

Korean Fire and Actual Conditions of Fire Service

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Abstract

Korean fire occurrence rate (number of fire/10,000 persons) is more than 7.0 and even it has even increased year by year. Korean national fire service organization includes the Fire Bureau under the Ministry of Government Administration and Home Affairs, National Fire Academy, and National 119 Rescue Brigade. Member of national fire service organization is comprised of the fire service personnel. Also, local fire service organizations have fire departments in every large local government of cities or provinces and fire stations belong to them. All fire service personnel of local fire service organization except the heads of fire departments and local fire academies are the local government employee. The total member of fire service personnel is about 23,000 and approx. 6,000 fire vehicles are equipped. A recruitment system consists of fire cadet and special recruitment examination for selecting rescue and first-aid members, aviation members, and fireboat members. Besides, there are a special promotion system and the grade-limit system, and a burial system in the National Cemetery as a special system only of Korea.

1. Introduction

Korean economy has developed rapidly in the last 50 years. Especially electronics and information industry, such as a semiconductor and computer, have achieved worldwide recognition. On the other hand, unexpected accidents have happened in some buildings constructed during the economic growth. In addition, fires have increased year by year. Such social and economical circumstances made the society to realize a sense of fire service and accordingly enlargement of fire service organization, repletion of fire resources, and policy for improving fire service personnel's position has been done. Regulations relating to fire service are maintained or some of them are, if necessary, even reinforced under a continuous control relaxation policy. Even the period when public organizations were restructured under the economic crisis, fire service organization was ruled out.

Introduction to actual conditions of fire, fire service organizations, resources, and fire service personnel system in Korea will be given in detail here after.

2. The Actual Conditions of Fires in Korea

2.1 The General Situation of Fires

Since 1951, fires have increased, especially sharply in recent years, as shown Fig. 1; 10,000 in 1981, 20,000 in 1994, 30,000 in 1998, and 32,644 now.

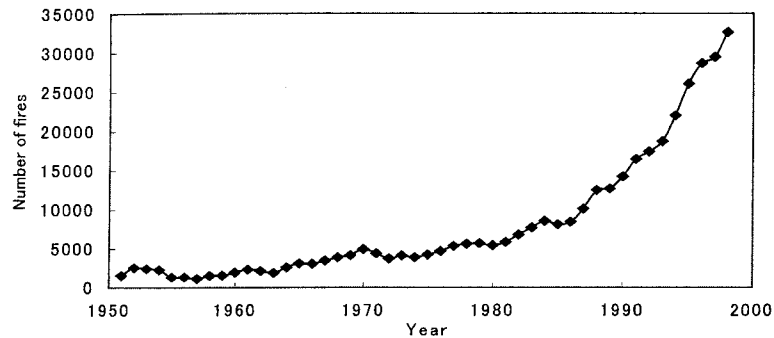


FIG. 1 The trend of the number of fires

The general situation for the last ten years is shown in TABLE 1. During 10 years, fires increased 11.2%; the dead 3.0%; the injured 6.15% and damages 31.4%.

TABLE 1 The general situation for the last ten years

Classification	Unit	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fires	Cases	12704	14249	16487	17458	18747	22043	26071	28665	29472	32664
Burnt dwellings	Buildings	7747	8239	11008	10435	11012	12947	14657	16580	16982	21318
Burnt floor area	m ²	1422	1639	1954	2927	2911	1010	1419	1158	1297	1228
Fatalities	Persons	447	348	525	510	573	555	571	589	564	505
Injury	Persons	1072	1200	1256	1237	1204	1324	1648	1634	1631	1779
Households affected	Households	1088	1166	1192	1813	1541	1448	1835	1712	1886	1555
Victims	Persons	3386	3814	3672	6205	4766	4355	5526	5053	5025	4103
Damages	Won million	224	341	442	527	519	1326	1007	1131	1217	1597
Rate of fire occurrence	Cases per 10,000 people	3.1	3.3	3.8	4.0	4.3	5.1	5.9	6.0	6.4	7.0

The number of fires by the main origin, including presumptive one, for last

10 years is displayed in TABLE 2. 35.8% was caused annually by electricity; 11.4% by smoking; 8.9% by arson and 6.4% by playing with fire.

In rise and fall by fire cause, while electricity, arson, playing with fire, fire-flakes, and gas increased 10.4%, 12.2%, 11.7%, 8.05, 14.3%, and 21.5% respectively, stove decreased 1.6%. Possibly it may have close relation to a change in the environmental conditions including energy.

TABLE 2 The number of fires by the main origin for last 10 years

Cause	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Electric	4525	5249	6160	6422	7153	8619	9307	10007	10075	10897
Smoking	1404	1473	1745	1752	1999	2490	3072	3496	3626	3856
Arson	1176	1310	1312	1747	1670	1824	2245	2577	2655	3056
Playing with fire	1020	1061	1181	1345	1263	1313	1550	1783	1566	1938
Fire flakes	554	630	835	824	1106	1497	1844	1648	1757	1668
Gas	414	473	578	648	670	773	866	806	847	1827
Petroleum	758	899	887	715	727	736	775	592	530	475
Others	2631	2626	3275	3555	3656	4318	6411	7269	7977	8556
Total	12704	14249	16487	17458	18747	22043	26701	28665	29472	32664

The fire situation by the occupancy type for last 10 years is shown in FIG. 2. In last 10 years, dwelling fire, including apartment, increased yearly 11.5%; manufactory and work site 15.7%; vehicle 13.3%; store 7.7%; restaurant 12.7%.

