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
Ryoumou Psychiatric Hospital 1648 Horigome-cho, Sano, TOCHIGI	Hospital (6) a	June. 29, 1970 Breakout at 20:07 (approx) Noticed at 20:12 Notified by emergency call Extinguished by 21:10	Wooden 1 stories above ground and 0 below Building area 305 m^2 Gross floor area 305 m^2	All, Half, Partial, Small 305 m^2 (100 %)	Fatalities 17 Injured 1 ( )

I. Summary of Fire Incident

(1) Summary

This psychiatric hospital was burned down in an arson attack that was made by inpatients. Because of the specialized nature of the hospital, this old wooden building was managed in a highly controlled manner where all the windows and exits were locked all the time, but this made both evacuation and rescue operations difficult. This fire revealed irresponsible night duty provisions, lack of staff on duty, and poor response to the fire, which resulted in 17 fatalities.

(2) Conditions per Floor

FL	Total area	Damaged area	Use (Purpose)	No. of persons	No. of fatalities	Fire escape equipment	Firefighting equipment
	m^2	m^2					Fire extinguishers Short circuit detector Outdoor fire hydrants
1	305	305	Patient rooms	47	17		
Total	305	305		47	17		

(3) Origin of Fire

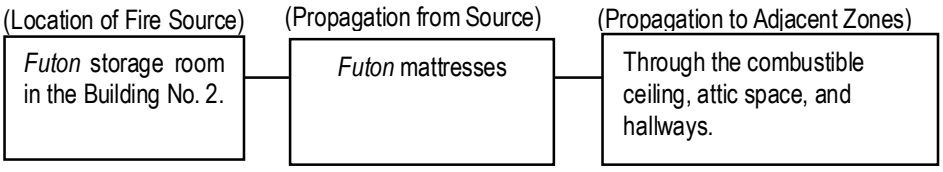
(Floor, Room, Part, Combustibles, Habitable/Non-habitable Rooms, Present/Absent)
From the storage room in Building No. 2.

- The storage room contained *futon* mattresses.
- The inpatients brought 2 sets of old newspapers, 5 sets of old weekly magazines and 4 sets of old magazines, and set a fire on the rolled up newspapers.
- Out of the 6 inpatients who conspired to set the fire, 1 of them broke into the storage room and deliberately set the fire.

(4) Cause of Fire

<u>Arson by the inpatients.</u>
The inpatients sneaked into the storage room and used a match and old newspapers to set the *futon* mattresses on fire, planning to escape during the disturbance.

(5) Fire Propagation Path



The incendiary fire was set in the *futon* storage area in the center of the old wooden building and spread to the ceiling. Since there was no fire compartment, it spread instantly to the attic space and hallways.

- Main Reasons for Propagation of the Fire
  - The opening protective assembly for the principal part of the building (incl. the attic space) was not of fire-resistive construction and therefore, the fire spread rapidly throughout the old building.
  - The late detection of the incendiary fire, and no immediate attempts to extinguish the fire.
- Smoke Propagation Path

  Along with the flames, smoke propagated rapidly along the ceiling and through the hallways.

II. Summary of the Building

(1) Built

Construction, Completion, and Major Renovations
(Construction) 1927, thereafter 4 expansions without permits

Fire Prevention Management

(2) Vertical Shafts

Stairs	[ ]	Duct Spaces	[ ]
Elevators	[ ]	Pipe Shafts	[ ]
Escalator s	[ ]	Other ( )	[ ]

N/A

(3) Fire Prevention

- The hospital had appointed a fire-prevention manager.
- The hospital had submitted a fire defense plan once in 1962; however, since then, no update had been made according to the actual condition of the buildings.
- The hospital had an in-house firefighting team, but no paper work had been submitted to the fire station.

(4) Fire Compartment

Building No. 2 did not have any fire compartments and the interior finish was not fire retardant.

The ceilings and walls were made of painted plywood.

(5) Firefighting Equipment

In accordance with regulatory changes, the hospital was subject to retroactive adjustment of the emergency alarm system and guiding lights.

The hospital was preparing an installation plan for an automatic fire detection system.

III. Actions Taken after Fire was Detected

(1) First Detected

- **Detected by** (Nurse)
- **How and why** (Arsonist shouted "fire!")
- **Action taken** (Immediate attempts to extinguish the fire and perform rescue activities)

After the arsonists confirmed that the fire had started as planned, one of them knocked on the door of the nurse station and shouted "Fire, fire!" A nurse who heard the shout confirmed a reflection of flames on the glass window above the closet. She poured 5 to 6 bucketfuls of water filled from the faucet of the washstand onto the fire, but she remembered about a physically disabled boy who had just been admitted to the Administrative Building a day before. So she went to help him and after that, she rescued 3 more inpatients from the Isolation building (Tuberculosis ward). She then returned to Building No. 2 (the fire building) to help other patients in the building, but the building was engulfed in flame.

