

Chapter 6: First Responders and U.S. Military Support Responders

Koichi Isobe

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Summary

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Why first responders?

The Fukushima nuclear accident was Japan’s largest post-war national crisis, in which, in the worst case, the radioactive materials it scattered could have polluted the Tokyo metropolitan area and made part of eastern Japan into dead land.

The Japanese government mobilized the so-called first responders¹ of the fire department, police, Japan Coast Guard, and Self-Defense Forces in order to overcome the crisis. It also used the Japan-U.S. alliance as a national resource. How well did those operations function? Or did they not function? What was the lesson to be drawn from that? What kind of "learning" was subsequently acquired?

At the time of the Fukushima nuclear accident, in addition to pre-planned off-site roles, the first responders of the fire department, police, and the Self-Defense Forces carried out on-site water discharges under high radiation, which was not included in disaster prevention work plans. First responders tend to think that their roles, organizations, and activities are similar, but since the background to formation, legal basis, and organizations all differ for each first responder, it is appropriate to discuss them after understanding their attributes.

The following is a brief description of the rules governing the mission of each responder.

Fire fighters’ mission: “In addition to using equipment and personnel to protect the life, limb and property of the people from fire, to prevent and control disasters such as floods, fires and earthquakes, reduce the damage caused by these disasters, and appropriately transport the victims of disasters, etc.”²

¹ First responders here refer to the fire department, the police, the Japan Coast Guard, and the Self-Defense Forces, who rush to the scene in the event of a disaster and are engaged in search and rescue, lifesaving, localization of damage, and emergency recovery. Looking at these first responders, they are divided into municipal fire departments, prefectural police, and the national Japan Coast Guard and Self-Defense Forces. They usually conduct their activities under their respective laws. When a disaster occurs, they cooperate with disaster relief in the disaster area.

² Fire and Disaster Management Organization Act (Law No. 226, 1948), Article 1.

Duty of the police: “In the duty of protecting life, limb and property of the people, to prevent crimes, suppress and investigate, arrest suspects, control traffic and maintain public safety and order.”³

Japan Coast Guard mission: “Securing maritime safety and public safety by carrying out the enforcement of laws and regulations at sea, salvage, prevention of marine pollution, maintenance of order in the navigation of ships at sea, prevention and suppression of crime at sea, investigation and arrest of criminals at sea, regulation of shipping traffic, affairs related to waterways and navigation signs, and other affairs related to ensuring maritime safety, and related matters.”⁴

The SDF's mission: “In order to protect Japan's peace and independence and to maintain national security, our main task is to defend Japan and, if necessary, to maintain public order.”⁵

In this way, based on the rules governing their duties, the fire department, the police, and the Japan Coast Guard, always have the task of going to a disaster site immediately and helping the people affected. The Self-Defense Forces can be dispatched to carry out disaster relief, etc., if necessary, but their main task is to defend the country. Therefore, unlike the other three organizations, when going to disaster relief, it has a mechanism for deploying troops basically at the request of the prefectural governor.

The following five points summarize what has become clear through the task of verification regarding the first responders.

First, the first responders have coordinated and cooperated when responding at the disaster site. However, because their organizations and legal foundations differ, they respond differently, and it is hard to say that sideways cooperation and communication systems between the first responders are necessarily adequate. Although mutual cooperation among responders has deepened through disaster drills, etc. based on the lessons learned from the Fukushima nuclear accident, there are still issues to be resolved.

The second point is that it seems that the measures taken for a nuclear disaster by the first responders after the Fukushima Nuclear Accident were somewhat negative and un-first-responder-like.

The third is the existence of support responders, the U.S. Armed Forces, who extended their support as an ally. In the process of cooperation between the U.S.-Japan alliance, issues became apparent at the policy and unit operation levels.

Fourth is the fact that the “ultimate question”, that is, what will be done by the state and first responders when a nuclear operator alone cannot take adequate measures in the event of a severe accident at a nuclear facility, has not fully been answered.

Finally, there is the relationship between politics and the SDF. The Self-Defense Forces are a first responder, but it is also the last bastion, the last responder expected to play the ultimate role as a nation. It appears that the distance between politics and the Self-Defense Forces has decreased in the last ten years, but it seems that the people, politicians, and the Self-Defense Forces should build an even more trusting relationship.

³ Police Act (Law No.162, 1964), Article 2.

⁴ Japan Coast Guard Act (Law No.28, 1948), Article 2.

⁵ Self-Defence Forces Act (Law No.165, 1945), Article 3.

1. Aerial and ground water discharge: First responders in the field

The trajectory of the actions of the first responders who worked at the Fukushima Daiichi Nuclear Power Station from the eventuality of the accident to around March 20 is clear as shown in the chronology below. The process leading up to their action presents many issues for us.

March 12, 15:36:	Unit 1 building hydrogen explosion
March 14, 11:01:	Hydrogen explosion of Unit 3 building, SDF personnel and TEPCO staff responding at the site injured
March 15, early morning:	Government/TEPCO integrated headquarters established
March 16, 6:10:	Unit 4 building hydrogen explosion
Sometime after 14:00 on March 16th:	Although the company plans to discharge water from a large GSDF helicopter, it gives up due to high radiation.
March 17, 9:48:	Start of water discharge to Unit 3 from the large GSDF helicopter
March 17, 19:05:	Start of water discharge to Unit 3 by the high-pressure water discharge vehicle of the Metropolitan Police Department riot police
March 17, 19:35:	Self-Defense Forces fire engine water discharge commenced
March 18:	“On the policy of water discharge activities on March 18” issued by Special Advisor Hosono
Before dawn on March 19:	Tokyo Fire Department's hyper rescue team start watering
March 20:	Issue of “directives” from the head of the Nuclear Disaster Headquarters (Prime Minister Kan)

Water discharge operation from helicopter

Approximately three days after the accident on the 14th, how to pour water into the spent nuclear fuel pool became a pressing issue for the government and TEPCO. During their discussions, a plan to discharge water by helicopter emerged as an option. It took time to coordinate the relevant ministries and agencies about implementing surface water discharge, and as a result, water from the helicopter was ready the earliest.⁶ Under these circumstances, Prime Minister Kan gave the go ahead for an aerial water discharge, which was implemented on the 17th.

Around the same time, the frustration of the U.S. government was reaching its peak. U.S. Ambassador to Japan John Roos asked Chief Cabinet Secretary Yukio Edano to have a U.S. expert resident in the Kantei's Crisis Management Center both on the afternoon of the 13th and the night of the 14th, but was refused by the secretary, finally being successful with a third call on the night of the 15th. The nuance from the U.S. government for the Japanese government to act swiftly and in a visible manner was conveyed through all its channels including the Japanese embassy in the U.S., the U.S. embassy in Tokyo, and the U.S. military.

According to the chronology, the plan was to use a helicopter to spray water from the air on the afternoon of 16th, but it was decided to give up because the radiation dose above the reactor building was high. The disappointment of government leaders at this time was great. At midnight on that day,

⁶ Please refer to the following to confirm the process of water discharge. Isobe, 2019, p. 47-49.

top officers of the Self-Defense Forces gathered in the commander's office, and made up their minds that on the next day, they would stay unaffected and carry out the aerial water release.

Next morning, two of the Ground Self-Defense Forces' largest helicopters, the CH-47 Chinook, dropped a total of 30 tons of seawater in two runs. From that night onwards, surface water was ready to be discharged, so the aerial water mission was completed.

Evaluation of the water discharge by helicopter is divided. At the time, Cabinet Crisis Director, Tetsuro Ito, judged that spraying water from a helicopter had little effect because of the small amount of water. Ichiro Fujisaki, the Japanese ambassador to the United States, also felt that the watering did not seem to change the attitude of the U.S. side. On the other hand, Defense Minister Toshimi Kitazawa notes that this was not the case, given his impression from senior US government officials.⁷ What can be clearly said is that by broadcasting to the world via NHK, CNN and so on, the aerial operation was effective both at home and overseas in demonstrating that the Japanese government was making a serious effort to tackle the crisis and had brought in the Self-Defense Forces.

Groundwater discharge by first responders

The ground water discharge followed a more complicated adjustment process than the aerial water discharge, with the addition of the police, the Self-Defense Forces, the fire department and TEPCO.⁸

After the aerial water discharge, it was the high-pressure water discharge unit of the Metropolitan Police Department riot police that led the ground water discharge. It is said that this was made possible at the strong insistence of Kansei Nakano, Chairperson of the National Public Safety Commission, and Cabinet Crisis Director Ito.⁹ The riot police's high-pressure water discharge vehicle, the Ground Self-Defense Force's chemical protective vehicle, along with TEPCO's vehicles all headed to the site, where the riot police released some 44 tons of water in one go on the night of the 17th.

Next, 30 minutes after water was released by the riot police, the SDF fire trucks started surface watering. Ground-based water discharge by the Self-Defense Forces continued until March 21, and a total of 338 tons was discharged.

On the night of the 18th, TEPCO staff members also started using a high-pressure water truck to discharge water. Water operations by the fire fighters, professionals at discharging water to extinguish fires, was achieved in the early morning on the 19th.

The Tokyo Fire Department at the time responded to the Fukushima nuclear accident applying Article 1 Causes of Special Disasters in the Ordinance on Emergency Fire Assistance Corps under the Fire and Disaster Management Organization Act, which mentions "accidents with a fear of abnormal levels of radioactive substances or radiation, or the diffusion or release of these."¹⁰ In response to a request from the Prime Minister, head of the Nuclear Emergency Response Headquarters, to deploy to the Fukushima Daiichi Nuclear Power Plant, the hyper-rescue team of the Tokyo Fire Department was dispatched by an order from the then Governor of Tokyo to go because the Great East Japan Earthquake was a national disaster. With the fire departments of Osaka City and Kawasaki City, the

⁷ Ibid., p. 92.

⁸ Funabashi, 2013, pp. 433–441.

⁹ Ibid., pp. 427–432.

