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
Tsurumi-en Leisure Center at Tsurumi-en Resort Hotel 2152-1 Minami-tateishi, Beppu, OHITA	Hotel (5) a	Nov. 27, 1969 Breakout at 10:33 (approx) Noticed at 10:35 Notified by emergency call Extinguished by 12:01	Fire resistive 5 stories above ground and 1 below Building area m² Total floor area 15,310 m²	All, Half, **Partial**, Small 910 m² (6%)	Fatalities 2 Injured 6 ( )

I. Summary of Fire Incident

(1) Summary

This hotel fire originated from the large hall on the 2nd floor in the daytime and resulted in 2 fatalities. The cause of the fire was a careless mistake made by a contractor during the installation of additional propane gas equipment for the upcoming end-of-the-year parties. The hotel was not compliant in the handling of flammable materials and maintaining the fire-prevention equipment. The hotel failed to contain the incipient-stage fire and the slow reaction in assigning a responsible person resulted in the fire spreading from the unclosed fire shutters in the stairwell.

(2) Conditions per Floor

Floor	Total area	Damaged area	Use (Purpose)	No. of persons	No. of fatalities	Fire escape equipment	Firefighting equipment
	m²	m²				3 sets of inside stairs from 2nd to 5th floors 1 set of outside stairs Escape chute 2 sets of slow descending machines on the 5th floor 2 sets of emergency ladders on 4th floor 1 set of fixed ladder on 3rd floor	Indoor fire hydrants (1 set on B1 floor, 3 sets on 3rd floor and 2 sets each on 4th and 5th floors) 75 sets of fire extinguishers in total Automatic fire detection system throughout the hotel Guiding lights throughout the hotel 5 sets of outdoor fire hydrants (25)
PH1	15,310.0						
5			Guest rooms	7	2		
4		30.0	Guest rooms	3			
3		105.0	Guest rooms	9			
②		775.0	Large hall, Theater	61			
1			Small store, Lobby, Office	45			
B1			Electrical room, Machine room	4			
Total	15,310.0	910.0		129	2		

(3) Origin of Fire

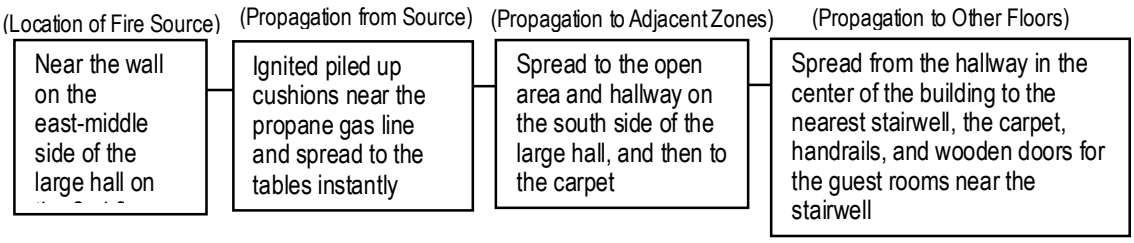
(Floor, Room, Part, Combustibles, **Habitable**/Non-habitable, **Present**/Absent)

The fire emerged near the middle portion of the east-side wall of the large hall on the 2nd floor. In the vicinity, a large number of combustibles (cushions and tables) were piled up. The interior walls were finished with wallpaper and the ceiling was made of plywood, which were both combustible.

(4) Cause of Fire

For the upcoming end-of-the-year parties, additional propane gas lines were being installed in the large hall. The contractor created 21 service lines, whereas the planned number of lines was 20. When the contractor released gas for the test run, the gas leaked from the extra line that was never sealed back. Subsequently he ran the ignition test. The leaked gas was ignited and the cushions caught on the fire.

(5) Fire Propagation Path



The flames that emerged near the wall in the east-middle side of the large hall spread in a flash by consuming combustibles such as the large amount of stacked cushions and tables. Once the flames reached the other side of the room, the fire spread to the hallway (open area) on the south side of the building. Then, the interior materials (sliding doors and carpet) burned toward the hallway in the center of the building and flames grew higher throughout the stairwell. The fire spread further to the wooden doors of the guest rooms on the 3rd to 5th floors via the stair carpet and wooden handrails.

○ Main Reasons for Propagation of the Fire
The main cause was the leak of the flammable and explosive propane gas. The location of the leak was surrounded by combustible materials such as cushions and tables.
There were no fire-preventive measures in place for the stairwell, and its carpet and wooden handrails facilitated the flames to spread upward.

