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Improvement of Incident Command System from Hanshin Awaji Earthquake in 1995 to East Japan Earthquake and Tsunami in 2011

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In Japan we have suffered a lot of damage by a big natural disaster such as an earthquake, a Tsunami, an eruption of a volcano and a typhoon. For example, in a decade from 2000 there were 1,036 earthquakes with the magnitude of 6.0 and over 6.0 all over the world, of which 20.5% occurred in Japan (*White Paper on Disaster Prevention in 2010* : 33). Every time we had damages by a big disaster, we checked the measures for disaster prevention. In such a process we have improved the incident command system at the occurrence of a big disaster. At the time of Hanshin Awaji Earthquake in 1995 we did not have efficient Incident Command System. Therefore, immediately after the occurrence of the earthquake the rescue activities delayed. I will analyze reasons of the delay by focusing on the operation of Incident Command System.

After the occurrence of Hanshin Awaji Earthquake the national government, local governments, many organizations in the private sector have improved the measures for disaster prevention including Incident Command System. I will analyze how these improved measures operated immediately after the East Japan Earthquake and Tsunami in 2011.

1 . Enactment of Atomic Power Fundamental Law in 1955

In 1949 the Chinese Communist Party conquered China. Since then the cold war between the east and the west became globalized. In the cold war the Soviet Union and the United States competed for the development of atomic bombs. To keep Japan in the Western Block, the United States proposed Japan to assist the construction of a nuclear electric power plant. To accept this proposal, in 1950 Atomic Power Fundamental Law was enacted as a first Fundamental Law (Yokoyama, 2015 : 18).

Under this fundamental law, Japan declared to use nuclear power only for the purpose of the development of peaceful life. At that time leaders in the national government and in the electric industry were seriously aware of the possibility of a severe incident at a nuclear electric power plant. To cope with the incident immediately, Incident Command System was established under the law. However, Incident Command System did not function efficiently to cope with the March 11 Earthquake and Tsunami which hit the Fukushima Nuclear Electric Power Plant, as I will analyze later.

2 . Development of Incident Command Systems under Fundamental Law on Disaster Countermeasures of 1961

In 1959 a large typhoon hit the area along Ise Bay, by which more than 5,098 persons were killed and missing. After the World War II our country was democratized under the guidance of the Allied Powers, by which the centralized national government collapsed. Therefore, small-sized local governments held the power for the incident command system.

However, they had neither resources nor the efficient command system enough to cope with a big disaster such as Ise Bay Typhoon. To improve this situation, in 1961 the Fundamental Law on Disaster Countermeasures was proclaimed as the second fundamental law. Under this fundamental law the initiative in taking the disaster control measures of the national government and the prefectural government was strengthened. The incident command system on the national and prefectural level was improved. Next, I will analyze how the incident command system operated at the occurrence of Hanshin Awaji Earthquake on January 17, 1995.

3 . Incident Command System at Hanshin Awaji Earthquake on January 17, 1995

At 5:46 a.m. on January 17, 1995, Hanshin Awaji Earthquake with magnitude 7.3 occurred. Residents at south areas of Hyogo Prefecture including Kobe City and Awajishima were seriously damaged by the earthquake and by the fire in succession. Many buildings and houses were collapsed. The total number of persons killed by this earthquake amounted to 6,434, of which about 80% were clashed to death soon after the earthquake.⁽¹⁾ In addition, many important systems such as the traffic system and the communication system, and the life line such as supply of water, gas and foods were seriously damaged. How did Incident Command System function to cope with this catastrophic disaster?

1) **How did a supreme commander of Incident Command System behave?**

A supreme commander of Incident Command System on the national level was Tomiichi Murayama, a prime minister of the coalition cabinet

affiliated with the Social Democratic Party of Japan. At 5:46 a.m. on January 17, 1995, a large earthquake occurred at the areas of southern Hyogo Prefecture. He got up early morning at Prime Minister's Official Residence in Tokyo, 430km far from Kobe. Although the swing by the earthquake is weak in Tokyo he knew this big earthquake on TV of NHK at 6:00 a.m.⁽²⁾

It is most important for a commander to collect information about a serious incident immediately in order to operate the Incident Command System. It was not until 6:30 a.m. that Murayama telephoned his secretary. As a supreme commander Murayama directed him to collect information about the earthquake. However, he failed to collect it. At 7:00 a.m. another secretary called to the Disaster Prevention Bureau of Land Agency to collect information. There was no officer in charge of collecting information about catastrophic disaster at the agency. An officer receiving the telephone answered that the agency did not have any information. Then, the secretary conveyed this answer to Murayama.⁽³⁾ Another reason why they failed to collect information was that the earthquake occurred in the early morning.⁽⁴⁾

At 8:26 a.m. one hour earlier than the scheduled time, Murayama entered his office in the Prime Minister's Official Residence, at which no officer worked to collect information about damages by the earthquake. At 8:45 a.m. he issued an announcement that he would take all possible measures to cope with the catastrophic disaster.

At 8:53 a.m. Kouzo Igarashi, a secretary-general of the Cabinet, announced that the Cabinet would establish the Urgent Headquarters to Cope with Disaster and that Kiyoshi Ozawa, a chief of Land Agency, would be dispatched to the suffered places. However, Ozawa did not leave for Kobe immediately to dispose of the scheduled job. At 9:20 a.m. he

attended a monthly meeting with Murayama to listen to a report on economic situation, at which members of the meeting did not discuss the measures to cope with the disaster. Both Murayama and Ozawa did not identify themselves as a commander of Incident Command System for the big earthquake.

At 10:04 a.m. Murayama began to preside at the regular Cabinet Meeting, at which the establishment of Urgent Headquarters to Cope with Disaster was discussed. However, he did not give any direction about the measures to cope with the catastrophic disaster. It was not until 11:00 a.m. that the Urgent Headquarters to Cope with Disaster was established and that Ozawa was appointed as a chief of the headquarters.⁽⁵⁾ At 11:30 a.m. the first meeting was held at the headquarters. At 12:00 a.m. Igarashi reported to Murayama that the total number of killed persons amounted to 203. Receiving the formal report for the first time, Murayama was surprised at a large number of casualties. It was not until 14:30 p.m. that Ozawa left Tokyo for Kobe by an airplane to inspect damages at the suffered places from the air.

A supreme commander of the Incident Command System is obliged to inform people of damages by a disaster. He/she is requested to appear at the press conference as early as possible. In case of Hanshin Awaji Earthquake it was not until 16:00 p.m. that Murayama appeared at a press conference. At the conference he stated that Hanshin Awaji Earthquake was the largest disaster in a large city since Kanto Great Earthquake Disaster in 1923 and that he would take all possible measures to save people's life by relief operation.

It was not until 9:46 a.m. on January 18 that the emergent Cabinet Meeting was held to discuss the measures to cope with the catastrophic disaster. At 11:32 a.m. on January 18 Murayama arrived at Kobe by a

helicopter with Takako Doi, a chairwoman of the House of Representatives affiliated with the Social Democratic Party of Japan.

Many politicians belonging to the left wing opposed the imperialism of the United States. As Murayama was a leftist, he refused an offer from President Bill Clinton for rescue activities by the use of an aircraft carrier, which was stationed at US navy base in Yokosuka. He received only 3,700 blankets from the United States. In addition, he refused to establish the Emergency Headquarters to Cope with Disaster, under which the government could control the traffic and the price of commodities. The reason why he refused it might be that he as a leftist did not want to use the strong control power of the national government. As a result the heavy disorder in the traffic was witnessed in the suffered city areas.

It was not until January 25 that the national government issued the ordinance to apply the Law to Provide Special Financial Support to Local Government to Cope with the Designated Disaster with Extreme Severity. The delay in the measures to cope with Hanshin Awaji Earthquake was severely criticized. Next, I will analyze how the Incident Command System did not function in order to request for the disaster relief operation to Self Defense Forces immediately after the occurrence of Hanshin Awaji Earthquake.

2) Request for Relief Operation to Self Defense Forces

In Japan politicians affiliated with the left wing opposed the expansion of the police power and the active operation of the Self Defense Forces. Therefore, Murayama might hesitate to use the Self Defense Forces⁽⁶⁾ for rescuing sufferers, although the Self Defense Forces began to prepare for the relief operation immediately after the occurrence of the

earthquake.