¹⁰ Interview with Yasuo Satô, October 8, 2019.

group performed a total of five water discharges until March 25 for a total of 23 hours and 39 minutes, releasing 4227 tons into the Unit 3 building.¹¹

Special Advisor Hosono and the “Directive” in the name of the Prime Minister

Around March 17, at the local government headquarters, which had been relocated to the annex of the Fukushima Prefectural Office, the members of the headquarters were at a loss because they had run into a situation that was not covered by the manual. When asked by Tadahiro Matsushita, head of the headquarters if there was something they could do, Lieutenant General Masato Taura, then deputy commander of the Central Response Group, who was working at the headquarters as a representative of the Self-Defense Forces, replied, “the police, fire department, Self-Defense Forces, and TEPCO are coordinating [watering] activities at the site, but it’s not going well. It’s no wonder since everyone wants to work in the best position at the best time.”¹² After that, Director Matsushita wrote something on a scrap of paper and faxed it. The result was a written directive, “On the policy of water discharge activities on March 18th,” issued in the name of Goshi Hosono, Special Advisor to the Prime Minister. At the end of the directive, the astonishing sentence was inserted, “3) The SDF will assume overall command of future activities such as water discharge and decontamination including the above activities 1) and 2).”

At the disaster scenes so far, first responders were basically coordinating with each other and acting based on their respective command systems. It was unprecedented that both the fire department and TEPCO act under the command of the Self-Defense Forces. For the Self-Defense Forces, assuming command was equivalent to laying their lives on the line. No matter how you looked at it, it was impossible for the Self-Defense Forces to assume responsibility for the lives of police officers and fire fighters.

A “directive” was issued in place of these instructions on March 20, in the name of the Nuclear Emergency Response Headquarters (Prime Minister). Regarding the problematic point, it was decided that the SDF would play a central role in the specific implementation procedures, that were to be decided after consultation, and that the SDF dispatched to the field would “unify management” in the field coordination center.

For the first responders, this was the first case of a “directive” in the name of the Prime Minister. By the time the directive was issued, the fire department and TEPCO were continuing water discharge activities with the Self-Defense Forces.

Yasuo Sato, Tokyo Fire Department’s Chief of Defense, who had command of the fire fighting on site, said, “the Prime Minister’s directive did not cause a great deal of discomfort because, before the Prime Minister’s directive was given, cooperation with the Self-Defense Forces had made progress in the field.” He said of that time, “we made a shared declaration that ‘our troops were under your command’ to Lieutenant General Masato Taura on the Self-Defense Forces side.”¹³

Despite all the twists and turns, both the aerial water discharge and the ground water discharge achieved their purpose of discharging water into the spent nuclear fuel pool. How, then, should they be evaluated and what should be passed on to future generations? This will be clarified in Section 3, The truth of “directives” “centering on the Self-Defense Forces”: Proposal by the National Governors’ Association.

¹¹ Sato, 2019, p. 258.

¹² Isobe, 2019, p. 54–57.

¹³ Sato, 2019.

2. What was questioned? What has changed?

Since the earthquake, four accident investigation reports have been published by the Diet, the government, the private sector and the Japan Atomic Energy Society. Looking at those investigations, descriptions about first responders are surprisingly few. Almost no description is found in the Parliamentary and Government Accident Investigations.

Unfettered by any organization, the Independent Accident Investigation captures the accident from an independent standpoint and from multiple perspectives, investigating the causes and providing lessons and recommendations regarding first responders.

One of them is to recommend the need to examine organization and command systems at the time of a large-scale earthquake in order to establish a system rapid response for first responders.¹⁴

They next propose the following on-site support. “If this [on-site response of each organization] is also included, along with clarifying the division of roles between nuclear operators and each organization as well as organizational operation systems, there is a need to examine in detail the nature of safety measures for emergency response at nuclear power plants, training and advance preparedness, and methods of responding when a situation occurs.”¹⁵

Thirdly, they argue the need for a nuclear disaster response unit as a last bastion along the lines of the U.S. Federal Emergency Management Agency (FEMA). Specifically, “The last bastion this time was the Self-Defense Forces. (...) The responsibility of the state in the event of a severe nuclear accident and the role of the executing unit responding in that case must be clarified in the legal system. In the future, we should aim to create a full-fledged execution unit for severe disasters and accidents comparable to the U.S. Federal Emergency Management Agency (FEMA).”¹⁶

As a recommendation regarding first responders in the accident report of the Japan Atomic Energy Society compiled in March 2014, three years after the Fukushima nuclear accident, it is proposed that “given the fact that the activities of the state, the police, fire departments and Self-Defense Forces, who are at the forefront of protecting residents, and the local public bodies responsible for the implementation of protective measures against nuclear disasters, are almost identical to other disaster prevention measures in general disaster prevention, they should be integrated on a common basis with reference to overseas cases as well.”¹⁷

Yoichi Funabashi, who compiled a book based on what became the last testament of Masao Yoshida, Director of the Fukushima Daiichi Nuclear Power Station, concludes his commentary on first responders, “neither the Parliamentary or Government Accident Investigations evaluated the response of the first responders. The police, the fire department and the Self-Defense Forces continue to be a ‘blank area of investigation’ on the Fukushima nuclear crisis.”¹⁸

What kind of efforts has each first responder subsequently made?

With regard to fire fighting, the Ministry of Internal Affairs and Communications' Fire Service Agency took measures such as reviewing its nuclear facility fire fighting activity manual, organizing

¹⁴ Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident, 2012, p. 169.

¹⁵ Ibid., p. 168.

¹⁶ Ibid., p. 388.

¹⁷ Atomic Energy Society of Japan, 2014, p. 363.

¹⁸ Rebuild Japan Initiative Foundation, 2015, p. 51.

terminology, and unifying views on the response to victims of nuclear disasters after the Fukushima nuclear accident.¹⁹ Following the earthquake, the agency compiled *A Collection of Records on the Great East Japan Earthquake* in March 2013, holding a Study Group for Upgrading Fire and Rescue Technology (Fire Fighting Activity Subcommittee on Nuclear Disasters, etc.) in that process, measures being taken from the perspective of responding to the revision of the nuclear disaster prevention system of the entire government, reflecting examples of fire fighting activities such as the Fukushima nuclear accident, and recent technological progress.²⁰ Regarding the introduction of specific materials and equipment, utilizing the supplementary budget for JFY2011, equipment and materials for responding to radioactive material accidents such as personal alarm dosimeters are now deployed at the Emergency Fire Assistance Corps Registration Headquarters.²¹

The police investigated police activity in the Great East Japan Earthquake by the National Police Agency, which was announced in November 2011.²² They looked at seven items in response to nuclear disasters: evacuation guidance, water discharge activities for reactor buildings, search activities around Fukushima Daiichi Nuclear Power Station, establishing warning zones, various police activities, ensuring the safety of nuclear facilities, and countermeasures for cyber attacks related to nuclear power plants. As matters to be examined in the future, it recommends promoting cooperation with related organizations in light of the loss of contact during the accident, implementing practical training that specifically assumes a nuclear disaster, thoroughly educating police officers about the characteristics of radiation, radiation protective clothing, and providing and enhancing equipment and materials necessary for dealing with nuclear disasters such as personal dosimeters.

In March 2012, the National Police Agency released *Future Crisis Management System related to Disasters* with the aim of expanding the operation of police forces and strengthening its system in anticipation of an earthquake directly under the Tokyo metropolitan area.²³

Regarding the Japan Coast Guard, in the *Coast Guard Report 2012*, the status of equipment and facility damage for the Coast Guard, restoration of damaged route signs, surveying waterways in damaged ports and nautical charts, and strengthening the system based on lessons learned from the Great East Japan Earthquake are described. However, there is no description of a nuclear disaster.²⁴ According to an interview with the Environment and Disaster Prevention Division of the Coast Guard, after the Fukushima nuclear accident, training courses for nuclear disasters were conducted for staff members, and regarding protective equipment for nuclear disasters, patrol boats, etc. belonging to the Regional Coast Guard Headquarters where nuclear power generation facilities are located are gradually being increased.²⁵

The current Japan Coast Guard has a variety of roles in a vast sea area with a force of 14,000. A commander of the Coast Guard commented that “considering the response to the Senkaku Islands, there’s not enough room to devise countermeasures specializing in nuclear disasters.”²⁶

Regarding the Self-Defense Forces, even before the Fukushima nuclear accident, it was assumed that there might be an emergency under radiation contamination, so the Chemical Unit of the Ground

¹⁹ Interview with Miura Hiroshi, December 9, 2019.

²⁰ Fire and Disaster Management Agency, 2013, p. 636.

²¹ Ibid.

²² National Police Agency, 2011.

²³ National Police Agency Security Planning Division, 2012.

²⁴ Japan Coast Guard, 2012.

²⁵ Interview with Japan Coast Guard Marine Environment Protection and Disaster Prevention Division, March 5, 2020.

²⁶ Interview with Hisayasu Suzuki (Commander of the Japan Coast Guard at the time of the accident), January 30, 2020.

Self-Defense Forces, which possesses equipment for radiation protection, is deployed nationwide. In addition, the largest specialist chemical unit, known as the Central Nuclear Biological Chemical Weapon Defense Unit, is stationed centrally in Saitama City in preparation for the threat of biological, chemical, and nuclear materials. This unit was also the one that rushed to the scene after the Fukushima nuclear accident.

In November 2012, the Ministry of Defense and the Self-Defense Forces compiled and published *Lessons related to the Great East Japan Earthquake*. The lessons related to the nuclear accident response are as follows: 1) a review of various response plans in the SDF and confirmation of cooperation points, active participation in nuclear disaster preparedness training drills, review of education and training system related to nuclear energy, and 2) a need to reconsider the procedure for information sharing and coordination immediately after a disaster occurs between the Kantei (Prime Minister's Office) and related ministries and agencies.²⁷

In the 2012 budget, the year following the earthquake, measures were taken for “carrying out various drills and exercises to strengthen response to nuclear disasters in addition to responding to natural disasters. Also, to attend radiation related courses to strengthen capacity related to nuclear disasters.”²⁸

Generally speaking, after the accident and in response to a nuclear disaster, the first responders have enhanced equipment and education for responding to accidents involving radioactive material such as personal exposure dosimeters. As for some of the above, although various needs have been stated, actually putting them into practice has not made a great deal of progress.