○ Smoke Propagation Path
The fire room was the large hall, which is an open space, and one side of the room facing the hallway is a wide opening usually partitioned by multiple sliding screens. The propane gas lines and the cushions made of sponge-like material are commonly provided in Japanese-style large halls. This particular large hall was next to a through-stairs with no fire compartment. Therefore, once the combustibles were ignited, the fire spread rapidly and the smoke propagated horizontally and vertically in the very early stages of the fire.

II. Summary of the Building

(1) Built

Construction, Completion, and Major Renovations
(Construction) July 1968, (Open) April 11, 1969

Fire Prevention Management

(2) Vertical Shafts

Stairs	[X]	Duct Spaces	[X]
Elevators	[ ]	Pipe Shafts	[ ]
Escalators	[ ]	Other ( )	[ ]

- 3 sets of inside stairs (with manually operable fire shutter on each stairwell).
- 1 set of pipe shafts.

(3) Fire Prevention

- The hotel had appointed a fire-prevention manager (General Affairs Supervisor) and submitted the paper work to the local fire station (Sept 22, 1969).
- The hotel had submitted the fire defense plan to the local fire station (May 1, 1969).
- The hotel had carried out a fire drill twice prior that year (on July 15th and 18th)

(4) Fire Compartments

Each stairwell, the theater and large had manually operable fire shutters; however, all of them were left open.

(5) Firefighting Equipment

The hotel completed a voluntary inspection of the firefighting equipment on November 9, 1969.

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III. Actions Taken after the Fire was Detected

(1) First Detected

- **Detected by** (Contractor who was conducting the ignition test after installation of the service gas line)
- **How and why** (The contractor saw flames during the test)
- **Action taken** (The contractor was alerted by the flames. After he closed and removed the gas cylinder, he went to look for a fire extinguisher in a different room)

The ignition test was carried out by 2 contractors, M and I. As soon as the fire emerged, Contractor M reached for the gas cylinder outside from the window to close the valve and went to look for a fire extinguisher. He returned to the fire room but then went outside to move one of the cylinders to a safe distance. Contractor I alerted other people as he ran toward the kitchen to get help and he went outside to remove the other cylinder (1) to a safe distance.

(2) Emergency Call

Emergency Call	Yes [X] (After the fire-prevention manager confirmed the fire on the 2nd floor, one of the female staff members made a 119 call from the back office on the 1st floor.) No [ ]	Time elapsed since the discovery ( ) minutes

The fire-prevention manager (General Affairs Supervisor) was attending a meeting in the office on the 1st floor when he heard the automatic fire detection system alarm. After he confirmed the fire location on the control panel, he went to the large hall on the 2nd floor via the stairs next to the small store on the 1st floor. As soon as he witnessed the intense fire, he ran back down to the back office on the 1st floor and told the female staff member to make a 119 call, which she did.

(3) Initial Firefighting Activities

Initiated	Successful [ ] Failed [X] ° Extinguished timing [ ] ° Firefighting difficulties [X] ° Firefighting method [ ]	**(Reasons or Conditions)** The guest room supervisor who was in the back office on the 1st floor heard the automatic fire detection system alarm and rushed to the 2nd floor. He used 2 fire extinguishers in the large hall and 2 more from the theater to contain the fire; however, the flames were too intense, producing a pillar of fire to the ceiling and therefore he gave up and evacuated.
Not Initiated	° Extinguished time [ ] ° Firefighting difficulties [ ] ° Firefighting method [ ] ° Other [ ]	

(4) Summary of Firefighting Activities

(Obstacles or Difficulties in Fire Control)

- The large hall was constructed with combustible interior materials (plywood ceiling, wallpapered walls, and tatami mats) and contained a large amount of piled cushions and wooden tables, which created very intense flames. In addition, the outlet of the outdoor fire hydrant was next to the origin of the fire, which made the firefighting activities difficult.
- Despite being a large property with leisure facilities and large structures, the water resources for firefighting operations were significantly poor and firefighters had difficulty in securing an effective amount of water.
- Since the hotel staff failed to secure the vertical shaft earlier, heavy smoke and heat spread to the upper floors and interfered with the firefighters' assessment for search and rescue operations.