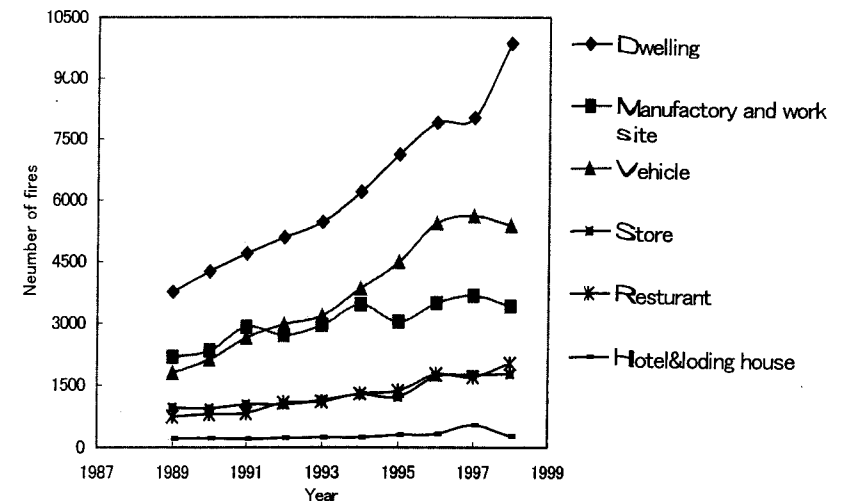


FIG. 2 The fire situation by the occupancy type for last 10 years.
2.2 The Actual Conditions of Fires

a. The Total Number of Fires

A graph in FIG. 3 compares the number of fires between Korea and Japan from 1950 to 1999. While Japanese fires occur about 60,000, reaching the summit in 1973(73,072), Korea's tends to increase recently.

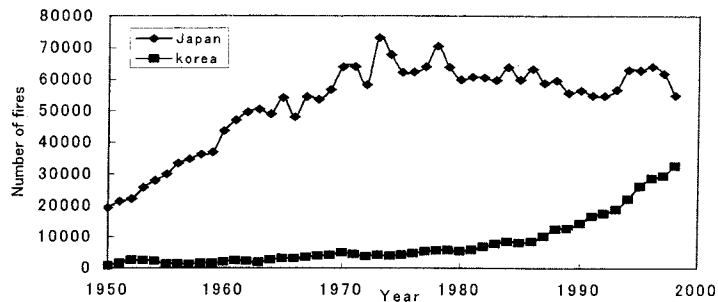


FIG. 3 The number of fires between Korea and Japan

Also the rate of fire occurrence (the number of fires per 10,000 persons) is displayed in FIG. 4. The Korean rate of fire occurrence in 1985 is 41% of Japan's and in 1990 73% but since 1995, Korean fires rate has been higher. For example, Korean fires rate was 7.0 in 1998, 59.1% higher than Japan's of 4.4.

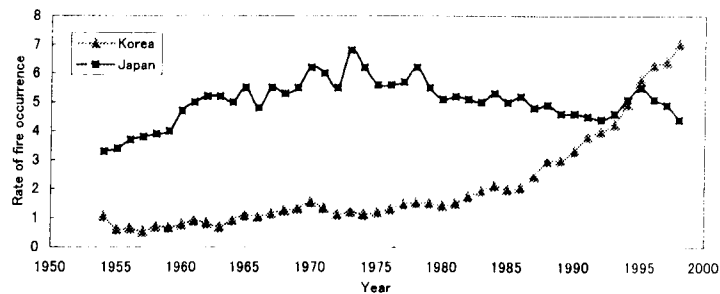


FIG. 4 The rate of fire occurrence

b. Death or Injury From Fires

Although the dead and injured tend to increase year by year (see FIG. 5), their number per 100 fires are less than half as many as in Japan.

c. Property Damages

Damages also increased as the number of fires, especially from the late 1980s. FIG. 6 shows the increasing rate of fires and damages, and it indicates

higher increasing rate than Japan. With rapid development of economy, circumstances change a lot. Buildings are getting larger, they store many goods and materials and the degree of risk in the process for production is increasing. Nevertheless, we have not enough sense to recognize it that makes fire occurrence rate higher.

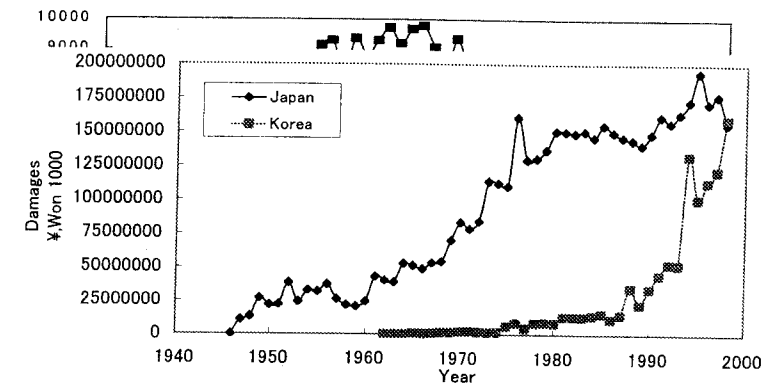


FIG. 5. The number of the dead and injured

FIG. 6 The trend of damages

3. Fire Service Organization

3.1 Organization of Local Governments

To find fire service organization of local governments, their system is first required to understand. Korean government has the Ministry of Government Administration and Home Affairs (hereinafter referred to as the MOGAHA) which is equivalent to the Ministry of Home Affairs in Japan. Local governments are divided broadly into large local governments (1 metropolis, 6 metropolitan cities, and 9 provinces), and 232 small local governments (Shi, Kun, and Ku).