Under the law the Self Defense Forces was prohibited from carrying out the relief operation for sufferers by their own judgement. A prefectural governor, a director-general of Maritime Safety Agency, a commander of a regional coast guard headquarters and a director of airport administrative office are qualified to give a request for rescue activities to Self Defense Forces. A chief of a local government can give the request through a prefectural governor. In case of Hanshin Awaji Earthquake Toshitami Kaihara, the Hyogo Prefectural Governor did not request as a commander of Incident Command System to Self Defense Forces for the relief operation soon after the occurrence of Hanshin Awaji Earthquake.

Four minutes after the occurrence of the earthquake members of an aviation corps at Yao Base of the Self Defense Army Forces began to prepare for flying a scouting helicopter to suffered palaces. At the same time at Itami Base of the Self Defense Army Forces they began to organize the rescue teams composed of about 300 members. At 6:30 a commander of the headquarters of the Self Defense Forces in the Central Areas decided to shift the working system to the urgent working one. At 6:30 a.m. at Hyakuri Base of the Self Defense Aviation Forces commanders discussed whether they should give an order to fly a scouting aircraft to suffered places. However, they gave up issuing the order in the consideration of political situation.⁽⁷⁾ A commander has to consider the political factors in case he/she gives an order to carry out the relief operation.

At 6:35 a.m. a commander at Itami Base decided to dispatch a rescue team to a collapsed building of Hankyu Railway Station by the request of the Itami Police Station. At 6:50 a.m. a commander of the Self Defense Army Forces in Himeji issued the emergency summons to all members. It

was not until 7:14 a.m. that a scouting helicopter flew from Yao Base to the suffered areas in the name of a training flight because they could not receive any request from the Hyogo Prefectural Governor. At 7:00 a.m. a commander of the Self Defense Army Forces in Himeji dispatched a liaison team to a building of the Hyogo Prefectural Government. It was not until 7:58 a.m. that 48 members dispatched from Itami Base began to carry out the rescue activities at the Hankyu Itami Station because they delayed in the arrival owing to the disordered traffic.

At 8:00 a.m. the Prime Minister's Office asked the Self Defense Agency whether the agency received a request for relief operation from the Hyogo Prefectural Governor. The agency answered that they did not receive any request. At 8:11 a.m. a scouting aircraft left from a base of the Self Defense Aviation Forces in Tokushima. They gave a report to the base that damages in Awajishima Island were gigantic.

Kaihara, the Hyogo Prefectural Governor, waited at his house for a car to pick him up to go to the Hyogo Prefectural Office Building. As the car was involved in a heavy traffic jam, it was not until 8:20 a.m. that he arrived at his office. However, he did not give a request immediately to the Self Defense Forces for relief operation. Under the law a prefectural governor obliged to write a situation on damages in detail when he/she gave a request to the Self Defense Forces. Local governments in the southern Hyogo Prefecture were damaged too seriously to grasp the situation of suffered areas. Kaihara might hesitate in requesting to Self Defense Forces, because he did not have information enough to write about damages in detail. Obligation of writing about damages in detail was inadequate in chaotic situation after a catastrophic disaster.

At 9:00 a.m. a combat support ship left a navy base in Kure for Kobe. At 9:05 a.m. the Land Agency advised the Hyogo Prefectural Govern-

ment to give a request for the rescue activities to the Self Defense Forces, as any organization of the national government was not authorized to give the request under the law. At 9 : 40 a.m. a transport ship left a navy base in Kure with carrying emergency provisions for 45,000 persons. At 9 : 40 a.m. a firefighting man gave a report from a helicopter to Yukitoshi Sasayama, a mayor of Kobe City.⁽⁹⁾ Then, Sasayama called to Kaihara to think about a request for relief operation to Self Defense Forces. As Kaihara did not request, a chief of many local governments gave the request directly to Self Defense Forces.

At 10 : 10 a.m. a deputy section chief of Hyogo Prefectural Government received a telephone from Self Defense Army Forces in Himeji to ask whether the Hyogo Prefectural Government gave a request for relief operation. As he gave an affirmative reply, the Self Defense Forces interpreted that they received the request formally from Hyogo Prefectural Government. Later his reply was approved by Kaihara.

At 10 : 15 a.m. a commander of the headquarters of the Self Defense Forces in the Central Areas ordered corps to move out from their base for carrying out the disaster relief operation. However, Prime Minister Murayama did not want to move the large-sized forces from a base. As he directed that the maximum number of the dispatched members should be within 3,000, only 2,300 members were dispatched to the suffered areas. At 10 : 25 a.m. two officials of Self Defense Forces in Himeji arrived at a Hyogo Prefectural Government Building by a helicopter. They joined a meeting to cope with the catastrophic disaster.

At 12 : 48 p.m. three helicopters of Self Defense Forces landed at an office of a town government in Awajishima Island. The arrived members of a rescue corps rode a motorcycle to carry out a research to grasp the situation of damages in the island.

At 13:10 p.m. 215 members of the first dispatched corps arrived at Kobe. They delayed in arrival owing to heavy traffic jams on the road to enter Kobe. In the afternoon the rescue activities by Self Defense Forces started. At 18:00 p.m. a transport ship left a navy base in Kure arrived at Himeji Harbor, at which relief goods were loaded. Then, the ship left for Kobe Harbor.

It was not until 19:50 p.m. and 21:00 p.m. that Kaihara requested the Self Defense Navy Forces and the Self Defense Aviation Forces respectively for the disaster relief operation. One reason why Kaihara delayed in issuing a request was that he received a report on damages infrequently from the Hyogo Prefectural Police. In addition, the content of the report was inaccurate. Another reason might be his character. Kaihara had a career as an able bureaucrat at Ministry of Home Affairs and Hyogo Prefectural Government before being elected as the governor. Therefore, he might assume the ritual type in Merton's adoption category. If so, he seemed to lack the ability in quick decision making at the catastrophic disaster. A ritualist is not qualified to work as a commander of Incident Command System.

3) Operation of Incident Command System by Police

The police are in charge of operating Incident Command System on the national level and the suffered prefectural level immediately after the occurrence of a disaster. In Japan the National Police Agency does not have police forces, while the police forces belong to a prefectural police or a region police (Yokoyama, 2001). In case of a catastrophic disaster a chief of prefectural police in the suffered areas asks the National Police Agency to direct other prefectural polices and a region police to dispatch the rescue squads to the suffered areas. Therefore, a chief of prefectural

police plays an important role as a commander for the Incident Command System.

In case of Hanshin Awaji Earthquake the National Police Agency in Tokyo established the Office to Cope with Earthquake Disaster at 6 : 30 a.m. After receiving the request from a chief of the Hyogo Prefectural Police, the National Police Agency directed a chief of several prefectural polices including the police in Osaka, Kyoto and Nara to dispatch the police squads. At 11 : 00 a.m. a riot squad of Kyoto Prefectural Police arrived at Hyogo, followed by many squads coming from neighboring prefectural polices. It was not the early arrival enough to rescue many persons buried under the collapsed building. In addition, the police officers could not carry out the relief operation efficiently at the suffered areas, because they did not have equipment, machines, technique and knowhow to rescue sufferers buried under the collapsed building.

4) Operation of Incident Command System in Management for Fire and Disaster

The Fire and Disaster Management Agency belonging to General Affairs Ministry does not have the squads to cope with a fire and a disaster. Therefore, Incident Command System on the local municipal level is more important than that in the police.

In case of Hanshin Awaji Earthquake Kobe City Firefighting Agency requested the neighboring local firefighting stations and several large-sized city firefighting agencies to dispatch the firefighting squads and the rescue squads. In response to the request at 11 : 00 a.m. a commander of the Incident Command System at Tokyo Metropolitan Firefighting Agency directed members of the special rescue squads in Hachioji to fly to Kobe by a large-sized helicopter, in which they carried equipment and

machines for rescue activities. Immediately after arrival in Kobe they performed the relief operation efficiently. However, there was no activity by the use of a helicopter to lift a sufferer up and to carry him/her to a safe place.