3. The truth about “directives” “centering on the Self-Defense Forces”: Proposal by the National Governors’ Association

Examining the water discharge: Repeating the same mistakes?

First, let us examine the aerial water discharge. It was pointed out that the evaluation of the aerial water discharge was divided. On what grounds were these statements based? Were they based on some scientific evidence? Do not such verbal conjectures hinder working out the lessons that will link to the future in Japan?

Some say that water from the helicopter amounted to “the piss of a cicada”. If so, there was no need for GSDF troops to risk their lives in releasing water from the air.

Probing the issue, you find that no verification on the effect of the helicopter water discharge has taken place. Neither the Government nor the Parliamentary Accident Investigations examined if it was possible to ascertain how much of the estimated 30-ton seawater aerial drop was injected into the fuel pool, and by what degree the pool was cooled. Nor did the Ministry of Defense or the Self-Defense Forces, the matter ending up in vagueness. I believe this kind of attitude poses a huge challenge. The action of resolutely heading into the skies over Unit 3 at the Fukushima Daiichi Nuclear Power Plant, and feeling one's life to be at the risk, ends up either being a heroic tale, or an irony-loaded cold epithet, the piss of a cicada.

Unless a scientific verification is conducted to examine how much water filled the spent nuclear fuel pool and helped in cooling it, their actions will be wasted. If the verification concludes that there was

²⁷ Ministry of Defense, 2012a.

²⁸ Ministry of Defense, 2012b.

little effect from aerial water discharge, then it would lead to the lesson of eliminating aerial water discharge from the options should a similar nuclear disaster occur.

Next, the process of surface water discharge was positively erratic. All things being equal, it should have been the fire fighters, who have the longest experience in discharging water, to rush to the front and implement it, but in reality, they were the last of the first responders to appear. On the other hand, although the police took the initiative, their high-pressure water discharge vehicles for suppressing riots were not suited to discharging water into high places.

What topped it all off was the monologue of Masao Yoshida, Director of the Fukushima Daiichi Nuclear Power Plant. “We got the riot police's one to come in first, but it wasn't very useful. They ended up only doing it once then pulling out. (...) This was especially true of the fire fighters’, but at first, it was going like this, then the tip of the hose gradually fell. And even though it was falling, nobody went to fix it.”²⁹ This bald monologue by Yoshida, which was not meant to be released, caused a sensation when it was.

Similar to the afore-mentioned verification of the aerial water discharge, unless there is an examination on the ground water discharge based on scientific grounds regarding how many tons of water the police, the Self-Defense Forces, the fire department, and TEPCO's water spray trucks discharged in total, and what percentage of that made it into the pool, it is probably impossible to know whether or not it contributed to the cooling.

Also, there was an opinion at the site that it would be faster to quickly restore the power supply than to discharge water. If so, then, what was the essence of the problem of injecting water into Unit 3's spent nuclear fuel pool? Unless we examine this, there will be no development for the future.

Finally, from March 22, concrete pump cars started injecting seriously and continuously a large volume of water into Units 4, 3, and 1. Is not a verification by experts from various angles necessary on how effective the aerial and ground water discharges were up until then in maintaining the water levels in the spent nuclear fuel pools? Making the same mistakes should be avoided.

Following the Prime Minister's “Directive”

Next was the “directive” on March 20 from the head of the Nuclear Disaster Headquarters, which entrusted the SDF with centralizing the management of the first responders, subsequently put to use? Let us look back here at the response of the first responders stipulated in the Nuclear Disaster Countermeasures Manual and the response to the recommendations of the National Governors' Association in July 2015, and see how the “directive” was reflected.

Instructions in the Nuclear Disaster Countermeasures Manual

The Cabinet Secretariat of the Nuclear Emergency Preparedness Council established the Nuclear Disaster Countermeasures Manual on October 19, 2012, one year and seven months after the Fukushima nuclear accident, and it is constantly updated. Although the manual basically assumes that first responders conduct off-site activities, on-site measures specify the activities of operational organizations as follows.

The first paragraph states the basic recognition that on-site measures are the responsibility of the operator, and if the operator's response is not adequate, the Kantei's operational taskforce team will make adjustments with the relevant ministries and agencies, including the first responders. After

²⁹ Rebuild Japan Initiative Foundation, 2015, p. 8, 47.

taking safety measures, the relevant ministries and agencies are to adjust responses related to on-site measures within the range that the first responders recognize as possible.

The second paragraph stipulates that the head of the disaster headquarters (the prime minister), etc., obtains the approval for deployment from the heads of the first responders.

And, in the third paragraph, based on the lesson that a “directive” was issued by the head of the Nuclear Disaster Headquarters at the time of the Fukushima nuclear accident, when several different first responders are active on-site, the Kantei's operational taskforce team is to coordinate activities, it also being stipulated that the head of the Disaster Headquarters should instruct the relevant ministries and agencies of the first responders.³⁰

In this way, a system has been defined based on the lessons learned from the Fukushima Nuclear Power Plant accident that allows first responders to direct on-site countermeasures even though the operator is responsible for on-site countermeasures.

Proposal by the Governor's Association: Cooperation among first responders

Following the earthquake, it was the 2015 Governor's Association that encouraged cooperation among first responders. In July of the same year, more than four years having passed since the accident, ensuring the safety of nuclear facilities was of the utmost importance. Recognizing the necessity for the national government to continue to enhance and strengthen nuclear disaster prevention measures, the National Governor's Association adopted its Proposal for Nuclear Power Plant Safety Measures and Disaster Prevention Measures.

As part of the proposal and with regard to first responders, it was recommended, “in preparation for a severe accident, the country's system should be clarified concerning support by operational organizations such as the Self-Defense Forces, maintenance of command, command systems and necessary materials.”³¹

In response to this, the government decided at the Nuclear Energy Ministerial Meeting its Stance on Enhancing Nuclear Disaster Countermeasures as a national response policy to this recommendation.³² The following is an outline of the cooperation policy for operational organizations.

- 1) The state handles it responsibly
- 2) Operational organizations cooperate in support activities for accident convergence activities and disaster victims support activities carried out by nuclear operators.
- 3) In normal times, information on site conditions, accident-convergence activities, evacuation plans for each entity, and local conditions are shared between operators, national/local governments, and private businesses.
- 4) In the event of an emergency, a predetermined person among the commanders of each operational organization adjusts flexibly according to the situation and the equipment of each unit, and takes necessary measures.

Furthermore, based on the above-mentioned response policy, the government adopted its Cooperation of Operational Organizations at the time of a Nuclear Disaster at the first subcommittee of the Ministry of Nuclear Emergency Response related ministries meeting in July 2017.

³⁰ Cabinet Office, Government of Japan, 2012, p. 102.

³¹ National Governors' Association, 2015.

³² Cabinet Secretariat, Government of Japan, 2016.

In the above-mentioned Stance on Enhancing Nuclear Disaster Countermeasures, important government policies that lead to a prime ministerial “directive” are specified. This is stipulated in Section 4, “a predetermined person among the commanders of each operational organization adjusts flexibly according to the situation and the equipment of each unit, and takes necessary measures”. This means that the role played by the Self-Defense Forces in the Fukushima Daiichi Nuclear Power Plant based on a prime ministerial “directive” will be decided in advance among the commanders of the first responders. This displays the government’s thinking based on the lessons learned from the Fukushima nuclear accident. However, in the current plan, it is not yet clear who will be the first responders.

Future issues: Recommendations

We propose that the following issues should be addressed in the future so that the first responders can deepen mutual cooperation and respond more quickly and effectively at nuclear disaster sites and other natural disaster sites.

** Acceleration of communication between first responders (improving communications)*

At present, communication between first responders at the disaster site takes place face-to-face with the local countermeasures headquarters.

Moreover, communication between first responders and the operator is crucial. The team from the Tokyo Fire Department dispatched to the site said, “It was very disappointing, but we [fire fighters]) had hardly any information on the operator’s regulatory equipment under the Act on Special Measures Concerning Nuclear Emergency Preparedness, such as information on the anti-seismic building. Uncertainties during operations were extremely high, since the supply point, evacuation point, and replacement point for replacement units were inevitably the command post 40 kilometers away or J Village about 20 kilometers away.”³³

In 2014, the Vice Ministers' Meeting on a Crisis Management Organization pointed out issues such as the standardization of radio frequencies among first responders, but even today there is no change in the status of being unable to communicate unless face-to-face. This issue should be corrected immediately. Bearing in mind not only nuclear disasters, but also an earthquake directly under the Tokyo metropolitan area or a huge Nankai Trough earthquake, it is hoped that cooperation between the first responders will be improved as soon as possible.

It is desirable that shared communication equipment and tablet devices stored in advance at facilities such as offsite centers and local countermeasures offices be prepared, so that communication and emails can be made in real time. It is important to check telephone call status and practice cooperation procedures through joint drills, along with the maintenance of materials and equipment.

** Promoting practical hands-on joint training*

Disaster prevention drills for nuclear disasters include those conducted by the national government, by prefectures, and by nuclear operators.

A former staff member of the regulatory agency said “the current situation is that nuclear disaster preparedness drills are only conducted based on scenarios. The prime minister participates [in the government’s nuclear disaster preparedness drills]. Since the governor is at the forefront of prefectural drills, no mistakes can afford to be made. There is a lot of pressure [not to fail] on disaster prevention drills,” he said.³⁴ Since drills could not fail, there was resistance to introducing blind drills.

³³ Interview with Yasuo Satô, October 8, 2019.

³⁴ Interview with "Old Boy" from the Nuclear Emergency Preparedness Cabinet Office, November 29, 2019.

However, when all participants share the drill scenario in advance, you cannot expect participants to have the ability to judge, share information between complicated organizations, and communicate instructions. In order to deal with a special disaster site such as radiation from a nuclear disaster, it is desirable to use more practical training and further promote game-based training involving the head of the organization as well. It is essential to improve the judgment ability of managers and operators by more actively incorporating blind training, which is conducted by the Self-Defense Forces.