(5) Evacuation

Means of Escape (No. of Persons)	Obstacles to Evacuation
° Stairs [X] (65) ° Elevators/Escalators [ ] ( ) ° Escape equipment [X] (3) ° Directly to ground from windows or openings [X] (54) ° Rescued [X] (2) ° Other (Guided) [X] (3)	° No windows [ ] ° Barred openings [ ] ° Locked emergency doors (Exits) [ ] ° Alarm system [ ] (Poorly controlled, Malfunctioned, Not installed) ° Power outage [ ] ° Other [X] (Heavy smoke throughout the stairwell)

Since the origin of the fire was on the 2nd floor, the guests who were on the 2nd floor and below were able to evacuate primarily from the main entrance. From the 3rd floor, 4 guests came down the indoor stairs on the north side of the building, which was the opposite side to the origin of the fire. The rest of the guests jumped out off windows to the roof of the 2nd floor and then climbed down the rain water pipes. On the 4th floor, the guests climbed up the employee stairs on the south side of the building to the rooftop and climbed down the stairs on the north side of the building. On the 5th floor, the guests climbed down ropes to the balcony of the 4th floor: 2 of them were rescued by ladder truck from the balcony, and 3 of them climbed down the wooden ladder further to the 3rd floor and used the escape chute to evacuate. Refer to (6) Causalities for more details.

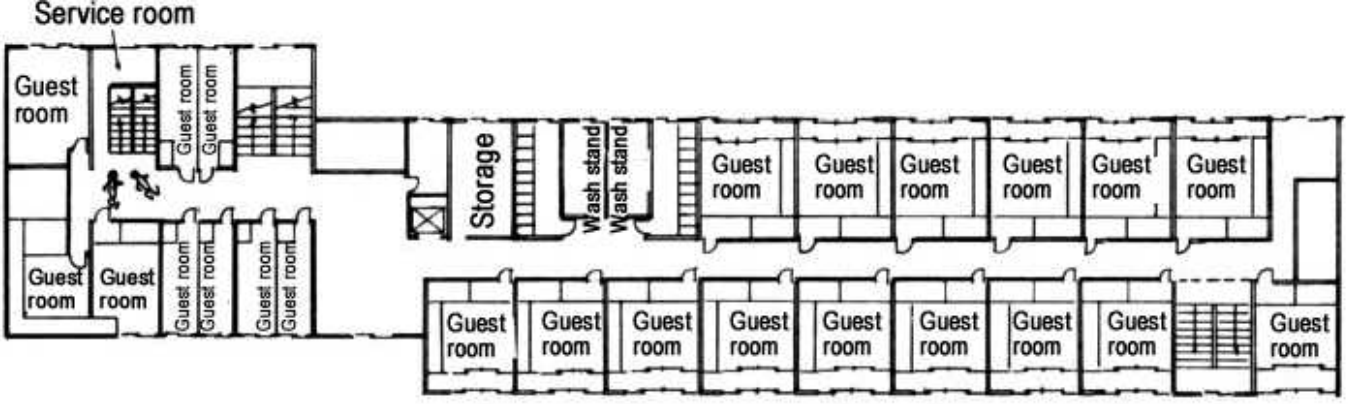
(6) Casualties

	Obstacles to Evacuation
Healthy individuals 2 (Drunk persons) Individuals in need of assistance Infants Elderly Handicapped Patients/ill persons	° No windows [ ] ° Barred openings [ ] ° Locked emergency doors (Exits) [ ] ° Alarm system [ ] (Poorly controlled, Malfunctioned, Not installed) ° Power outage [ ] ° Other [X] (Heavy smoke in the stairwell trapped the evacuees)

