

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
Ikenoboh Mangetsu-joh	Hotel (5) a	Nov. 2, 1968	Fire resistive Partially wooden 4 stories above ground and 2 below	All, Half, Partial, Small	Fatalities 30
		Breakout at 02:30 (approx) Detected at 03:06 Notified by ___ Extinguished by 05:45			
865 Arima-machi, Hyogo-ku, KOBE			Building Area 3,520 m ²	6,950 m ² (62%)	Injured 44 (3)
			Gross Floor Area 11,258 m ²		

I. Summary of Fire Incident								
(1) Summary	<p>The fatal fire originated on the 2nd floor of a wooden hotel and spread rapidly. The hotel was constructed on the hillside: this geographical feature was utilized to add more rooms over the years, which increased serious concerns for evacuation safety as well. The delayed detection and emergency call and inappropriate evacuation instructions exposed all occupants to danger from heavy smoke and resulted in 30 fatalities and 44 injuries.</p>							
	(2) Conditions per Floor	FL	Total area m ²	Damaged area m ²	Use (Purpose)	No. of persons	Fatalities	Fire escape equipment
4		203	203	Guest room, etc			7 sets of inside stairs 1 set of outside stairs (from 4th to 5th floors of the main building) 3 sets of metal ladders 3 sets of rope ladders	Fire extinguishers Guiding lights Automatic fire detection system (New building only) Indoor fire hydrants (New building only)
3		801	801	Guest room, etc	34	12		
2		3,050	2,062	Guest room, Grand hall	82	17		
1		3,520	1,994	Guest room, Lobby	130	1		
B1		1,842	1,687	Guest room, Boiler room	48			
B2		1,842	203	Guest room, Bathroom (<i>Onsen</i>)	15			
Total		11,258	6,950		309	30		

(3) Origin of Fire	(Floor, Room, Part, Combustibles, Habitable/Non-habitable Rooms, Present/Absent)		(4) Cause of Fire	Unknown
	<p>The flame emerged from the service room of the 2nd floor in Nioh-den (2-story building).</p> <p>The service room is a small room (30 m²) between the kitchen and the guest room where the hotel staff prepare sake and load dinnertrays before serving to the guests.</p>			
(5) Fire Propagation Path	(Location of Fire Source)	(Propagation from Source)	(Propagation to 3 rd floor)	(Propagation to 4 th floor and below)
	Service room on the 2nd floor of the Niohden	Spread to the wooden walls and ceiling and then to the hallway northward and southward subsequently	Instantly from the stairwell and connecting corridor	From the pipe shaft and gaps between the buildings
	<p>The fire that emerged from the service room of the 2nd floor (Niohden building) spread northward and southward through the hallway and also upward. In an instant, the flame traveled to the 3rd floor of the Ginmatsukaku building through a steep connecting corridor near the origin of the fire. The flame also reached the 3rd floor (of the Niohden) mainly through the stairwell and partly from the opening of a pipe shaft.</p> <p>On the 4th floor, instead of the stairwell, the flames spread through a pipe shaft, pipes for the bathroom, and voids between the buildings.</p> <p>○ Main Reasons for Propagation of the Fire</p> <ul style="list-style-type: none"> ○ The hotel consisted of 3 fire-resistive buildings and 4 wooden buildings. These buildings were all added to each other inadequately over the years and inevitably facilitated the spread of fire. ○ Some of the fire shutters remained open and therefore the flames spread through the structure easily. <p>○ Smoke Propagation Path</p> <p>Accompanied by the flames that emerged in the service room, smoke ascended rapidly along the stairwell to the top floor and propagated to all corners of the buildings.</p>			
II. Summary of the Building				
(1) Built	Construction, Completion and Major Renovations (Completion of the Ginmatsukaku building) Oct. 1953 (Completion of the main building) Aug. 1962			
	(2) Vertical Shafts		(3) Fire Prevention	
Fire Prevention Management	Stairs [X] Duct Spaces [] Elevators [] Pipe Shafts [X] Escalators [] Other(vaulted ceiling) []	<ul style="list-style-type: none"> ○ Unofficially, the hotel had appointed a fire-prevention manager and created a fire defense plan. ○ The hotel carried out a fire drill once a year according to the fire station's instructions. ○ The hotel did not carry out any voluntary inspections. ○ The in-house firefighting team consisted of only female members. ○ Only 1 security guard was on duty at night and the night patrol was 2 times per night. ○ At every inspection, the hotel received a number of recommendations from the fire station; however, no 		
	<ul style="list-style-type: none"> ○ There were fire doors on the stairs of the Honmaru building and partially on the Nishinomaru building; however, these doors all remained open. ○ The drilled holes that were made for the piping installations (HVAC, sewage, and odor-eliminating lines) were never sealed adequately. 			

