

FIRE SAFETY IN HIGHRISE BUILDINGS FOR THE ELDERLY

HEARINGS
BEFORE THE
SUBCOMMITTEE ON
HOUSING FOR THE ELDERLY
OF THE
SPECIAL COMMITTEE ON AGING
UNITED STATES SENATE
NINETY-THIRD CONGRESS
FIRST SESSION

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Part 1. Washington, D.C., February 27, 1973

Part 2. Washington, D.C., February 28, 1973

CONTENTS

	Page
Opening statement by Senator Harrison A. Williams, chairman.....	1
Statement by Senator Edward J. Gurney.....	3
Statement by Senator Pete V. Domenici.....	4

CHRONOLOGICAL LIST OF WITNESSES

Gibson, J. I., first deputy chief, Atlanta Fire Department; accompanied by Capt. J. B. Gossett, Jr., assistant fire marshal, Atlanta Fire Department; and Capt. M. H. Sullivan, arson investigator, Atlanta Fire Department.	5
Gossett, J. B., Jr., Capt.....	6
Sullivan, M. H., Capt.....	8
Snow, George, manager, Baptist Towers, Atlanta, Ga.; accompanied by Flora Webb, tenant, Baptist Towers, and Paul Bennett, tenant, Baptist Towers.....	15
Webb, Flora, tenant.....	18
Bennett, Paul, tenant.....	20
Butler, Thomas A., Sr., executive vice president, ABCO Builders, Inc.---	22
Prepared statement.....	29
Bland, Richard E., chairman, National Commission on Fire Prevention and Control.....	32
Prepared statement.....	38
Schirmer, Chester W., president, Schirmer Engineering Corp., Niles, Ill.---	40

APPENDIX

Orlando, Fla., proposed sprinkler ordinance, submitted to Senator Edward J. Gurney, by Mr. M. W. Rivenbark, chief, Orlando Fire Department, January 24, 1973.....	49
Letter from Z. C. Greenway, director, fire operations, St. Petersburg, Fla.; to Senator Gurney, dated January 24, 1973.....	50
Letter from Mr. Thomas A. Butler, Sr., to Senator Harrison A. Williams, ref: Housing Program 202 and Program 236; dated March 30, 1973....	54

FIRE SAFETY IN HIGHRISE BUILDINGS FOR THE ELDERLY

TUESDAY, FEBRUARY 27, 1973

U.S. SENATE,
SUBCOMMITTEE ON HOUSING FOR THE ELDERLY
OF THE SPECIAL COMMITTEE ON AGING,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 4232, Dirksen Office Building, Hon. Harrison A. Williams, Jr., chairman, presiding.

Present: Senators Williams, Gurney, and Domenici.

Also present: John Edie, professional staff member; John Guy Miller, minority staff director; Robert M.M. Seto, minority counsel; Ruby Simpson, minority staff member; Gerald Strickler, printing assistant; and Phyllis Balan, clerk.

OPENING STATEMENT BY SENATOR HARRISON A. WILLIAMS, CHAIRMAN

Senator WILLIAMS. Today and tomorrow, the Subcommittee on Housing for the Elderly will examine the problems of Fire Safety in Highrise Buildings for the Elderly.

We open these hearings with no preconceived notions of what the best answers are to those problems. The concepts of fire prevention and the techniques of firefighting are complex, and they often demand a background of thorough scientific experience.

Therefore, I will call on professional firefighters and on other experts during these hearings to help us find those best answers.

Nevertheless, I do come to these hearings with one very strongly held conviction: I believe, that with this Nation's resources and advanced technology, we can build highrise apartment buildings exclusively for the elderly, that are free from the dangers of multiple-death fires.

And, we can build them so that older Americans with low incomes can afford to live in them.

BAPTIST TOWERS FIRE—ATLANTA, GA.

Last November, fire broke out on the seventh floor of the Baptist Towers apartment building in Atlanta, Ga.

Ten elderly persons died as a direct result of this fire. Those deaths came, despite the fact that the building had been occupied only 8 months, and despite the fact that the building was 100 percent in compliance with local and State codes.

Baptist Towers is reserved exclusively for tenants over the age of 62, and is financed through the Federal Government's section 236 interest-subsidy program.

This fire, which occurred less than 24 hours after a similar fire in New Orleans, has resulted in considerable national attention to the issue of fire safety in highrise buildings.

Much of the testimony we are soon to hear will deal with the question of highrise fires in general.

However, I have asked all of our witnesses to address themselves to the added problem of fire safety in a building occupied only by older persons.

As we all know, the elderly are often subject to physical handicaps. Many have difficulty walking down stairs; many are hard of hearing; and many suffer from failing vision.

All these handicaps can increase the dangers in a fire. If this subcommittee is to continue to push strongly for housing funds and for specially designed housing for the elderly, we would be failing in our duty if we did not at the same time ask whether housing for the elderly does not demand a special system of fire safety.

I want to take note of the fact that a hearing such as this has the potential danger of greatly alarming many people.

While I am hopeful that the importance of this issue will receive wide exposure, I am equally concerned that our inquiry not breed irrational fears.

NEED FOR CONCERN

New buildings today are, in many ways, safer from fire than ever before. New developments in construction and fire-resistant materials are daily being incorporated into new buildings.

New highrise buildings go up daily and yet, the serious highrise fire is still a relatively rare occurrence.

Nevertheless, what happened in Atlanta could happen elsewhere, and it is therefore important that we examine this problem openly.

Our objective is not to cause panic, but to stimulate constructive interest and to improve the conditions of fire safety.

This morning we will hear from the Atlanta Fire Department, from the manager and two tenants of Baptist Towers, from the builder of Baptist Towers, and from two nationally recognized experts in the field of fire prevention.

Tomorrow, our discussion will focus primarily on the effect of various fire safety requirements on Federal housing programs for the elderly.

New fire safety regulations from the Department of Housing and Urban Development will go into effect this year, and a representative from HUD will be here to discuss those changes and their effects on cost and fire prevention.

Before we hear from the Atlanta Fire Department, I would like to make a few points about the Baptist Towers fire.

Strictly speaking, the fact that this apartment building was a high-rise structure did not contribute to the results.

Because the fire broke out on the seventh floor, firefighters were able to rescue many trapped tenants from their windows.

But what if the fire had started on the tenth floor? Ladder rescues would have been impossible, and this tragedy could have been much worse.

Therefore, the issue of highrise safety becomes crucial and must be closely examined.

MULTIPLE-DEATH VS. SINGLE-DEATH FIRES

Finally, I am deeply concerned with another fact that strikes me as the crucial issue in the wake of this tragic fire.

Here we have a brand-new building, a building that was built 100 percent according to code. And yet, 10 persons die from a fire.

Clearly, something is wrong. I cannot believe that with our advanced know-how, we cannot build an apartment building that will prevent multiple-death fires.

Single-death fires are probably inevitable; but multiple-death fires should be avoidable.

Tragedy was not avoided in Atlanta, and this subcommittee wants to know why.

Is it a cost problem? Do we need stronger and stricter codes? Do our Federal housing programs need to be restructured to guarantee better safety?

These questions are difficult, but I earnestly hope that our efforts here today and tomorrow will help us begin to find some answers.

Senator Gurney, I turn to you for any comment you have.

STATEMENT BY SENATOR EDWARD J. GURNEY

Senator GURNEY. I certainly concur with all you have said in your opening statement and I would like to extend my own word of welcome to our witnesses today on this very important matter, and to say that I certainly look forward to these hearings. As we all know, Florida is a large retirement State, and we have large concentrations of elderly retirees around our urban centers in St. Petersburg, Orlando, Miami, and Jacksonville. Those areas, of course, have hundreds of highrise buildings already, with more going up every day. Fortunately, there haven't been any major fires in those structures, but the tragedy that took place in Atlanta should dissuade people from thinking that "It can't happen here."

The fact of the matter is that fires can happen most anywhere. From the newspaper accounts of the fire, I understand that in Atlanta, deaths occurred despite the fact that the building had complied with existing fire safety standards.

PROPOSED ORLANDO ORDINANCE

As a consequence of this, I wish to submit, for the record, some information I have gathered from two of our Florida cities.¹ The first item, submitted by Chief M. W. Rivenbark, of the Orlando Fire Department, is a proposed Orlando city ordinance, which would require the installation of sprinkler systems in virtually all highrise buildings, even though we already have a fire safety code which requires sprinkler systems in many buildings. The new regulations, however, would establish a number of other fine fire protection standards, including, for instance, one requiring an approved fire alarm system to be connected to the local fire department alarm office. From my preliminary research of the Atlanta fire, it seems to

¹ See appendix, p. 49.

me that such a system could have saved lives, particularly the life of the guard.

The other item I would like to submit, if I may, is a working copy of an examination of the Atlanta fire by members of the St. Petersburg Fire Department.² The examination, and subsequent recommendations, form the basis for a proposed new city ordinance for highrise buildings in St. Petersburg. I am certainly proud of the St. Petersburg Fire Department for taking the initiative in the wake of these two tragic highrise fires, and for coming up with a proposal that will help prevent this type of occurrence from taking place in St. Pete. We have a very large retired population in St. Petersburg, and these senior citizens deserve the utmost consideration.

I think it is the forward looking attitude of many Florida city fire departments that has protected us from tragedy so far. Of course, I realize that all the proposals in the world will not do the job unless city governments agree to the proposed fire regulations in the first place, and then see to their enforcement.

I realize there is a great deal of controversy in this area, most of it centering around the cost of good fire protection equipment. The building contractors are concerned about the added cost of such equipment to the purchaser, and fire departments are worried about the cost of extra firefighting equipment to the taxpayer. The two ideas I have just presented represent, I believe, reasonable alternatives that would fill the need. At any rate, they warrant further consideration and I hope that this committee will consider them along with any other worthy proposals. We owe it to our senior citizens to do no less.