The large local governments include the Seoul Metropolis, Pusan, Taegu, Incheon, Kwangju, Taejeon and Ulsan metropolitan cities, and Kyunggi, Kwangwon, North and South Chungchung, North and South Cholla, North and South Kyungsang, and Cheju Province equivalent to prefecture and city government in Japan. Mayors and governors, chiefs of large local governments, and chairmen of local councils are elected by the locals' direct election and hold office for five years.

The local governments equivalent to Shi and Ku (of Tokyo) include 72 Shi, 91 Kun, 69 Ku (autonomous). These large local governments' Ku are different from non-autonomous Ku of Shi, small local governments. There are 3,718 Eup,

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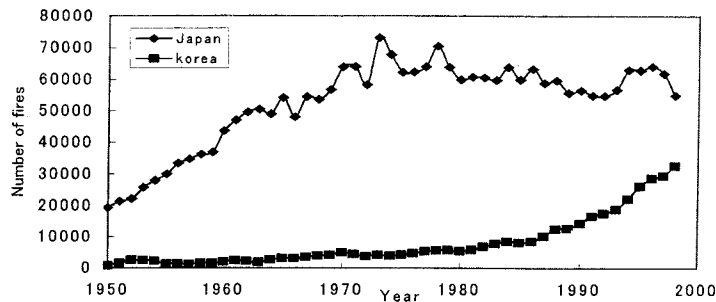


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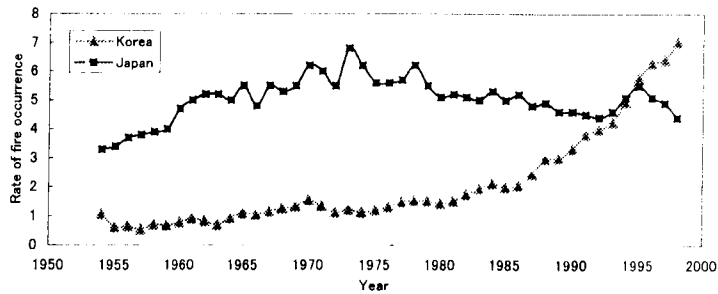


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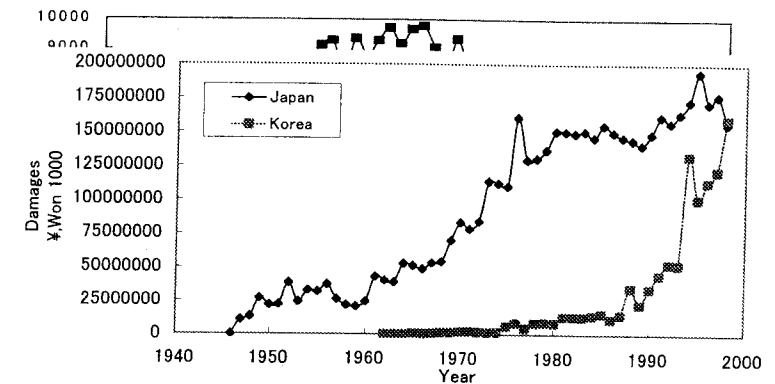


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Myon, Dong, equivalent to Shi/C'hyo/Son in Japan, as subordinate administrative organizations of Shi/Kun/Ku in Korea. Mayors and Kun governors, chiefs of Shi and Kun and members of local councils are elected by the locals' direct election and hold office for five years. All chiefs of Eup, Myon, and Dong are fire service personnel appointed by the government and Eup, Myon and Dong have no their councils.

There is no local government in Korea corresponding to cabinet-order designated city in Japan. Relation of MOGAHA of the government and local governments is shown in FIG. 7.

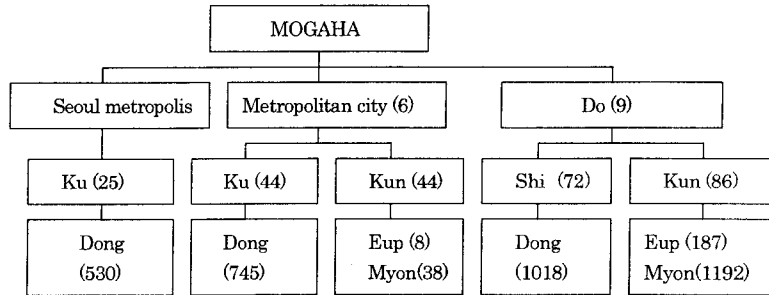


FIG. 7 Relation of MOGAHA and local governments

(1) Transition of Fire Service Organization

Since the Fire Service Act enacted and published as Act No. 485 on March 11, 1958 did not include the regulations affecting duty to fire service, it may be said that Korea had national fire service organization. As it was amended third on Dec. 31, 1970, it was newly added on Article 2-2(control and supervision) that fire marshals should be controlled and supervised by chiefs of local governments who control competent fire stations when doing their duty under the Fire Service Act.