It will be necessary to concentrate personnel and authority in order to carry out blind training in government-level comprehensive nuclear disaster prevention drills. To that end, giving appropriate authority to appropriate departments such as the Cabinet Office Nuclear Emergency Preparedness or the regulatory agencies should be considered as well as creating a function to bring experts together to plan and control training. In addition, a function of continuously and cross-sectionally evaluating drills and the response of training participants is required. It is important that such a supervisory organization have skilled personnel from the participating organizations seconded to an evaluation department for the long-term and using a skilled eye to evaluate at fixed points.

In addition, not only exercises on nuclear disaster but also risk management should be conducted at the central government level as well as in the field. It is becoming increasingly important to provide this kind of exercise to political leaders and administrative bureaucrats given the security environment surrounding Japan in recent years and having to deal with sudden natural disasters and severe accidents.³⁵ Former Assistant Chief Cabinet Secretary Nobushige Takamizawa commented, “In order to train politicians [strong in crisis management], I think a ‘crisis management school’ would be effective. You might be able to mix multi-partisan young politicians, researchers and bureaucrats, and train them in decision-making by setting up various scenarios.”³⁶

As the most realistic way to practice without making large-scale preparations, one possible approach is to have the many related organizations train or participate in the integrated disaster prevention drills conducted by the Self-Defense Forces, exchange opinions, and regularly check points of cooperation.³⁷

** Response to wide-area disaster areas that span prefectures*

So far, we have looked at the mission/organization of first responders, the response at the time of the Fukushima nuclear accident, and subsequent responses, it being made clear that when a disaster in a wide area where damage crosses prefectures occurs, fire fighters’ and the police’s area of activity have to be either municipalities or prefectures. On the other hand, the Japan Coast Guard and the Self-Defense Forces are organizations that operate on a nationwide scale, so even when a nuclear disaster affects multiple prefectures, it is possible to set the operation area and adjust the operational units of the organization according to the extent of the disaster area.

At the time of the Fukushima nuclear accident, the affected area was generally limited to one prefecture, but several nuclear power plants in the Reinan region of Fukui Prefecture are close to neighboring prefectures such as Kyoto and Shiga. In such an area, is it not possible to create a wide-area fire and police cooperation system that straddles prefectures?

³⁵ Isobe, 2019, p. 255.

³⁶ Interview with Nobushige Takamizawa, February 4, 2020.

³⁷ Isobe, 2019, p. 260.

The fire department has a system known as its emergency fire response team, and during the Great East Japan Earthquake, it carried out long-term activities for up to 88 days.³⁸ The original role of fire fighters is to extinguish fires as quickly as possible. It is not desirable for them to leave their area of jurisdiction for a long period of time. As pointed out by former Commissioner of the Fire and Disaster Management Agency Nobuyasu Kubo, it is necessary when dispatching an emergency fire brigade to not only provide logistical support, but also detailed arrangements including status compensation. Fire fighters deployed to other areas as an emergency fire brigade may need to be deployed as public servants of the national government.³⁹

Regarding the police, in addition to prefectural police, there are six regional police bureaus nationwide. Based on the Police Act, the regional police bureaus are responsible for inspecting and instructing the prefectural police, making commendations, coordinating wide-area investigations, responding to large-scale disasters, and police communications, etc. It does not have the authority to centrally command.

Not only nuclear disasters but also natural disasters are expected to increase in scale, frequency, and severity, and the population is declining nationwide. Regarding the disaster response capabilities of the police operating in Japan, it is becoming an issue to respond flexibly and agilely across the boundaries of municipalities and prefectures.

4. Japan-U.S. Alliance as support responder

With the exception of the Independent Accident Investigation, no other investigation captured the Fukushima nuclear accident in the context of the U.S.-Japan alliance.

Chapter 12 of the report, U.S.-Japan Relations Regarding Nuclear Accident Response, clearly verifies how the U.S.-Japan coordination was carried out. Finally, in response to the question, “did the U.S.-Japan alliance function?” it said, “in a critical situation, until a cross-ministerial approach was established, it was the alliance function between the Self-Defense Forces and the U.S. Army that undertook the responsibility for coordinating between Japan and the United States.”⁴⁰ It later concluded, “in an extremely important accident like this involving governmental and private organizations other than those traditionally involved in managing the alliance, such as the defense authorities, the military, and diplomatic authorities, the key is how to systematically build a multi-layered information sharing/coordination system that covers not only bilateral but also all functions inside and outside the government. What is required is precisely the creation of a “whole of state” or “whole of alliance” approach.”⁴¹

Approximately at the same time, or slightly after, the verification work of the Independent Accident Investigation, interviews with the people involved were underway in the Government Accident Investigation. Of particular note is the fact that they were interviewing Japanese government officials about the state of coordination between the U.S. and Japan at the time of the accident. This covered politicians, Cabinet Secretariat, Ministry of Defense, Ministry of Foreign Affairs, NISA, the Atomic Energy Commission and others. In these interviews, many valuable opinions regarding coordination and cooperation in the U.S.-Japan alliance are presented. However, for some reason, the Government

³⁸ Kubo, 2015, p. 31.

³⁹ Interview with Nobuyasu Kubo, December 3, 2019.

⁴⁰ Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident, 2012, p. 380.

⁴¹ Ibid.

Accident Investigation does not include the results of its verification on the status of coordination between Japan and the United States.

What should be learned from the coordination between Japan and the United States, especially Operation Tomodachi?

Lessons learned from the Hosono Process

Cooperation between the Japanese and U.S. governments was a series of miscommunication at the beginning of the Fukushima nuclear accident. U.S. Ambassador to Japan John Roos telephoned Chief Cabinet Secretary Yukio Edano on Tuesday, March 13, and the night of March 14 to ask for an American expert to be dispatched to the Crisis Management Center. This was finally accepted on the third phone call in the afternoon on the 15th. The Hosono Process began in the midst of the growing communication gap between the two governments.

The Hosono Process was a conference body that aimed at sharing information and awareness about the Fukushima nuclear accident between the two governments of the United States and Japan, and to discuss cooperation between the two countries for an early end to the accident. This name was given by the U.S. participants based on the name of the Japanese representative, Special Advisor to the Prime Minister Goshi Hosono. Participants on the Japanese side were Special Advisor Hosono, the Cabinet Secretariat, Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs, Ministry of Education, Culture, Sports, Science and Technology, Ministry of Defense and the Self-Defense Forces, NISA, TEPCO, and others. The U.S. side comprised U.S. counterparts, such as James Zumwalt, Deputy Chief of Mission at the U.S. Embassy in Tokyo, and Charles Casto from the U.S. Nuclear Regulatory Commission (NRC). At the beginning of the accident, communication between Japan and the U.S. was barely connected by an extremely thin pipe. Amidst the lack of information sharing between the Japanese and U.S. governments, officials from the Ministry of Defense, Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry, NISA, and TEPCO met at the Ministry of Defense for the first time on March 16th, five days after the disaster. From the U.S. side, the U.S. Embassy in Tokyo and the U.S. Armed Forces in Japan participated in discussions, and this meeting was developed into the Hosono Process established on the 22nd.

The process was characterized by the following: the fact that a Japanese politician, Special Advisor to the Prime Minister Hosono headed the Japanese side; the fact that all related organizations, including the Self-Defense Forces, the U.S. forces, and TEPCO, all participated; and thirdly, the fact that a direction was set that with the participation of the director general class, decisions could be made on the spot.

Special Advisor Hosono said of the process, “the silo mentality that symbolizes Japan was resolved relatively smoothly. Each had a strong sense of all Japan pulling together in the face of the crisis at the nuclear power plant.”⁴² Zumwalt recollects about the meetings, “The military were probably familiar with having this kind of meeting, but the civilians weren’t. So, with the participation of all the ministries concerned, this meeting was very meaningful.”⁴³

Reflected in the Guidelines for Japan- U.S. Defense Cooperation

This achievement was to be reflected in the new Guidelines for Japan-U.S. Defense Cooperation formulated in April 2015, four years after the earthquake with the establishment of a new “alliance coordination mechanism”. Within that, a consortium was formed called the Alliance Coordination

⁴² Isobe, 2019, p. 99.

⁴³ Ibid., p. 103.

Group, in which the Ministry of Defense, the Self-Defense Forces, the Ministry of Foreign Affairs and other related ministries and agencies participate.⁴⁴

However, looking at the details of the Alliance Coordination Group, it must be said that it is still in the middle of reaching a cross-ministerial and unified government response. Participants in the group are described as “representatives from the Cabinet Secretariat (including the National Security Bureau), the Ministry of Foreign Affairs, the Ministry of Defense/Self-Defense Forces, and related ministries (NB: as required).” In other words, other than the Cabinet Secretariat, Foreign Affairs, and Defense, there is a reservation that rather than participate regularly, the others will participate as required. These are the Guidelines for Japan-US Defense Cooperation authorized by the Japan-U.S. Security Consultative Committee (a so-called “2+2” four-member committee consisting of the Foreign and Defense Ministers and the U.S. Secretary of State and Defense). Yes, it may reflect the opinion of other ministries that ministries other than foreign affairs and defense are not obligated. However, there were many related ministries and agencies that responded to the Fukushima nuclear accident. Will it not be indispensable for all ministries to participate if an even more intense situation than Fukushima arises in which the United States and Japan jointly deal with an armed attack? It would consequently be appropriate for relevant ministries and agencies to participate in the Alliance Coordination Group on a regular basis and, if possible, for politicians at the Kantei to also enter this scheme in the way that Special Advisor Hosono led the other initiative.

The essence and lessons of Operation Tomodachi

Operation Tomodachi⁴⁵ is the name of the disaster relief and humanitarian operations conducted by the U.S. military during the Great East Japan Earthquake. The SDF and the U.S. Armed Forces often conduct joint training and consultations to communicate with each other. Even during the Great East Japan Earthquake, immediately after the quake, cooperation began between the Joint Staff Division, the command center of the Ministry of Defense, and the U.S. Army in Japan.

The characteristics of this operation are that, firstly, the United States Armed Forces formed a joint task force for the first time in Japan and joined in Operation Tomodachi; secondly, the name of the operation was “Joint Support Force (JSF);” and finally, the mission of the U.S. Army extended not only to disaster relief and humanitarian assistance but also to a wide variety of tasks.