(2) Emergency Call

Emergency Call

Yes [X] (Nurse) Time elapsed since the discovery (12) minutes

No [ ]

Nurse K (age 46) who was on the 2nd floor of the Administrative Building heard a female voice shouting "Fire", and from the west-side window, she confirmed that Building No. 2 was on fire. She made a 110 call first and then a 119 call.

(3) Initial Firefighting Activities

Initiated	Successful [ ] Failed [X] ° Extinguished timing [ ] ° Firefighting difficulties [ ] ° Firefighting method [ ]	**(Reasons or Conditions)** ° The nurse who first became aware of the fire began pouring buckets of water that she filled up from the washstand onto the fire. ° Three nurses who were about to go out noticed the fire from the bathroom, and used fire extinguishers to extinguish the fire, but to no success. ° The wife of the hospital director (age 42) was in on the premises. As soon as she became aware of the fire, she extended a hose from the outdoor fire hydrant, which the hospital had voluntarily installed on the west side of the Isolation Ward; however, she did not know how to use it. (This outdoor fire hydrant did not have any water pressurization system because it was directly connected to the public water line.)
Not Initiated	° Extinguished time [ ] ° Firefighting difficulties [ ] ° Firefighting method [ ] ° Other [ ]	

(4) Summary of Firefighting Activities

(Obstacles or Difficulties in Fire Control)

By the time the firefighters arrived, the fire building (Building No. 2) was fully engulfed in flames and therefore, the firefighters operated defensively to prevent the fire from spreading to other buildings because it was too late for search and rescue activities.

(5) Evacuation

Means of Escape (No. of Persons)	Obstacles to Evacuation
° Stairs [ ] ( ) ° Elevators/Escalators [ ] ( ) ° Escape equipment [ ] ( ) ° Directly to ground from windows or openings [ ] ( ) ° Rescued [ ] ( ) ° Other ( ) [ ] ( )	° No windows [X] ° Barred openings [X] ° Locked emergency doors (Exits) [X] ° Alarm System [ ] (Poorly controlled, Malfunctioned, Not installed) ° Power outage [ ] ° Other [X]

There were a total of 46 inpatients with relatively severe disorders present in the buildings. There were supposedly 2 nurses on night duty; however, one of them was out for personal reasons and 1 elderly caregiver (no license, age 66) was on duty by herself. The survivors from the fire building were those who escaped as soon as they became aware of the fire and unusual noise. It was likely that these survivors chased after the group of arsonists and went outside. All of them ended up outside from the same escape route. The patients in the other buildings were able to evacuate with the help of the nurses and caregivers.