Senator WILLIAMS. Thank you very much, Senator Gurney. The material will be inserted in the record.

Senator GURNEY. Yes, thank you, Mr. Chairman.

Senator WILLIAMS. Senator Domenici.

STATEMENT BY SENATOR PETE V. DOMENICI

Senator DOMENICI. Mr. Chairman, I have a brief statement. I come from a State, New Mexico, that most people might not suspect is a State with many retired senior citizens. It has a bright future in terms of conditions of livability for our senior citizens, and I want you to know, Mr. Chairman, I am extremely interested in the overall problems of housing, particularly the one that comes before us today—safety.

I am somewhat concerned that many problems, such as the one before us, seem to await a catastrophe before we get down to being as concerned as we should be.

But I hope what has occurred will cause us to focus on what we should do as a nation. And I will do my share for those of the country and for those of my State so we can take whatever action is necessary for the safety code, and we will build for the future.

Thank you for giving me an opportunity to comment.

Senator WILLIAMS. We will start with the panel of witnesses from Atlanta. We will have Chief J. I. Gibson, Capt. J. B. Gossett, Jr., and Capt. M. H. Sullivan.

Will you come to the table, please?

² See appendix, p. 50.

I am most grateful that you have come here for our hearing today, and have been so cooperative in developing the hearing to this point. Who is going to start our discussion?

STATEMENT OF CHIEF J. I. GIBSON, FIRST DEPUTY CHIEF, ATLANTA FIRE DEPARTMENT; ACCOMPANIED BY CAPT. J. B. GOSSETT, JR., ASSISTANT FIRE MARSHALL, ATLANTA FIRE DEPARTMENT; AND CAPT. M. H. SULLIVAN, ARSON INVESTIGATOR, ATLANTA FIRE DEPARTMENT

Chief GIBSON. I will recap the fire. Captain Gossett will give testimony relative to his investigation of the fire.

I am the first deputy chief of the Atlanta Fire Department. I arrived on the fire scene within 30 minutes of the first alarm.

November 30, 1972, at 2:19 a.m., we received a fire alarm to the Baptist Towers—an 11-story, 300-unit fire resistive class "B" apartment erected for the elderly. The building is designed in a T shape.

If you will hold the chart up, its cross runs north and south, the leg extends eastwardly, each corridor averages 75 feet in length, and is carpeted.

The fire alarm system is a manual pull system with vibrating horns at each end of the stairwells. Each individual apartment had separate air conditioning and heating units.

In the first alarm assignment, there were two pumpers and one aerial ladder and a battalion chief.

When the battalion chief arrived on the scene, he observed heavy smoke and fire coming from the seventh floor on the south side of the building.

SLOPE OF LAND HAMPERS RESCUE

He immediately sounded a second alarm to help effect rescue. Rescue efforts were hampered because of heavy rains and a plot of grass that extended along the parking lot at the east end of building.

We were unable to get aerial ladders to this side of building. We were able to get our snorkel on the back side and aerial ladders on the north side.

Senator WILLIAMS. What was the impediment with the grass plot? You could not get your trucks up that area?

Chief GIBSON. Right. This area was a grass plot and it went all the way down a slope bank to the building. This is the parking area here. We could not get aerial ladders down this side of the building because of the heavy rain. This has an effect on rescue efforts.

We went to the back of the building and were able to put our snorkel and aerial units on this side.

I arrived on the fire scene 30 minutes after the first alarm. There was heavy smoke issuing from the fire floor to the upper floors. We had elderly people crying out for rescue.

Knowing it would be impossible to make the rescues necessary, I made the decision that we could save the most lives by extinguishing the fire.

We entered the east wing and advanced hand lines from the standpipe down the hallway, extinguishing the fire. I think we saved more lives this way.

After we extinguished the fire, we discovered nine fatalities on the seventh floor and one on the 10th floor.

At this time, we had at the scene of the fire nine pumper units, eight aerial ladders, and four battalion chiefs as well as other supporting units to help combat the fire.

Captain Gossett will now give his testimony.

STATEMENT BY CAPTAIN GOSSETT

Captain GOSSETT. Senator Williams and members of the committee, I am Capt. J. B. Gossett, Jr., assistant fire marshal of the Atlanta Fire Department.

Highrise apartments are a relatively new concept for housing senior citizens in Atlanta; however, fires in highrise buildings are not so new.

There have been numerous fires in this type building throughout the country, which have resulted in multiple deaths of occupants and employees.

FIRE PROTECTION FEATURES IN HIGHRISE BUILDINGS

Atlanta fire officials, like other fire officials across the Nation, are confronted with ways to perform rescue operations and means to extinguish fires in these buildings, which are far above the reach of fire department ground equipment.

Architects, as well as building officials, realizing the necessity for fire safe buildings, have incorporated some basic fire protection features into these buildings.

For example, noncombustible and fire rated materials used in construction and standpipe systems, fire alarm systems, the enclosure of vertical shafts, fire resistive enclosed stairways, et cetera.

After each large fire in a highrise building, building officials, architects and fire protection engineers are often called in to make recommended additional features which could possibly prevent a recurrence of a similar fire.

In most cases, these recommendations address themselves to building structure and not to the basic problem, which is the protection of occupants and contents.

Today's highrise buildings are constructed to withstand fire for a given number of hours and very little consideration is given to the contents therein.

We in the fire service, enthusiastically endorse fire resistive construction of these buildings. Such construction is essential in order to prevent a conflagration in the urban areas and in the prevention of collapse or total destruction of a building from the severity of a fire.

BUILDING PERFORMS WELL

Our modern highrise buildings are relatively safe from fire due to these construction requirements. A good example of what we are speaking of is the Baptist Towers fire in Atlanta on November 30, 1972.

This structure is an 11-story fire resistive building that conforms to the present building code in every respect.

The building was not weakened in any way nor did it sustain any damage to supporting walls, columns, et cetera. The building withstood the fire. However, as a result of the fire, 10 persons died.

One hundred percent content damage occurred in apartment 710, the point of the fire's origin. Fifty percent content damage occurred in apartment 721.

The large volumes of heat, smoke and toxic gases generated from the burning of the contents in these two rooms migrated into the corridor and adjacent rooms and was the major factor in life loss.

IMPROVEMENTS IN HIGHRISE BUILDING PROBLEMS

Over the past several years there has been much discussion at various conferences and seminars on highrise building problems.

The topics of these discussions are centered around:

Pressurizing stairways and elevator shafts to prohibit migration of smoke from one floor to another and to keep these stairways and elevator shafts clear for occupant egress from the building;

Compartmentation in buildings to provide areas of safe refuge for building occupants;

Horizontal exits which would require division of a story into two or more areas;

Smoke control systems to prevent smoke from being distributed to other parts of the building;

Smoke ventilating systems to release smoke and heat from floors to permit firefighter's accessibility to fire areas;

Automatic self-closing devices installed on doors to occupant rooms to prevent the spread of fire;

Enclosing elevator lobbys to permit egress from the building utilizing elevators;

The installation of early warning devices to alert occupants during the incipient stage of a fire;

Voice communication system to instruct occupants during a fire;

A central control station to monitor all fire protection features and alarm systems;

Elevator recall systems to place elevators at the fire department's command for transporting firefighting personnel and equipment to the fire floor; and

The installation of automatic sprinkler systems to detect and extinguish the fire.

AUTOMATIC SPRINKLER SYSTEMS

Of all the improvements named, it would be economically impracticable to incorporate this package into every highrise building constructed.

However, if the fire service had a preference to all the previously stated improvements, the prime feature would be the installation of automatic sprinkler systems.

We can justify our choice simply because once a building is completed, it will be filled with combustible furnishings and occupied by human life and these two elements create our most serious problem.

It is the consensus of fire officials present at the Baptist Towers fire that nine of the 10 persons who died in the fire did so prior to the arrival of the fire department, and had the building been equipped with an automatic sprinkler system, the multiple loss of life would have been averted.

The Baptist Towers building is classified as a multistory or high-rise apartment building. There is no distinction between this type of occupancy and any other apartment building in Atlanta as far as construction and fire protection features are concerned.

There are no special code provisions for this type structure even though its occupants are senior citizens who have attained the age of 62 years or older, and are living on a limited income.

Requirements for admission state that residents must be physically capable of attending to their own needs, such as housekeeping, preparation of meals, et cetera, but do not stipulate that they must be fully ambulatory and able to traverse stairways without assistance.

When the first highrise structure was proposed for the housing of elderly persons, Atlanta fire officials expressed concern relative to the sense of alertness in aged persons being somewhat diminished, and the fact that they are usually not able to cope with emergency conditions.

Also, in most cases their physical strength is limited and would probably prohibit the utilization of stairways for speedy egress without assistance by four to five men.

It is strongly recommended that serious consideration be given to the requirement that all highrise apartment buildings for senior citizens be equipped with a supervised automatic sprinkler system and that elevators be so constructed and protected whereby they can be utilized by occupants for evacuation purposes.

The recommended provision of automatic sprinkler systems should be required in existing buildings, as well as those to be constructed in the future.

We feel that lesser requirements for this type occupancy in lieu of a supervised automatic sprinkler system would be selling the occupants short and giving them a false sense of security.

Senator WILLIAMS. Thank you, Captain Gossett.

Captain Sullivan, do you have a statement you would like to make?

STATEMENT BY CAPT. M. H. SULLIVAN

Captain SULLIVAN. I am M. H. Sullivan, supervisor of the Atlanta Fire Department Arson Squad.

The function of the arson squad in fires producing human fatalities is to investigate the cause and origin of the fire and to follow through with remedial action where the need is indicated and/or prosecution is necessary.