Immediately after the earthquake, the Self-Defense Forces and the U.S. Armed Forces in Japan dispatched liaison officers to each other and worked closely together to provide disaster relief and humanitarian assistance. However, information was received in a telephone conference between the Joint Chief of Staff and the Commander of the U.S. Army in Japan on the night of the 18th that a navy admiral and U.S. Navy Pacific Fleet Commander, located in Hawaii, was coming to Yokota Air Base on the 20th to assume command of the Joint Support Force.⁴⁶ This information was a bolt from the blue for the SDF. Both Japan and the United States had been accumulating command post training and operational training under normal conditions, but it was the first time in history that the U.S. Army formed an integrated unit in Japan and the Navy took command of it. This was proof that not only the U.S. military but also the U.S. government took the Fukushima nuclear accident very seriously. It is believed that they were worried that if the Fukushima Nuclear Power Plant was not properly controlled, the U.S. military Yokota Base, Yokosuka Base and Sagami-hara Depot would not be able to operate in the Kanto area.

⁴⁴ Ibid., pp. 172–173.

⁴⁵ Ibid., pp. 110–111.

⁴⁶ Ibid., p. 122.

The next point regards the name Joint Support Force. Normally, when the U.S. military conducts operations, it forms a Joint Task Force (JTF) by combining units from land, sea, air, and marines that suit the purpose of the operation. And the name of this unit is usually JTF XYZ. However, in the Great East Japan Earthquake, although it was a joint task force, it was named the JSF (Joint Support Force). Admiral Robert F. Willard, Commander of the U.S. Pacific Command, who was head of the U.S. forces in the Asia-Pacific at the time, said, “The reason we used JSF and not JTF, was because we wanted to make it clear that it was the SDF side being supported and the United States on the side of supporting. As the situation worsened, we recognized the need to expand the scope of our support and strengthen our command, so eventually the role was given to the Pacific Fleet commander.”⁴⁷ The important point here was the fact that the main force of this operation was the Self-Defense Forces, and that the U.S. Armed Forces were dedicated to providing support. Command relations between the U.S. and Japanese units in US-Japan joint training are arranged in parallel and follow their respective command systems. Operation Tomodachi was carried out according to each command system, but the U.S. military took a step back.

Finally, as I have touched on earlier, JSF's mission was to provide disaster relief and humanitarian assistance to Japan, which had been hit by an unprecedentedly compound disaster, and to help American citizens living in eastern Japan. At the time, it also had the task of evacuating abroad.⁴⁸ The U.S. Marine Corps commander in Okinawa was in charge of evacuation. When they heard the explanation from him, the command directors recalled the tense situation at the time, “at the same time as having an unfamiliar feeling of frustration going through our minds about the fact that American citizens from our U.S. ally might evacuate in this tough situation from Japan, we knew the Fukushima Daiichi Nuclear Power Plant accident had to be contained at all cost.”⁴⁹

When you view the alliance with a cold eye, it is only normal for the interests of both parties to intersect. Of these, it is the work of the alliance to find common interests that are the greatest common divisor for both parties. French President De Gaulle is said to have said that allies may come to your rescue, but they will never share your destiny. Operation Tomodachi in the Fukushima nuclear accident was precisely on that brink. At the time, if things became worse, the U.S. military would have, of course, evacuated U.S. citizens residing in the Kanto region. For them, the overriding task was to protect the citizens of the United States.

The U.S. military seriously tried to support Japan. This was because the White House and other political leaders at the Department of State and the Department of Defense as well as senior civilian officials believed in the importance of the U.S.-Japan alliance, but at the same time, the solid training between the U.S.-Japan military personnel cultivated through joint training under normal conditions was also a gift of trust and friendship. “When it comes to professionalism, the Self-Defense Forces are always in the top tier. I had no worries whatsoever about professionalism regarding the SDF,”⁵⁰ said Michael Mullen, Chairman of the Joint Chiefs of Staff and the top U.S. military man at the time. “The military-military relationship was extremely easy to have talks with, because we've always been training together since before the crisis. All I had to do was to pick up the phone to communicate with Oriki. That's how deep the relationship between the U.S. Army and the Self-Defense Forces is.”⁵¹ Although there were communication problems and conflicts of interests between the two countries, the strong bond between the Self-Defense Forces and the U.S. Army resulted in Operation Tomodachi, further strengthening the U.S.-Japan alliance.

⁴⁷ Ibid., p. 129; Interview with Robert Willard, September 25, 2017.

⁴⁸ Ibid., pp. 132–134.

⁴⁹ Ibid., p. 134; Interview with Masayuki Hironaka, August 1, 2018.

⁵⁰ Ibid., p. 203; Interview with Michael Mullen, August 1, 2017.

⁵¹ Ibid., p. 225; Interview with Michael Mullen, August 1, 2017.

5. The operators and first responders (The Mariners' Act Model)

Let us revisit the Nuclear Disaster Countermeasures Manual. The manual still adheres to the expression that coordination with first responders, who are operational organizations, will commence when it comes to a full emergency.

What should be done when confronted by such an ultimate situation? Neither the government nor the operators have an answer yet about what concrete adjustments are to be made.

Is the operator then to leave everything to the first responders in the event of a nuclear disaster and be a complacent secondary responder? With brutal frankness, staff working for the Cabinet Nuclear Emergency Preparedness said the reason why first responders did not participate in the operators' disaster prevention drills was "because the operator is supposed to stay put until the very last. They're instructed to stay put until the last. We've had serious discussions with staff at the Regulatory Agency about whether they'll have to do the ultimate valve at the end. The Ministry of Defense says it won't do it and the operator that it can't. So, we wonder if it will be someone from the Regulatory Agency or someone involved with them."⁵² However, from the perspective of the first responder, this is basically the responsibility of the operator, and if there is a role that the operator cannot fulfil, such as the transfer of materials and equipment to the site, then, under a division of labor, that role is expected of the first responders, and so it is true that until a specific need is identified, they cannot provide an answer.

When asked if there were specific requirements for first responders regarding support for the site, a TEPCO executive replied, "In the present situation, since we did what we could, there aren't any explicit requirements for this or that please. But when the unexpected happens, it's bad not being prepared, so I think we should be sharing on a daily basis a basic risk map about the structure and risks of the power plant and avoid a situation where both parties (the operator and the first responders) are seeing this for the first time."⁵³

Although it is the operator who makes every effort to prevent the worst situation, there is no one but the first responders who can provide the ultimate help when all measures are exhausted.

Is a legal approach conceivable?

Although we believe first responders will ultimately respond alongside operators, a moral hazard for nuclear operators should not be created and the status and treatment of operators working at nuclear power plants should be guaranteed. In that regard, legal provisions may be desired.

At this time, the Mariners' Act might be helpful. According to the Mariners' Act, the regulation covering the duty of the captain to remain with the ship is "Article 11: With the exception of unavoidable cases, unless the captain delegates his duties to another person to direct the ship on his behalf, the captain must not leave the vessel under his control from the time of loading cargo and boarding passengers to the time of landing cargo and passengers."⁵⁴

⁵² Interview with multiple former staff of the Nuclear Emergency Preparedness Cabinet Office, November, 2019.

⁵³ Interview with TEPCO executive, November 27, 2019.

⁵⁴ From the homepage of the Ministry of Land, Infrastructure, Transport and Tourism Hokuriku-Shin'etsu District Transport Bureau: "From the perspective of protecting workers, (...) only sailors are subject to the seafarers' law. This law addresses the following particularities of maritime workers: Long-term absence from land; the inability to receive aid (repairs or medical) from outside the ship; doing dangerous work in a moving ship (including the danger of

There is no move to prepare a bill that imposes the obligation to remain at the facility until the end on the nuclear operator as in Article 11 of the Mariners' Act. A TEPCO executive said, "Not even the Prime Minister had the power to order TEPCO employees to put their lives on the line at the time of the Fukushima accident. At the time, TEPCO's onsite handling of the accident was on a voluntary basis. As long as we can't get employees to sign a contract like the SDF's Pledge of Service, all we can do is take preventive measures to prevent severe accidents."⁵⁵ Operators will remain in the reactor on an absolutely voluntary basis.

Shuya Nomura, who was involved in the Parliamentary Accident Investigation, explained the need for legal developments such as the Mariners' Act as follows. "I wouldn't object to making such a law, but it would be a legislative mistake to bind them by law because if things are left as is, they will take to their heels. On site at the Fukushima Nuclear Power Plant [the reactor operator] dealt with the accident without fleeing. To say they would run is an insult to them and is contrary to the facts. On the other hand, I think using the words compulsory for public compensation would be acceptable. For example, compulsory hospitalization as a measure to counter designated infectious diseases such as coronavirus uses the term compulsory as a basis for publicly funded benefits. It differs from the logic of if left to their own devices, they wouldn't be hospitalized."⁵⁶

"Even if it is an irrational command, people will act if they have a sense of mission. The same applies to the Japanese members of university faculty who currently remain in Wuhan, but when it comes time, people are prepared to act. Isn't that why, when taking an oath for assuming a position, instead of clearly specifying the obligation of dealing with a crisis, compensation is guaranteed for that through mutually agreed coercion and financial compensation if the maximum allowance is promised as compensation?"⁵⁷ It is impossible to find a simple and clear answer for the ultimate question. However, at the end of the day we can say that we must contemplate the following.

6. "The ultimate question"

What should we do if a reactor falls into a situation where the vent has to be opened even at the risk of life?

Of course, the ironclad rule for preventing such a situation is to consider and prepare all the necessary measures, and train for them, so that a reactor can be kept in a prior state. Still, when the unanticipated happens, and you have to vent even at the risk of life, who exactly will be the person to say, do it, and to whom?

The Chernobyl nuclear accident

On April 26, 1986, the nuclear reactor explosion at the Chernobyl Nuclear Power Plant in the Ukraine in the former Soviet Union released radioactive material into the atmosphere surpassing that of the Fukushima nuclear accident. Immediately after the nuclear reactor's explosion, it was the power plant and the local fire brigade that rushed to the scene. They extinguished the fire in the presence of very high concentrations of radioactive material with poorly prepared protective clothing. Many were

capsizing); labour consisting of 24 hours of continuous overlap between 'work' and 'life.' In Ministry of Land, Infrastructure, Transport and Tourism, Hokuriku Shin'etsu Transport Bureau. (n.d.).