At a firefighting station a certain number of members of firefighting squads stay all night. Immediately after a big fire and a catastrophic disaster other firefighting officers staying at their house hurry to the station. In case of officers at the occurrence of the earthquake 24 firefighting officers stayed at Nagata Firefighting Station in Kobe City. As a fire at more than ten places at Nagata Ward occurred immediately after the earthquake, all firefighting officers of four squads rode five firefighting cars and two ambulance cars to hurry to the scenes of a fire. However, they could not cope with all fires.⁽¹³⁾ Therefore, at many scenes of a fire residents filled a bucket with water and passed it forward to extinguish a fire. Both firefighting officers and residents, especially firefighting volunteers could not get sufficient water from a water pipe and a river. As a result a fire spread in wide area in Nagata Ward, where there were many old wooden houses. They gave up extinguishing a fire, while participating only in the preventive activities against expanding a fire.

Koji Uozumi, a vice marshal of the Nagata Firefighting Station, stayed at the Nagata Firefighting Station as a commander of Incident Command System, because a marshal was struck by an illness (Uozumi, 1995). He received many reports about a fire from residents. However, he could not direct firefighting squads to go to many scenes of a fire. He ordered his subordinate to call to the Kobe City Firefighting Headquarters in order to receive assistance. But the headquarters could not give assistance. However, around 8:00 a.m. many firefighting squads came

from other firefighting stations in Kobe to Nagata Ward. At 10:00 a.m. Uozumi requested the headquarters to dispatch a firefighting ship. Around 11:00 a.m. some squads of Sanda City Firefighting Headquarters arrived at Nagata Ward. Then, Uozumi assigned three subordinate commanders to cope with fires at three divided areas in Nagata Ward. Firefighting squads coming from other places were put under the command of these three commanders. It was good operation of the Incident Command System.

In Japan we have the squad of firefighting volunteers. At the scenes of a fire in Nagata Ward they worked to extinguish a fire. In addition, they guided firefighting volunteers coming from other places to the scene of a fire. It contributed to coping with the big fires in Nagata Ward.

At 13:30 p.m. ten squads of the Osaka City Firefighting Bureau arrived at Nagata Ward. Uozumi at Nagata Firefighting Station directed all chiefs of the arrived squad to go to a certain scene of a fire by the guide of his subordinate. In addition, he suggested the chiefs to use water in sea to extinguish a fire in the cooperation with firefighting ships. He worked as an excellent commander of Incident Command System.

Following the squads of the Osaka City Firefighting Bureau, 170 squads composed of 900 firefighting officers participated in activities to extinguish a big fire in Nagata Ward. It was not until January 19 that a big fire was distinguished in Nagata Ward. By January 25 more than 2,000 firefighting officers coming from other prefectures helped the firefighting squads belonging to Kobe City Firefighting Bureau.

The total number of a fire amounted to 285, of which 87 occurred before 18:00 p.m. on January 16. Owing to inefficient firefighting activities about 7,000 buildings were burned.

The main reason why firefighting activities were in vain was the

shortage of water to extinguish fires. Another reason was that each firefighting squad used a hose with different standard. In addition, in some areas hoses from a firefighting car were destroyed by the traffic, because there was no efficient traffic control.

In Awajishima Island they had a close human tie. Therefore, they succeeded in performing the rescue activities within one day by themselves under the initiative of police officers, firefighting officers and firefighting volunteers. In general Incident Command System functions more efficiently in rural areas with close human tie than in urban areas in which anonymity is prevalent.

5) Operation of Incident Command System in Medical and Nursing Field

Soon after the occurrence of the earthquake medical doctors, nurses and caseworkers working at national hospitals wished to be dispatched to suffered places. However, it was not until the early February that the Ministry of Health and Welfare admitted their wish. The ministry failed to operate Incident Command System earlier. By the way, the mental care for sufferers with psychological trauma was carried out at ten public health centers at suffered places.

6) Operation of Incident Command System in Private Sectors

In many organizations in the private sectors they operated Incident Command System to cope with Hanshin Awaji Earthquake. Among them the most excellent commander was Isao Nakauchi, a founder of Daiei Spermarket Group.⁽¹⁴⁾ He knew the earthquake by watching the news on TV at his house in Tokyo. At 6 : 20 a.m. he appeared at the headquarters of Daiei in Tokyo, at which he began to work as a commander of Incident

Command System. At 8:00 a.m. he presided a meeting to cope with the catastrophic disaster. As Nakauchi had a philosophy that a supermarket is a lifeline for people, he ordered a director general in charge of sale to fly to Kobe immediately by a helicopter. The director left for Kobe by a helicopter carrying 1,000 lunch boxes and a portable machine for satellite communications. In addition, by using a ferry a lot of goods were carried to Kobe.

Daiei Supermarket Group suffered great damages by the earthquake.⁽¹⁵⁾ However, employees opened their damaged supermarkets and Lawson convenient stores to sell the daily necessities without raising the price.⁽¹⁶⁾ Three days later Nakauchi went to Kobe, at which he worked as a supreme commander of Incident Command System on the hot spot. By the negotiation with the government he succeeded in acquiring the permission to prolong the opening hours at supermarkets and convenient stores, and to sale goods on a road in front of the collapsed stores.⁽¹⁷⁾ He ordered employees to keep lighting during a whole night at a store in order to encourage sufferers, and to open a store until midnight if customers continue coming.

In other companies in distribution industry they also operated Incident Command System earlier than in the public sectors. At 8:30 a.m. Seven Eleven Company with many convenient chain stores established the Urgent Headquarters to Cope with Disaster. Under the command at the headquarters a helicopter left for Kobe with carrying a lot of rice balls, which were delivered to their damaged convenient stores within three hours after the occurrence of the earthquake. In such a way many daily necessities were carried to the suffered places earlier than those carried by organizations in the public sector including the Self Defense Forces.

Many private organizations and groups offered such aids to sufferers

as the supply of foods, water, a toilet, a place for taking a bath and accommodation. Even members of Yamaguchi-gumi, the largest Boryokudan group (Japanese gangsters group), joined the relief operation as a group with Ninkyo-do under the command of their godfather, because their headquarters was located in Kobe.⁽¹⁸⁾ As the police connived at their activities, they contributed to helping many sufferers.

Soon after the earthquake many people came to Kobe to help sufferers on the voluntary base.⁽¹⁹⁾ It also contributed to helping sufferers from recovering from damages. However, their voluntary activities were sometimes encumbrance for the disaster relief operation, as the Incident Command System to volunteers was not established.

4 . Improvement of System to Cope with Disaster after Kobe Awaji Earthquake

1) Improvement of Incident Command System on National Level

At Hanshin Awaji Earthquake the system to cope with disaster, especially Incident Command System did not always function adequately. Then, the Fundamental Law on Disaster Countermeasures was revised twice in 1995. By these revisions the conditions of the establishment of Emergency Headquarters to Cope with Disaster, at which a prime minister becomes a director general, were mitigated. The Emergency Headquarters to Cope with Disaster on the hot spot was legalized. The chief of a local government was authorized to ask a prefectural governor to request the Self Defense Forces for the relief operation. The police were authorized to prohibit private vehicles extensively from running on a road in areas suffered by a disaster. In addition, the environment for activities by volunteers and private organization for the disaster preven-

tion were improved.

In July in 1995 the Fundamental Plan for Disaster Prevention was revised, followed by the revision of the plan for disaster prevention made by local governments.

At Hanshin Awaji Earthquake we saw the delay in the relief operation at the early stage. Some measures were established to improve this defect. In February in 1995 such a director as a bureau director of the concerned ministries was obligated to assemble at the Prime Minister's Official Residence at the occurrence of a catastrophic disaster as early as possible. The gathering directors should attend a meeting to exchange information about the disaster.

In 1996 the Cabinet Center to Consolidate Information was founded, at which staffs collect information all day long. In April in 2002 a new building of Prime Minister's Official Residence was completed, in which the Risk Management Center with the newest facility and equipment to use high information technology was established.