EXAMINATION OF BAPTIST TOWERS FIRE

Our examination of the building indicated that the fire started in room 710, which was an apartment occupied by Miss Alice M. Ross, Caucasian, female, 62-years old.

She was a victim of Parkinson's disease. She walked with a cane and smoked regularly and kept late hours. She was an avid TV fan and was seen frequently in the corridors at all hours of the night.

I describe Mrs. Ross so that we may have benefit of the general background of activities normally taking place in her apartment.

We have testimony from one witness who had been cleaning the furniture in Mrs. Ross' apartment 2 or 3 weeks before, who said that cigarette burns were all over several pieces of combustible furniture in the room, specifically a sofa and two large chairs.

Our investigation included interviewing all witnesses we could get our hands on who had knowledge of the fire, and any witness who could tell us about rescue operations.

We have reconstructed the fire scene from physical evidence and interviews and that reconstruction logically leads to our opinion that this fire started in the apartment of Mrs. Ross, a semi-invalid, heavy smoker, who most probably fell asleep in her living room in apartment No. 710 and was awakened later finding a well advanced fire in her living room.

And we think she attempted to fight the fire. It may be she pulled the alarm to summon Mr. Roy to the floor.

Mrs. Ross, already fatally injured, had fled her apartment when she found she could not control the fire, and fell in the corridor, before sounding the alarm.

The fire went undetected until all three corridors were heavily involved with both fire and smoke.

The apartment unit doors were 1-hour fire doors that were installed with a softwood molding around the edges.

When the door facing burned away, the smoke and fire went into the apartment.

I am digressing somewhat there. At this point, I would like to go back and say that we are not sure if it was Mrs. Ross or not that pulled the switch on the seventh floor; giving the alarm causing Mr. Roy, the night manager, to take the elevator.

Smoke and heat were in the corridor and when the elevator door opened, the heat would probably have killed him instantly.

This elevator-door action could be overridden by the emergency button in the elevator.

We know there was a photoelectric cell in the elevator-door system that would hold the door open. This could be overridden by the emergency button itself in the elevator, but a man opening the door on such heat would probably fall instantly and could not get to the emergency button.

It is my opinion that by the time Mr. Roy reached this floor the fire was at least 1 hour old, and possibly an hour and a half old, encompassing apartment 710 and the fire traveled down the east corridor, and in fact we estimated had temperature ranges of 1,500° to 1,800° in the corridor at the elevator.

This is where Mr. Roy was found, and no human could have survived that.

POSITIVE PRESSURE IN AIR SHAFT

With regard to the air shaft, it had a blower on the basement end that furnished about 2,000 cubic feet of air per minute to the building to keep the air from getting stagnant. This caused positive pressure in all the corridors.

We measured shaft pressure at the seventh floor level after the fire at 0.12 inches water column. The pressure of smoke was so great that it

was forced into the apartments around the edges of the door. We know the shaft that supplied this air had a 165° F. fire damper unit.

This link was kept cool during the fire and never operated which would indicate that the fresh air coming to the floor was enough to blow heat away and prevent the damper's operation in spite of extremely high temperatures only inches away.

There was no sign of smoke migrating into the shaft. Every other place showed migration. This one showed none. We do not know what effect this had on the fire.

There was fresh air to circulate into the apartment from that supply of air coming through the shaft. We know that the fusible length operation indicates very strongly there was enough pressure to cool the air, preventing link operation. I think that the smoke detection outside of the shaft could have operated the damper and stopped it from pushing smoke into the apartments.

ALARM SYSTEM ACTIVATED

The fire alarm system was operated on the 9th and 10th floors. There was considerable conflict among the witnesses as to the time. One witness, Mrs. Patterson, told the chief she heard the alarm at 1:45 a.m.

Bear in mind the alarm reached the Atlanta Fire Department at 2:19 a.m.

Mrs. Patterson's testimony is opposed by others who said they did not hear it at all and others who said they heard it much later.

There are sounding devices for the system at each end of the corridor. If one of these horns went out, the horn would be out on all floors directly and above, like the old-fashioned Christmas tree light string.

Loss of one of these sounding devices would mean that 11 of them are out of service simultaneously at the loss of that one sounding device.

Senator WILLIAMS. You have determined which alarm was sounded, which was activated?

Captain SULLIVAN. Yes, sir. It was activated on the 9th and 10th floors. One of these should have been sufficient to activate the system through the entire building.

Senator GURNEY. They did not?

Captain SULLIVAN. They did operate, yes. With the possibility that some of them may have been lost.

The fire alarm system positively operated, but we found a great deal of conflict in what people said, about hearing it.

Many people said they did not hear it at all. Others said that they heard it but they thought it was an alarm clock and that it might be in a neighboring apartment.

Senator WILLIAMS. Did you talk to the individual that activated the alarm?

Captain SULLIVAN. Yes, sir; but I did not talk to the one that pulled it on the ninth floor, I only talked to the one who pulled it on the 10th floor.

LATE ALARM

Senator WILLIAMS. Was the fire well advanced for it to have reached people two floors away?

Captain SULLIVAN. Yes, sir, and this fact supports our conclusion that the fire was half an hour to an hour and a half old before we knew there was a fire in the building.

When Mrs. Patterson told the chief she heard the fire alarm at 1:45 a.m., I am doubtful of this.

One thing is certain is that the majority did not hear the fire alarm and that many confused it with an alarm clock.

Later, Captain Gossett and I went in the company of a man who headed up noise pollution problems in Atlanta, and we took a decibel meter to the scene and read the same alarm system which had been reactivated and we read it from several locations in the building, and our conclusion was that amount of noise was highly inadequate to wake a sleeping person.

We found that on the walls of the apartment immediately adjoining the walls where the fire alarm sounding device was, the device was pretty effective. We could hear it in there satisfactorily.

However, 75 feet down the corridor the second time it was activated, I was looking at the meter and all I saw was a tiny flickering of the decibel meter.

Senator GURNEY. This was in the hall?

Captain SULLIVAN. No, sir, this was in a room where it should be heard loud enough to wake a sleeping person. It would appear if everybody was in the corridor, everybody would hear it.

But at the time this fire happened, people were asleep, and those not asleep were in their apartments behind several inches of rock, wood, plaster, and steel doors, and this kept them from hearing the alarm.

ALARM NOT LOUD ENOUGH

Senator GURNEY. If you were listening to your radio or television, would you have heard it?

Captain SULLIVAN. It would have drowned out this thing except in the apartments around the area where the horns were installed.

Senator WILLIAMS. Could I come back to one thing you said?

You said the residents in their apartments had a call bell or something. You mentioned Mrs. Ross probably did not get to her emergency bell. What kind of device was it?

Captain SULLIVAN. There is such a system in the building, this system is provided to allow assistance to be sent to people when they need assistance in the bathroom.

This is a system whereby if they run into trouble there is a switch in the bathroom that has a pullstring and it is so designed so you can reach the string from anywhere in the room.

Senator WILLIAMS. Where does it register?

Captain SULLIVAN. In the building office and gives the room number, and a buzzer sounds to tell what room in the building they are in.

Senator WILLIAMS. This was not activated?

Captain SULLIVAN. Yes, it was, and it was the earliest indication we had that something was wrong on this floor.

Senator WILLIAMS. Was it apartment 710?

Captain SULLIVAN. We are not certain of that. Mr. Roy and his wife were in the lobby serving as security persons and at that time the first statement was that Mr. Roy left to go and see what the buzzer was for on the seventh floor.

Later it was said that smoke from 710 began to filter down into the lobby, and it was this that may have preempted the statement that he went to see what was going on in 710.

So we know the power of suggestion may have taken over there. We are not sure. I would be inclined to believe it did come from there because I think Mrs. Ross attempted to fight this fire with the limited facilities she had in her apartment, like a pan of water, or something in her apartment.

I am inclined to believe it did come from her apartment. I do not think it came immediately, and I think she died shortly after that in the corridor.

And she left the door open, and the fire spilled out into the corridor and went in all directions.

Senator GURNEY. That alarm just says somebody needs help, it does not say what kind?

Captain SULLIVAN. It does not say what kind of help at all.

Senator WILLIAMS. There is no intercommunication by voice from each room?

Captain SULLIVAN. There is a public address system covering a small part of the building.

Senator WILLIAMS. We will get that described.

RESCUES DELAY FIREFIGHTING

Captain SULLIVAN. The firefighting equipment did control the fire as would have been expected. There was delay in applying the firefighting techniques because when people are hanging out of windows, you have to get them out.

We got people out in precarious conditions, and it may have caused a very few minutes delay in actual firefighting techniques being effected, as Captain Gossett pointed out.

Some of the high ladders were used for rescue, and some were used for carrying the hoses up.

Chief GIBSON. The aerial ladders were used for rescue.

Captain SULLIVAN. Yes.

Senator WILLIAMS. How did you get the hoses through?

Chief GIBSON. Through a standpipe system. You have three stairwells. That was the standpipe used to carry the water up.

Senator WILLIAMS. I see.

Chief GIBSON. We carry them up in a doughnut roll fashion, and advance the hose lines down through the corridors, the fire pumper connects into it at ground level and the firefighters connect their hose lines into it, at or below the fire floor.

Senator GURNEY. The fire hydrant is on the inside of the building and you can connect it?

Captain SULLIVAN. Right.

VALUE OF SPRINKLER SYSTEMS

Senator DOMENICI. That is why they say that it is ridiculous not to have sprinklers. You would have water in each room. Now you have it in the corridor and it is not a sprinkler system.

Chief GIBSON. I have been fighting fires in Atlanta for 25 years, and I have never witnessed a multiple fire death in a sprinkler protected building.

Captain SULLIVAN. Yes.