Again, in the fourth amendment on Feb. 8, 1973, responsibility and supervision of mayors, including the Seoul Metropolis and Pusan Metropolitan City, and Kun governors were provided for in the Act No. 3 to establish fire service organization of local governments except Seoul and Pusan.

And, as it was amended again on Dec. 14, 1991, present fire service organization of large local governments that Seoul, metropolitan cities and provinces shall control fire service and fire marshals and chiefs of the fire departments shall be controlled and supervised by chiefs of their competent local governments was settled.

(2) Background Decided Present Fire Service Organization of Large Local Governments

Whether fire administration service organization will be fire service organization of the government or local governments(large and small local governments)depends on each country's history, social and cultural situation, or policy. When the self-governing system were carried into effect in earnest in 1991, Korean government inquired 435 persons, including 18 experts such as professors, 306 chiefs of large(mayors of Seoul and metropolitan cities) and small local governments (mayors, Kun governors, autonomous Ku governors, and 111 fire marshals and chiefs of fire departments), whether the government would choose fire service organization of large local governments(metropolitan city or Do like prefecture in Japan) and consequently 329 of 71.7% agreed to the system of large local governments.

Then the government presented amendment of the Fire Service Act to the National Assembly after careful consultation among the Economic Planning Board, the Ministry of Government Administration and the Office of Legislation. Finally, when it passed through legislative deliberation and proceedings in Jan. 1992, Korea came to follow the fire service organization of large local governments.

The regulations are as follows.

Article 3(Responsibility for Fire Service)

① The Seoul Metropolis, metropolitan cities, and provinces shall perform fire service within the competent district. ② Chiefs of fire departments or fire marshals performing the fire service that is provided in this law shall be controlled and supervised by a mayor of Seoul, mayors of metropolitan cities, or governors controlling their fire departments or the location of fire stations.

(3) Fire Service Organization(as of Jan. 1, 2000)

Fire service organization in Korea is shown in FIG. 8. Although it is somewhat different according to regions, it consists of Fire Administration Service Section(administration service branch, equipment and accountants branch, and inspection branch), Fire Fighting and Protection Section(fire fighting branch, fire protection branch, education branch, and command and control center), and Rescue and First-Aid Section(rescue branch, first-aid branch, and fire aviation unit). Some fire departments, including Seoul, have charge of operating disaster measures after restructuring of their administrative organ due to the economical crisis in 1998. Seoul Fire Department in charge of disaster measures even changed its name to 'Fire Service and Disaster Measurers Department' and has Fire Administration Service Section(administration branch, planning branch, inspection branch, and accountants branch), Planning Section of Disaster Measures(general disaster measures branch, disaster prevention branch, control branch, management branch, situation center, and mobile unit for safety inspection), Fire Fighting Section(fire fighting branch, fire investigation branch,

equipment branch, and general situation center), Fire Protection Section(protect ion branch, guidance branch, safety branch of dangerous articles, gas safety branch I, and gas safety branch II), Rescue and First-Aid Section(rescue branch, first-aid branch, and computer center), Civil Defense Section(civil defense plan branch, formation and operation branch, education branch, chemistry, biology, and radiology branch, and education center), and 119 rescue brigade. Fire stations usually have Fire Service Section(fire service branch and equipment branch) and Fire Fighting and Protection Section(fire fighting branch, fire protection branch, and education branch).

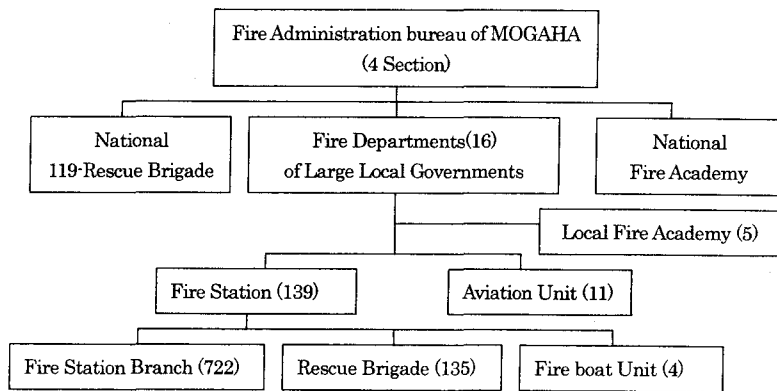


FIG. 8 Fire service organizations in Korea(as of Jan.1, 2000)

(4) Related Laws and Regulations

Unlike Japan, there is no such single law as the Fire Service Organization Act in Korea and fire service organization is provided in the Local Autonomy Act. Its Article 104(Subordinate Organizations under Direct Control) defines the following:(1) Local governments may, if necessary within the scope of affairs under their jurisdiction, establish a fire fighting organization, training organization, medical organization, test and research organization, and an organization directing small-and-medium enterprises, etc, as a subordinate organization under direct control under the conditions as prescribed by the Presidential Decree or the Municipal Ordinance of the local government concerned under the conditions as prescribed by the Presidential Decree(Amended by Act No. 4789, Dec. 20, 1994).