Since Hanshin Awaji Earthquake the wireless network between the national government and the assigned public organizations has been improved. The Emergent Management System was founded in 1999 to collect data, to analyze the data and to share the information about the results of the analysis with the concerned organizations of national government. Such public organizations in charge of the coping with a disaster as the National Police Agency, the Self Defense Agency, Fire and Disaster Management Agency, Ministry of Land and Transportation, Maritime Safety Agency, are obliged to collect information from the suffered places. When they receive the live pictures from a helicopter flying over the suffered areas, they send the pictures at the same time to the Risk Management Center. At the center professional staffs analyze

these pictures and information collected by the concerned organizations to estimate the damages and to make a plan on how to cope with this disaster. The establishment of the system to collect adequate information immediately after the disaster is necessary to operate Incident Command System effectively.

2) Improvement of System for Relief Operation

In 1995 the Firefighting Organization Law was revised to improve the system from the perspective of a whole Japan to cope with emergency caused by a large-sized disaster and a special type of a disaster. The standard of facilities, equipment and instruments for firefighting and rescue activities became uniform in all Japan. At the same time the system of the Emergency Fire Response Squad was founded.

At the time of the Hanshin Asaji Earthquake many police officers affiliated with the riot corps were dispatched to the suffered areas from their prefectural polices. However, they could not efficiently rescue people buried under the collapsed buildings and houses, as I mentioned before. To reflect on it, on June 1, 1995, every prefectural police set up the Wide-Area Emergency Rescue Squads. The member police officers of this unit learn special techniques for rescue under the guidance of firefighting officers. At the occurrence of a big disaster they are dispatched with carrying special machines and instruments for the relief operation.

3) Improvement of Medical Relief Operation

By a large-sized disaster at the suffered places many people are injured, while many medical organizations become disordered. To cope with such situation, Ministry of Health and Welfare founded the system of Relief Center as a first-aid station and a shelter, at which medical

doctors and nurses station all day long.

Next, I will analyze how the above-mentioned improved systems to cope with a disaster functioned at the East Japan Earthquake and Tsunami on March 11 in 2011 by focusing on the Incident Command System.⁽²⁰⁾ The time data of incidents on March 11 are cited from an article entitled “Document in Political Circle at Large Disaster in East Japan” in Asahi Newspaper on March 12, 2011.

5 . Occurrence of East Japan Earthquake and Tsunami on March 11, 2011

People living in northeast area in Japan along Pacific Ocean were severely hit by a large earthquake with magnitude 9.0 at 14:46 p.m. on March 11, 2011. Even in Tokyo which was about 375km away from the center of the earthquake, we witnessed some casualties and a lot of damages by the strong swing. Following it, many aftershocks of the earthquake occurred, one of which was an earthquake with magnitude 7.7 at 15:15 p.m. occurring at the offshore of Ibaragi Prefecture. In addition, about thirty minutes later a large Tsunami came to the long seashore along Pacific Ocean. The total number of killed and missing persons amounted to 15,270 and 8,499 respectively (*White Paper on Disaster Prevention in 2011*: 13). 92.4% of the killed persons were drowned to death by the high wave of Tsunami. About 65% of the killed persons were 60 years old and over. Many old people were victimized, because they cannot evacuate by themselves.

The Incident Command System prescribed in detail by laws and manuals under the Fundamental Law on Disaster Countermeasures began to operate immediately at the headquarters of national government in

Tokyo. It was completely different from that in case of Hanshin Awaji Earthquake in 1995. Under the umbrella of the national government many public and private sectors embarked smoothly on their own relief operation for sufferers. I will analyze it.

6 . Incident Command System at East Japan Earthquake and Tsunami

1) Operation of Incident Command System at National Government

Immediately after the earthquake, the Incident Command System began to operate almost automatically according to a manual. Without receiving the direct direction of the national government many organizations in both public sectors and private ones embarked on their own activities to cope with this catastrophic disaster. The operation of the Incident Command System on the national level is the following.

At the occurrence of the earthquake our prime minister and main ministers attended a committee meeting on the settlement of accounts at the House of Councilors. It was very lucky for us, because Naoto Kan, a prime minister could give commands immediately as a supreme commander under the Fundamental Law on Disaster Countermeasures.

At 14:50 p.m. only four minutes after the earthquake, the national government established the Office to Cope with the Disaster in Prime Minister's Official Residence (*White Paper on Disaster Prevention in 2012* : 24). At the same time Kan gave directions to confirm the state of casualties and damages, to ensure safety of persons hit by the disaster, to make them evacuate from the disaster, to ensure life line, to restore damaged transportation system, and to offer accurate information to people. Many organizations at public and private sectors embarked on

activities to realize these items.

Immediately after the earthquake the broadcasting teams belonging to TV stations flew by a helicopter to take pictures of scenes at suffered places. About 30 minutes after the earthquake a large Tsunami began to hit the long seacoast areas along Pacific Ocean. People knew it by the live pictures broadcasting from helicopters of TV companies.⁽²¹⁾

Kan realized that the earthquake was most disastrous one in our modern history. Then, at 15 : 14 p.m. he decided the establishment of the Emergent Headquarters to Cope with Disaster headed by him.⁽²²⁾ It was established for the first time after the enactment of the Fundamental Law on Disaster Countermeasures. Kan affiliated with the Democratic Party had the ability of quick decision making, because he had worked as a leader in citizens' movement. Unlike Murayama in 1955 he decided quickly to exercise the strong power as a supreme commander of Incident Command System to cope with the catastrophic disaster.

At 15 : 37 p.m. ministers in charge of disaster prevention held the first meeting of Emergent Headquarters to Cope with Disaster, at which they decided the following fundamental policies to cope with this catastrophic disaster⁽²³⁾ (*White Paper on Disaster Prevention in 2012* : 25).

- a) To grasp the real situation by the collection of information in order to carry out activities smoothly to cope with the disaster
- b) To rescue victims first and foremost by such measures as the dispatch of the Self Defense Forces, the police, fire fighting teams and the medical teams
- c) To restore the transportation system and the life line such as the supply line of foods, clothes, water, electric power, gas and gasoline
- d) To establish the support system of both public and private sectors in all Japan

e) To offer the accurate information

As this statement was issued only 51 minutes after the first strongest earthquake, the draft of the statement seemed to be already prepared by some officials in the consideration of the Fundamental Law on Disaster Countermeasures.

At 16:57 p.m. at the press conference Kan appealed to people to behave coolly. It was earlier than Murayama's appeal in 1995. Without hearing his appeal most Japanese behaved coolly and patiently, although they were anxious about the damages at the earthquake, Tsunami and the severe accident in Fukushima Nuclear Electric Power Plant. Fewer people committed a crime, which was highly evaluated in foreign countries (Abe, 2013 : 116-117).

In Tokyo and its satellite cities public transportation system such as a train and a subway stopped immediately after the earthquake. Most trains and subways did not run owing to the stop of the electric power supply and owing to checking whether the system and equipment for running trains and subways safely were damaged or not. Then, many people working in Tokyo and its satellite cities began to return on foot to their home.

At 17:39 p.m. at the press conference Yukio Edano, the Chief Cabinet Secretary, appealed to people to stay at a safe place without returning to their house. His appeal was in vain. Although the bus system operated, most buses could not move smoothly owing to a heavy traffic jam. Many police officers participated in controlling vehicles and pedestrians. However, the traffic jam and the crowdedness of pedestrians continued until midnight. Although Tokyo Metropolitan Police had not many police officers enough to control and protect pedestrians returning to their home, most of them succeeded in returning without being involved in any

⁽²⁴⁾
trouble.

To collect information about casualties and damages on the hot spot, at 18:42 p.m. a team of the national government headed by vice minister of Cabinet Office was dispatched from Tokyo to Sendai, a capital city of Miyagi Prefecture. The team was composed of about 30 able officials affiliated with ten ministries and agencies such as Cabinet Office, National Police Agency and Ministry of Defense. This composition was decided to facilitate the cooperation between organizations of the national government and those with the corresponding local agencies in Sendai.⁽²⁵⁾ Members of the team rode cars running all night on the highway from Tokyo to Sendai. It was a difficult driving on the road split by strong swing and damaged by a landslide. However, there was no traffic jam, because cars except for those for emergent relief operation could not run on the Tohoku Highway from Tokyo under the traffic control by the police.

