kL (fresh water)		approx. 2,784 kL
2011/4/8	approx. 144 kL (fresh water)		approx. 2,366 kL	approx. 168 kL (fresh water)		approx. 2,923 kL	approx. 168 kL (fresh water)		approx. 2,952 kL
2011/4/9	approx. 144 kL (fresh water)		approx. 2,510 kL	approx. 168 kL (fresh water)		approx. 3,091 kL	approx. 168 kL (fresh water)		approx. 3,120 kL
2011/4/10	approx. 144 kL (fresh water)		approx. 2,654 kL	approx. 168 kL (fresh water)		approx. 3,259 kL	approx. 168 kL (fresh water)		approx. 3,288 kL
2011/4/11	approx. 139 kL (fresh water)		approx. 2,793 kL	approx. 162 kL (fresh water)		approx. 3,421 kL	approx. 162 kL (fresh water)		approx. 3,450 kL
2011/4/12	approx. 144 kL (fresh water)		approx. 2,937 kL	approx. 168 kL (fresh water)		approx. 3,589 kL	approx. 168 kL (fresh water)		approx. 3,618 kL
2011/4/13	approx. 144 kL (fresh water)		approx. 3,081 kL	approx. 168 kL (fresh water)		approx. 3,757 kL	approx. 168 kL (fresh water)		approx. 3,786 kL
2011/4/14	approx. 144 kL (fresh water)		approx. 3,225 kL	approx. 168 kL (fresh water)		approx. 3,925 kL	approx. 168 kL (fresh water)		approx. 3,954 kL
2011/4/15	approx. 144 kL (fresh water)		approx. 3,369 kL	approx. 167 kL (fresh water)		approx. 4,092 kL	approx. 168 kL (fresh water)		approx. 4,122 kL
2011/4/16	approx. 144 kL (fresh water)		approx. 3,513 kL	approx. 168 kL (fresh water)		approx. 4,260 kL	approx. 168 kL (fresh water)		approx. 4,290 kL
2011/4/17	approx. 144 kL (fresh water)		approx. 3,657 kL	approx. 168 kL (fresh water)		approx. 4,428 kL	approx. 168 kL (fresh water)		approx. 4,458 kL
2011/4/18	approx. 144 kL (fresh water)		approx. 3,801 kL	approx. 168 kL (fresh water)		approx. 4,595 kL	approx. 168 kL (fresh water)		approx. 4,626 kL
2011/4/19	approx. 144 kL (fresh water)		approx. 3,945 kL	approx. 168 kL (fresh water)		approx. 4,763 kL	approx. 168 kL (fresh water)		approx. 4,794 kL
2011/4/20	approx. 134 kL (fresh water)		approx. 4,079 kL	approx. 168 kL (fresh water)		approx. 4,931 kL	approx. 144 kL (fresh water)		approx. 4,938 kL
2011/4/21	approx. 139 kL (fresh water)		approx. 4,218 kL	approx. 169 kL (fresh water)		approx. 5,100 kL	approx. 154 kL (fresh water)		approx. 5,092 kL

[Replaced on June 13, 2011]