	corrective actions were made.
(4) Fire Compartment	(5) Firefighting Equipment
The connecting portions between the buildings were partitioned by a single steel glass door with uneven surface and gaps, which were completely inadequate from the aspect of the fire safety.	<ul style="list-style-type: none"> ◦ The automatic fire detection system and the indoor fire hydrants were only available in the new building, and the old buildings did not have any of these. ◦ None of the firefighting equipment was used effectively to fight this fire.

III. Actions Taken after the Fire was Detected		
(1) First Detected	<ul style="list-style-type: none"> ◦ Detected by (Hotel guest staying in the Nakanomaru Building) ◦ How and why (Unusual sound) ◦ Action taken (Evacuated without any action) 	
	<ul style="list-style-type: none"> ◦ Guest S (age 32), who was sleeping in his room (Jyurokuya Room) on the 3rd floor of the Nakanomaru building, woke up because of unusual raining-like sound. When he looked outside, he saw small flames on the lower floor to the right and walked to the service room to find out what it was. He confirmed smoke emerging from around the door and just ran away (without making a 119 call or trying to extinguish the fire). ◦ Hotel staff member O (age 31), who was sleeping in the south end of the 2nd floor of the Niohden building, woke up because of a burning smell and became aware of the fire because of smoke that entered his room. He went downstairs, and as soon as he observed a reflection of a flickering light near the service room, he loudly alerted others and made a 119 call. 	
(2) Emergency Call	Emergency Call (Hotel staff made a 119 call) No []	Time elapsed since the discovery (36) minutes
	Hotel staff member O who witnessed the fire realized that he could not extinguish the fire by himself, so he went to wake up the other hotel staff and then alerted the other buildings by shouting "fire" repeatedly. In the lobby, he met the night guard and notified him of the fire. As soon as staff member O was told that no one had made a 119 call yet, he dialed the number from the phone on the front desk (at 03:06).	
(3) Initial Firefighting Activities	Initiated	Successful [] Failed [X] <ul style="list-style-type: none"> ◦ Extinguished time [X] ◦ Firefighting difficulties [] ◦ Firefighting method []
	Not initiated	<ul style="list-style-type: none"> ◦ Extinguished time [] ◦ Firefighting difficulties [] ◦ Firefighting method [] ◦ Other []
(4) Summary of Firefighting Activities	(Obstacles or Difficulties in Fire Control)	
	<ul style="list-style-type: none"> ◦ By the time the firefighters arrived onsite, the flames had spread extensively; therefore, they had to operate defensively. ◦ The geographical features of the building created exceptionally difficult conditions for the firefighters, and the firefighters therefore struggled to secure a water source or place necessary firefighting apparatus that were needed for the search and rescue operation. ◦ The firefighting operation was delayed by the heavy smoke that was produced by the interior finishing materials on the main parts of the interiors. 	

