

Building Name Address	Use (as per FSA Annexed Table 1)	Date and Time of Incident	Structure and Stories Area	Extent of Damage (Damaged Area/ Total Area)	No. of Casualties
<b>Aichi Cancer Center</b>	Hospital (6) a	Feb 8, 1975	Fireproof structure	All, Half, Partial, <b>[Small]</b>	Fatalities 0
		Breakout at 22:20 (approx) Noticed at 22:24 Notified by Extinguished at 00:06 of next day	8 stories above ground and 1 below		
81-1159 Kanokaden, Chikusa-ku, Nagoya, AICHI			Building area 3,392 m <sup>2</sup>	81 m <sup>2</sup>	Injured 0 (0)
			Total floor area 16,744 m <sup>2</sup>	(0.48%)	

### I. Summary of Fire Incident

(1) Summary

The fire emerged from the machine room (81 m<sup>2</sup>) on the 1st basement floor of the hospital. The fire damaged only one room; however, the evacuation was slow and chaotic, and firefighters rescued most of the people inside. This hospital fire served to provide an opportunity to revise the evacuation plans of hospitals so that any number of physically-disabled individuals can evacuate safely.

(2) Conditions per Floor

Floor	Total area m <sup>2</sup>	Damaged area m <sup>2</sup>	Use (Purpose)	No. of persons	No. of fatalities	Fire escape equipment	Firefighting equipment
8	884		Patient rooms			3 sets of escape stairs in the East, West, and Main buildings	Fire extinguishers Indoor fire hydrants Automatic fire detection system Guiding lights Emergency alarm system (PA system)
7	1,533		Patient rooms	49			
6	1,533		Patient rooms	95			
5	1,533		Patient rooms	90			
4	1,533		Patient rooms	86			
3	1,533		Operating theaters, Treatment rooms				
2	3,514		Doctors offices, Pathology lab, Exam rooms				
1	3,392		Office, Autopsy room				
<b>B1</b>	1,289	81	Machine room, Electrical room				
Total	16,744	81		320	0		

(3) Origin of Fire

(Floor, Room, Part, Combustibles, Habitable/Non-habitable Rooms, Present/Absent)  
  
From the center of the machine room on the 1st basement floor.  
The room was constructed of exposed concrete walls but contained HVAC piping of 4.780 m total length.