Senator WILLIAMS. You go in an older building today and you see a sprinkler system. I was in an old hotel in upstate New York and there was a sprinkler system there that must have been installed at least 50 years ago.

Captain SULLIVAN. Depending on the construction of the building, the buildings today are constructed with fire resistant exterior walls, those buildings do not require sprinklers.

Senator GURNEY. What you are saying is that buildings are given a lot of attention, but people are not.

Senator DOMENICI. I have two questions.

Captain Gossett, if I understand you and Captain Sullivan, you would add a third dimension to your two dimensions. You say sprinkler and evacuation mechanism and I would add the alarm system.

Do you concur with that?

Captain GOSSETT. Yes, sir, but if you have a sprinkler system, you have an exterior water flow that would alert people.

Senator DOMENICI. Well, many commercial-type buildings, regardless of the system, require sprinklers.

I assume what we are doing is adding piecemeal improvements to the code, so that we would have an adequate fireproof building, but what I would like to know is, if a more reasonable alternative would be just to add a sprinkler system?

Captain GOSSETT. Yes, sir, if they had the builder build the building with less fire resisting materials, and to put in a sprinkler system.

Senator DOMENICI. It is your feeling that we should not let the sprinkler be traded off?

Captain GOSSETT. That is right. It should not be traded off for something else that does not do the job.

Senator GURNEY. I guess you have answered this, but I was in some old buildings that did have sprinkler systems.

Captain GOSSETT. That is true. A lot of old buildings do have sprinkler systems, but many buildings are considered to be a fire hazard from the standpoint of construction.

In public institutions, such as where people are bedridden, the homes for the aged, convalescent homes, nursing homes and hospitals, you do have the problem that these people cannot move very rapidly.

HOW DID FIRE SPREAD?

Senator GURNEY. Let me ask you, how did the fire spread from the corridor into the apartment?

Captain GOSSETT. It goes in through the door, around the door. It does not take a match to ignite this door, all it takes is heat.

The heat in the corridor would ignite these doors to the various apartments.

Senator GURNEY. That is my question: What happens; does the door burst into flame?

Captain GOSSETT. Yes, sir.

Senator GURNEY. Isn't it because of the flames?

Captain GOSSETT. No, sir. It is just the heat. Also, there is a lot of acoustical tile and drop ceiling, but I think that that had very little to do with the spread of the fire.

Senator WILLIAMS. There is a report from the National Bureau of Standards. Could you tell us what does the figure 334 mean to you?

Captain GOSSETT. That means, it is burning pretty good.

There was a subcommittee hearing some time ago on the Ohio fire.³

Senator WILLIAMS. That is correct. We went through this 3 years ago, and it was the padding under the carpeting.

Captain GOSSETT. Right, but the carpet itself would have to burn away, too.

Senator GURNEY. What about the thermostat, did that comply with the building code?

Captain GOSSETT. Yes, sir.

Senator GURNEY. Has there been any suggestion of changes in the building code?

Captain GOSSETT. Yes, sir. There has been talk about putting fire equipment in corridors that would be activated in case of fire.

Senator GURNEY. That is my next question, would it be a good suggestion to have within a hallway like that, a device which would detect unusually high heat fires, and equipment that would be activated, would that be possible?

Captain GOSSETT. Yes, sir.

Senator GURNEY. Would that be very costly?

SMOKE DETECTORS

Captain GOSSETT. Yes, sir. They do have fire alarm systems that detect smoke and a system also that detects flame for that particular type of area. It goes off at 135°, and it can be useful.

Senator GURNEY. In the tradeoff that we talked about awhile ago, would that be a cost that could be incorporated and paid for by the people living in the building?

Captain GOSSETT. Yes, we still believe that a fire alarm system will alert the people, but that a sprinkler system is very necessary.

Senator GURNEY. What about connecting up with the fire department, is that costly?

Captain GOSSETT. No; that is not costly to tie into the fire department's master box on the outside. We do this in the public school system in Atlanta and in hospitals and large office buildings where they request it, we tie it into the fire station system.

In this way in case of fire, the system is activated, and we do not have to rely on anybody getting up out of bed.

Senator GURNEY. Would you recommend that, along with a sprinkler system, as a device that ought to be incorporated?

Captain GOSSETT. Yes; the fire department would advise such a thing, and they would supervise it.

³ See "Trends in Long-Term Care," pts. 3-4, Feb. 9-10, 1970; hearings by the Subcommittee on Long-Term Care, Special Committee on Aging, U.S. Senate.

Where you have a sprinkler system that is properly maintained, I do not know of a case where we have had one death as yet.

Senator GURNEY. Thank you very much.

LIVES COULD HAVE BEEN SAVED

Captain SULLIVAN. Senator, I am convinced that this loss of life would have been contained to a maximum of one, and possibly none if there had been a sprinkler system.

With regard to Mrs. Ross' life, I feel we could have saved her life if there were a system within her room.

Senator GURNEY. Let me ask one final question. With regard to a sprinkler system, do you advocate a system that is triggered automatically at a certain temperature?

Captain GOSSETT. Yes, sir. All sprinkler systems are triggered automatically. They go off automatically when they are located in the area of the fire. They are designed to go off at 165°, and we are opposed to putting sprinkler systems only in corridors.

You can have a fire in a room, and the fire could reach such a great magnitude that the sprinkler system outside would not check that fire.

You would still have your gases and smoke. That smoke and gas would go out into the corridor, and that could cause death.

It seems to me that two things are needed, two very sensible things, that is, an automatic alarm that is set off when the temperature reaches a certain point at the device. This automatically triggers the systems.

Captain SULLIVAN. There is an old adage among firemen that holds true that most firemen will tell you they will not swap the first 5 minutes of a fire for the next 4 or 5 hours, and this is very true, the potential of a fire is tremendous in those first few minutes.

Senator WILLIAMS. I know from my own experience, that with regard to fire extinguishers, that most people do not know you must turn them upside down.

Captain SULLIVAN. Yes, sir, and some of them you do not turn upside down.

Senator WILLIAMS. Well, I know that your department has been spoken of in the highest terms of praise, that you are truly professionals, and that you did give attention to this particular fire in the highest order, so you are to be commended.

We thank you very much, gentlemen.

Captain GOSSETT. Thank you, Mr. Chairman.

Senator WILLIAMS. Mr. Snow, first of all, let me say the committee appreciates your being with us, coming up to help us in these hearings, which are going to be significant in terms of suggesting better and realistic ways to meet the needs that we see in highrise buildings, and of course, the focus of this committee is on the elderly.

STATEMENT BY GEORGE SNOW, MANAGER, BAPTIST TOWERS, ATLANTA, GA.; ACCOMPANIED BY FLORA WEBB, TENANT, BAPTIST TOWERS, AND PAUL BENNETT, TENANT, BAPTIST TOWERS

Mr. SNOW. My name is George Snow, I am the administrator for Baptist Towers, Atlanta, Ga.

It is a corporation, nonprofit, that conceived Baptist Towers through the worthwhile moneys provided by our legislative body under section 236.

Senator WILLIAMS. This is an interest subsidy program that we had legislated, and it is working evidently.

Mr. SNOW. Yes, sir. I can say without having interviewed every resident that came into Baptist Towers, that no one has disagreed or been unhappy with what is provided for them at 1881 Myrtle Drive, Southwest in Atlanta.

FINANCING OF BAPTIST TOWERS

Senator WILLIAMS. Could I ask you a question on the Towers, and on the financing of the Towers.

What is the interest that you paid for the money to build the Towers?

Mr. SNOW. It is 8½ percent.

Senator WILLIAMS. And the subsidy accounts were how much of that?

Mr. SNOW. I believe it is 7 or 7½. It is one of the two.

Senator WILLIAMS. The effect of this is to permit a lower unit rent.

Mr. SNOW. That is correct.

Senator WILLIAMS. And it is working out very well.

Mr. SNOW. I would say exceptionally well.

Senator WILLIAMS. We have had some slowdowns in this whole program recently, and it was hinted it is not working, but yours works?

Mr. SNOW. Well, there are a lot of factors that go into any endeavor that you try to put forth. It has to do with management and a number of other things, but if you provide the atmosphere for senior citizens, they will take advantage of it and the ongoing programs that are provided for them, most of which come from industry, citizens, whether they be businessmen, or fraternal organizations.

Life can be extremely happy for these people. Many of them move into Baptist Towers for one or two reasons that sometimes we overlook ourselves.

No. 1, the burden of owning an individual home today, the cost of upkeep, the taxes, and somewhat the loneliness that a person might experience if he or she has lost their partner, or he or she never married, that they can get in a highrise, or in a complex, where the density of people is somewhat higher, have somewhat the same age group, and have similar interests.

Senator WILLIAMS. I am imposing on Senator Gurney here.

This whole approach to meeting the needs of housing for older people is of course basic to our work here in this committee, but we better get back to the situation.

BACKGROUND ON BAPTIST TOWERS

Mr. SNOW. Let me give you some background on Baptist Towers, and I am speaking of course from the administrative standpoint.

We have on the staff of Baptist Towers, myself, and the administrator, Mrs. Lucy Ross, who is the assistant administrator, and three men in the maintenance, one of which is the building superintendent and two assistants for a total number of five on the staff.

At the inception of Baptist Towers, when it was turned over to us on April 20, 1972, we took it upon ourselves to hire male residents to the use of furnishing them rent-free apartments to work 3 hours each night as security guards. You heard the three gentlemen from the fire department relate that one of the 10 lives lost was Mr. Samuel Grant who was a security guard on duty at that time.

The system worked for us. Some of the measures that we took to provide safety for the residents there of course were explained as these people were interviewed for residency in the Towers.