(5) Evacuation	Means of Escape (No. of Persons)		Obstacles to Evacuation	
	<ul style="list-style-type: none"> ◦ Stairs [] () ◦ Elevators/Escalators [] () ◦ Escape equipment [] () ◦ Directly to ground from windows or openings [] () ◦ Rescued [X] (7) ◦ Other () [] () 		<ul style="list-style-type: none"> ◦ No windows [] ◦ Barred openings [] ◦ Locked emergency doors (Exits) [] ◦ Alarm system [X] (Poorly controlled, Malfunctioned, Not installed) ◦ Power outage [X] ◦ Other [X] 	
<ul style="list-style-type: none"> ◦ Refer to the attachment 				
(6) Casualties	Healthy individuals 28 (Drunk persons) Individuals in need of assistance 2 Infants 1 Elderly 1 Handicapped Patients/ill persons		Obstacles to Evacuation	
			<ul style="list-style-type: none"> ◦ No windows [] ◦ Barred openings [] ◦ Locked emergency doors (Exits) [] ◦ Alarm System [X] (Poorly controlled, Malfunctioned, Not Installed) ◦ Power outage [X] ◦ Other [X] 	
Refer to the attachment				
IV. Issues and Lessons Learned				
<ol style="list-style-type: none"> 1. This large-scale hotel retained almost zero firefighting equipment and violated the fire codes in every small area. Despite the corrective action recommended by the fire inspectors a dozen times, the hotel put their efforts only into the expansion work and kept postponing the installation of firefighting equipment. 2. None of the hotel employees, including the hotel owner, fire-prevention manager, and hotel employees, were as aware of the fire safety measures as they should have been. No-one was in charge of the nighttime fire watch and the in-house firefighting team was organized by the female staff only. 3. A single steel glass door partitioned the connecting portions between the buildings. A series of expansion works created unsafe steps and gaps and a maze-like structure. Furthermore, the fire compartments were constructed with wooden doors, the parts liable to catch fire were constructed with regular glass windows, and the steel-frame wooden structure (guest rooms) were illegally built on a fireproof roof. 4. This catastrophic fire was predestined because of an inadequate automatic fire detection system (the first building ablaze had no detection system), a significantly delayed 119 call, power outage during the evacuation, a maze-like structure, and an undefined action plan for the employees to act upon with respect to fire control, communication, and evacuation instructions. 				

Attachment Number of hotel guests when the fire broke out

Floor	Name of building	No. of guests		No. of hotel employees	
		No. of guests in a group	No. of individual guests	Male	Female
4	Honmaru				
3	Honmaru		19		4
	Nishinamaru	8			3
2	Honmaru		2		
	Nishinamaru		10		2
	Ginmatsu-kaku	18			5
	Ryokuu-soh	20			
	Kyuka-en	25			
1	Honmaru				1
	Nakanomaru	20			1
	Nishinamaru	23		1	6
	Niohden			1	1
	Ginmatsu-kaku	24			
	Ryokuu-soh	24		1	1
	Kyuka-en	23			
B1	Nishinamaru	38		3	7
	Niohden			1	
	Yamabiko			2	
	Onsen				
B2	Okunoin	15			
	Subtotal	238	31	9	31
	Total	309			

Causalities

Based on the number of causalities in Honmaru Building, as soon as the fire emerged in the service room, the smoke drifted from the service room and started ascending the stairwell. In a very short period of time, the smoke reached the top floor and propagated throughout the building. When the guests noticed the smell of smoke and came out into the hallway, visibility was already poor and the power was probably out by that time. Although the conditions worsened, the guests were able to escape because the intensity of heat and amount of carbon monoxide (CO) were still less than critical levels. Since the hallway was too risky, they tried to escape through the windows, but unfortunately they could not secure a good footing. While going back and forth to find an emergency exit in the hallway and becoming separated from each other, the CO concentration must have reached critical level. Thus, burned bodies were found all over the floor. Probably the loss of visibility at first lead to this tragic outcome.

On the 2nd floor of the Ginmatsu-kaku Building, bodies were found in the same place and on top of each other. According to survivors who were staying in the same room when the fire broke out, most guests assumed that they still had time to change their clothes; however probably, a sudden flash-over occurred in the wooden building, killing them instantly. All the survivors stated, "At first, when we came out to the hallway the smoke was minimal, but when we came out again after changing our clothes, it was too late". This statement proves that the propagation of smoke was considerably fast.