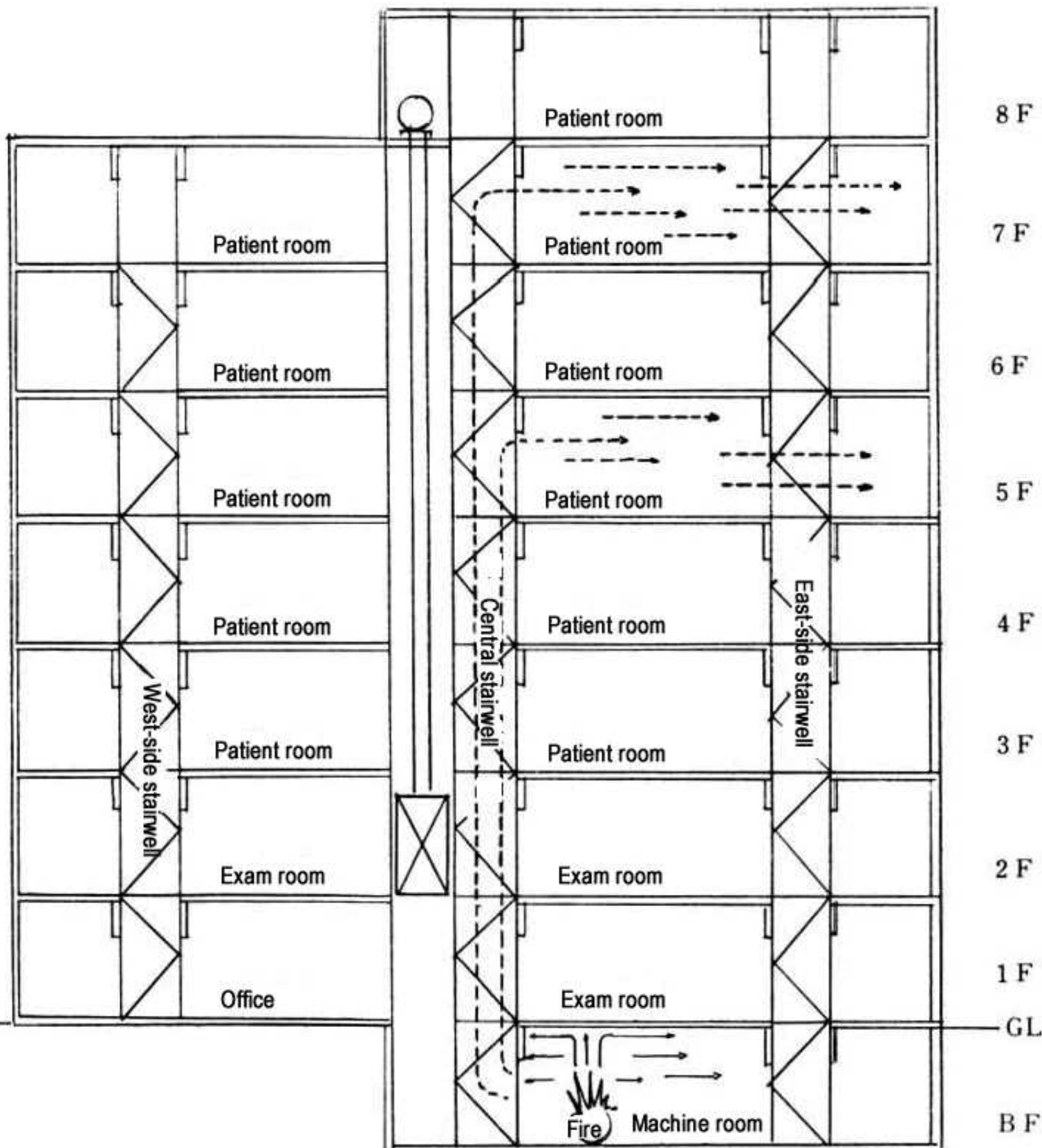
(4) Cause of Fire

Unknown

<b>(5) Fire Propagation Path</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">(Location of Fire Source)</td> <td style="width: 33%; text-align: center;">(Propagation from Source)</td> <td style="width: 33%; text-align: center;">(Propagation of smoke to upper floors)</td> </tr> <tr> <td style="text-align: center;">From the center of the machine room on the 1st basement floor</td> <td style="text-align: center;">Coverings of the HVAC piping inside the room</td> <td style="text-align: center;">Central stairs and east stairs</td> </tr> </table>		(Location of Fire Source)	(Propagation from Source)	(Propagation of smoke to upper floors)	From the center of the machine room on the 1st basement floor	Coverings of the HVAC piping inside the room	Central stairs and east stairs						
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	From the center of the machine room on the 1st basement floor	Coverings of the HVAC piping inside the room	Central stairs and east stairs											
<p>The fire burned the coverings of the HVAC piping inside the machine room on the 1st basement floor.</p>														
<p>○ Main Reasons for Propagation of the Fire</p> <p>○ Smoke Propagation Path When the fire broke out, smoke and heated air ascended the stairwell and drifted into the 5th and 7th floors where the fire doors of the central stair were open. The smoke also drifted to the east stairs through the fire door clearance. Although the condition there was not as bad as in the central stairs, the smoke made the evacuation difficult.</p>														
<b>II. Summary of the Building</b>														
<b>(1) Built</b>	Construction, Completion, and Major Renovations													
<b>Fire Prevention Management</b>	<b>(2) Vertical Shafts</b>	<b>(3) Fire Prevention</b>												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Stairwells</td> <td style="width: 10%; text-align: center;">[X]</td> <td style="width: 33%;">Duct spaces</td> <td style="width: 10%; text-align: center;">[]</td> </tr> <tr> <td>Elevators</td> <td style="text-align: center;">[X]</td> <td>Pipe shafts</td> <td style="text-align: center;">[]</td> </tr> <tr> <td>Escalators</td> <td style="text-align: center;">[]</td> <td>Other ( )</td> <td style="text-align: center;">[]</td> </tr> </table>	Stairwells	[X]	Duct spaces	[]	Elevators	[X]	Pipe shafts	[]	Escalators	[]	Other ( )	[]	<p>○ In 1974, the hospital carried out a fire drill (emergency call, fire extinguishing, and evacuation) 6 times.</p>
	Stairwells	[X]	Duct spaces	[]										
	Elevators	[X]	Pipe shafts	[]										
Escalators	[]	Other ( )	[]											
No information available due to lack of information														
<b>(4) Fire Compartments</b>	<b>(5) Firefighting Equipment</b>													
No information available due to lack of information		No information available due to lack of information												