Attachment-2

Date	Unit 1 Fukushima Daiichi NPS			Unit 2 Fukushima Daiichi NPS			Unit 3 Fukushima Daiichi NPS		
	volume (per day)	accum. (seawater)	accum. (fresh water)	volume (per day)	accum. (seawater)	accum. (fresh water)	volume (per day)	accum. (seawater)	accum. (fresh water)
2011/4/22	approx. 144 kL (fresh water)		approx. 4,362 kL	approx. 168 kL (fresh water)		approx. 5,268 kL	approx. 161 kL (fresh water)		approx. 5,254 kL
2011/4/23	approx. 143 kL (fresh water)		approx. 4,505 kL	approx. 166 kL (fresh water)		approx. 5,434 kL	approx. 160 kL (fresh water)		approx. 5,413 kL
2011/4/24	approx. 143 kL (fresh water)		approx. 4,649 kL	approx. 167 kL (fresh water)		approx. 5,601 kL	approx. 163 kL (fresh water)		approx. 5,576 kL
2011/4/25	approx. 143 kL (fresh water)		approx. 4,792 kL	approx. 168 kL (fresh water)		approx. 5,769 kL	approx. 164 kL (fresh water)		approx. 5,741 kL
2011/4/26	approx. 145 kL (fresh water)		approx. 4,937 kL	approx. 167 kL (fresh water)		approx. 5,936 kL	approx. 161 kL (fresh water)		approx. 5,902 kL
2011/4/27	approx. 200 kL (fresh water)		approx. 5,136 kL	approx. 167 kL (fresh water)		approx. 6,103 kL	approx. 161 kL (fresh water)		approx. 6,063 kL
2011/4/28	approx. 240 kL (fresh water)		approx. 5,376 kL	approx. 168 kL (fresh water)		approx. 6,271 kL	approx. 163 kL (fresh water)		approx. 6,226 kL
2011/4/29	approx. 185 kL (fresh water)		approx. 5,562 kL	approx. 167 kL (fresh water)		approx. 6,438 kL	approx. 159 kL (fresh water)		approx. 6,386 kL
2011/4/30	approx. 144 kL (fresh water)		approx. 5,706 kL	approx. 166 kL (fresh water)		approx. 6,604 kL	approx. 156 kL (fresh water)		approx. 6,542 kL
2011/5/1	approx. 144 kL (fresh water)		approx. 5,850 kL	approx. 166 kL (fresh water)		approx. 6,769 kL	approx. 157 kL (fresh water)		approx. 6,699 kL
2011/5/2	approx. 143 kL (fresh water)		approx. 5,993 kL	approx. 168 kL (fresh water)		approx. 6,937 kL	approx. 163 kL (fresh water)		approx. 6,861 kL
2011/5/3	approx. 143 kL (fresh water)		approx. 6,136 kL	approx. 168 kL (fresh water)		approx. 7,105 kL	approx. 165 kL (fresh water)		approx. 7,027 kL
2011/5/4	approx. 144 kL (fresh water)		approx. 6,280 kL	approx. 167 kL (fresh water)		approx. 7,272 kL	approx. 195 kL (fresh water)		approx. 7,222 kL
2011/5/5	approx. 144 kL (fresh water)		approx. 6,424 kL	approx. 168 kL (fresh water)		approx. 7,440 kL	approx. 216 kL (fresh water)		approx. 7,438 kL
2011/5/6	approx. 172 kL (fresh water)		approx. 6,596 kL	approx. 168 kL (fresh water)		approx. 7,608 kL	approx. 216 kL (fresh water)		approx. 7,654 kL
2011/5/7	approx. 192 kL (fresh water)		approx. 6,788 kL	approx. 168 kL (fresh water)		approx. 7,776 kL	approx. 216 kL (fresh water)		approx. 7,870 kL
2011/5/8	approx. 192 kL (fresh water)		approx. 6,980 kL	approx. 168 kL (fresh water)		approx. 7,944 kL	approx. 216 kL (fresh water)		approx. 8,086 kL
2011/5/9	approx. 192 kL (fresh water)		approx. 7,172 kL	approx. 168 kL (fresh water)		approx. 8,112 kL	approx. 216 kL (fresh water)		approx. 8,302 kL
2011/5/10	approx. 192 kL (fresh water)		approx. 7,364 kL	approx. 167 kL (fresh water)		approx. 8,279 kL	approx. 216 kL (fresh water)		approx. 8,518 kL
2011/5/11	approx. 191 kL (fresh water)		approx. 7,556 kL	approx. 168 kL (fresh water)		approx. 8,446 kL	approx. 216 kL (fresh water)		approx. 8,733 kL
2011/5/12	approx. 190 kL (fresh water)		approx. 7,746 kL	approx. 167 kL (fresh water)		approx. 8,613 kL	approx. 235 kL (fresh water)		approx. 8,968 kL
2011/5/13	approx. 191 kL (fresh water)		approx. 7,936 kL	approx. 166 kL (fresh water)		approx. 8,779 kL	approx. 287 kL (fresh water)		approx. 9,255 kL
2011/5/14	approx. 192 kL (fresh water)		approx. 8,128 kL	approx. 168 kL (fresh water)		approx. 8,947 kL	approx. 337 kL (fresh water)		approx. 9,592 kL
2011/5/15	approx. 213 kL (fresh water)		approx. 8,341 kL	approx. 168 kL (fresh water)		approx. 9,115 kL	approx. 370 kL (fresh water)		approx. 9,963 kL
	Total	approx. 11,183 kL		Total	approx. 18,312 kL		Total	approx. 14,458 kL	