⁵⁵ Interview with TEPCO executive, November 27, 2019.

⁵⁶ Interview with Shūya Nomura, February 4, 2020.

⁵⁷ Ibid.

exposed to intense radiation and died.⁵⁸ A military helicopter unit was subsequently deployed. Sand and boron started to be dropped into the reactor that exploded 40 hours after the accident, 5,000 tons being dropped in about ten days.⁵⁹ Most of the pilots were heroes who had fought in Afghanistan and were highly skilled. The most rigorous tasks of removing radioactive debris and building the sarcophagus were carried out by service soldiers, reserves, engineering units, and private guards. Many young soldiers were from Central Asia who could not speak much Russian and had no knowledge of radiation protection. They were called biorobots. Nearly 600,000 people were mobilized for this intense work.⁶⁰ At the time, the Soviet Union had a one-party dictatorship system of the Communist Party, which had little consideration for basic human rights and radiation protection, and there was a backdrop that progress was to be made on the sarcophagus for the nuclear reactor no matter the human sacrifice. As such, it does not serve as a reference at all. The Chernobyl accident tells how harsh the task of sealing an exposed reactor is for humanity.

Role of first responders shown in Nuclear Disaster Countermeasures Manual

According to the Nuclear Disaster Countermeasures Manual mentioned above, the basic principle for on-site countermeasures is that they are the responsibility of the operator. Tetsuya Yamamoto, former policy director of the Cabinet Office (Nuclear Disaster Prevention) confirmed the principle of the manual saying, “the on-site response involves a system design that the operator is primarily responsible for acting. However, staff of the Regulatory Agency have technical knowledge about responding to a severe accident, and have made great progress compared to the days of NISA. Basically, it’s the responsibility of the operator, but if there’s a role that the operator can’t fulfil, such as the transfer of materials and equipment to the site, then that role is expected of the Self-Defense Forces, and so on.”⁶¹

Charles Casto, who was sent to Japan from the U.S. NRC at the time of the Fukushima nuclear accident, said to this ultimate question, “Well, you can’t ask civilians. They didn’t sign up for that. That would have to be SDF, police, fire etc. Just regular people didn’t sign up to die. And that’s why I commend the operators at both of these sites.”⁶² Meanwhile, George Apostolakis, Professor Emeritus at the Massachusetts Institute of Technology and Head of the CRIEPI Nuclear Risk Research Center, said, “the control room operators are the absolute masters. (...) the principle is that the control room operators are the masters.”⁶³ The views of these two U.S. experts diverge.

First responders’ Oath of Service

Public servants who serve the public take office by signing an oath of service to the appointed authority when they are appointed. The same applies to first responder staff.

The oath of SDF personnel is exemplary. “I will be cognizant of the Self-Defense Forces mission to protect the peace and the independence of Japan, to comply with the Japanese Constitution and the laws, and shall aim to maintain unity, to strictly and impartially observe rules, to constantly cultivate virtue, to respect people, to refresh mind and body, to polish skills, to execute duties with a deep sense of responsibility and dedication, to face events without regard for risk, to strive to the utmost of my abilities to complete the assigned tasks, and to respond to the will of the people.”⁶⁴

⁵⁸ Plohky, 2018, pp.87–100.

⁵⁹ Potter et al., 1991, pp.1034–1047.

⁶⁰ Plohky, 2018, p.218.

⁶¹ Interview with Tetsuya Yamamoto, November 22, 2019.

⁶² Interview with Charles Casto, August 26, 2019.

⁶³ Interview with George Apostolakis, January 29, 2020.

⁶⁴ Self-Defence Forces Act Enforcement Regulations (Prime Minister’s Office Ordinance No. 40 of 1945).

Of civil servants, only Self-Defense Forces personnel swear “to face events without regard for risk, to strive to the utmost of my abilities to complete the assigned tasks, and to respond to the will of the people.” Even if, then, the SDF were suddenly ordered to come and open the vent, it would probably be impossible to open a vent they had never before seen or touched. The SDF is a national organization that anticipates invasions such as armed invasion, and is usually prepared through rigorous training, refining its training and preparing for emergencies. However, their knowledge of reactors is almost non-existent, and reactor structures are an unknown. It would be well nigh impossible for them, even if asked, to suddenly become reactor operators and vent.

Ryoichi Oriki, Chief of Staff at the time of the earthquake, commented on the oath of SDF personnel as follows.

“They swear ‘to face events without regard for risk’ in order to be prepared for a national emergency, so it’s not as if the SDF are prepared to lay down their lives for all the dangerous events in the world. That’s not the case. Basically, they put their lives on the line when carrying out their duties against armed forces or members of armed forces. I think asking personnel without expertise to go in to open a vent can even increase the number of victims and worsen the situation. Only experts can ensure success with minimal damage.”⁶⁵

Looking back on the first responders’ response to the Fukushima nuclear accident, it was not only the Self-Defense Forces, who swear to face events without regard for risk and to strive to the utmost of their abilities to complete the assigned tasks, who put their lives on the line at the Fukushima nuclear accident. It is true that the crew of the GSDF helicopter, who performed the seawater air drop into the reactor building under high radioactive contamination, put their lives at risk in an effort to complete their duty, but this was followed by the groundwater discharge by the police, the Self-Defense Forces, the fire department, and TEPCO’s unit.

In this way, regardless of the content of their pledges, it can be said that the first responders were prepared to risk their lives and take on the task when a national crisis was imminent.

For that reason alone, it is more important than anything else that the government take various actions in advance in light of various situations, so that they can do their jobs without endangering themselves, rather than relying solely on their resolve.

7. Political and military relations: 10 years after the Fukushima accident– the relationship between politics and the Self-Defense Forces

Clarifying in this way the relationship between first responders and the operator is a reminder of the necessity for both the operator, who manages and operates the reactor, and the first responders, who support the operator, to face responding with a clear sense of mission and determination. And it is politicians and state leaders who in the end seek the ultimate measure. In the Fukushima nuclear accident, what was the relationship between the first responders, especially the SDF and politics, and what kind of civil-military relationship was it? What was the lesson there? What has changed in the last 10 years?

The relationship between politics and the Self-Defense Forces at the time of accident

In a press conference the day before the water drop on the reactor building at the Fukushima Daiichi Nuclear Power Plant, when asked if they would release water from a helicopter, Defense Minister

⁶⁵ Interview with Ryōichi Oriki, January, 21, 2020.

Toshimi Kitazawa replied, “it is the ultimate duty of the SDF to protect the people. And resolve to carry out this last-minute mission has been consolidated at the Ministry of Defense and the Self-Defense Forces,”⁶⁶ announcing they were prepared to risk the life of the troops.⁶⁷ It was the first time since the inauguration of the Self-Defense Forces that a minister himself announced in public that the SDF was determined to do an aerial water drop at risk of life and limb. At this point, there was no discrepancy between the politicians and the SDF engaged in the aerial drop.

On the other hand, in a post-drop press interview with Defense Minister Kitazawa, he stated, the order “was a decision made by the Chief of Staff himself upon his own judgement of the Prime Minister’s and my weighty decision.”⁶⁸ This statement caused some controversy. Some pointed out that the Defense Minister escaped his responsibility and had the Chief of Staff make a decision. Regarding this, Masayuki Hironaka, General Manager of the SDF Operations Division at the time, notes that there were SDF officers who were confused by this third-party like statement. Apparently, there was a sense of incongruity that wasn’t it the politicians, who were the leaders of the state, not the commander-in-chief, who bore responsibility for the final decision? Hironaka said later, “Japan’s political leaders, including Prime Minister Naoto Kan, the Supreme Commander of the Self-Defense Forces, have no understanding of the principles involved in using the Self-Defense Forces, which is a defense organization. (...) The commander of the Self-Defense Forces was also unable to grasp the nature of the relationship with the political leaders, and it was difficult to clearly present options from a military perspective to the political leaders,”⁶⁹ demonstrating the lack of a “common language”⁷⁰ between the politicians and the Self-Defense Forces.

Has the relationship changed over the last 10 years?

How, then, has the relationship between politics and the Self-Defense Forces changed ten years on from the disaster?

In December of the year following the earthquake, the DPJ government changed to the second Abe Administration. The Abe Cabinet launched the National Security Council in December 2013, and the Joint Chief of Staff now regularly attends meetings. The Joint Chief of Staff (formerly the Chairman of the Joint Staff) also attended the Security Council and the Defense Council, which were the predecessors of the National Security Council, but the frequency and content of the meetings have changed. Looking at the annual average frequency of meetings, the National Security Council met 32.7 times (the average for 2014-2019), a significant increase compared to the former Defense Council, which met 2.4 times, and the former Security Council, which met 8.1 times.⁷¹ In addition, discussions cover North Korea and the Indo-Pacific region, and the opportunity for the Chief of Staff to explain and speak are increasing.

With the harsher security environment surrounding Japan, it seems that politicians and the public are deepening their interest and understanding regarding security and defense. In fact, Katsutoshi Kawano, a former Vice-Admiral and Chief of Staff for four years and five months under the Abe Administration (retired April 1st 2019), said, “We shared a common language and values with Prime Minister Abe. I think he is the first post-war prime minister interested in the SDF’s actions and always bears them in mind.”⁷² Although there were exceptions such as Yasuhiro Nakasone, a post-war prime

⁶⁶ Ministry of Defense, 2011.

⁶⁷ Isobe, 2019, p. 50.

⁶⁸ Ministry of Defense, 2011.

⁶⁹ Hironaka, 2017, pp.28–29.

⁷⁰ “Common language” means a common understanding and recognition that forms a basis of mutual trust and communication among actors from different positions.

⁷¹ Chijiwa, 2016, p. 8.

⁷² Interview with Katsutoshi Kawano, May 21, 2020.

minister and experienced defense minister with a deep knowledge of defense issues, it is worth noting that the Abe Administration as a whole, not just Abe the man, has tried to share a “common language”.