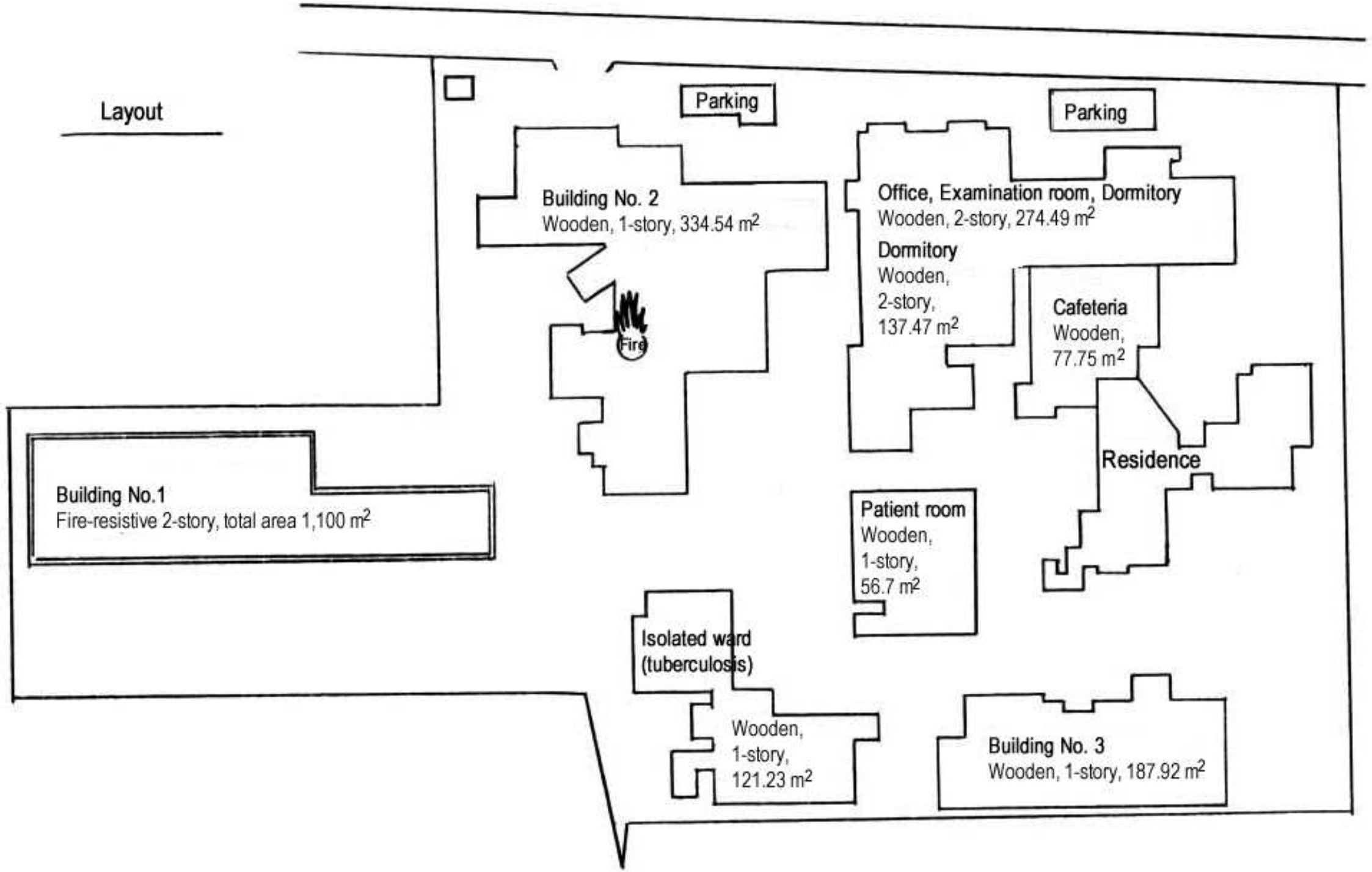
(6) Causalities

Healthy individuals 17 (Drunk persons)	Obstacles to Evacuation
Individuals in need of assistance Infants Elderly Handicapped Patients 17	° No windows [X] ° Barred openings [X] ° Locked emergency doors (Exits) [X] ° Alarm System [ ] (Poorly controlled, Malfunctioned, Not installed) ° Power outage [ ] ° Other [X]

Seventeen patients were killed in this fire: 14 were found in their rooms and 3 of them were in the hallway outside their rooms. Those who died in their rooms were mostly patients with a history of epilepsy or mentally-challenged patients who exhibited agitated/disruptive behavior. They were diagnostically sound sleepers and the doctors always needed to tap their cheeks to wake them up. Those who died in the hallway (3 patients) probably became aware of the fire a little too late. While looking for an exit, they were trapped by heavy smoke and became unconscious. The visibility of the evacuation route was poor because the fire room was facing the main hallway that became the fire propagation path, and all the doors were facing the hallway.

IV. Issues and Lessons Learned

1. The entrance and emergency exits were double doors with 4 different kinds of locks. Only the nurses had the keys to unlock them, which proves that they failed to appropriately consider basic evacuation safety of the patients .
2. There were no preventive measures or proactive actions taken about the lack of nurses (in terms of the nurse:patient ratio).
3. The caregiver who was in the nurse station was overwhelmed by the fire and did not respond to the situation very well. She unlocked the doors once, but closed them again and spent some critical time in confusion. She did not help the patients to evacuate from the other buildings. If the caregiver had responded promptly, the hospital could have minimized the casualties. This highlights the need to provide thorough training according to the specific environment.
4. The fire defense plan was not updated according to the actual environment that changed over time, and in particular, the night duty staffing was unreasonable and inappropriate. The employees lacked a sense of responsibility.
5. Hazardous materials (a match and lighter) were unsuitably managed and the dangerous consequences not well understood.


Layout
Parking
Parking
Building No. 2
Wooden, 1-story, 334.54 m2
Fire
Office, Examination room, Dormitory
Wooden, 2-story, 274.49 m2
Dormitory
Wooden,
2-story,
137.47 m2
Cafeteria
Wooden,
77.75 m2
Residence
Building No.1
Fire-resistive 2-story, total area 1,100 m2
Patient room
Wooden,
1-story,
56.7 m2
Isolated ward
(tuberculosis)
Wooden,
1-story,
121.23 m2
Building No. 3
Wooden, 1-story, 187.92 m2

Building No. 2