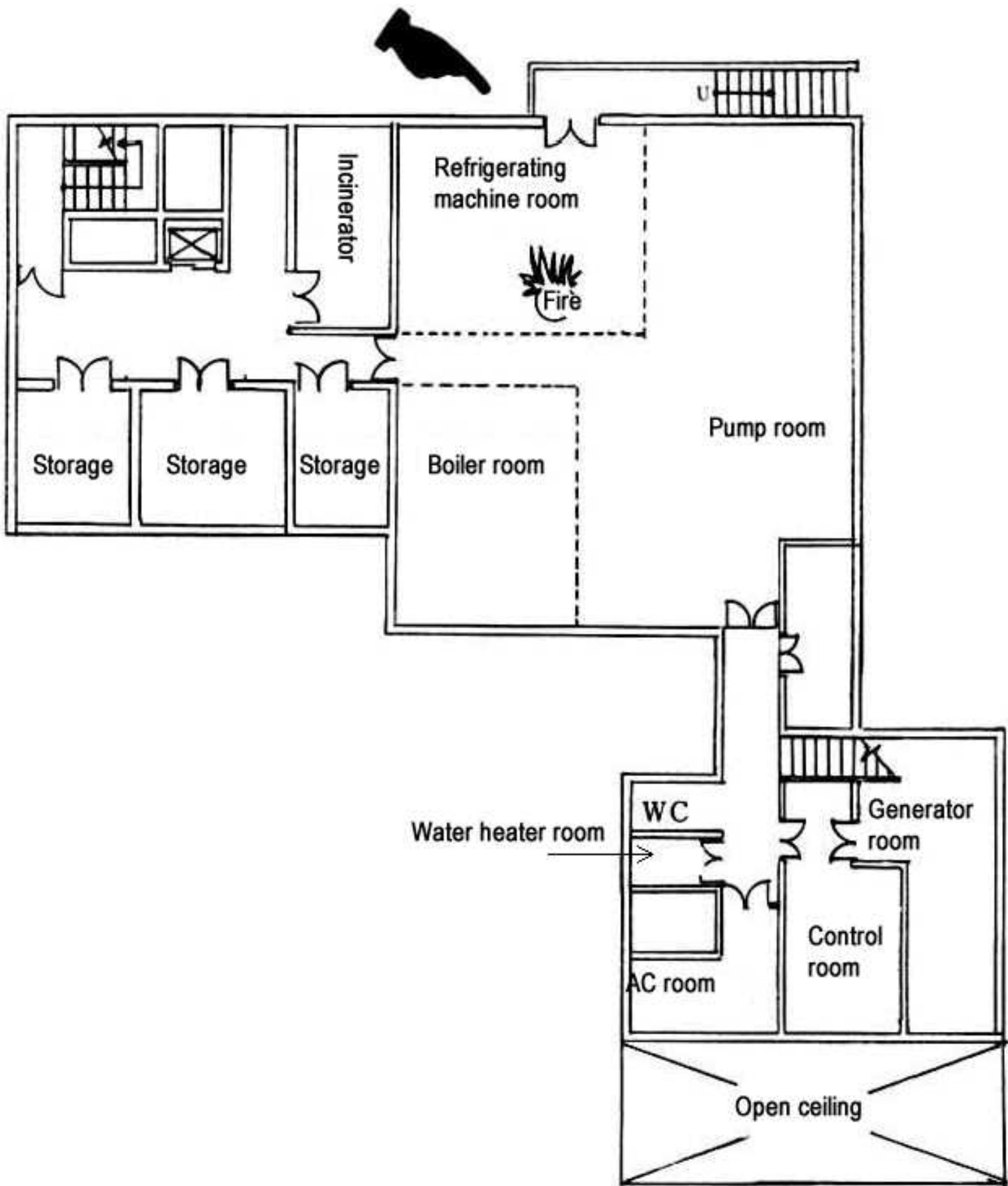
III. Actions Taken after the Fire was Detected		
<b>(1) First Detected</b>	<ul style="list-style-type: none"> <li>◦ <b>Detected by</b> ( Night guard on duty )</li> <li>◦ <b>How and why</b> ( Alarm sound of the automatic fire detection system )</li> <li>◦ <b>Action taken</b> ( Rushed to confirm the fire )</li> </ul>	
	<p>Two security guards on duty in their office on the 1st floor, at around 22:15, heard the alarm coming from the control panel of the automatic fire detection system. The control panel indicated that the fire was in the machine room (refrigerator) on the 1st basement floor. One of the guards confirmed the fire and he came back to the office shouting "Fire!"</p>	
<b>(2) Emergency Call</b>	<b>Emergency Call</b>	Yes <input checked="" type="checkbox"/> ( Night guard on duty )      Time elapsed since the discovery ( 4 ) minutes No <input type="checkbox"/>
	<p>As soon as the guard who confirmed the fire returned to the office, the other guard called the fire station from the emergency telephone and then activated the siren of the emergency PA system to alert everyone in the building.</p>	
<b>(3) Initial Firefighting Activities</b>	<b>Initiated</b>	Successful <input type="checkbox"/> Failed <input checked="" type="checkbox"/> <ul style="list-style-type: none"> <li>◦ Extinguished timing <input type="checkbox"/></li> <li>◦ Firefighting difficulties <input checked="" type="checkbox"/></li> <li>◦ Firefighting method <input type="checkbox"/></li> </ul>
	<b>Not Initiated</b>	<ul style="list-style-type: none"> <li>◦ Extinguished timing <input type="checkbox"/></li> <li>◦ Firefighting difficulties <input type="checkbox"/></li> <li>◦ Firefighting method <input type="checkbox"/></li> <li>◦ Other <input type="checkbox"/></li> </ul>
<b>(Reasons or Conditions)</b> A boiler technician who was working in the control room on the 1st basement floor realized that something was wrong because the circuit breaker tripped. On the way to the boiler room, he saw smoke pouring out of the exit door. He went through the door and closed the door on the east stairs exit. In addition, he opened 2 windows on the south-west side wall of the boiler room and grabbed a dry-chemical extinguisher from the dry room on the north side of the building. When he entered the machine room, the insulation material of the pipe running under the ceiling was burning. He tried to extinguish the fire with a few other people, but the fire was too strong and therefore they evacuated.		
<b>(4) Summary of Firefighting Activities</b>	<b>(Obstacles or Difficulties in Fire Control)</b>	
	<ul style="list-style-type: none"> <li>◦ Because of poor visibility and intense heat, firefighters had difficulty entering the basement floor and finding the fire location.</li> <li>◦ When the firefighters arrived, gray smoke was pouring out of the windows on the 5th and 7th floors, and many panicked inpatients were leaning out and calling for help from the windows on the north side of the building.</li> </ul> <p>(In order to prevent the inpatients from doing something reckless, the firefighters put all their strength into the rescue operation.)</p>	