On the other hand, with the deployment of troops to disasters due to large-scale storms and floods in recent years, it has been heard that even when the SDF is deciding on its own unit operations, matters are sometimes decided in local task forces because they are the wishes of the Kantei. An example is the size of deployed troops. If the duties to be assigned are to be determined by political judgements, it would be more appropriate to let the SDF decide on optimal unit sizes and the necessary scale.

It is important that there always be a dialogue between politicians and SDF leaders on what politics should judge and decide, and what should be left up to the SDF, not only for deployment in disasters but also for coping with various situations.

The Self-Defense Forces: Conflict between the “last bastion” and an “all-rounder bastion”

The roots of the Self-Defense Forces are in the police reserve forces that were established to fill a void of power from the diversion of troops stationed in Japan to the Korean Peninsula at the outbreak of the Korean War broke in 1950. The Self-Defense Forces was established in 1954 without amending the constitution at a time when there was strong aversion to the army shortly after the defeat. In a hostile climate, the SDF has striven since its inception to become a beloved SDF accepted by the people, focusing its efforts on recruiting and public relations. It was in the Great East Japan Earthquake that this half-century long desire to be recognized by the people was fulfilled.

However, what was accepted was a SDF that was active in disaster relief and humanitarian assistance rather than a SDF for national defense. According to a public opinion poll on the SDF/defense issues conducted in 2018, 79.2% of the total respondents cite disaster relief as the role expected of the SDF, followed by national security at 60.9%.⁷³

The Self-Defense Forces have begun to move further forward in responding to frequent disasters following the Great East Japan Earthquake. It mobilized a total of 850,000 people in the 2016 Kumamoto earthquake, 100,000 people in the 2017 heavy rains in northern Kyushu, and a total of 1.19 million people in the July 2018 heavy rains and the Eastern Hokkaido Iburi Earthquake. Its modes of dispatch are becoming more diverse, including special deployment for swine cholera in JFY 2018 and responding to the novel coronavirus in 2020. Today, the Self-Defense Forces are no longer the “last bastion”, but are becoming an “all-rounder bastion”. As a national asset, it has come to be deployed under various circumstances. The SDF has become a handyman, which raises the issue that this new image may hinder its original training and prevent the SDF from showing its true potential at a critical moment. The SDF is a first responder, but it is also the final or ultimate responder as well. The final bastion of a nation is its army. When the SDF looks over its shoulder, no one is there. The task of a first responder is naturally important, and everything that can be done for victims should, of course, be done. However, we must not forget for a moment that the SDF is the ultimate responder.

Civil-military relations

The need for a “common language” between politicians and the Self-Defense Forces may be placed in the broader context of the need for a “common language” between society and the SDF. One manifestation of this is the difference in enthusiasm between society and the SDF regarding its mission and role. Among the people, the expected role of the Self-Defense Forces is disaster deployment rather than defense. It is difficult to say that defense, the original task of the Self-Defense Forces, is widely acknowledged by the people. As mentioned above, the SDF is “the last bastion”, but it is becoming an “all-rounder bastion” in light of recent disaster deployment.

⁷³ Cabinet Office, Government of Japan, 2018.

An “all-rounder bastion” and “last bastion” are also themes for coordinating the relationship between the military value of the army and its professional and functional roles.

Samuel Huntington, who pioneered a new academic field called civil-military relations by theorizing the relationship between politics and the military in modern nations, wrote in his book *The Soldier and the State* about the relationship between the military and society. He said.

“The military institutions of any society are shaped by two forces: a functional imperative stemming from the threats to the society’s security, and a societal imperative arising from the social forces, ideologies, and institutions dominant within the society. Military institutions that reflect only social values may be incapable of performing effectively their military function. On the other hand, it may be impossible to contain within society military institutions shaped purely by functional imperatives. The interaction of these two forces is the nub of the problem of civilian-military relations.”⁷⁴

The army cannot exist without society, and society cannot exist without the army. In the words of Huntington, pre-war Japan could be said to have failed as a result of pursuing too many “military institutions shaped purely by functional imperatives” beyond society’s tolerance. And the Self-Defense Forces that were born after the war “reflect only social values [and are therefore] incapable of performing effectively their military function].”⁷⁵

It seems that both pre-war Japan and post-war Japan have come along without managing to find a harmony and balance for these two imperatives of “social values” and “military function”. And even today, it seems unlikely that the people, political leaders, and the Self-Defense Forces are seriously addressing this issue in search of a solution. Huntington argued, “some societies may be inherently incapable of providing effectively for their own military security. Such societies lack survival value in an era of continuing threats.”⁷⁶ The time has come for the people, politicians, and the SDF to find a balance point between “functional imperatives based on threats” and “social imperatives”.

Yuichi Hosoya, a professor at Keio University, said, “In post-war Japan, discussions have concentrated on controlling the SDF as a ‘competent organization’ and there have been limited opportunities to envision desirable and harmonious relationships.”⁷⁷ He went on to state, “Only when the people and government understand the difficulties, empathize, respect, and even provide compensation for military personnel, who will ultimately be compelled to sacrifice their lives, will military personnel also be subject to such controls. It is a reciprocal relationship, which requires trust on all three sides of the triangle,”⁷⁸ emphasizing that interaction of the people and politicians with the SDF is the cornerstone of a healthy relationship of trust.

Issues within the Self-Defense Forces: establishment of a new integrated commander

Next, the Fukushima nuclear accident left lessons on political assistance and troop operations. Political assistance is the role of the Self-Defense Forces in assisting political decisions on behalf of the Self-Defense Force on the side of being controlled. Troop operations refer to the role of bundling the three Self-Defense Forces, establishing operations under one policy, and executing that policy. In democratic countries, the political assistants and the troop operators are usually separated.

⁷⁴ Huntington, 1957, p.5.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ Hosoya, 2019, p. 24.

⁷⁸ Ibid., p. 23.

In March 2006, the Self-Defense Forces' Joint Staff Council and its secretariat were abolished, and the Joint Staff Office was established. Along with this, a system has been established in which the Chief of the Joint Staff will assist the Defense Minister in an integrated fashion in the operation of the Self-Defense Forces. However, there still remains no integrated command center that binds the operation of the three Self-Defense Forces under one commander. For the sake of convenience, the Joint Staff Office assumes this role. Despite not having command authority, the Joint Staff Office also played a commanding role during the Great East Japan Earthquake.

At the time, Joint Chief of Staff Ryoichi Oriki, who was the top uniform and was in both positions of assisting politics and managing the operations of the Self-Defense Forces, said, "I had to use about 40% of my time on Japan-U.S. coordination, ministerial assistance, and liaison with the Kantei, so I could only devote 60% to the operation of the troops."⁷⁹ Furthermore, he recalls, "because of the lack of personnel in normal times, we start off with the expectation of 'one person, two roles', but once there is a disaster or a battle begins, that becomes 'two people, one role'."⁸⁰ He is saying, in an emergency or crisis response, it is impossible for one person to play the two roles of bundling political affairs and operating troops, and in normal times, one or two roles may be manageable, but it is impossible during an emergency, and if possible, you need to have four times the number, i.e. two people, one role.

After the earthquake, momentum for a division of labor increased in the form of a new integrated command established to centrally control the three Self-Defense Forces from within the SDF and politics, the chief of the integrated staff to be dedicated to assisting politics, and the integrated commander to be dedicated to operating and managing the units of the SDF. In March 2018, a joint meeting of the Liberal Democratic Party's Security Investigation Committee and the Defense Committee proposed that a unified commander should be permanently installed.⁸¹ However, the establishment of an integrated headquarters was postponed in the new General Defense Plan decided by the Cabinet in December of the same year.

If the Chief of Staff puts a great deal of emphasis on political assistance, unit operations will be neglected. The reverse is also true. Former U.S. Secretary of State Colin Powell, a military officer, said in his autobiography, "In my days as an intermediate-level officer, I was sometimes afraid of the obedience of the Joint Chiefs of Staff. They engaged in the Vietnam War without asking the politicians for a clear goal."⁸² The Chief of Staff should be devoted to political assistance, and the Joint Commander should be in charge of managing unit operations in a centralized manner and clarifying what the SDF can and cannot do. It is inevitable that there will be disagreement between the Chief of Staff and the Joint Commander. This is because each position is different. But in that tension, it is their role to find a point of equilibrium under the direction and supervision of the Defense Minister. The military cannot be regulated only by political needs, and conversely, it is not possible to carry out operations pursuing only military rationality and disregarding the actual situation of society.

Although the current relationship between politics and the Self-Defense Forces is heading in the right direction, two-way communication is still insufficient. This means that in Huntington's words, in Japan, the pre-war military forces pursued too much "a functional imperative stemming from the threats to the society's security" leading to the country's destruction, but the post-war Self-Defense Forces are nothing but still hesitant about asserting this imperative. In order to bring about

⁷⁹ Funabashi, 2014, p. 225.

⁸⁰ Ibid., p. 219.

⁸¹ Mainichi Shimbun, 2018.

⁸² Powell, 1995, p. 548.

coordination and balance, an integrated commander should be swiftly created to unite the three Self-Defense Forces.

Summary

We have analyzed how the first responders responded to the Fukushima nuclear accident and what they subsequently learned, as well as further explored the essence of support responders from the U.S. military.

Firstly let us recap on the first responders. In the event of a nuclear disaster such as the Fukushima nuclear accident, it goes without saying that closer coordination and cooperation between the first responders will be needed, but even more so is the fact that a more detailed discussion is needed on how the operators and first responders should share roles in a nuclear disaster. At the same time, constant efforts and reforms are needed to permit the government to respond promptly in the event of not only a nuclear disaster but also other major disasters.

Next, the support responders, the U.S. Army, the only allied army Japan has. Considering the growing preference for domestic politics in the United States, it is necessary for Japan itself to lead the way in multi-layered ties in various fields such as politics, diplomacy, military, and human exchange. With the U.S. Army, which provides support in the event of an emergency, the Ministry of Defense and the Self-Defense Forces must continue to enhance strategic dialogue, joint training and operations. At this time, it is hoped that Japanese participants will not only include the Self-Defense Forces, but also related organizations to practice joint policy as a more integrated government.