In addition, new interior materials are known to produce substantial amounts of smoke and trap evacuees. Such materials were extensively used in the hallways of the Gimnatsu Building and also each room and the hallway of the Honmaru Building, and therefore resulted in greater damage from smoke.

Sequence of Evacuation

Guest S first discovered the incipient stage fire, but did nothing. A few minutes later, one of the hotel staff became aware of the fire; however, he made a 119 after he alerted the guests in the Kyuka-tei, Ryokuu-soh, and Ginmatsu-kaku Buildings, so the emergency call was delayed and guests in the other buildings did not find out about

the fire until much later. Meanwhile, the fire completely disabled the power supply, and therefore the means to alert people was lost. This also affected the systematic response that was expected from the hotel staff who were then sleeping on different floors of the different buildings. Most of the hotel staff did not know about the fire and barely had time to evacuate themselves. This circumstance tells the whole story of how this fire caused 30 fatalities and 17 injuries and how devastating it was for the hotel guests who also became aware of the fire when the smoke entered their rooms or suddenly somebody else summoned them to wake up. This chaotic situation was brought about by the delayed 119 call, but the accelerant was the hotel itself, configured in maze-like hallways. These long and sloping hallways became the smoke propagation path and ironically, the far most room (Hagoromo Room in the Kyuka-tei Building, 100 m away from the origin of fire) was the first room the smoke reached. The heavy smoke produced from the decorative interior walls of the Ginmatsu-kaku was approaching as well. So, the guests were threatened by smoke coming from both directions in the hallway. People in the taller buildings, Honmaru and Nishinomaru, were also exposed to difficult conditions, yet were not in such a dire situation as those in Kinmatsu-ten, Kyuka-tei and Ryokuu-soh.

Casualties per Building

[Ginmatsu-kaku]

1st floor --- The closest to the origin of the fire where the evacuees struggled under adverse conditions

- Escaped to courtyard --- 11
- Escaped through hallway --- 10
- Fatally burned --- 2

Total 23

2nd floor --- The evacuees struggled under the worst conditions (worse than the 1st floor)

- Climbed down rainwater gutters --- 2
- Jumped down from windows --- 3
- Escaped via stairs and hallways --- 3
- Fatally burned 15

Total 23

[Ryokuu-soh]

1st floor --- Ground level and easier to escape

- Escaped to the courtyard through windows --- 3
- Escaped through hallways --- 12
- Escaped to backyard from windows --- 8
- Fatally burned --- 1

Total 24

2nd floor --- Unlike the 1st floor, the smoke came from two directions, the hallway and the bathhouse (Jungle Bath), which made evacuation difficult

- Escaped to backyard from windows --- 2
- Escaped to trees from windows --- 5
- Escaped from windows by climbing over the penthouse roof --- 5
- Escaped through hallways --- 8

Total 20

[Kyuka-tei]

1st floor --- Despite the fact that this was the far most location from the origin of the fire, the evacuees escaped under severe conditions

- Escaped through hallways with evacuation guidancee from a maid ---- 12 (including 2 hotel staff)
- Escaped through windowa ---- 12

Total 24

2nd floor -- As severe as the 1st floor.

- Escaped from window by climbing over the pent house roof ---- 25

[Nakanomaru]

- Escaped through light windows ---- 19
- Escape route unknown (Rushed to confirm the fire) ---- 2

Total 21

[Honmaru]

Extremely difficult throughout the building. Most of them evacuated by unusual means since their rooms were on the higher stories

- Climbed down from windows with *futon* sheets and via rainwater gutters ---- 1
- Climbed down rainwater gutters ---- 6
- Jumped from windows ---- 2
- Climbed down metal ladders ---- 2 (hotel staff)
- Rescued from balcony ---- 4
- Fatally burned ---- 12 (including 1 hotel staff)

Total 27

[Mangetsujo]

Each floor was far away from the fire; however, the smoke made the evacuation difficult. (In the early stage of the fire, the pressure produced by the fire remained inside and it may have affected the evacuation in some way.)