The dispatched officials of the national government established the Local Emergent Headquarters to Cope with Disaster at sixteen o'clock in the morning on March 12 in Sendai. On the same day other two teams of the dispatched officials established the Emergent Office to Cope with Disaster in Iwate Prefecture and Fukushima Prefecture.

The national government and three prefectural governments seemed to operate Incident Command System smoothly soon after the earthquake and Tsunami. This smooth operation was carried out under the elaborated scheme prescribed by many laws, rules and manuals under the Fundamental Law on Disaster Countermeasures. However, the command and information was not transmitted smoothly from the national government and the prefectural governments to local governments, of which human resources and facilities were damaged seriously by the earthquake and

Tsunami.

In most areas hit seriously by the earthquake and Tsunami the communication system was destroyed. Even in case the facilities and the equipment were not completely destroyed, the most communication system did not function by the electric supply stop. Therefore, commanders of the national government and the prefectural governments could not transmit a command to the local governments on the base of accurate information collected at the suffered places.

2) Request for Relief Operation to Self Defense Forces

The Ministry of Defense established the Headquarters to Cope with Disaster at 14:50 p.m.⁽²⁶⁾ (*White Paper on Defense in 2012*:206). The ministry was ready for receiving a request for the relief operation by a governor of the suffered prefectural governments.

A governor of suffered prefectures received information about great damages soon after the earthquake. Then, Iwata Prefectural Governor and Miyagi Prefectural Governor requested the Ministry of Defense at 14:52 p.m. and at 15:10 p.m. respectively to dispatch troops of the Self Defense Forces. It was earlier than the time when Tsunami hit the long coast of Pacific Ocean. At 16:47 p.m. Fukushima Prefectural Governor also requested the Ministry of Defense to dispatch the troops. Three governors' decision making on the request to Ministry of Defense was earlier than that by Kaihara in 1995. The earlier request contributed to rescuing many sufferers buried under the collapsed building and rubbles.⁽²⁷⁾ Kan knew many people hit by a big Tsunami through the live pictures broadcasted by helicopters belonging to such public organizations as the police and the Maritime Safety Agency.⁽²⁸⁾ Then, at 15:27 p.m. he directed the Minister of Defense that the Self Defense Forces should exert all its

powers in the response to the request of a governor of suffered prefectures. As he did not direct the maximum number of dispatched members of Self Defense Forces, many members were sent to three suffered prefectures. The total number of dispatched members per a day exceeded 100,000 by March 18 (*White Paper on Defense in 2012*:206). As Kan directed, the Incident Command System of the Fire and Disaster Management Agency, the police and the Maritime Safety Agency was put under that of the Self Defense Forces.⁽²⁹⁾ It was good to operate Incident Command System efficiently as a whole.

3) Acceptance of Offer for Relief Operation from Foreign Countries

Soon after the earthquake an ambassador of American Embassy in Tokyo proposed our national government to dispatch troops stationing at the U.S. military bases in Japan for the relief operation. Kan accepted the proposal from US embassy.⁽³⁰⁾ Then, the U.S. military carried out “Tomadachi (Friendship) Strategy” under which about 16,000 staffs and soldiers per a day participated in the relief operation (*White Paper on Defense in 2012*:206). As Kan accepted the offer for the relief operation from foreign countries, specialists and members for the relief operation came from 28 countries to three suffered prefectures (*White Paper on Disaster Prevention in 2011*:28). Their activities contributed to rescuing and helping many sufferers.⁽³¹⁾ Commander’s decision making to accept the offer for the relief operation from foreign countries becomes important with globalization.

4) Operation of Incident Command System by Police

Immediately after the occurrence of the earthquake the police operated Incident Command System both on the national level and on the local

level. At 14:46 p.m. National Police Agency established the Security Headquarters to Cope with Disaster chaired by a director of the Security Bureau (*White Paper on Police in 2012*:19). It was about 30 minutes after the occurrence of the first largest earthquake that a large Tsunami began to hit the long coast of Pacific Ocean. As it was the most catastrophic disaster in our modern history, at 15:14 p.m. the Emergent Headquarters to Cope with Disaster headed by the Prime Minister was established. At the same time National Police Agency established the Emergency Security Headquarters to Cope with Disaster chaired by the director general. The Security Headquarters to Cope with Disaster was also set up at all prefectural polices headed by its director general. The highest-level Incident Command System in the police began to operate.

It was very difficult for prefectural polices covering the area damaged seriously by the disaster to perform the relief operation for sufferers by themselves under their Incident Command System. One of the reasons was that police facilities suffered great damages by the earthquake and Tsunami. In Miyagi and Fukushima Prefecture even the buildings and the equipment of the police headquarters were damaged. Three suffered prefectural polices had to perform their activities to cope with the disaster in the damaged facilities while losing life line such as the supply of water, electric power and gas.

Three suffered prefectural polices did not have human resources enough to cope with the disaster (Yokoyama, 2013b:18). Then, they requested National Police Agency to dispatch the Wide-Area Emergency Rescue Corps, Wide-Area Police Aviation Corps and Riot Police Communication Corps from other prefectural polices. Receiving the requests, National Police Agency directed other 44 prefectural polices to dispatch these units and corps to three suffered prefectural polices. The coordina-

tion between National Police Agency and prefectural polices operated well soon after the catastrophic disaster.

Immediately after the largest earthquake on March 11 the police began to collect information about main roads in the northeast area of our main island especially from Ministry of Land, Infrastructure, Transport and Tourism, and East Nippon Expressway Company. They judged that vehicles could run on the main highways with speedily repaired pavements. On March 12 the police appointed the main highways to go to three damaged prefectures as an emergent traffic road prescribed by the Fundamental Law on Disaster Countermeasures. This appointment contributed greatly to operating the relief operation speedily.

5) Operation of Incident Command System by Miyagi Prefectural Police

Naoto Takeuchi, a director general of Miyagi Prefectural Police, worked as an excellent commander of Incident Command System. He set up the Security Headquarters to Cope with Disaster at 14:49 p.m. (Takeuchi, 2013:40). All 24 police stations in Miyagi Prefecture also established its own Security Headquarters to Cope with Disaster (Takeuchi, 2012:3). Then, among all 4,200 police officers in Miyagi Prefecture 3,900 were assigned to cope with this disaster. As the plan on policing against natural disaster was revised in 2010, this assignment was performed smoothly. According to the plan Miyagi Prefectural Police Headquarters founded five bases on the hotspot to cope with the disaster, to which the assembling police officers were assigned.

At 15:04 p.m. the Miyagi Prefectural Police requested National Police Agency to dispatch the police officers from other prefectural polices. In spite of difficult traffic conditions on the highway roads, the

riot police units affiliated with Miyagi Prefectural Police and the North-east Region Police rushed to the bases on the hotspot (Takeuchi, 2012 : 3). Immediately after their arrival at one of the bases they were assigned to go to a certain suffered area for the rescue activities. Under the guidance of a commander of Miyagi Prefectural Police in each base the corps and the units dispatched from other prefectures could participate in the relief operation smoothly.

Police officers in three suffered prefectures worked earnestly for sufferers after the earthquake and Tsunami, of whom many did not have information about their family, relatives and friends. Takeuchi knew this situation. Then, he issued several messages everyday by his personal words to encourage police officers working earnestly for sufferers (Takeuchi 2012 : 25).

Takeuchi wanted to express that the earthquake and Tsunami caused the large number of casualties in Miyagi Prefecture. Then, at the meeting of Miyagi Prefectural Government Office he stated that more people than ten thousands estimated to be killed or missing by this catastrophic disaster (Takeuchi, 2013, 42). On March 13 his statement was reported as the big news with a large headline through the mass media. His statement was deviant from the rule prescribed by National Police Agency that the police should announce the number of killed persons after they count the number of a dead body. However, it contributed to forming image of a catastrophic disaster among people all over the world. A commander of Incident Command System is requested to have a bravery to commit a deviant behavior to cope with an unusual catastrophic disaster.

6) Operation of Incident Command System by Iwate Prefectural Police

In case of Iwate Prefectural Police immediately after the first largest earthquake Yoshio Sato, a director in charge of security policing, entered a command room at a building of Iwate Prefectural Police Headquarters, and set up the Security Headquarters to Cope with Disaster (Iwate Prefectural Police, 2013 : 177).