[Replaced on June 13, 2011]

Attachment-3

(Appendix-2)

Status of injecting water into the spent fuel pool in Fukushima Daiichi Nuclear Power Station

Unit 1

Date	Measure	Type	Amount of water injection(t)
3/31 13:03～16:04	TEPCO's concrete pumping vehicle(62m-class)	Fresh water	90
4/2 17:16～17:19	TEPCO's concrete pumping vehicle(62m-class)	Fresh water	(Confirmation of position of water spray)
5/14 15:07～15:18 (spraying)	TEPCO's concrete pumping vehicle (62m-class)	Fresh water	— (Cancelled due to strong winds)

Unit 2

Date	Measure	Tyrp	Amount of water injection(t)
3/20 15:05～17:20	FPC	Sea water	40
3/22 16:07～17:01	FPC	Sea water	18
3/25 10:30～12:19	FPC	Sea water	30
3/29 16:30～18:25	F P C	Fresh water	15～30
3/30 19:05～23:50	F P C	Fresh water	Below 20
4/1 14:56～17:05	F P C	Fresh water	70
4/4 11:05～13:37	F P C	Fresh water	70
4/7 13:29～14:34	F P C	Fresh water	36
4/10 10:37～12:38	F P C	Fresh water	60
4/13 13:15～14:55	F P C	Fresh water	60
4/16 10:13～11:54	F P C	Fresh water	45
4/19 16:08～17:28	F P C	Fresh water	47
4/22 15:55～17:40	F P C	Fresh water	50
4/25 10:12～11:18	F P C	Fresh water	38
4/28 10:15～11:28	F P C	Fresh water	43
5/2 10:05～11:40	F P C	Fresh water	55
5/6 9:36～11:16	F P C	Fresh water	58
5/10 13:09～14:45	F P C	Fresh water	56
5/14 13:00～14:37	F P C	Fresh water	56

Status of Water Injection to Spent Fuel Pool of Fukushima Daiichi Nuclear Power Station