1st floor

- Escaped via hallway and stairs ---- 16 (incl. 1 hotel staff)

2nd floor

- Escaped via hallway and stairs ---- 16 (incl. 3 hotel staff)
- Climbed down with *futon* sheets, a rope and trees from windows ---- 14 (incl, 4 hotel staff)
- Climbed down construction footings ---- 7

Total 37

3rd floor

The evacuation was very fast because guests were playing all-night mah-jong.

- Climbed down curtains and construction footings from windows ---- 19
- Exited via stairs and escaped through emergency exits ---- 5
- Escaped via hallways and stairs ---- 13 (incl. 7 hotel staff)
- Climbed down rope from a hallway window ---- 1

Total 38

4th floor

- Climbed down construction footings from the handrail of a window --- 1
- Fell while climbing down from the handrail --- 1
- Rescued by firefighters 7 (incl. 2 hotel staff)
- Escaped via stairs and hallways --- 3
- Escape route unknown --- 3

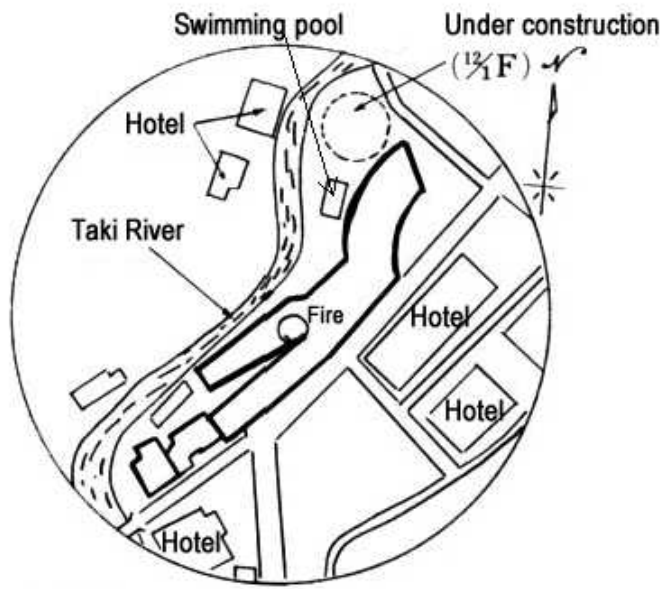
Total 15

5th floor

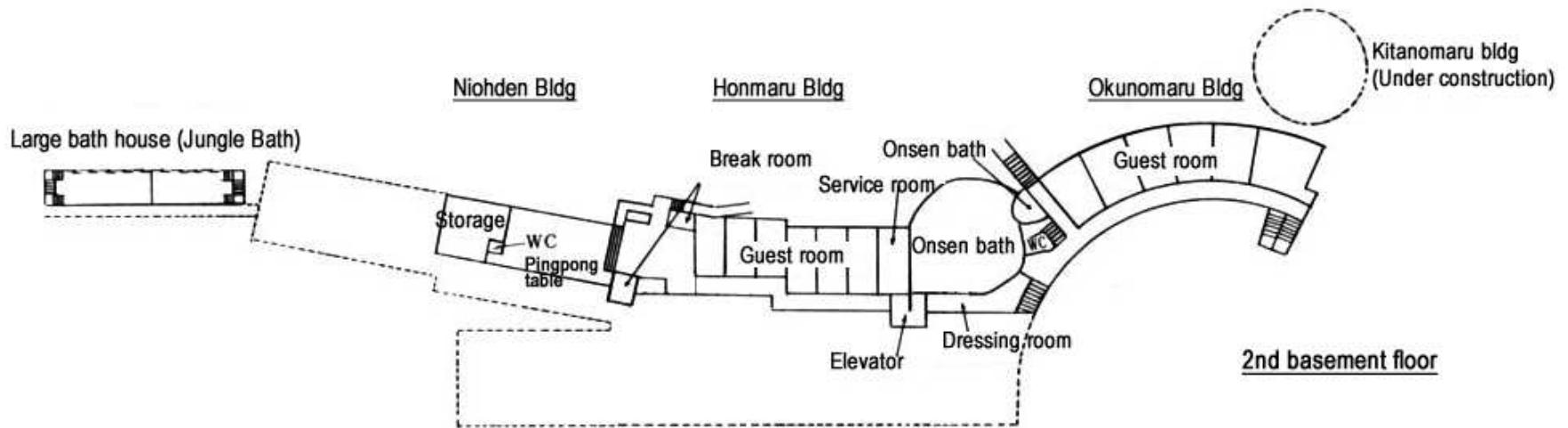
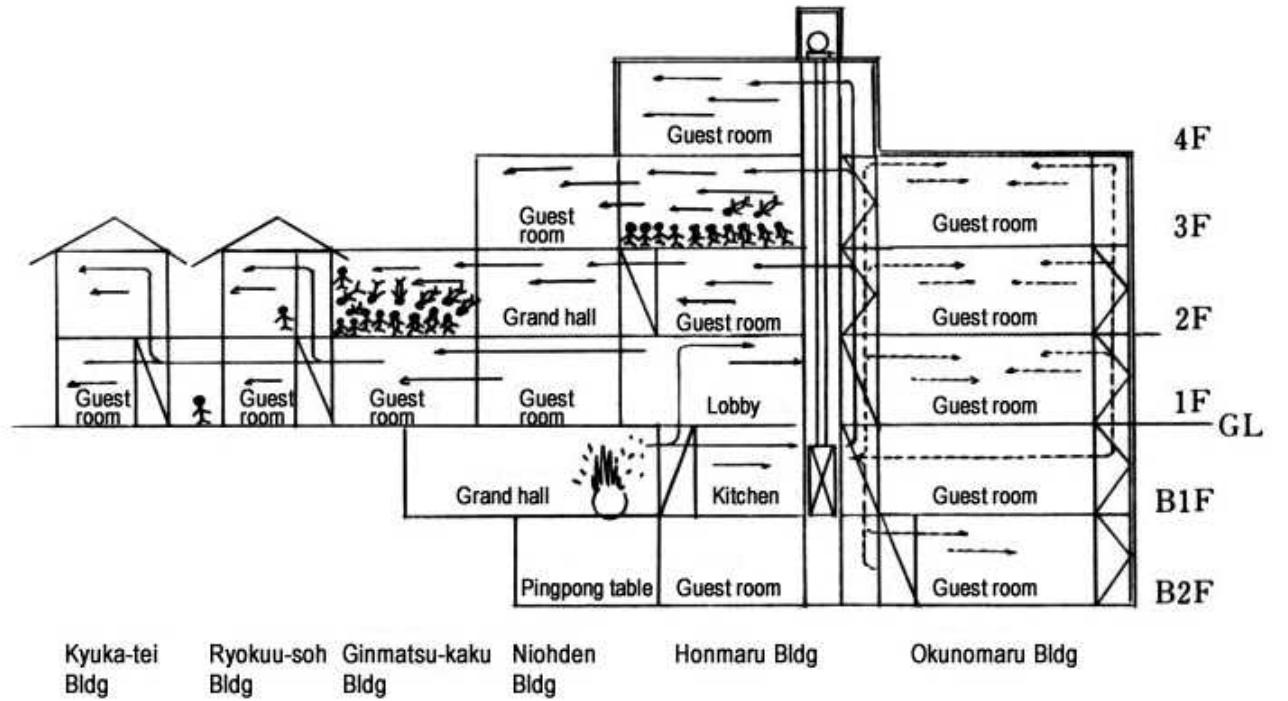
- Escaped via hallways and stairs --- 8 (incl. 3 hotel staff)
- Climbed down construction footings --- 3
- Climbed down rope 1