Finally, about politics and the SDF. Since the Great East Japan Earthquake, Japan has been hit by many great disasters. In each case, the Self-Defense Forces have been acting as an all-round responder. In Japan, where the central government does not hold an operational organization such as FEMA in the United States, the SDF is expected to play that role. The ultimate task of the SDF is disaster rescue as well as the protection of Japan from foreign enemies. As a result, engaging in long-term and large-scale disaster deployment activities is becoming an obstacle to maintaining national defense and training. The Self-Defense Forces need to clearly communicate their duties, roles, what they can do, and what poses a hindrance, and to build a firm relationship of trust between the people, politicians and the Self-Defense Forces.

References

- Atomic Energy Society of Japan. (2014). *Fukushima Dai ichi genshiryoku hatsudensho jiko ni kansuru chôsa ênkai* [Final Report on the Accident at Fukushima Daiichi Nuclear Power Plant]. Report, March 26. Tokyo: AESJ. (In Japanese.)
- Cabinet Office, Government of Japan. (2012). *Genshiryoku saigai taisaku manyuaru* [Nuclear Emergency Response Manual]. Tokyo: Cabinet. (In Japanese.)
- Cabinet Office, Government of Japan. (2017). *Genshiryoku saigaiji ni okeru jitsudôshiki no kyôryoku ni tsuite*. Report, July 7. Tokyo: Cabinet.
- Cabinet Office, Government of Japan. (2018). '*Jieitai - bôei mondai ni kansuru yoron chôsa' no gaiyô* [Outline of "public opinion survey on the Self-Defense Force and defense issues"]. Press Release, March. Tokyo: Cabinet. Retrieved June 2, 2020 from <https://survey.gov-online.go.jp/h29/h29-bouei/gairyaku.pdf> (In Japanese.)
- Cabinet Secretariat, Government of Japan. (2016). *Genshiryoku saigai taisaku jûjitsu ni muketa kangaekata* [Concept for enhancing nuclear disaster countermeasures]. Report, March 11. Tokyo: Cabinet. (In Japanese.)
- Chijiwa, Y. (2016). *Kokka anzen hoshô kaigi (NSC) to kokka anzen hoshôkyoku (NSS) nihon no naikaku anzen hoshô kikô no kako to genzai* [National Security Council (NSC) and National Security Agency (NSS): Japan's Cabinet Security Organization past and present]. Tokyo: The Japan Association of International Relations. (In Japanese.)
- Fire and Disaster Management Organization Act (Law No.226, 1948), Article 1.
- Funabashi, Y. (2013). *Kaunto Daun Meruto Daun Kami* [Countdown Meltdown Part 1]. Tokyo: Bunshun Bunko. (In Japanese.)
- Funabashi, Y. (2014). *Genpatsu Haisen Kiki no Rîdâshipu to wa* [The Lost Fight of Nuclear Power: What is Crisis Leadership?]. Tokyo: Bunshun Shinsho. (In Japanese.)
- Hironaka, M. (2017). *Gunjin ga seijika ni natte wa ikenai hontô no riyû - seigun kankei o kangaeru* [The real reason military personnel shouldn't be politicians: the relationship between politics and the military]. Tokyo: Bunshun shinsho. (In Japanese.)
- Hosoya, Y. (2019). *Gunji to seiji, nihon no sentaku, rekishi to sekai no shiza kara* [Military and politics: Japan's choice—from history and the global perspective]. Tokyo: Bunshun Shinsho. (In Japanese.)
- Huntington, S. P. (1957). *The State and the Soldier: The Theory and Politics of Civil-Military Relations*. Massachusetts: Harvard University Press.
- Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident. (2012). *Fukushima gennpatsu jiko dokuritsu kenshō ênkai: chôsa, kenshō hôkoku sho* [Independent Investigation Commission on the Fukushima Daiichi Nuclear Accident: Report on the Inquiry and Investigation]. Tokyo: Rebuild Japan Initiative Foundation. (In Japanese.)
- Interview with Charles Casto, August 26, 2019.
- Interview with George Apostolakis, January 29, 2020.
- Interview with Hisayasu Suzuki, January 30, 2020.
- Interview with Japan Coast Guard Marine Environment Protection and Disaster Prevention Division, March 5, 2020.
- Interview with Katsutoshi Kawano, May 21, 2020.
- Interview with Masayuki Hironaka, August 1, 2018.
- Interview with Michael Mullen, August 1, 2017.
- Interview with multiple former staff of the Nuclear Emergency Preparedness Cabinet Office, November, 2019.
- Interview with Nobushige Takamizawa, February 4, 2020.
- Interview with Nobuyasu Kubo, December 3, 2019.
- Interview with "Old Boy" from the Nuclear Emergency Preparedness Cabinet Office, November 29, 2019.

- Interview with Robert Willard, September 25, 2017.
- Interview with Ryōichi Oriki, January, 21, 2020.
- Interview with Shūya Nomura, February 4, 2020.
- Interview with TEPCO executive, November 27, 2019.
- Interview with Tetsuya Yamamoto, November 22, 2019.
- Interview with Yasuo Satō, October 8, 2019.
- Isobe, K. (2019). *Tomodachi sakusen no saizensen: fukushima genpatsu jiko ni miru nichibei dōmei renkei no kyōkun* [At the forefront of Operation Tomodachi: Lessons from the Fukushima nuclear accident for the Japan-US alliance]. Tokyo: Sairyūsha. (In Japanese.)
- Japan Coast Guard Act (Law no.28, 1948), Article 2.
- Japan Coast Guard. (2012). *Kaijō hoanchō repōto: tokushū higashi nihon daishinsai - kaijō hoanchō no taiō to kongo no taisaiku* [Japan Coast Guard report: special issue on the Great East Japan Earthquake–response from the Japan Coast Guard and future measures]. Report. Retrieved June 2, 2020 from <https://www.kaiho.mlit.go.jp/info/books/report2012/html/top.html> (In Japanese.)
- Kubo, N. (2015). *Ware, kakutatakaeri - higashi nihon daishinsai to nihon no shōbō (shōbōchō chōkan toshite no taiken o chūshin ni)* [The Great East Japan Earthquake and Japanese Fire Fighting (centering on my experience as the Commissioner of the Fire and Disaster Management Agency)]. Tokyo: Kindai shōbō sha. (In Japanese.)
- Mainichi Shimbun. (2018). Tōgō shireibu o jōsetsu - jimin ga teigen kosshi [The establishment of the Permanent Joint Headquarters proposed by the LDP]. *Mainichi Shimbun*, morning edition, March 21. Retrieved June 2, 2020 from <https://mainichi.jp/articles/20180321/ddm/002/010/085000c> (In Japanese.)
- Ministry of Defense. (2011) *Daijin rinji kisha kaiken gaiyō* [Summary of the Ministerial Press Conference]. Press statement, March 16. Retrieved June 15, 2020 from <https://warp.da.ndl.go.jp/info:ndljp/pid/11347003/www.mod.go.jp/j/press/kisha/2011/03/16.html> (In Japanese.)
- Ministry of Defense. (2012a). *Nihon daishinsai e no taiō ni kansuru kyōkun jikō (saishū torimatome)* [Lessons learned concerning the response to the Great East Japan Earthquake]. Report, November. Retrieved June 2, 2020 from <https://www.mod.go.jp/j/approach/defense/saigai/pdf/kyoukun.pdf> (In Japanese.)
- Ministry of Defense. (2012b). *Waga kuni no bōei to yosan: heisei 24 nendo yosan no gaiyō* [Japan's defense budget: 2012 budget overview]. Report. Retrieved June 2, 2020 from https://www.mod.go.jp/j/yosan/yosan_gaiyo/2012/yosan.pdf (In Japanese.)
- Ministry of Land, Infrastructure, Transport and Tourism, Hokuriku Shin'etsu Transport Bureau. (n.d.). *Sen'in-hō no go an'nai* [Information on the Seafarer Law]. Retrieved from <https://www.tb.mlit.go.jp/hokushin/hrt54/vessel/seninhou/seninhouannai.html> (In Japanese.)
- National Governors' Association. (2015). *Genshi ryoku hatsudensho no anzen taisaku oyobi bōsai taisaku ni taisuru teigen* [Recommendations for nuclear power plant safety and disaster prevention measures]. Report, August 20.
- National Police Agency Security Planning Division. (2012). *Saigai ni kakawaru kongo no kiki kanri taisei ni tsuite* [Future crisis management system for disasters]. Press Release, March 8. (In Japanese.)
- Nuclear Disaster Countermeasures-related Ministries Meeting 1st Subcommittee. (2017). *Genshiryoku saigai-ji ni okeru jitsu dō soshiki no kyōryoku ni tsuite* [Cooperation of Production Organizations at the Time of Nuclear Disaster]. Nuclear Ministers' Meeting (8th) Handout, Appendix 2-1, p.1. Retrieved from https://www.cas.go.jp/jp/seisaku/genshiryoku_kakuryo_kaigi/dai8/siryou2_1.pdf (In Japanese.)
- Plokhly, S. (2018). *Chernobyl: The History of A Nuclear Catastrophe*. New York: Basic Books.
- Police Act (Law No.162, 1954), Article 2.

- Potter, W., Kerner, L. (1991). 'The Soviet Military's Performance at Chernobyl,' *Soviet Studies*, 43 (6), pp. 1027–1047.
- Powell, C. (1995). *Mai Amerikan Jânî* [My American Journey]. Tokyo: Kadogawa Shoten. (In Japanese.)
- Sato, Y. (2019). *Naze, sono 'ketsudan' wa dekita no ka* [Why was that "decision" made?]. Chûô keizaisha. (In Japanese.)
- Rebuild Japan Initiative Foundation. (2015). *Yoshida Masao no igon - yoshida chôsho ni miru fukushima genpatsu kiki* [Anatomy of the Yoshida Testimony – The Fukushima Nuclear Crisis as seen through the Yoshida Hearings]. Tokyo: Tôyô Shuppan. (In Japanese.)
- Self-Defense Forces Act Enforcement Regulations (Prime Minister's Office Ordinance No. 40, 1945).
- Self-Defence Forces Act (Law no.165, 1945), Article 3.