Unit 3

Date	Measure	Type	Amount of Water Injection(t)
3/17 9:48～10:01	Helicopter, Self-Defense Force	Sea water	30
3/17 19:05～19:13	The riot's high-pressure water cannon truck	Sea water	44
3/17 19:35～,19:45～,19:53～, 20:00～,20:07～20:09	High-pressure water cannon truck, Self-Defense Force	Real water	30
3/18 approx. 14:00～14:38	High-pressure water cannon truck, Self-Defense Force	Real water	40
3/18 14:42～14:45	High-pressure water cannon truck, US Forces	Real water	2
3/19 0:30～1:10	Bending spray tower vehicle etc, Tokyo Fire Department	Sea water	60
3/19 14:10～3/20 3:40	Bending spray tower vehicle etc, Tokyo Fire Department	Sea water	2430
3/20 approx. 21:36～3/21 3:58	Bending spray tower vehicle etc, Tokyo Fire Department	Sea water	1137
3/22 15:10～15:59	Bending spray tower vehicle etc, Tokyo Fire Department (Tokyo Fire Department･Osaka municipal Fire Department)	Sea water	150
3/23 11:03～13:20	FPC	Sea water	35
3/24 approx. 5:35～approx. 16:05	FPC	Sea water	120
3/25 13:28～16:00	Bending spray tower vehicle etc, Tokyo Fire Department	Sea water	450
3/27 12:34～14:36	TEPCO concrete pumping vehicle(52m class)	Sea water	100
3/29 14:17～18:18	TEPCO concrete pumping vehicle(52m class)	Fresh water	100
3/31 16:30～19:33	TEPCO concrete pumping vehicle(52m class)	Fresh water	105
4/2 9:52～12:54	TEPCO concrete pumping vehicle(52m class)	Fresh water	75
4/4 17:03～19:19	TEPCO concrete pumping vehicle(52m class)	Fresh water	70
4/7 6:53～8:53	TEPCO concrete pumping vehicle(52m class)	Fresh water	70
4/8 17:06～20:00	TEPCO concrete pumping vehicle(52m class)	Fresh water	75
4/10 17:15～19:15	TEPCO concrete pumping vehicle(52m class)	Fresh water	80
4/12 16:26～17:16	TEPCO concrete pumping vehicle(62m class)	Fresh water	35
4/14 15:56～16:32	TEPCO concrete pumping vehicle(62m class)	Fresh water	25
4/18 14:17～15:02	TEPCO concrete pumping vehicle(62m class)	Fresh water	30
4/22 14:19～15:40	TEPCO concrete pumping vehicle(62m class)	Fresh water	50
4/26 12:00～12:02	TEPCO concrete pumping vehicle(62m class)	Fresh water	(confirmed water surface)
4/26 12:25～14:02	FPC	Fresh water	47.5
5/8 11:38 (measured water level) 12:10～14:10 (water injection) 14:10～14:50 (measured water level、sampling)	FPC	Fresh water	(measured water level、sampling) 60
5/9 12:14～15:00 (water injection) (measured water level around the time of water injection)	FPC	Fresh water	(measured water level) 80

Unit 4

Date	Measure	Type	Amount of Water Injection(t)
3/20 8:21～9:40	High-pressure water cannon truck, Self-Defense Force	Real water	80
3/20 18:30頃～19:46	High-pressure water cannon truck, Self-Defense Force	Real water	80
3/21 6:37～8:41	High-pressure water cannon truck, Self-Defense Force	Real water	90
3/21 8:38～8:41	High-pressure water cannon truck, US Forces	Real water	2.2
3/22 17:17～20:32	TEPCO concrete pumping vehicle(58m class)	Sea water	150
3/23 10:00～13:02	TEPCO concrete pumping vehicle(58m class)	Sea water	125
3/24 14:36～17:30	TEPCO concrete pumping vehicle(58m class)	Sea water	150
3/25 6:05～10:20	FPC	Sea water	21
3/25 19:05～22:07	TEPCO concrete pumping vehicle(58m class)	Sea water	150
3/27 16:55～19:25	TEPCO concrete pumping vehicle(58m class)	Sea water	125
3/30 14:04～18:33	TEPCO concrete pumping vehicle(58m class)	Fresh water	140
4/1 8:28～14:14	TEPCO concrete pumping vehicle(58m class)	Fresh water	180
4/3 17:14～22:16	TEPCO concrete pumping vehicle(58m class)	Fresh water	180
4/5 17:35～18:22	TEPCO concrete pumping vehicle (62m class)	Fresh water	20
4/7 18:23～19:40	TEPCO concrete pumping vehicle (62m class)	Fresh water	38
4/9 17:07～19:24	TEPCO concrete pumping vehicle (62m class)	Fresh water	90
4/13 0:30～6:57	TEPCO concrete pumping vehicle (62m class)	Fresh water	195
4/15 14:30～18:29	TEPCO concrete pumping vehicle (62m class)	Fresh water	140
4/17 17:39～21:22	TEPCO concrete pumping vehicle (62m class)	Fresh water	140
4/19 10:17～11:35	TEPCO concrete pumping vehicle (62m class)	Fresh water	40
4/20 17:08～20:31	TEPCO concrete pumping vehicle (62m class)	Fresh water	100
4/21 17:14～21:20	TEPCO concrete pumping vehicle (62m class)	Fresh water	140
4/22 17:52～23:53	TEPCO concrete pumping vehicle (62m class)	Fresh water	200
4/23 12:30～16:44	TEPCO concrete pumping vehicle (62m class)	Fresh water	140
4/24 12:25～17:07	TEPCO concrete pumping vehicle (62m class)	Fresh water	165
4/25 18:15～4/26 0:26	TEPCO concrete pumping vehicle (62m class)	Fresh water	210
4/26 16:50～20:35	TEPCO concrete pumping vehicle (62m class)	Fresh water	130
4/27 12:18～15:15	TEPCO concrete pumping vehicle (62m class)	Fresh water	85
4/28 11:43～11:54	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level)