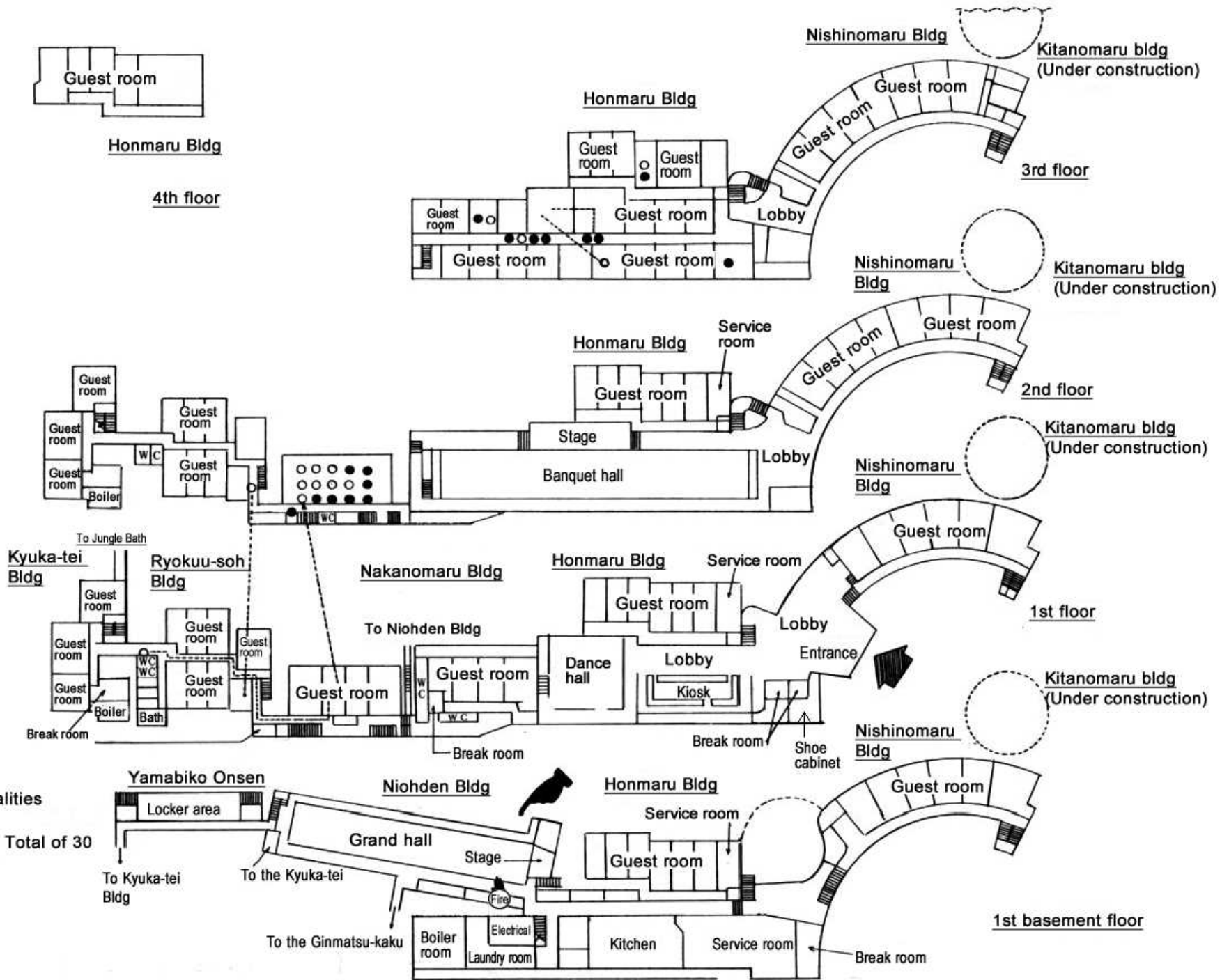
Total 12

Escape route unknown --- 4



Layout





Symbols

- ● Number of fatalities
 - Male 14
 - Female 16
- } Total of 30

Layout of pipe shaft and rooms