In Iwate Prefecture a helicopter took off soon after the earthquake. When the crew members arrived at Rikuzen Takada City, they saw ordinary scenery (Iwate Prefectural Police, 2013 : 135). At 15 : 29 p.m., a few minutes after their arrival, the high wave hit the city. While shouting through the police radio that the city was completely destroyed, they took pictures by TV equipment. Immediate collection of information about the suffered places contributed to the smooth operation of Incident Command System.

A commander have obligation to do his/her best to secure the safety of people including the confined suspects. At the occurrence of earthquake and Tsunami 28 suspects were confined at six police stations along Pacific Ocean in Miyagi and Iwate Prefecture. However, nobody was killed or missing.

Three suspects were confined in Kamaishi Police Station (Iwate Prefectural Police, 2013 : 180). According to the manual the detained suspects should be sent to Tono Police Station at the emergency. However, Yoshihiro Yamauchi, a chief of the police station, judged that it was impossible to send them to Tono. Then, before being hit by Tsunami he ordered to made three suspects go up to the roof of a building of the police station. Together with 26 police officers including Yamauchi, three suspects could survive on the roof, although high wave of Tsunami reached

to second floor of the building. Yamauchi's decision making was very good, although it violated the manual.

By the earthquake and Tsunami 25 police officers were killing and five were missing (*White Paper on Police 2012*: 2). Eleven among 25 killed officers were affiliated with Iwate Prefectural Police (Iwate Prefectural Police, 2013: 76-78). They were swallowed to death by high wave of Tsunami while being involved with jobs such as calling out to residents and guiding them for evacuation from Tsunami.

Iwate Prefectural Police assigned twelve main roads to go from the inland to the seashore as an emergent traffic road around 21:00 on March 11 (Iwate Prefectural Police, 2013: 130). Although this early assignment was regarded as a flying start by National Police Agency, it was helpful for emergency vehicles to go to the suffered areas smoothly. In Iwate Prefectural Police we saw some good commanders to cope with the catastrophic disaster.

7) Operation of Incident Command System in Management for Fire and Disaster

Immediately after the earthquake a director general of the Fire and Disaster Management Agency ordered all prefectural headquarters of the fire and disaster management to dispatch Wide-Area Emergency Rescue Squads to suffered places.⁽³²⁾

In Japan we have many officers in charge of preventing a disaster such as a police officer and a firefighting officer. To supplement the manpower, such volunteer system as the volunteer firefighters and the volunteer flood-fighters has developed in the community.

Immediately after the first largest earthquake many officers and volunteers in charge of the disaster management drove their car or an

emergency vehicle to seashore. After they shut a water gate according to the manual and observed the situation along the seashore, they patrolled on the road while calling out to residents for evacuation to a high place by the use of a microphone⁽³³⁾. Participating in such jobs, some of them were killed and missing by the unforeseen high wave of Tsunami. The total number of volunteer firefighters who were killed or missing amounted to 253 (Asahi Newspaper on November 25, 2011). It might be a tragedy caused by the routine activity according to the manual for disaster prevention⁽³⁴⁾.

After the earthquake 313 fires occurred in 12 prefectures (*White Paper on Disaster Prevention in 2011*:29). 163 or 52.1% occurred in Miyagi Prefecture, followed by 37 in Ibaragi Prefecture, 34 in Tokyo Metropolis and 26 in Ibaragi Prefecture. In the Tokyo Metropolitan areas fires were extinguished soon except of one case occurred in Chiba Prefecture⁽³⁵⁾.

Majority of fires occurred at the places hit by Tsunami, because some dangerous substances were drained from houses and facilities after Tsunami. Firefighting persons including police officers could not embark on extinguishing a fire, as they did not have sufficient manpower, equipment and instruments⁽³⁶⁾.

8) Operation of Incident Command System for First-Aid Medical Treatment

The system of the Disaster Medical Assistant Team was established after Hanshin Awaji Earthquake in 1995. Soon after the earthquake the Ministry of Health, Labor and Welfare requested the prefectural governments to dispatch the Disaster Medical Assistant Team to the suffered places. Then, eight teams arrived at the suffered places by 20 : 00 p.m. on

March 11 when about 140 teams left already for first-aids medical treatment (Asahi Newspaper on March 12, 2012). 193 Disaster Medical Assistant Teams worked for sufferers in four prefectures, that is, Iwate, Miyagi, Fukushima and Ibaragi.

Many helicopters were used to rescue suffers staying on the roof of a building after Tsunami. In case that a rescued sufferer was seriously injured or suffered from a serious illness, he/she was carried by a helicopter to a hospital in a large city without being damaged by the earthquake. The total number of patients carried by a helicopter amounted to 121, of which 92, 16 and 13 were carried from Miyagi, Fukushima and Iwate respectively (*White Paper on Disaster Prevention in 2011*:30). The system for first-aid medical treatment was more effective than that in Hanshin Awaji Earthquake in 1995.

9) Operation of Incident Command System in Local Community

In a catastrophic disaster commander's decision making is very important in the community level, too. In Ozuchi Town a town mayor decided to hold a meeting to cope with the earthquake at a square in front of a building of the town government, because the old building might collapse by aftershocks of the first largest earthquake. When the meeting started, Tsunami came to the square. Then, 40 persons including a town mayor were swallowed to death by the high wave. After this tragedy a deputy town mayor became a commander to operate the relief operation. However, it was very difficult for him to do so owing to a great loss of human resources in the town government.

People having evacuated to a facility on a high place began to live under mutual aid system, which was organized voluntarily. The life guided by some volunteer leaders continued at least until the arrival of a

rescue team.

We saw some Japanese leaders rescuing foreigners in the community. As there was the shortage of labor power in the Sanriku Area, many foreign youngsters, above all, Chinese ones worked as trainees at such an industry as fisheries and agriculture. They did not have any idea about Tsunami. However, almost all of them could evacuate to a high place by the direction of Japanese people (Asahi Newspaper on March 17, 2011). In Onagawa City a managing director of Sato Fisheries Company guided twenty Chinese trainees to a high place. Then, he returned to the factory, when he was swallowed to death by the high wave of Tsunami. His brave rescue activity was highly evaluated in China.

10) Operation of Incident Command System in Private Sectors

Immediately after the earthquake many private organizations began to operate Incident Command System according to a manual under the direction of a commander. For example, Lawson, one of big companies to manage the convenience stores under the franchise system, established the headquarters to cope with the disaster four minutes after the occurrence of the largest earthquake. At midnight on March 11 seven staffs were dispatched by cars from the headquarters in order to grasp the real situation of 911 branch stores at the suffered places (Yoshida, 2013 : 49).

After this catastrophic disaster sufferers were short of living necessities. Local governments at the suffered places could not supply these necessities to them. Then, the national government shouldered the responsibility for the first time. In response to requests from the suffered local governments the national government used its budget to purchase the necessities and to carry them to the suffered places. Many private organizations co-operated the government for the supply and the trans-

(39)
port of these necessities. Almost all Japanese people and organizations participated in some relief activities such as donating money and goods, transporting goods and distributing them to sufferers. Many people all over the world donated money for sufferers. Volunteers worked systematically under the guidance of volunteer leaders.⁽⁴⁰⁾

7 . Incident Command System at Severe Nuclear Accident

After the earthquake and Tsunami we saw success in the efficient operation of Incident Command System to cope with the catastrophic disaster. However, we saw failure in the operation of Incident Command System to cope with a severe accident at Fukushima No.1 Nuclear Electric Power Plant. I will analyze it briefly.

1) Operation of Incident Command System on March 11

On March 11, 2011, the Fukushima No. 1 Plant was hit at 15 : 27 p.m. by the first high wave of Tsunami and at 15 : 35 p.m. by second wave (Tokyo Electric Power Company, 2012 : 121). Two generators for emergency stopped owing to being hit by high wave. As the supply of electric power from outside also stopped, at 15 : 42 p.m. Masao Yoshida, a director at the Fukushima No. 1 Plant, judged that the situation prescribed by Article 10 of the Law on Special Measures Concerning Nuclear Emergency Preparedness⁽⁴¹⁾ occurred. At 16 : 36 p.m. he judged that the nuclear emergency situation prescribed by Article 15 occurred as all equipment for emergency to cool four nuclear reactors stopped.