The regulations affecting establishment of a fire fighting organization prescribed by the Presidential Decree is a substantial basic law on the fire service organization, consisting of 3 Chapters and 10 Articles: General Provisions is written in Chapter 1, Local Fire Academy in Chapter 2, and Fire Station in

Chapter 3.

3.2 Fire Service Organization of the Government

While Japan has Fire and Disaster Management Agency under the Ministry of Home Affairs, National Fire College, and National Research Institute of Fire and Disaster, Korea is characterized by the Fire Administration Bureau of MOGAHA, National Fire Academy, and National 119-Rescue Brigade. We don't have National Research Institute like Japan. Most fire service personnel belong to the government are Fire Civil Servants.

(1) Fire Administration Bureau of MOGAHA

Fire Administration Bureau of MOGAHA is the highest fire service organization like Fire and Disaster Management Agency in Japan. Unlike Japan, the chief of Fire Administration Bureau is a fire civil servant in Korea. Subordinate organizations of the Fire Administration Bureau include Fire Service Section, Fire Fighting and Protection Section, Fire Protection Section, and Rescue and First-Aid Section. Their chiefs are, of course, fire service personnel of the 1st Assistant Chief.

Fire Service Section has fire administration branch, planning branch, management branch, and equipment branch; Fire Fighting and Protection Section fire fighting branch, guidance branch, communication branch, and computer and information branch; Fire Protection Section fire protection branch, safety branch, dangerous article branch, and technique branch; Rescue and First-Aid Section rescue branch, first-aid branch, training branch, and situation center. Personnel are 49, including 38 fire service personnel.

(2) National Fire Academy

National Fire Academy is the only national education organization for fire service personnel equivalent to National Fire College in Japan, established in 1978. It has General Affairs Section, Education Section, and Fire Research Section and 38 workers, including 30 fire service personnel who are in charge of education, are working.

It provides 1-year-course of fire cadets and 1-month-basic-course of executives from Fire Lieutenant to Assistant Chief. A fire suppression course for elementary officers like Fire Lieutenant, fire-prevention devices course, hazardous materials course, and commander course of rescue brigade are also available. Although officers below Fire Sergeant are usually trained in local fire academies, it also offers such difficult courses as a fire investigation course, fire apparatus and equipment course, or paramedic-training course for them.

(3) National 119- Rescue Brigade

National 119-Rescue Brigade was established in 1999. It is a subordinate organization of MOGAHA like National Fire Academy and its marshals' grade is

assistant chief. Its subordinate organizations include an administrative support team, field control team, high-tech apparatus and equipment team, technical support team, emergency mobile team and fire aviation unit. All 74 workers, except 6 helicopter pilots and mechanics, are fire service personnel.

It turns out regardless of place, when long-term rescue operation is anticipated owing to heavy losses of lives caused by a big accident. Because It equipped high-tech apparatus and equipment, It often supports rescue brigades of each fire station when burial accident happens and international rescue service as well(e.g. a flight crash accident in Cambodia and earthquake in Turkey and Taiwan, etc).

4. Resources

4.1 Standard Regulations of Resources

The Rules on Standard of Fire Resources aims to define general standard of fire apparatus and equipment and fire brigade members necessary for the Seoul Metropolis, metropolitan cities, and provinces to fulfill fire prevention, keeping guard on a fire, fire suppression, or rescue and first-aid activities(hereinafter referred to as fire service).

Unlike Japan, the above mentioned rule does not include a matter of volunteer fire brigades and prescribes that it shall be defined under a municipal ordinance on establishing volunteer fire brigades of the Fire Service Act instead.

(1) Establishing a Fire Station(Article 3)

① A fire stations shall be established by the unit of Shi, Kun, or autonomous Ku, but if necessary for efficient fulfillment of fire service, it may be built by the unit of area including neighboring Shi, Kun, or autonomous Ku.

② In case the fire station established under the Item ① have more than 5 branches, it may be established every 5 branches.

③ In case special fire service measures are required because of danger of a big fire upon development of petrochemical complexes, industrial complexes, or tourist attractions and a sudden increase in demand for fire service, a fire station may be established there regardless of Item ① or ②.

(2) Establishing a Fire Station Branch(Article 4)

① In case a fire station branch is established under fire stations, TABLE 3 shows its standards of establishment.

② In case special fire service measures are required because of danger of a big fire upon development of agricultural and industrial complexes, housing sites, or tourist attractions and a sudden increase in demand for fire service, a fire station branch may be established there regardless of Item ①.

TABLE 3 Standards of establishing a fire station branch

Classification	Large city	Middle city	Small city	Others
Jurisdictional Area	5 ?	10 ?	15 ?	20 ?
Jurisdictional Population	○Seoul : 70,000 ○Pusan : 30,000 ○Others : 20,000	○City with 500,000 or over persons : 30,000 ○City with 100,000 - 500,000 persons : 20,000	15,000	10,000

Notes 1. The large city includes the Seoul Metropolis and metropolitan cities.

2. The middle city includes cities with 100,000 or over except for a large city. In case of the city mixed province and rural area excludes Eup or Myon area.

3. The small city includes the city other than the large or small city. In case of the city mixed province and rural area excludes Eup or Myon area.

4. The others means the Myon area recognized that special fire measures upon development of agricultural and industrial complexes and tourist attractions are required.