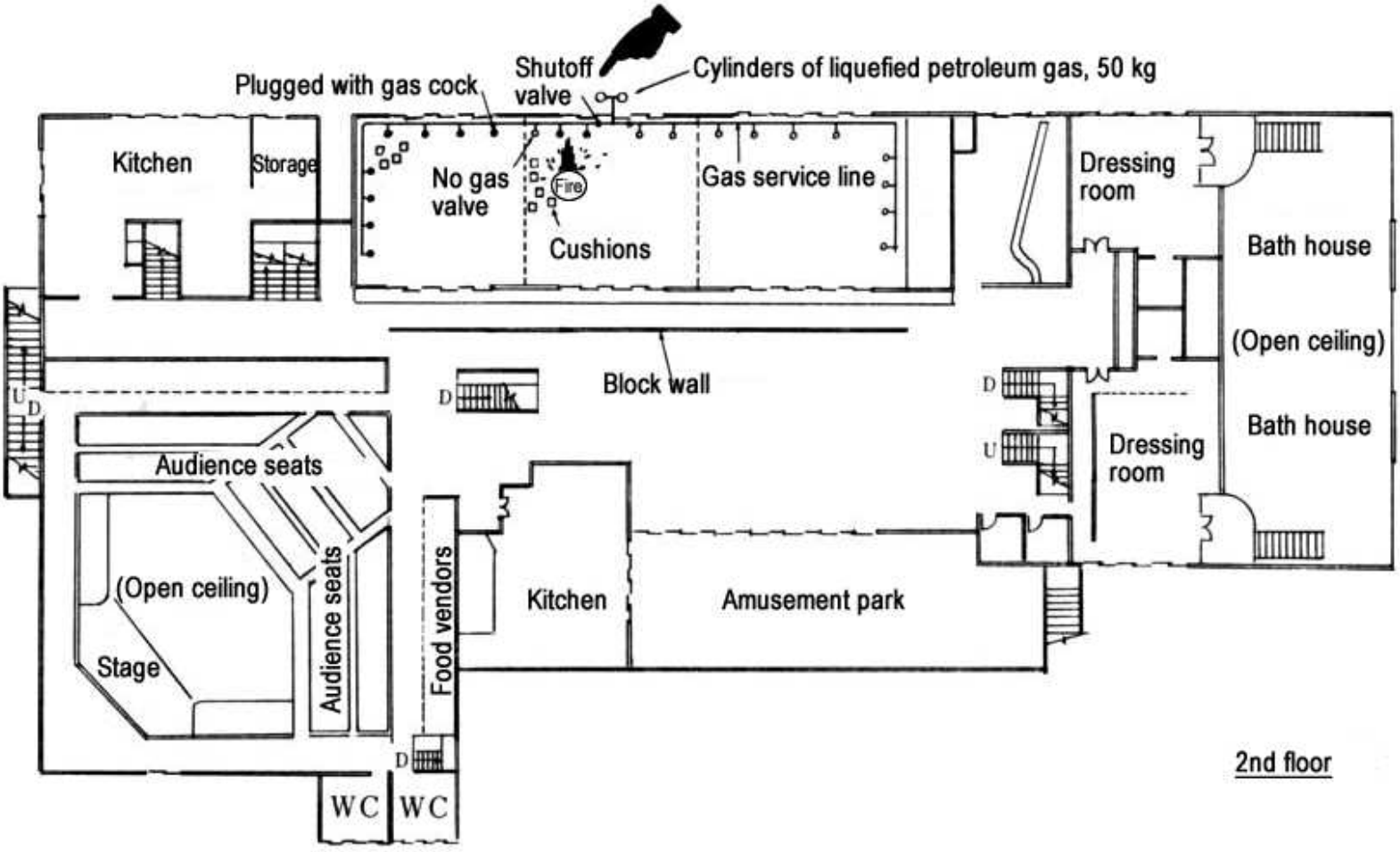
- On the 4th floor, 3 guest-room staff members and 1 cleaning lady became aware of the fire and ran up the employee stairs to the roof top; however, 1 of the guest room staff members was trapped by the flames and smoke in the stairwell and died there.
- On the 5th floor, 6 guests and 1 guest-room staff member became aware of the fire and used a rope to climb down to the balcony of the 4th floor; however, 1 of the guests disappeared at some point. Since he/she was later found in the hallway of the 4th floor, probably s/he tried to escape via the stairs instead. One of the evacuees from the 5th floor was rescued by firefighters, but was pronounced dead later at hospital.

IV. Issues and Lessons Learned

1. Building structure:
   - The restrictions for interior finishings need to be reinforced for tall buildings consisting of a large room on the 2nd floor and guest rooms on the 3rd floor.
   - This type of the building needs to have outside stairs for emergencies and to secure a space for emergency vehicles (ladder truck) to operate at a close distance.
   - A hotel consisting of guest rooms and a hallway that runs between and separates the guest rooms to 2 sides needs to have a balcony that is connected to outside stairs.
2. Firefighting equipment:
   - The regulations regarding installation of firefighting equipment needs to be reinforced in large-scale hotels.
3. Fire-prevention management:
   - Before any construction work, the fire safety measures need to be clearly defined and fully enforced to the extent of supervision with respect to the handling of the hazardous materials inside any building.
   - Fire drills (especially evacuation drills) need to be executed flawlessly.



4th floor



2nd floor