We showed them where the general flow of traffic, the exits, the stairwells, as was related here, the emergency light system that is provided in each of the 300 apartments, and most people were familiar enough to know and utilize these systems before the tragic fire on November 30.

I arrived on the scene myself after having been called from my home by Mrs. Ross at 2:25 a.m., and a few minutes later, some 6 minutes after the fire alarm was supposedly sounded in the fire alarm system.

At that time there was some equipment on the site. My first estimate was what was going on, was as the firemen related, on the seventh floor, some small amount of flame and smoke coming from the building. The firemen worked rapidly, and I have nothing but praise for them.

I have nothing but praise for the people who resided there, because there was no mass panic.

I circled the building several times, watching the progress of the fire fighting, and hopefully adding some suggestions and places to go to the firemen, and one lady hung with almost half of her body out of the window on the west side of the north wing, for somewhere between 30 and 40 minutes and survived the fire.

The only one that we know of that has anything approaching some permanent injury, and this is really due to thermal burns, and as an added thing to this, she was the widow of a retired fire captain in Atlanta, and of course had been confronted with these things during her married life.

THOUGHT BUILDING WAS FIREPROOF

As the firemen related here, no one thought that this building was anything other than fireproof, and the enjoyment that the people experienced there before the fire was that it never entered their mind, even though fire safety precautions had been taken, and so at least some semblance of letting them recognize what could happen did not come about.

I did not go to the seventh floor, because I did not have any apparatus or anything available to me, where I thought I could get up and back safely.

Two of the residents from the seventh floor, Mrs. Flora Webb and Mr. Paul Bennett, they are here with me, they were chosen to come, and they can tell you more from an eyewitness standpoint than I can, because they lived and resided on the seventh floor, and were there at the time of the fire. That essentially is what I have to say, unless you have some questions from the administrative end.

Senator WILLIAMS. On that point, do you have fire drill procedures?

Mr. SNOW. Yes, sir.

Senator WILLIAMS. Could you describe how frequently, or how you administer the drills?

Mr. SNOW. Well, they required a minimum of every 2 months, and by the way I have a copy of the bill just passed by the Georgia Senate that also goes along with a minimum of every 2 months.

Senator WILLIAMS. In what kind of housing or in what areas?

Mr. SNOW. In highrises, four-stories or higher.

Senator WILLIAMS. That is in general, not just for elderly tenants?

Mr. SNOW. This bill is directed mostly at highrises for the elderly.

Senator WILLIAMS. I think it would be helpful if we had a copy of that.⁴

Mr. SNOW. I do have a copy.

Senator WILLIAMS. Now we will turn to Mr. Bennett.

Mr. SNOW. Mr. Chairman, I believe it would be best if Mrs. Webb talked first.

Senator WILLIAMS. Thank you very much for being here Mrs. Webb.

Mrs. WEBB. It is nice to come. I hope I can help.

Senator WILLIAMS. You were a tenant on the seventh floor?

Mrs. WEBB. Right, in apartment 703.

Senator WILLIAMS. Perhaps it would be helpful if you could just describe the events as you recall them.

STATEMENT BY FLORA WEBB

✓ Mrs. WEBB. Well, I do not think it was as long a time as the fire department said it was. It did not seem that way to me, but anyway, I was awakened by Mrs. Ross running down the hall hollering help, I know it was Mrs. Ross, because she is a person whom I have known for 25 years, and it was her, and I went to my front door, not knowing the reason for the call, and before I got there, by the time I got to my front door, I knew it was a fire, because I could smell smoke, and I opened my door, and when I did, the black smoke billowed in, and so I slammed the door shut, and I then opened it one more time to call to my neighbors across the hall, and there was no reply.

Well, then, the door was closed, knowing I could not go that way, that one gulp of that, and I would be gone, so I stood there in my living room and decided for a moment what I could do, so I went into my bedroom and closed that door, I went to the bathroom and got me a wet towel, and then I went to my back window which was on the west side of the building, pushed the screen out, and stood there in the window and held my head out far enough so that there was no danger of smoke inhalation.

Senator WILLIAMS. Was there any smoke in your apartment at that point?

Mrs. WEBB. Yes, it was just coming in, some smoke came in.

Of course, after that, there was more and more each time.

Senator WILLIAMS. How was it coming in?

Mrs. WEBB. I could not tell you where it was coming in, because I did not do anything except stand in my window.

Senator WILLIAMS. Was the smoke dense through this period in your apartment?

Mrs. WEBB. Well, it became more so as time went on.

Senator WILLIAMS. How long were you at the window?

Mrs. WEBB. I could not give you any estimate of the time. It would not have been long. I was there say 30 minutes or something of the

⁴ Copy retained in committee files.

kind. I just do not know. I just did not take time or even think of even counting time or what time it was.

What I did was stand there, and I decided what to do, I knew I could not go into the hallway, I did not think I could, and my only thought was I would just get to my back window, that the fire department had some sort of facility for rescuing, and which would be my only means of escape.

Senator WILLIAMS. How long did you have the door open to sound the personal alarm to your neighbors?

Mrs. WEBB. Just an instant, because the smoke was billowing in so black.

Senator WILLIAMS. Could you tell through the door whether your neighbor was across the way?

Mrs. WEBB. I could not see anything.

Senator WILLIAMS. How long was it before you were rescued, Mrs. Webb?

Mrs. WEBB. Oh, I guess 20 to 30 minutes, probably.

Senator WILLIAMS. And then the equipment came with that snorkel?

Mrs. WEBB. Yes.

Senator WILLIAMS. You seem most composed, and not anxious as a result of this very, very difficult experience.

What is the general feeling of your friends and neighbors at Baptist Towers now following this fire?

Mrs. WEBB. Well, I can only tell you mine. I have no qualms about the building, and I do not think but very few have, and I still think that as the fire department told us in lecturing, and the do's and dont's of what to do, I remember the one thing that the fire marshal said, that your safety depends on you, and I think that was my thought that morning, and I stood there and figured that, and I did not panic, and that is where the trouble was.

I think every one of the lives could have been rescued had they done what I did, had they stayed in their apartment and waited for the fire department.

Senator WILLIAMS. Now, there are periodic drills?

What are the suggestions as to the drills, what do they suggest that you do in the event of fire, just what you did, is that part of the drill?

Mrs. WEBB. That is right, keep your composure, do not panic.

Senator WILLIAMS. Keep the door closed?

Mrs. WEBB. And before I went there, I availed myself of where the fire escapes were, where the alarm system was. It is a do-it-yourself program when you get there alone, and you have just got to do those things. Somebody else is not responsible for my safety. It is me.

Senator WILLIAMS. Mr. Bennett, you may proceed.

Mr. BENNETT. I have just a brief statement to make.

Senator WILLIAMS. You have been very helpful to our staff people who have worked with you in understanding the situation in Atlanta, and we appreciate that.

Mr. BENNETT. Thank you.

Senator WILLIAMS. Now, if you could explain for our record, to the committee, your analysis, your experience, we would appreciate it.

STATEMENT BY PAUL BENNETT

Mr. BENNETT. It is like Mrs. Webb just explained, you have to familiarize yourself with those problems, and that is what I did when I first went there.

I went all the way up the stairwells, all three of them, to the top floor to see that all of those handrails were solid.

That is the first thing I did, and then I——

Senator WILLIAMS. When did you move in?

It was opened in April. Were you one of the first tenants?

Mr. BENNETT. Sir?

Senator WILLIAMS. Were you one of the first tenants?

Mr. BENNETT. Yes, sir.

Senator WILLIAMS. And that was your indoctrination, your personal indoctrination soon after you moved in?

Mr. BENNETT. That is right.

I was trained in firefighting, and we kept our raincoats hanging in the wall closet, and I told my wife, never leave furs in the corridor, and so she awakened this one night and smelled smoke, I said, well, that is it. It is up to us now to not panic. It is up to us to survive this fire, and I said we will if you will listen to what I say, so we put on those raincoats, with a wet towel over our head and walked out.

We walked the full length of the hallway through the smoke.

Senator WILLIAMS. You and your wife left your apartment and turned to go out?

Mr. BENNETT. Yes.

Senator WILLIAMS. I have a diagram here, you turned left to the closest stairwell?

Mr. BENNETT. That is right.

Senator WILLIAMS. How dense was the smoke in the hall at that point?

Mr. BENNETT. Well, we could not see anything but smoke and flames.

Senator WILLIAMS. Did you know how far you had to go?

Mr. BENNETT. Yes, sir, I certainly did.

Senator WILLIAMS. What had you done to get ready for any emergency of this kind?

I understand you had been prepared.

Mr. BENNETT. That is right.

Senator WILLIAMS. What had you done?

Mr. BENNETT. These raincoats, we put them on, and our regular shoes, pulled off our house shoes, and discarded those, and put on the polyester things.

Senator WILLIAMS. And then do you know how far it was, even though you could not see in the hall, you knew how far you had to go?

Mr. BENNETT. Yes, sir.

Senator WILLIAMS. You knew how many spaces it was to the stairwell?

Mr. BENNETT. Yes, sir.

Senator WILLIAMS. When you got to the stairwell, did you have to open the door to get in?

Mr. BENNETT. Yes, sir.

Senator WILLIAMS. Was there any smoke in the stairwell?

Mr. BENNETT. Yes, sir; there was, down to the fifth floor.

It was dense down to the fifth floor in the stairwell.

Senator WILLIAMS. This wet towel that you had over your heads, does that act as a filter to keep the smoke away?

Mr. BENNETT. Well, it did in this case.

The firemen, they gave a talk at the Towers in the family room, and they said it was not very good.

Senator WILLIAMS. The towel procedure?

Mr. BENNETT. Yes, sir, but it saved our lives.

Mrs. WEBB. You get your breath with the wet towel over your face.