(3) Establishing a Rescue Brigade(Article 4-2)

A fire station can establish its rescue brigade, and special rescue brigade suitable for their area conditions to cope with fire service needed in chemical complexes, inland water, mountains or express ways.

(4) Establishing a Fireboat Unit(Article 4-3)

A fire station controlling a harbor under Article 2-1 of the Harbor Law may establish a fireboat unit for fire suppression and saving a life on a ship or dock.

(5) Establishing a Temporal Fire Station Branch(Article 5)

① Chief of fire station may, if necessary, establish its branch temporarily in agricultural and industrial complexes, tourist attractions, developmental areas, or the seasonal gravitation areas of the population.

② A temporal branch is required to run within the scope of its fire station branch's fire apparatus and equipment and personnel.

(6) Fire Vehicles of a Fire Station Branch(Article 6)

Fire vehicles of a fire station branch shall be arranged as shown in TAB. 4.

TABLE 4 Fire vehicles stationed at the branch

Classification		Total	Pump Engine truck	Water tank truck	Ladder truck	Foam truck	Command post vehicle	Fire patrol car	Ambulance
Direct Control Fire Station Branch	Great City	12	3	2	2	1	1	1	2
	Middle City	11	2	2	2	1	1	1	2
	Others	10	2	2	1	1	1	1	2

Fire Station Branch	4	2	1			
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A direct control fire station branch, located in the same place as a fire station, is main forces for fire service, equipping such special fire apparatus and equipment as an explosion-proof foam truck and aerial ladder.

4.2 Present Status of Resources

Present Status of resources (as of Jan.1, 2000) is shown in TABLE 5.

TABLE 5 Present status of resources

Classification	Information
Fire Service Organizations	Nation: Fire Administration Bureau(1), National Fire Academy(1), National 119 Rescue Brigade(1) Regions: Fire department(16), local fire Academy(5), fire station(139), fire station branch(722), rescue brigade(135), fire aviation unit(11), fire boat unit(4)
	Personnel: 22,597(157 national fire service personnel, 22,440 local fire service personnel) Fire chief(1), Deputy Chief(3), 1st Assistant Chief(26), Assistant Chief(188), Battalion Chief(417), Fire Captain(829), Fire Lieutenant (1375), Fire Sergeant (2746), Assistant Fire Sergeant (6668), Firefighter (10344)
Fire Vehicles	5,958 : 2243 pump engine trucks, 492 water-tank trucks, 241 foam trucks, 137 aerial ladders, 182 squirts, 59 floodlight wagons, 35 exhaust smoking trucks, 10 unmanned water trucks, 594 high level ambulances, 503 ambulances, 164 rescue trucks, 43 fire apparatus and equipment transporting trucks, 21 forklifts, 6 neutralizing poison trucks, 248 administrative supporting cars, 128 diagnosis cars, 25 public information cars, 109 cargo trucks, 2 maintenance trucks, 13 traction vehicles, 291 fire fighting motorcycles, 79 other vehicles, 17 helicopters, 6 fire boats, 7 rescue boats
Fire-Water Facilities	95,895: 91,420 public hydrant, 2,072 public water storage tanks, 2,403 public water supplying towers

5. Fire Service Personnel

5.1 Recruitment System

Although Japan's recruitment system of fire service personnel is somewhat different according to each fire department, the fact that all fire service personnel start from firefighter is the same. Korea has such own systems as starting from firefighter or lieutenant, recruitment of only qualified people for rescue members or first-aid members, or special recruitment of people passing the Higher Civil Service Examination to start from battalion chief. But there is no significant difference by departments.

(1) How to Select

There are two ways of selection: an open competitive examination and

special recruitment, and the former is widely used. The open competitive examination is designed to select fire cadets and firefighters. The special recruitment is a limited competitive examination for people who have qualifications authorized by the government or expert knowledge on fire service, who pass the Higher Civil Service Examination, who win the fire service scholarship students at university, policemen, or members of fire volunteer brigades.

(2) Classification of Appointment

a. Fire Cadet

A fire cadet system is Korean unique one that Japan does not have and the government has invited about 40 persons every or every other year since 1978. Anyone who meets the physical requirements and legal age can take this examination. The examination includes a university-level written exam, a test of strength, and an oral test. Successful candidates become a fire civil servant of fire lieutenant after trained at National Fire Academy for 1 year. A place to work is decided out of consideration for both their hope and opinion of the fire department concerned by the end of their training, but they must work as chief of fire station branch for first 1 year.

b. Firefighter

Recruitment division includes fire fighting and protection and fire engine operating. Unlike the fire cadet, firefighters are selected by the local government. While anyone who meets the physical requirements and legal age can take the exam in fire fighting and protection division like that of fire cadet, applicants for fire engine operating are required to have a driving license for 1st big grade. The exam includes a high school-level written exam, a test of strength, and an oral test. Successful candidates become firefighters after completing 3-month course at the local fire academy concerned.

c. Special Recruitment

Although it is designed to select qualified people without limit, it is largely intended for rescue members, first-aid members, aviation members, fireboat members, or people passing the Higher Civil Service Examination. Other cases have hardly applied.

