III. The First Four Hours

A. Description of the City Immediately After the Quake

It was 5:46 in the morning, and it was dark. It was too early for sunshine, and the electricity was cut off. Houses had collapsed or were damaged, and residents who had survived the first blow were trying to crawl out of bed and call out for their family members. There were smells of gas leaks. Buildings had also collapsed or tilted and, fortunately, there were very few people inside - only nightguards and 24-hour shift workers inside office and commercial buildings. Highways had collapsed in some places but fortunately there was very little traffic. Early commuter trains had turned over and elevated stations were damaged but there were very few passengers. People outside the area directly hit began telephoning their relatives and friends but most could not get through. Water pressure in main pipes gradually decreased because of cracks. Residents of slightly damaged houses opened watertaps to save water in pots and pans but found a dwindling supply. NHK, the nationwide public broadcasting corporation, aired the first news of the seismic event (as a public corporation, it is their duty to give first priority to any disaster news). But the majority of people directly hit could not turn on their TV sets or find their displaced portable radios.

At 7:00 a.m. came the first sunlight. Many people could now see what had happened around them. Soon they learned that all the rail services had stopped. Some found their cars undamaged and drove around the neighborhood to see what had happened or tried to reach their workplaces by car. Many then faced the numerous roadblocks from collapsed buildings. Several fires broke out. Many injured were helped out of the debris by their families and neighbors. People first tried to telephone the police, firemen or hospitals for help. Some found that their telephones did not function, while others were able to call but found it difficult to get through. They ran to public telephone cabins to call for help. Prepaid phonecards could not be machine-read due to the electricity cut. Only 10-yen coins were accepted, but it was still difficult to get through. Then they ran to the nearest police or fire station to ask for help. Neighbors carried the severely injured to the nearest medical clinics and hospitals. The NHK sent helicopters with TV cameras out over Kobe and within 30 minutes started showing aerial footage of major structural damage to houses, buildings, highways and railroads. Several cars and trucks were shown turned over or fallen from elevated highways. But the aerial footage could not show what had happenned inside the houses and buildings.

On the outer rims of the shaken area, highways leading to Kobe started clogging up with traffic heading into Kobe itself or transit traffic to western Japan. Since Kobe is on the artery link connecting eastern and western Japan, overnight trucks already heading toward their destinations could not easily find detour routes. Although drivers could listen to radio traffic information about roadblocks, they could not immediately imagine the extent of the huge congestion they were driving into.

B. Initial Rescue and Firefighting Operations

Policemen, firefighters and medical personnel in Kobe themselves were also severely affected by the earthquake. They had to crawl out of their houses and find some means (by foot, bicyle or motorbike) to reach their duty stations. Once they had arrived (many reported to the nearest station they could reach), they faced the fact that their buildings had also suffered damage. Six of the main police stations in Kobe Prefecture suffered major structural damage (the ground floor of one building was crushed and one policeman on duty died). Several fire stations also had structural damage, and firefighters had to spend some time pulling their fire engines out from behind crippled garage doors. Unlike some parts of eastern Japan where large earthquakes are expected and vital public buildings are especially reinforced, Kobe's emergency stations were not. The local contingency plan had made provision for earthquakes only up to V on the JMA scale (equivalent to 8-9 on the Modified Mercalli Scale). Buildings vital to emergency operations were not reinforced.

The remote fire surveillance camera on top of one of Kobe's high-rise buildings did not function during the first two hours. Telephone calls to 119 (the emergency number for fire and ambulance) immediately peaked. Exclusive electronic controllers for 119 calls were paralyzed due to the overload. Telephone line congestion, even to this special number, continued for hours and people could not report fires. Kobe's fire service command could not get an overall idea of the fire situation during the critical first hour. People were running to police and fire stations in their neighborhoods asking for help. All the police and fire personnel available ran to the sites with shovels and bars in hand. They were pulled to the sites by the residents. Once they arrived, the initial rescue started. But removing debris to pull out just one trapped person required one professional rescue worker plus 5-6 family members or neighbors for 3-4 hours. Policemen were ordered to gather information on their neighborhood damage and report back to their main stations. But, as soon as they were in uniform and stepped out of their stations, they had to respond to initial rescue needs and could not report back within one hour. Knowing the people in their neighborhoods, they could not just say, "I'm sorry, I can't help you because my main duty is to report on damage. So I will come back later." This greatly delayed the local police command's grasp of overall damage.

At 7:30 a.m. the remote fire surveillance camera resumed functioning and revealed the rising black smoke. The Kobe fire service had reconnaissance helicopters. However, because of roadblocks, pilots could not immediately reach the heliport, and it took 3 hours before the first helicopter could finally take off and send photos back to the fire command.

The number of collapsed houses was far too great for the local professional rescue and firefighting teams to concentrate on individual sites. Also, the number of fires was unprecedented. The numerous roadblocks of debris blocked emergency vehicles everywhere, and damage to the water mains and cracked water reservoirs deprived firefighters of the means to extinguish fires. To put out a fire in a residential area of traditional wooden houses, the first 30 minutes is said to be the critical period. If enough firefighting power can be on the site within this time (the standard is 4 fire engines at 1 site), the fire can be easily extinguished. However, in this case, the

maximum could be only 1 fire engine at one location, while many sites were left unattended because roadblocks made them inaccessible and there was a shortage of firefighting resources.

The Kobe fire service faced a serious dilemma: whether to give priority to fire-fighting or to search and rescue. (Japanese emergency workers always remember the holocaust from the enormous fire in Tokyo and Yokohama caused by the Great Kanto Earthquake of 1923.) Right after the earthquake, approximately 30 fires broke out in Kobe. Firefighters headed for fire sites. Unless fires are rapidly contained, survivors from an initial earthquake can be quickly engulfed by widespread flames. On the other hand, the firemen could see that people were trapped in collapsed houses and that residents were desperately removing wooden beams and digging for family members. Since most of the residents had been asleep, those who escaped the first blow knew immediately where others were trapped. In most residential areas, there was no need for search activity but manpower and basic tools (saws, bars and shovels) for rescue were desperately needed. The number of destroyed houses (87,000 in Kobe City) was far too great. Many firefighters who set out to extinguish flames found themselves in the midst of rescue activities. Due to wind conditions, the fires spread slowly and fire victims were estimated to be only 4.4% of the total deaths. Fortunately, the 1923 experience was not repeated.

C. Initial Medical Care

The injured who escaped from their houses ran to nearby clinics and hospitals. Those severely injured were carried by neighbors. But clinics and hospitals were also not free of damage. Many old clinics had collapsed One floor of the Kobe-Nishishimin Hospital collapsed and 43 patients were trapped. Kobe's main emergency hospital was located on the reclaimed Port Island. The access bridge/road was damaged and ambulances could not use it.

Table 7
Damage to Medical Facilities in Kobe

	Total Number Existing on 16 January	Totally Destroyed	Half Destroyed	Partially Damaged
Public Hospitals	13	0	1	7
Private Hospitals	99	2	7	86
Medical Clinics	1,363	93	104	566
Dental Clinics	807	43	26	172

Photo 14 Ambulance Car in Rush, Fires Breaking out of Collapsed Building
Traffic jams not yet
Hyogo Prefectural Government

Photo 15 Police Patrol Car Arrives at One Collapse Site
Policeman calling for additional manpower
Hyogo Prefectural Government