Receiving information about the accident at the Fukushima No. 1 Plant, the Emergent Headquarters to Cope with Disaster of the national government hold the second meeting from 16 : 11 p.m. to 16 : 23 p.m. Then,

at 16:36 p.m. an office to cope with this accident was established at the Prime Minister's Official Residence. However, the national government could not give direction to cope with the accident owing to the failure in collecting information⁽⁴²⁾.

Our national government and all electric power companies monopolizing the area market of the electric power supply promoted the policy of constructing more and more nuclear electric power plants (Yokoyama, 2012). They made a myth that the plant is absolutely safe, as they have good systems and the equipment to prevent a severe accident. They did not have any idea about the command system to cope with a severe incident like the accident in Chernobyl in 1986. Therefore, both commanders of our national government and Tokyo Electric Power Company could not issue the adequate command to cope with an accident at Fukushima No. 1 Plant.

In the confrontation with a severe accident a director and technicians at Fukushima No. 1 Plant could not grasp the real situation in four reactors at Fukushima No. 1 Plant. Therefore, they could not transmit accurate information to a head office of Tokyo Electric Power Company in Tokyo. Then, the head office could not give direction to the plant. One of reasons why they did not cope with the accident adequately was the absence of two tops of the company, that is, two supreme commanders⁽⁴³⁾.

The company wanted to maintain the policy of constructing a new nuclear electric power plant. Therefore, they hesitated to offer information about the severe accident to the national government and the mass media. However, the government began to grasp the dangerous situation at Fukushima No. 1 Plant.

At 19:03 p.m. members of the Control Headquarters for Safety of Nuclear Power held a meeting, at which they issued the Declaration on

Nuclear Emergency Situation prescribed by the Law on Special Measures Concerning Nuclear Emergency Preparedness.

At 19:23 p.m. the third meeting of the Emergent Headquarters to Cope with Disaster was held. At 19:30 p.m. the Minister of Defense issued an order to dispatch troops to cope with the disaster causing at Fukushima No. 1 Plant.

At last at 21:23 p.m. the national government issued an evacuation order to residents living in an area within 3 km from the plant, and another order to stay inside a house to residents living in a zone between 3 km and 10 km.

2) Operation of Incident Command System on March 12

To cope with the severe accident at Fukushima No. 1 Plant there were three headquarters, that is, at Fukushima No. 1 Plant, at the head office of Tokyo Electric Power Company in Tokyo and at Prime Minister's Official Residence. Kan, a supreme commander at Prime Minister's Official Residence, had the knowledge on natural sciences, as he was graduated from Tokyo Institute of Technology. He worried about the dangerous situation at Fukushima No. 1 Plant. As he could not receive sufficient information, he decided to visit the plant by a helicopter in the morning on March 12.

Yoshida decided to open a vent to prevent explosion. At 00:06 a.m. he directed some staffs to prepare for opening a vent at No. 1 reactor. However, if a vent was opened, air with radiator would be emitted out from a capsule of No. 1 reactor. Therefore, Yoshida asked the national government through the head office of Tokyo Electric Power Company to get permission of opening a vent. At 3:05 a.m. Banri Kaieda, Minister of Economy, Trade and Industry, gave the permission. Then, at 5:45 a.m.

Kan gave direction that residents living in the zone between 3 km and 10 km from Fukushima No. 1 Plant should evacuate.

Kan flew to the plant by a helicopter. During time from 7:11 a.m. and 8:04 a.m. he observed the situation and encouraged Yoshida and staffs working at the plant. Later Kan was severely criticized for this visit, because his visit might cause the delay in opening a vent to prevent an explosion. As he wanted to direct in every detail, he did not appoint a commander to cope with a severe accident at Fukushima No. 1 Plant. His judgment was not always right, because he failed to get cooperation with ministers and officials of the national government. In the extraordinary situation the quality of a commander is important to cope adequately with an incident. Later Kan was criticized for his over-intervention. It was Kan's defect as a supreme commander.

After getting permission of opening a vent, several workers went to a building of No. 1 reactor. However, they wasted time to open a vent as they did not have experience. Although at 14:40 p.m. they succeeded in opening a vent, at 15:36 p.m. an explosion of hydrogen gas occurred at No. 1 reactor.

By the request of Ministry of Land, Infrastructure, Transport and Tourism 117 buses of eleven companies went to the area within the zone for evacuation. In the morning on March 12 about 50,000 residents living within the zone were asked by the police officers wearing a nonflammable garment to ride a bus without giving sufficient information about evacuation.

The national government seemed to issue commands speedily to cope with a severe accident at Fukushima No. 1 Plant. However, some of these commands were severely criticized later, because they were not issued on the basis of accurate information and scientific data. For example, the

neglect of the result of data analysis under the System for Prediction of Environmental Emergency Dose Information (SPEEDI) was most severely criticized.

Nuclear Safety Technology Center affiliated with the Ministry of Education and Technology operated SPEEDI. After an accident at Fukushima No. 1 Plant the center offered the result of the data analysis to the national government. However, it was not reached to the Emergent Headquarters to Cope with Disaster. Therefore, many people receiving an order on the evacuation were wrongly guided to the area where the wind brought radiation after explosions of hydrogen gas at Fukushima No. 1 Plant. The guidance to the wrong area would not be performed if the national government had received the result of the data analysis under SPEEDI. Even the high-technology becomes in vain for the well operation of Incident Command System if people fail to use it. Anyway, it was good that nobody was killed and injured directly by explosions at Fukushima No. 1 Plant.

Conclusion

As a conclusion I would like to point out some causes why Incident Command System did not always function effectively in the East Japan Earthquake and Tsunami in 2011 even though it was improved after Hanshin Awaji Earthquake in 1995.

The Incident Command System has become elaborate by the improvement after Hanshin Awaji Earthquake. However, the operation of the elaborate Incident Command System depends on the quality of a commander. Especially, the commander is requested to have the quick and adequate decision making on the base of collected accurate informa-

tion.

We experienced Hanshin Awaji Earthquake in January in 1995, after which we improved the scheme and manuals on how to cope with a disaster. This improvement contributed to our activities to cope with the disaster on March 11. However, the earthquake, Tsunami was too large and wide to cope with under the previously prescribed scheme. Nuclear accident at Fukushima No. 1 Plant was beyond our imagination. Some of the scheme, manuals, rules and laws under the Fundamental Law on Disaster Countermeasures were in vain to cope with unexpected disasters on March 11.⁽⁴⁴⁾ In such a case people on the hot spot were compelled to cope with the disaster by their own judgment. In confrontation to this extraordinary disaster commanders were also urged to give a command by their own decision making without yielding to the ready made manuals. If they lack to have braveness to issue a command by their own judgment, they cannot rescue people.

In East Japan Earthquake and Tsunami the Incident Command System was operated smoothly on the national level and the prefectural level. However, both the national government and the prefecture government could not transmit commands to local governments damaged seriously by the earthquake and Tsunami. One of reasons was the stop of electric power supply, by which the communication network did not work.⁽⁴⁵⁾ Another reason was the breakdown of whole system in a local government. As I mentioned before, many officers of the town government including the town mayor in Ozuchi Town were killed and missing by Tsunami. In such a situation Incident Command System does not work without an able deputy like Uozumi in Hanshin Awaji Earthquake.

In a small local community damaged seriously by the disasters on March 11 people living under the mutual help could survive without

receiving any command from a public organization. In the extraordinary situation where the formal Incident Command System does not work people have to survive by their own judgment and with the mutual help under the guidance of some volunteer leaders.

In the Social Welfare State like Japan we develop the safety net, one of which is Incident Command System. We need to improve the system after our miserable experiences brought by a disaster. However, we will not be able to establish the complete Incident Command System and the complete operation of this system under an able commander. With being aware of this limit we should endeavor to establish better Incident Command System.