Senator WILLIAMS. What did they say was a better system, when you are going through smoke, and possibly some flames, did they give you an alternative?

Mr. BENNETT. No; they did not, as I remember.

Senator WILLIAMS. Well, I consider myself a layman in this connection, that wet towel I always thought was proper procedure.

You used it too, Mrs. Webb?

Mrs. WEBB. Yes, and some others also thought of wearing a wet sheet and putting it at the front of the door which would have kept some of the smoke out for some time, but I could not have lived without the wet towel over my face, even though I had my face out the window.

The smoke was still coming out the window. My face was black, my hair, the clothing, but the wet towel, I could breathe through that and not breathe in the smoke.

ALERTED BY SMELL OF SMOKE

Senator WILLIAMS. Were you asleep in your respective apartments when you first discovered there was a fire?

Mrs. WEBB. Yes.

Mr. BENNETT. Yes.

Senator WILLIAMS. What was it, the smell of smoke that alerted you?

Mr. BENNETT. Yes, sir.

The bedroom was two doors from the hallway, therefore in that position, we did not get any fire alarm at all, until we got out in the hallway.

Senator WILLIAMS. But the smell of smoke awakened you, and awakened your wife?

Mr. BENNETT. Well, yes, and then the lady that lived just a wall between our bedroom and hers, we heard her screaming through the wall.

Senator WILLIAMS. Well, your tenants on either side of you did not survive this fire, did they?

Mr. BENNETT. That is right.

Senator WILLIAMS. Two to the north, in apartment 713, they did not survive.

Mr. BENNETT. The north, the south, and east.

Senator WILLIAMS. As a matter of fact, the deaths that were caused by this fire, five of them, were all within about 20 feet of your apartment.

Mr. BENNETT. Yes, that is right, and one man came up to our door. I do not know who the man was. My wife stumbled over him and fell.

Senator WILLIAMS. Do you have any observations on the safety and security of the building itself, do you still live there?

Mr. BENNETT. I have thought about one thing quite a bit, that probably the others had not thought about.

In that escape, it gets in there and just builds up, that is, the smoke.

Say, for instance, the fire was on the seventh floor. Well, the people from there up, it is almost impossible for them to get through that dense smoke going down those stairwells.

It is all concrete, all the way from the bottom to the top.

The only way it has to go is out the doors into the hallways. That is the one bad thing about the design, as I see, of the buildings, there is no place at all for it to escape.

Senator WILLIAMS. Well, I am glad you made that observation. I hope some of our technical people will address themselves to that. Certainly, you do not have to be anywhere near the flame of the fire. The two things that can be fatal, smoke, and intense heat, is enough, and both of them can reach you, even though you are far removed from a fire in the building.

Mr. BENNETT. That is right.

Senator WILLIAMS. This has been very helpful, Mr. Snow, Mrs. Webb, Mr. Bennett.

Thank you very much.

Senator WILLIAMS. Our next witness is Mr. Thomas A. Butler, Sr., executive vice president of Abco Builders, Inc.

Thank you for responding to our invitation to be here, Mr. Butler. We appreciate it very much.

STATEMENT BY THOMAS A. BUTLER, SR., EXECUTIVE VICE PRESIDENT, ABCO BUILDERS, INC.

Mr. BUTLER. Thank you, Senator.

Senator WILLIAMS. We have your full statement. If you want to summarize it, you may give the highlights of your statement, and we will insert it in the record.

(See prepared statement, p. 29.)

Mr. BUTLER. Yes, Senator. I can condense my statement. I have listened to the fire department. I think what you are interested in now is safety measures and costs, and I will limit my testimony to this.

BUILT-IN SAFETY MEASURES

The safety measures that were built into the building was a solid concrete frame building with exterior masonry walls.

The interior masonry walls were drywall or sheetrock on steel studs.

All of the corridor and the walls between the various apartments were 1 hour.

This means two layers of half-inch sheetrock with thermal insulation between the layers and steel studs.

This gives a 1-hour rating between the corridors and the apartments.

The chase walls that are built into the building between the kitchen and all bathrooms where all of the pipes and exhaust is carried from the building.

These walls are made up of 2½ inch laminations of sheetrock with a 1-inch core board, which makes it almost fireproof.

It was in room 710 where Mrs. Ross was, that these walls were intact, and after the entire partitions inside the various apartments were destroyed.

The elevator shaft walls are 2-hour fire walls.

This again is two 1-inch core board laminated at the factory with two half-inch layer of sheetrock applied inside and outside that gave us a 2-hour rating.

The floor slabs and ceilings are 2-hour rating.

They are concrete slabs, 2½ inches thick, with a five-eighths inch sheetrock ceiling.

The corridor doors were 1¾-inch solid core 30-minute doors.

The exits are three stairs per floor which consists of one stair at the end of each corridor.

Each stairwell is a 2-hour fire rated concrete block enclosure with B-level doors with closers.

We had a fire alarm in the lobby that was the central station for the various emergency pull cord stations in the tenants' rooms that you have heard talked about.

We also had exit lights at the end of each corridor to point out where the stairwells were to help the tenants locate the stairwells, and to make easy access to them.

We had four standpipes in the building with the fire hose cabinets and a 1½-inch hose.

There was one in each stairwell, and there was one just in front of the elevator which made four.

We did have sprinklers in the building, but the sprinklers had been limited to the mechanical area and the storage area on the ground floor.

These are the safety measures that were built in to the building. You have heard the reference to many partitional safety measures that could have been built into the project

INSTALLATION OF SPRINKLERS

Naturally the sprinklers are the most fail safe safety measure that could be built in.

There are two ways to really put a sprinkler system into a high-rise building; that is, with the use of the national fire safety specifications which requires sprinklers approximately 8-foot center, from center, so that the fire could be put out from almost anywhere in the building.

This would have required two sprinkler heads in the bedroom, two sprinkler heads in the living room, two in the dining room, one sprinkler head in the various bedrooms to the apartment, one in the bathroom, one in the kitchen, one in each of the closets.

If they had installed this system, as would be required under our present code in Atlanta, we would have had to put in a separate standpipe system with the various pumps to pump up the water.

This would have cost approximately \$240,000.

If you go to the NFPA sprinkler system, it requires multiple heads in the various apartments, but allows us to use the firefighting standpipes that are already incorporated in the building, this would have saved approximately \$40,000, and would have a cost of approximately \$200,000 to have still installed the sprinklers in accordance with the NFPA specifications.

We talked with Chief Gibson, Captain Gossett, and two other building inspection officials in Atlanta, and they are investigating allowing the use of the standpipe system to come off with a sprinkler system using what we are referring to at this time as a modified sprinkler system.

To use this modified sprinkler system, it would cut down on the various heads required inside the various apartments.

You would have heads down the corridors to the electrical rooms, storage rooms, to trash rooms, but in lieu of numerous heads inside the various apartments, you would have one head just inside the apartment door, and you would have one head between the living area and the bedroom area.

This would confine the fire to that particular apartment, we would hope to install the modified sprinkler system, which would have cost, using Baptist Towers, approximately \$90,000.

Senator WILLIAMS. What was the total cost of Baptist Towers?

Mr. BUTLER. \$3,453,000. Now, if we go to Captain Gossett's reference to omitting various requirements for 1-hour ratings, or 1½-hour ratings, as a swapout for going to a sprinkler system, if we went to a modified sprinkler system, where it would cost \$90,000, and leave out various requirements such as the 1-hour walls between the corridors, such as the ratings of the stairwell, this would have saved approximately \$50,000, which would have cut down the modified sprinkler cost to approximately \$40,000.

ADDITIONAL SAFETY FEATURES

We had talked about the safety features that could have been installed in that building, and one of them was to install automatic closers to the apartment doors, so that if some tenant left the apartment, the door would automatically be closed.

If we installed the closers on all the apartment doors to every apartment it would have cost approximately \$10,000.

They have talked about the fire blocks or isolating the elevator core.

This fire block would consist of a metal frame with 1½-hour fire doors with wire glass installed. They would also consist of the addition of a smoke detecting magnetic closer.

This would tie in with the firemen's guard, which is the automatic system that would cut off the operation of the elevators and send the elevators to the ground floor so that no one could operate the elevators other than the firemen themselves.

The firemen could use the elevators to evacuate the tenants from the building if they felt it was safe to use those elevators.

With the corridor fire guards and a smoke detecting system, when the smoke hit one of these detectors, these detectors would automatically set off the alarm direct to the fire department, notifying the fire department that there was the possibility of fire.

Now, this would be done by smoke.

At the same time, the smoke detectors would activate the fireman's guard, send the elevators to the ground floor and put the elevators under the operation of the firemen.

It would also activate the smoke guards at the end of all corridors, closing the doors on the smoke guards, and isolating the elevator shaft or elevator core area to the tenants so they could find refuge in these core areas, and then the elevators could be used by the firemen to take the tenants out.

All of these would have cost approximately \$33,000.

Senator WILLIAMS. Where would the smoke devices, sensing devices be?

Mr. BUTLER. Those smoke sensing devices would be three per corridor.

This would be down the corridors, it would be nine per floor.

These would not be the smoke detectors in each apartment, and we also recommend an audio emergency call system in lieu of the manual pull call systems, so that rather than notifying the enunciator on the first floor that there is something wrong and having to go up to find out what it is, they could talk to the tenant, or the person in that room and find out what the problem is, and then go ahead and relate what is necessary.

Senator WILLIAMS. Now, that is frequently found in apartment buildings, the audio, from apartment to the front desk, is it not?

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. It is most customary in new highrise apartments.

Have you priced that system out for this particular building?

Mr. BUTLER. Yes, using the system we already put in, the electrical system, this would cost an additional \$35,000.

The system in there now costs \$30,000.

Senator WILLIAMS. Say that again, please.