<b>(5) Evacuation</b>	Means of Escape (No. of Persons)	Obstacles to Evacuation
	<ul style="list-style-type: none"> <li>◦ Stairs [ X ] ( many )</li> <li>◦ Elevators/Escalators [ ] ( )</li> <li>◦ Escape equipment [ X ] ( 10 ) Escape chute</li> <li>◦ Directly to the ground from windows or openings [ ] ( )</li> <li>◦ Rescued [ X ] ( 32 )</li> <li>◦ Other ( ) [ ] ( )</li> </ul>	<ul style="list-style-type: none"> <li>◦ No windows [ ]</li> <li>◦ Barred openings [ ]</li> <li>◦ Locked emergency doors (Exits) [ ]</li> <li>◦ Alarm system [ ] (Poorly controlled, Malfunctioned, Not installed)</li> <li>◦ Power outage [ ]</li> <li>◦ Other [ ]</li> </ul>
<ul style="list-style-type: none"> <li>◦ On the 4th and 6th floors, nurses helped inpatients to evacuate to the West building.</li> <li>◦ On the 5th floor, except for those patients who evacuated by themselves to the West building, all other patients were trapped because the nurses told them to wait in their room while they were preparing stretchers or gurneys. Later, they were all rescued by firefighters.</li> <li>◦ On the 7th floor, since the fire doors in the hallway were closed and the smoke had filled the floor, people could not escape to the West building. Approximately 10 persons who could move by themselves used the escape chute to reach the ground. The stretchered/gurneyed and severely ill patients were trapped but were rescued by firefighters.</li> </ul>		
<b>(6) Casualties</b>	Healthy individuals (Drunk persons ) Individuals in need of assistance Infants Elderly Handicapped Patients/ill persons	Obstacles to Evacuation <ul style="list-style-type: none"> <li>◦ No windows [ ]</li> <li>◦ Barred openings [ ]</li> <li>◦ Locked emergency doors (Exits) [ ]</li> <li>◦ Alarm system [ ] (Poorly controlled, Malfunctioned, Not installed)</li> <li>◦ Power outage [ ]</li> <li>◦ Other [ ]</li> </ul>
	None	
<b>IV. Issues and Lessons Learned</b>		
<ol style="list-style-type: none"> <li>1. The hospital building had a 2-way evacuation route as required by law; however, on the 5th and 7th floors, the fire doors that needed to be closed all the time were kept open by a stopper. Because of this, the smoke drifted into the central stairwell, so no-one could use the stairs for evacuation.</li> <li>2. The hospital failed to secure a safe evacuation route for the stretchered/gurneyed and severely ill patients who were left behind until the firefighters rescued them, which was a close call.</li> <li>3. Although the fire room was a machine room made of concrete, a large amount of smoke was produced because the coverings of the HVAC piping (total length of 4,780 m) were ignited. A room like this should have a fixed or automatic fire extinguishing system and be compartmentalized appropriately in order that the room can be separated from the other rooms where the patients are staying.</li> </ol>		



**Symbols**

- Fire propagation path
- - - - -> Smoke propagation path



Basement floor