(a) Rescue and First-Aid Members

Because rescue members usually work under hard circumstances, only former commando unit men who are physically strong and have experience in rescue can apply for. To apply for first-aid members, applicants are required to have a nurse's license or paramedic's license. Successful candidates work as rescue member for fire stations or fire aviation units, or first-aid member for first-aid units. They first start their work as firefighter in general.

(b) Aviation Members

Only commercial pilots or people who have an aircraft mechanic's license can apply for. Successful candidates become helicopter pilots or mechanics for fire aviation units. These members are not fire service personnel, but contract workers.

(c) Fireboat Members

Only applicants who have a mate's or engineer's license can apply for this. Successful candidates become mates or engineers of fireboat units. Unlike aviation members, they are fire service personnel.

(d) Recruitment of People Passing the Higher Civil Service Examination

This exam is organized by the government but the fire department concerned has charge of recruitment. Successful candidates become fire service personnel of battalion chief. Six people, including me, were selected through this exam in 1992 and 1994.

5.2 Grade Organization

(1) Grade Classification

Grades are divided into 10 from firefighter to fire chief like Japan but name of grades is somewhat different. TABLE 6 shows the comparison of 10 grades between Korea and Japan(Tokyo).

TABLE 6 Comparison of fire service personnel's grades

	Korea		Japan(Tokyo)
1	Firefighter	Member (9th-8th)	Member (1st-3rd)
2	Assistant Fire Sergeant		
3	Fire Sergeant		
4	Fire Lieutenant	Chief of a Fire Station Branch or Rescue Unit (7th)	Senior staff member (4th), Associate (5th)
5	Fire Captain	Branch Chief of a Fire Station (5th)	Branch Chief (5th), Assistant Section Chief(6th)
6	Battalion Chief	Section Chief of a Fire Station (4th)	Section Chief (7th), Designated Section Chief(8th)
7	Assistant Chief	Fire Marshal (4th)	Fire Marshal (9th)
8	1st Assistant Chief	Chief of a Fire Department (3rd)	Fire District HQ's Chief (9th)
9	Deputy	Chief of a Fire Department in Seoul and Pusan, Head of National Fire Academy (2nd)	Division Chief (9th)
10	Fire Chief	Chief of the Fire Administration Bureau(MOGAHA) (1st)	Fire Chief of Tokyo Fire Department (10th)

(2) Grade by Duty

In case duty of the Fire Administration Bureau and fire stations is the same, a grade would also be the same in Japan. For example, a section chief and branch chief in the Tokyo Fire Disaster Management Agency have a grade of Fire Captain and Battalion Chief as that of a fire station.

In Korea, fire departments and the Fire Administration Bureau of MOGAHA are 1 grade higher than fire stations and fire departments respectively and there is no a setup of division chief.

- a. The Fire Administration Bureau of MOGAHA: chief→Fire Chief, section chief→1st Assistant Chief, branch chief→Assistant Chief
- b. National Fire Academy: head→Deputy Chief, section chief→Assistant Chief, branch chief→Battalion Chief
- c. Fire departments of metropolitan cities or provinces(Dos): chief→1st assistant chief(Deputy Chief in Seoul and Pusan),section chief→Assistant Chief(1st Assistant Chief in Seoul and Pusan), branch chief→Battalion Chief
- d. Fire stations: marshal→Assistant Chief, section chief→Fire Captain, chief of a fire station branch or rescue unit→Fire Lieutenant
- e. Local fire academies: head→Assistant Chief(1st Assistant Chief in Seoul), section chief→Battalion Chief(Assistant Chief in Seoul), branch chief→Fire Captain(Battalion Chief in Seoul)

5.3 Special Promotion System

(1) Legal Source

The Fire Service Law provides for as follows: a martyr to duty as fire civil servant and those coming under Item 1-1 or 1-4, Article 40-4 of the National Public Service Law(Special Promotion of Special Person of Merit) or Item 1-1 or 1-4, Article 39-3 of the Local Public Service Law(Special Promotion of Excellent Public Service Personnel) may be won promotion 1 grade in spite of Article 12.

Further regulations support the above: Article 38(Special Promotion of Special Person of Merit), Article 39(Grade Range of Special Promotion), Article 40(Enforcement of Special Promotion), Article 41(Exclusion of Application of Minimum Service Period), and Article 42(Screening of Special Promotion), Chapter 6(Special Promotion) of the Regulations Defining Fire Service Personnel's Promotion Appointment.

(2) Present Situation

In addition to the above, those who win the KBS 119 Award, the Fire Service Safety Prize, or the National Fire Service Skills Contest may be promoted specially.

a. KBS 119 Award

It is Organized by KBS(equivalent to Japan's NHK). KBS award a prize

to rescue and first-aid members who do their duty well every year. Since it was established in 1996, its ceremony has been broadcasted live on KBS. In 1999, 20 of recommended members by 16 fire departments in Korea, including 1 for the Grand Prize and 16 for the Main Prize, were awarded through a preliminary screening and a main screening. For prizewinners not only get a premium but also have opportunity to specially promote 1 grade. KBS also televises [Emergency Rescue 119] which introduces rescue activities of rescue and first-aid members at 7:35-8:30 pm every Wednesday(first televised on Tuesday) on KBS-1. This program is produced with the members in office and loved by especially children.