Mr. BUTLER. \$30,000 is the system presently in the building, which is a manual system.

Senator WILLIAMS. It is not audio, then, and it just activates a light?

Mr. BUTLER. A light and a buzzer, and gives the apartment number.

Senator WILLIAMS. And with the audio, this would add how much?

Mr. BUTLER. Approximately \$35,000.

If you take all of the various costs of all the systems and incorporate all of them into the building, including the sprinkler system, it would have cost approximately an additional \$350,000.

This additional \$350,000 would have added approximately \$12 to \$15 per month to the rental for the tenants to pay for their apartments in these buildings.

Senator WILLIAMS. Are you familiar with the rents that are being charged now?

Mr. BUTLER. No, sir, I am not.

I know they are in the neighborhood of \$100.

Senator WILLIAMS. I think basically it is \$80 to \$102.

We do have that in our records.

NO NEW SAFETY FEATURES ADDED

Have you been engaged to rebuild Baptist Towers where the damage is?

Mr. BUTLER. Yes, sir, we have.

Senator WILLIAMS. Any new safety features being added?

Mr. BUTLER. I beg your pardon?

Senator WILLIAMS. Do you have any new safety features as part of your rebuilding?

Mr. BUTLER. No, sir.

Senator WILLIAMS. It is being done without any changes, then, this kind of fire could occur again?

Mr. BUTLER. Yes, sir, it most certainly could.

Senator WILLIAMS. You know, this is one thing that Mr. Bennett described here, he is a very forward thinking man.

He had done his own analysis of what he and his wife should do in the event of a fire, well before there was a fire, he spoke to the problem of that smoke in the stairwells that had no escape, no provision is made for clearing the stairwell of the smoke.

I do not know much about this, but I can suspect if you have to wait for it to get out, you also have this rush of air principle at work, and you also have a competing principle with your desire to get the smoke out of there.

Mr. BUTLER. No, sir, what Mr. Bennett was referring to is the pressurization of the stairway.

This is putting a fan on an exhaust system at the top of the stairwells.

This would continually blow air into the stairwells which would pressurize those stairwells and prevent the smoke from entering the stairwells.

This pressurization of those stairwells would have only cost about \$5,000.

Senator WILLIAMS. You mean a fan could pressurize those?

Mr. BUTLER. Yes, sir; blowing the air into the stairwells, it would set up the action that would prevent the smoke from coming into the stairwells.

Senator WILLIAMS. A greater pressure in the stairwells?

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. Where would this fan be installed?

Mr. BUTLER. At the top of the stairwell shaft, but the fault in that is that it would prevent the smoke from leaving the corridors and it would trap it in the corridors.

SMOKE HAZARD OF CARPETING

Senator WILLIAMS. Now, this carpeting situation rather greatly concerns me. On a national basis this problem of both flame and smoulder, and smoke arising from the carpeting or the padding, should be standardized.

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. One of the witnesses mentioned this Ohio fire, I think it was 3 years ago, might have been 2 years ago, we had dramatic descriptions of what happened right here in this room at a hearing just like this, and I understood that the professional minds had gone to work in construction and standard procedures, but evidently the materials here still had a high flame rate and smoulder, whatever that index is all about.

Mr. BUTLER. Senator, let me say something about the carpet.

The top of the carpet is a nylon-type of material that when exposed to flame, it melts and condenses.

It goes into almost a brick-hard surface, and if you take a blow torch at the top of the piece of this carpet and turn that blow torch on it, it will melt the top of that carpet, preventing the flame getting to the pad under the carpet.

Once it gets to that pad, I don't know what happens in the corridors, but once it gets to that pad it sets up a smoke screen like they used to lay down in World War II, that is really something else, but I noticed in the corridors, I believe the fire or the high heat melted the carpet.

I do not believe the carpet flamed. I do not believe that actually happened. It will set it on fire, and it will go out. I believe you have the heat at 1,200 to 1,500° which was so intense that it melted that carpet, and it caused the pad to smoke.

Now, we are talking about going to a jute-backed pad in lieu of the foam-rubber backing.

Now, the jute will not smoke, but it would burn. You would still have the problem of flames spreading, although it would be held to a minimum, even with the flame spread rating on the jute backing, and I understand HUD is discussing now to go to a jute back.

This foam rubber backing on the carpet is a HUD specification.

Senator WILLIAMS. How long has that been a specification, do you know?

Mr. BUTLER. I do not know.

Senator WILLIAMS. How long have you been in the construction of buildings basically designed for older people?

Mr. BUTLER. We have built four in the last 4 years.

Senator WILLIAMS. Have you seen the standards changed over that period?

Mr. BUTLER. Yes, sir.

We have gone to certain additional safety features like the closers on the doors to automatically close a door when a tenant leaves his apartment.

VALUE OF DOOR CLOSERS

We say, and I say we, the contractors feel that many of the deaths were caused by the panic, or by the doors being left open.

Now, either the tenants, as they started out, we honestly believe they started out the doors, and the heat and the smoke hit them as they opened the door, and they were forced back into their apartments, and collapsed, leaving the doors open, and we feel if these doors had been closed, that a lot of the deaths would have been held down.

Mr. Boyd, who was right next door in Apartment 708, his apartment was immaculate. You would not believe it to look at his apartment, and to look at the damage compared to his apartment to that of Mrs. Ross next door.

Senator WILLIAMS. 708, the door had not been opened?

Mr. BUTLER. He had left it, and he closed the door. As he walked out of his room, he closed the door.

This is a picture of Mr. Boyd's room right next door, the fire occurred on the other side of this room, wall and every partition inside of that apartment was destroyed.

Senator WILLIAMS. That is very interesting. That room was not disturbed at all.

Mr. BUTLER. Other than at the door.

Senator WILLIAMS. Do you have copies of these?

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. Could we have some pictures for our files? ⁵

Mr. BUTLER. You can have all of them. This is Mr. Boyd's door.

Senator WILLIAMS. Thank you very much, Mr. Butler. It is very helpful indeed.

Are you in construction on any other buildings now?

Mr. BUTLER. Yes, sir, we are doing Springdale, which will be a 236 apartment building for the elderly.

We are at present in negotiating stages on the design stages for Columbia Towers and for Campbell Stone, which both will be 236.

Senator WILLIAMS. Did you ever build a 202?

Mr. BUTLER. Yes, sir, we built Calvin Court in Bulkhead.

SECTIONS 202-236 CONSTRUCTION STANDARDS

Senator WILLIAMS. Let me ask you, in terms of construction standards, do the same standards apply to 202 and 236? ⁶

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. In terms of the builder's situation, did you find any difference in time and demands of 202 and 236?

Mr. BUTLER. Yes, sir, we do.

Senator WILLIAMS. Let me hear about that.

Mr. BUTLER. The 202 program is a bid program. You have to bid the job. You cannot negotiate the contract under a 202 program.

Under the 236 program, you can negotiate a contract.

When we bid a contract, you have to accept the low subcontractors, and you must have specifications because of Federal funds.

We have to accept the low bidder regardless of who he is, or how qualified he is.

Therefore, when we bid a job under the 202 program, we increase the profit and overhead we put on that building, because we feel we are running more risks costwise, and in timewise, because if we get an unreliable, unqualified subcontractor to one of the jobs, he could hold up construction for months, by not really doing the job he should do by trying to cut down his costs on his labor.

If we do it under a 236 program, we can accept or negotiate contracts with people we know who are reliable, and therefore we can hold our costs down, and we can cut the profit figure by 2, 2½ percent, because we feel we have more leeway in working with the owner, the consultant, and with HUD, on giving them a quality job, and with less risk.

Senator WILLIAMS. The general bids the job with the owner on the 202?

Mr. BUTLER. Yes, sir.

Senator WILLIAMS. You have to put out your subs to bid?

Mr. BUTLER. We take the bids from the sub at the same time we bid the job, and if say the contractor, subcontractor wanted to bid the job, and we felt like he was not qualified to do the job, we cannot tell him, we do not want your price.

We cannot tell him we refuse to accept it, without him saying why do you refuse to accept my price, it has Federal money on it, talk to my attorney.

⁵ Retained in committee files.

⁶ See letter from Mr. Butler, Ref: Housing Program 202 and Program 236; appendix, p. 54.

Senator WILLIAMS. How many 202's have you done?

Mr. BUTLER. Just the one.

Senator WILLIAMS. Who was that for?

Mr. BUTLER. That was for the Presbyterian Home in Atlanta.

Senator WILLIAMS. Do these additional provisions under 202 undergo bidding, did that put it in a longer period of construction for you?

Mr. BUTLER. Yes, sir, it did.

Senator WILLIAMS. Well, I never heard of this before.

I have never heard this described before, and I have talked to scores of people about 202.

Mr. BUTLER. It took us approximately 21 months to build Calvin Court which was \$3 million.

It took us 14½ months to build Baptist Towers, which was \$3,453,000.

The difference is we built the Baptist Towers job for approximately the same per square foot cost and per unit cost that we did Calvin Court 2½ years earlier.

Senator WILLIAMS. Thank you very much.

[The prepared statement follows:]

PREPARED STATEMENT OF MR. THOMAS A. BUTLER, SR. ABCO BUILDERS, INC.

Reference: Baptist Towers

Baptist Towers was sponsored by a non-profit organization, called Baptist Towers Corp. which is a unity of seven Baptist Churches in the metropolitan Atlanta area. The Baptist Towers Corporation is made up of: Beecher Hills Baptist Church—Rev. M. P. Harrison, Jr., Pastor; Ben Hill Baptist Church—Rev. L. Clyde Allen, Pastor; Connally Drive Baptist Church—Rev. Ronald Henson, Pastor; College Park First Baptist Church—Dr. Dudley Pomeroy, Pastor; Dogwood Hills Baptist Church—Dr. William H. Geren, Pastor; East Point Baptist Church—Dr. C. Douglas Jackson, Pastor; Jefferson Avenue Baptist Church—Rev. Roy W. Hinchey, Pastor;

The seven churches felt that they could offer a sponsorship for the building that would provide housing and fellowship for the senior citizens of their area.