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Notes

- (1) Most of collapsed buildings and houses were constructed before the revision of the Building Standards Law in 1981, of which the main purpose was to strengthen standards for anti-earthquake.
- (2) At the same time many people living in foreign countries knew the big earthquake because CNN reported about it as the top news at 6 : 00 a.m.
- (3) At 6 : 19 a.m. the Land Ministry and the Firefighting Agency received information that the earthquake had a tremor with an intensity of six on the Japanese seven-stage seismic scale. However, both did not convey this information to Murayama.
- (4) When the earthquake occurred, most of residents at the suffered area slept in a bet at their home. Therefore, the total number of persons killed and missing was esteemed to be less than that in a case that the earthquake would occur at the time zone for working.
- (5) Korean government established the Urgent Headquarters in Korea. to Cope with Earthquake at 8 : 50 a.m. The delay in the establishment

of the headquarters by Japan's government was severely criticized by Japanese people.

- (6) Under Article 9 of the Constitution Law enacted in 1946 our government is prohibited from holding any military forces. However, the Self Defense Forces has developed under the Cabinet composed of the conservative parties since the beginning of the cold war.
- (7) Four months ago a commander ordered to fly a scouting aircraft to the places suffered by a large earthquake on the sea off from Hokkaido. The aircraft was crashed down into sea. A Diet member affiliated with Social Democratic Party of Japan criticized the commander for giving the order by his arbitrary judgment. Then, he received a sanction of stepping down from his position as a commander.
- (8) Tsutomu Matsushita, a mayor of Itami City, arrived at a city hall at 5:56 a.m. However, he did not ask a governor of Hyogo Prefectural Government to request the Self Defense Forces for the relief operation. A chief of the Itami Police Station requested the Itami Base with neglect of legal procedure.
- (9) At 6:35 a.m. Sasayama arrived at a city hall in Kobe City,
- (10) One of reasons for traffic jam was collapse of some parts of the elevated highway to Kobe City.
- (11) By 10:00 a.m. Kaihara received only one report, of which the content was that the total number of persons killed by the earthquake was four.
- (12) Ritualism is one of Merton's typology of modes of individual adaptation (Merton, 1968). A ritualist has a negative attitude to the cultural defined goals, while affirmative one to the structurally defined means.
- (13) Firefighting officers went to one scene of a fire after another. Those affiliated with a squad arrived at the first scene at 5:51 a.m., the second one at 6:20 a.m., third one at 9:40 a.m. and the fourth one at

14:00 p.m..

- (14) Nakauchi founded a drug store, after which he succeeded in establishing Daiei Supermarket Group by selling goods at cheaper price for customers. However, in 2001 he retired from Daiei because of a drastic drop in performance of Daiei.
- (15) Four supermarkets among all seven Daiei supermarkets in Kobe collapsed by the earthquake. About 100 Lawson convenient stores belonging to Daiei Supermarket Group were damaged. In addition, about 30 employees died by the earthquake.
- (16) Many goods were sold even at the cheaper price. For example, a sweetened bun and a rice ball were sold at JPY10 (eight US cents).
- (17) There are many laws to regulate activities in the distribution industry. Therefore, a commander like Nakauchi has to negotiate with the government to mitigate regulations. The commander is needed to have the ability for negotiation.
- (18) The core of Ninkyodo, a kind of chivalry, is composed of conventional virtues such as Giri (obligation and duty) and ninjyo (empathy and humaneness) (Yokoyama, 1999 ; 141).
- (19) The average daily number of volunteers helping at the suffered places for three months amounted to more than ten thousand. In addition, many people participated in various activities to support sufferers on the voluntary base at their home place such as collecting of donation, and packing and transportation of goods. As it was the first upsurge of volunteers' activity, the Cabinet has designated January 17 as the day of disaster and volunteers.
- (20) Concerning to the measures to cope with Tsunami on March 11, 2011, see Yokoyama (2013a).
- (21) Most people hit by earthquake could not watch on TV owing to the

stop of the electric power supply. They received the warning on a big Tsunami mainly through the radio managed by the local government. As the Meteorological Agency issued the first warning on the base of underestimation of the wave height, many people believing in it were victimized by the Tsunami (Yokoyama, 2013 : 97).

- (22) 23 prefectural governments among all 47 founded the headquarters to cope with the disaster.
- (23) The meeting was held twelve times until March 17.
- (24) Many facilities such as a public hall and a university offered accommodation to people who gave up returning on foot to their home.
- (25) In Japan the autonomy of prefectural governments is weak, because the national government controls them through the subsidy and the personnel management. In such relation the command from the national government is easily transmitted to the prefectural government.
- (26) In 2007 the Self Defense Agency was promoted to the Mistry of Defense.
- (27) After the elapse of 72 hours it is very difficult to rescue an injured person buried under the collapsed building and rubbles.
- (28) The live pictures of the seashore and towns being hit by Tsunami was transmitted to such a place as Prime Minister's Official Residence, National Police Agency, the Security Headquarter to Cope with Disaster in three suffered prefectural polices (*White Paper on Police in 2012* : 8).
- (29) Immediately after the earthquake and Tsunami the Maritime Safety Agency directed the Regional Headquarters of Maritime Safety to dispatch ships, aircrafts and the Special Salvage Corps to places hit by Tsunami.
- (30) Since the finish of Cold War we have seen the decrease in leftists who

criticize the United States for imperialism.

- (31) The rescue team coming from some foreign countries returned to their home country soon after the explosion at Fukushima Nuclear Electric Power Plant.
- (32) It was the first dispatch after the establishment of Wide-Area Emergency Rescue Squads.
- (33) As Meteorological Agency issued the first warning on the base of underestimation of the height of Tsunami wave, many people believing in it did not listen to the calling out for evacuation (Yokoyama, 2013 : 97).
- (34) The manual is useful to cope with a foreseeable disaster. However, people should behave by their own judgement without the adherence to a rule and a manual in the confrontation with an unexpected catastrophic disaster.
- (35) Soon after the earthquake an explosion and a fire occurred at LPG tank at Chiba petroleum refinery of Cosmo Oil Co. Ltd. Many firefighting squads participated in firefighting activities from land and sea. It was not until 10 : 10 a.m. on March 21 that the fire was extinguished completely.
- (36) Most of dispatched firefighting officers could not go to the place of a fire mainly because roads were covered by the collapsed building and rubbles.
- (37) Among 136 officers of Ozuchi Town Government, 33 officers including a town mayor and 7 executive officers were killed and missing. In addition, seven part-time employees died at the same place.
- (38) In Minami Sanriku Town many people evacuated to an elementary school. At night on March 11 they slept in a gymnasium. As it was cold night, under the direction of voluntary leaders old people and children

slept on the floor while being covered by curtains. Adults slept on a chair, because they did not have space enough to sleep on the floor.

- (39) First, such the living necessities as water, foods and blankets were carried to the suffered places. A few days later such goods as toilet paper, shampoo and paper diaper were supplied to sufferers living in a shelter.
- (40) Since Hanshin Awaji Earthquake in 1995 the Incident Command System on how to guide volunteers has developed. For example, volunteers go to the registration desk by 8 : 00 a.m. on the hot spot. After the finish of registration a volunteer leader guides a group of volunteers to the place of working. He/she supervises volunteers' working until around 16 : 00 p.m. with taking a rest sometimes all together.
- (41) Law on Special Measures Concerning Nuclear Emergency Preparedness was enacted in 1999 after the critical nuclear accident at JCO Company, at which 670 persons including two killed persons were exposed by the leaked radiation.
- (42) A special advisor to the prime minister told news reporters that the government could not collect information about the state of casualties and damages at the plant because the communication system especially that by a telephone became disordered in a chaotic situation.
- (43) On March 11 Tsunehisa Katsumata, a chairman of directors' board, stayed in Beijing. Masataka Shimizu, a president of the company, enjoyed sightseeing in Nara. Shimizu failed to return to Tokyo immediately. It was not until 10 : 00 a.m. on March 12 that he arrived at a head office of the company in Tokyo.
- (44) For example, the national government had encouraged local governments to make a hazard map. However, many people who failed to evacuate owing to believing this map were killed by Tsunami with

unexpected high and strong wave.

- (45) In Japan the communication system operates by the highly developed
commuter net-work which does not work without the electric power. In
the areas hit by the disaster people were eager to get an electric
battery.