b. National Fire Service Skills Contest

It is held at National Fire Academy every other year. In 1998, about 1,000, including players from every fire department, volunteer fire brigades, and college students from the dept. of Fire Safety Management and Emergency Rescue, took part in. The contest includes three fields and nine items, including fire suppression, saving a life, and first-aid treatment. First and second winners(20) by field are specially promoted 1 grade.

c. Fire Safety Service Prize

Since 1974, it is organized by the Korea Fire Insurance Association on the Fire Day(November 9) every year to encourage present fire service personnel. Winners are determined by the Screening Committee(4 section chiefs of the Fire Administration Bureau of MOGAHA, 1 member of the Korean Institute of Fire Science and Engineering, and 3 directors of the Korea Fire Insurance Association) of recommended assistant fire sergeants and firefighters by each fire department who do their duty well in the site of fire. 17 winners(1 for the Grand Prize and 16 for the Main Prize) were awarded in the 26th ceremony in 1999. All winners receive a premium, 1 grade special promotion, and special 1-week-holiday.

5.4 Fire Service Personnel's Status and Treatment

(1) Status

While all Japan's fire service personnel of local fire organizations are local public service employees guaranteed according to the Local Public Service Law and Municipal Ordinance of the local government concerned, fire service personnel's status in Korea is all provided in the Fire Public Service Law rather than the Local Public Service Law.

The Fire Public Service Law aims to define a special case on national or local public service personnel's appointment, training, service, and guarantee of status according to their responsibility, importance of duty, status, or peculiarity of service conditions.

The laws on status include the Fire Public Service Law, the Fire Service

Personnel Appointment Act, the Enforcement Regulations of the Fire Service Personnel Appointment Act, the Regulations Defining Appointment of Fire Service Personnel's Promotion, the Enforcement Regulations of the Regulations Defining Appointment Fire Service Personnel's Promotion, etc.

National fire service personnel above Battalion Chief are appointed by President through the Prime minister upon the recommendation of the Ministry of MOGAHA. But, the Minister of MOGAHA has charge of transference, temporary retirement, removal, suspension from duty, and reinstatement of fire service personnel below 1st Assistant Chief and appoints those below Fire Captain. The mayor of Seoul, mayors of metropolitan cities, or Do(province) governors appoint local fire service personnel concerned.

Chiefs of fire departments and heads of local fire academies are appointed by President on promotion or transference because they are also fire service personnel. Fire marshals are appointed of the local fire service personnel concerned by a chief of each fire department with approval of chief of the local government concerned. There is no the regulations of fire marshal like Japan.

Personnel of fire departments, fire stations, or local fire academies are public service employees appointed by the mayor of Seoul, mayors of metropolitan cities or Do governors.

It is also possible that national fire service personnel are transferred to local. Article 17 of the Fire Public Service Law is provided that in case national fire service personnel are appointed local correspondent to their grade and vice versa, they may be employed without a special examination.

(2) Working System

A working system includes a daily and shift system. Only personnel in a command and control center of fire stations or fire departments and all members of fire station branches or rescue brigades but their chiefs or commanders work in shift. Members divided into half work every other day under the shift system and go to their office at 9:00 am and leave at 9:00 am next day.

(3) The Age-Limit-System

While fire service personnel's retirement age in Japan is 60, Korea follows the following age-limit-system and the grade-limit-system (Article 20 of the Fire Public Service Law). The grade-limit-system is for those who do not promote even after serving possible years for their grade.

a. The Age-Limit-System

Above fire lieutenant is 60 and below fire captain 57.

b. The Grade-Limit-System

Duty chief is 4 years; assistant chief 6; assistant chief 1; battalion chief 12 and fire captain 12.

(4) System for Burying in the National Cemetery

If fire service personnel are dead due to their duty, such as fire suppression, rescue or first-aid activities, they will be buried in the National Cemetery, based on the provisions of Article 14-2 of the Fire Service Act that those who are dead or injured on their duty, such as fire suppression, rescue or first-aid activities, the bereaved family shall be cordially received under the Law for Honorable Treatment & Support of Patriot. Only soldier, policeman, or fireman can be buried in the National Cemetery.

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Changes of the Industry and the Disaster in Postwar Japan

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ABSTRACT

After the World War II, Japan was racked by hunger, illness, and cold. However, by using the knowledge and technology introduced from the developed countries before the war, the industry was revived, and even new industries were established. In the meantime, a large number of labors were injured and killed in the dangerous work site. It was fortunate that the safety experts were sent from the United States by the U.S. Forces' requisition. Then, along with the technological innovation in the dangerous industries such as steel and shipbuilding, the new industries such as car, television, and information changed the production center into a clean and safe place. However, since Japan is full of mountains and surrounded by the sea, most of its land is humid and rainy. Compared with the less humid country, corruptions occur quickly, and it can lead to the excessive cost for preservation. Moreover, although earthquake is not the major issue here, the demand for strong artifacts are very high, compared with the country with no earthquake. Here, we would like to introduce the failure rather than success and receive criticism.

KEYWORDS: Japan, Industrial Safety, Natural Environment

1 DISASTERS OF THE WORLD

As the coal was began to be used in the 18th century Britain, industrial accidents started to take place in the dark and narrow coal mine where the methane often generates. Since the risk of the explosion of the methane and the coal dust was not clear, explosive accidents often took place.

The boiler, once triggering the Industrial Revolution, had low hyperbaric-pressure at the