(Exhibit－2)

4/28　11:55～12:07	TEPCO concrete pumping vehicle (62m class)	Fresh water	(sampling)
4/29　10:29 (measured water level)、10:35 (measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
4/30　10:14～10:28 (measured water level、measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
5/1　10:32～10:38 (measured water level、measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
5/2　10:10～10:20 (measured water level、measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
5/3　10:15～10:23 (measured water level、measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
5/4　10:25～10:35 (measured water level、measured temperature)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature)
5/5　11:55～12:05 (measured water level、measured temperature) 12:19～20:46 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature) 270
5/6　12:16 (measured water level、measured temperature) 12:38～17:51 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、measured temperature) 180
5/7　11:00 (measured water level、underwater photography、sampling) 14:05～17:30 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	(measured water level、underwater photography、sampling) 120
5/9　16:05～19:05 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	100
5/11　16:07～19:38 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	120
5/13　16:04～19:04 (spray water)	TEPCO concrete pumping vehicle (62m class)	Fresh water	100

Fukushima Nuclear Power Station 1～4, Single Wire Circuit Diagram, Temporary Power

(Utilize 3L of Okuma Line)

66/6.9kV
10MVA

1L of Yonomori Line
66kV

For transferring use MC

(Multi-circuit switch1)

(Multi-circuit switch 2)

Temporary Line 3/4 M/C A

Temporary Common PoolP／C

Power Source Car

Temporary Line 3/4 M/C B

TEPCO Nuclear Line・1L of Yonomori Line Power source connection (4/19)

1F-4 P/C 4D

Unit 4, Received power to the panel for main line for measuring main bus conductor

Unit 3, Received power to the panel for measureing main bus conductor

Unit 3, Central Control Plate, Light Distribution board

Unit 3, Light of Central Control room

Unit 4, Central Control Room, Light Distribution board

Unit 4, Central Control Plate Light

AC Distribution board

Central Control Plate

Tohoku Electric Power 66kV
TEPCO Nuclear Line

Spare Transformer
4500kVA

6.9kV Spare TransformerM/C

Temporary Line 1/2 M/C A

Main Anti-Earthquake Building, Line 5 of power line

1F-2 P/C 2C

Unit 2, Central Control Room, Light Distribution board

Unit 2, Central Control room light

Temporary distribution plate

2号立坑水中ポンプ

Unit 2, Switching plate for measuring

Main Control room for distribution plate

Main Control room for measuring plate

Unit 1, Central Control Room, Light Distribution board

Unit 1, Central Control room Light

Unit 1, Received power to the panel for measureing main bus conductor

AC Distribution board

Central Control Plate

Power source for monitoring post (regular side) MP5～8

2L of Yonomori Line
66kV

Starting Transformer 5SA
55MVA/30MVA×2

M/C6C

M/C6D

D/G6A

D/G6B

P/C5B-1

P/C5A-1

P/C6C

P/C6D

Higashidori Nuclear Line・2L of Yonomori Line Power source connection (4/25)

Temporary Line 1/2 M/C B

440V

210V, 220V, 110V

Unit 1～4, Feed pump for concrete pumping vehicle

③In front of Information building(1)

Fire pumping vehicle for backup (one vehicle)

440V

210V

Power source car

Unit 1, Power source for N2 injection facility

⑨In front of Information building(2)

N_2 injecting facility with D/G for backup

200V

D/G

Unit 1～3, Power source for reactor water injection pump

Fire pumping vehicle for backup (more than 3 vehicles)