The average cost per unit in this type building is running approximately \$13,750.00 per unit. The total construction cost for Baptist Towers was \$3,453,183.00 with a total square footage of 195,000 square feet which equals \$17.80 per square foot or \$11,510.00 per unit. The Towers consists of 300 units in an eleven story highrise concrete frame structure. There are 210 one bedroom units and 90 efficiency units. The building was started in January of 1971 and completed in the last of March of 1972. The efficiency units have a total of approximately 400 square feet per unit consisting of a living area, a large closet for storage and clothing, bath and kitchenette. The one bedroom unit consists of approximately 540 square feet per unit consisting of a bedroom, living/dining area, a large closet off the living area for storage and clothing and a smaller closet in the bedroom, bath and kitchenette. All units are completely furnished with stoves, refrigerators and kitchen cabinets. Heating and air conditioning controlled in each apartment and the apartment is completely carpeted.

The first floor covers only approximately two thirds of the total area per typical floor. This floor contains ten one-bedroom units, a large storage area for tenants use, mechanical room, maintenance storage and office, trash accumulation room, receiving area for tenants moving into the building, laundry room, and beauty parlor.

The second floor is the first full floor which contains twenty one-bedroom units. The second floor being at the street level, it also includes the offices and administration areas, lounge, lobby, waiting lounge, recreation and multi-purpose room, private dining and board room, a small catering kitchen, mail lobby, and mail room with two public toilets.

The remaining nine floors are identical including twenty one-bedroom units and ten efficiencies per floor. All floors have a beautifully decorated core area which is used primarily for lounging and discussion for the tenants. They have been furnished with tables and benches to add comfort.

The building is constructed of concrete utilizing a concrete frame consisting of concrete columns, concrete shear walls at the end of each wing running from foundations to roof and a concrete pan type slab which is made up of 12" concrete joist with 2½" of concrete over the top of the joist to add additional fire-proofing. The exterior of the building is 4" utility face brick with steel studs, sheet rock, insulation backup. We have used the strip windows in the units running from foundations to the roof. The interior walls are made up of the following materials and specifications including the built-in safety features.

Corridor and party walls—One hour fire rated walls—Test #T-3362-OSU

The construction of the walls to conform to the above mentioned test are as follows: 25 gauge metal studs at 24" on center with one layer of ½" fire code gypsum board on each side of the studs. All joints finished and the perimeter of the wall caulked. Also a 1½" thermafiber sound attenuation blanket is attached between the studs. To this one hour rated construction, we have added an additional layer of ½" gypsum board on the corridor side of the wall. This layer of gypsum board was attached to the stud and then the layer of ½" one-hour fire code gypsum board was attached to it.

Fire alarm enunciator panel

The panel was located near the front entrance readily visible to firemen. It indicates the floor that fire alarm was pulled.

Emergency call system

Each unit is equipped with an emergency call system which activated and an alarm is sounded and the room number is indicated on a panel located in the administrative area.

Chase walls—Two hour fire rated walls—Test #T-1339-OSU

The construction is as follows: Two layers of ½" one hour fire code gypsum board laminated to a 1" core board which is screw attached to metal runners at the floor, ceiling and side walls.

Floor slabs and ceilings—Two hour fire rated floor and ceiling system

The floor-ceiling system in the apartment units consists of a concrete pan joist floor deck with a concrete slab portion being 2½" thick. A ceiling consisting of 5⁄8" one hour fire coated gypsum board is suspended from the joists of the floor system.

The floor-ceiling system in the corridors consists of an acoustical tile lay-in ceiling suspended from the concrete pan slab floor system. The concrete slab portion being 2½" thick. This system is in accordance with design No. 307—two hour.

Corridor doors and frames

The doors are 1¾" solid core doors with wood frames. The doors carry a 30 minutes underwriters label in accordance with the underwriters laboratory.

Exits

Three stairs per floor which consists one stair at the end of each corridor. Each stairwell is a two-hour fire-rated concrete block enclosure with B-label doors with closers.

Fire alarm stations

Four fire alarm pulls per floor. One at each stairwell and one in elevator lobby. Three fire alarm bells per floor, one per stairwell.

Exit lights and signs

Exit lights are located at the end of each corridor at the stairwells, these signs are lit at all times.

Fire hose stand pipes for fire department use

Located in each of the two hour fire rated stairwells with a hose connection at each floor. An additional fire hose stand pipe with fire hose is located at each elevator lobby.

Sprinklers

Sprinklers were installed in the trash room storage areas, and receiving area on the first floor as well as in the trash chute.

Fire hose cabinets and fire extinguishers

There are four fire hose cabinets per floor with 75 ft. of hose in each. There are four fire extinguishers per floor of the pressure water type stored in the fire hose cabinets.

All construction meets or exceeds requirements of the national building code

Our first knowledge of the fire at Baptist Towers was when it was heard on a news report at approximately 6:00 a.m. The morning of November 30, 1972. At this time, our Mr. Lynn Bledsoe immediately proceeded to Baptist to offer his assistance in any way he could. When he arrived at the site, the fire had been extinguished and he was allowed to proceed to the 7th floor to make a preliminary investigation as to the cause of the fire. From here on, the information is as we can piece it together from the various tenants.

It is our understanding that all of the heavily smoked apartments had had their doors left open, also the fatalities, Mr. and Mrs. F. E. Roland, Mrs. Sadie Ransom, Mrs. Katie Falk, Mr. Flury, Mr. and Mrs. Paulk, had also left their doors open. Evidently the fatalities had been driven back either by smoke or by flame when they attempted to exit from their various apartments. It is our understanding that Mrs. Alice Ross, the tenant in apt. 710 where the fire originated actually left her apartment and woke up Miss Bockelman in apt. 707 then proceeded down the corridor to awaken the Lee sisters in apt. 701 and that she and the Lee sisters had entered in the stairwell when Mrs. Ross made the statement that she had left her medicine back in her apartment. She collapsed in the corridor, however, before reaching her apartment.

Apartment 710 where the fire started is bordered on the south side by apartment 708 and on the north side by the efficiency 721. It was noted that when Mr. Boyd left apt. 708, he had carefully closed the door. It is unbelievable the condition of Mr. Boyd's apartment standing in his living area which is on the other side of the party wall of Mrs. Alice Ross's apartment, one could not tell other than for a vague amount of smoke that the fire had even existed next door. This apartment was almost completely void of smoke damage and the only fire damage was noted just inside the corridor door. It was also noted that other of the apartments on the seventh floor were also void of excessive smoke damage and void of flame damage where the doors had remained closed and the occupant had placed wet towels at the base of the doors. We firmly believe that the fatalities could have been greatly reduced had the occupants remained in their apartments with their doors closed and with wet towels at the base of their doors.

There are numerous safety precautions that can be added to each multistory high-rise dwelling in order to make the occupants as safe as possible. We are the first to admit that the safety precautions are needed and will be more than happy to include them in the construction of all multi-story buildings provided the monies are made available to pay the cost incurred by their addition. The most prominent being mentioned by the news media is the installation of sprinklers. We list the cost of the various stages for the sprinklers as well as other safety measures that could be incorporated into the building which are not required by the National code or the various codes in the metropolitan Atlanta area at the time.

1. Cost of the stand pipe system with pumps—\$40,000.00.
2. Cost of sprinklers with stand pipe and pumps and in accordance with N.F.P.A.—\$200,000.00.
3. Cost of sprinkler off fire protecting stand pipe system in accordance with N.F.P.A.—\$200,000.00.
4. Cost of sprinkler off fire protecting stand pipe system with one head in bedroom, one head in living room, and one head just inside apartment doors—\$90,000.00
5. If we omit the class B 1½ hour ratings and the 1 hour party and corridor walls leaving the 2 hour stairways and elevator shaft, you could effect a \$50,000.00 credit to help pay for the sprinklers.
6. Install closers on all of the corridor doors. The installation of these closers would have added approximately \$10,000.00 to the construction cost. Anyone leaving the door open as they exit the apartment would have the door closed automatically.
7. The installation of corridor fire blocks at the end of each corridor at the core area in order to isolate the core area including the elevators. This fire block would consist of a metal frame with 1½ hour fire doors with wire glass installed. They would also consist of the addition of a smoke detecting magnetic closer.

Once smoke was detected by this device, it would automatically close the doors blocking off the admission of smoke or flames into the core area which would give the tenants some refuge in this area until fire protectors could arrive. The installation of these fire block frames would have cost approximately \$14,000.00 at Baptist Towers.

8. The addition of fireman's guard on the elevators. This would consist of a smoke detecting device placed throughout various areas in each corridor that once smoke was detected, it would automatically engage all elevators sending them to a central point, i.e. the first floor. This system would furnish a key that would be in the possession of the fire fighters and only they could operate the elevators should they feel it was necessary and safe. The installation of the fire guard operation would have cost approximately \$10,000.00 at Baptist Towers.

9. A system of visual aid throughout the corridors. This could be a closed channel television station that would have centrally located cameras that could focus on a revolving stand on all corridors in order to detect any smoke or fire throughout the building. It would also act as an additional protection against any intruders and would enable the security guard to watch the panel at a central location. The cost of visual aid in the corridors of Baptist Towers would have been \$70,000.00.

10. Installation of an emergency call system. This system could work so that when activated by the tenant the condition of the emergency could be given to the security guard and corrective measures taken. The cost of this would have added around \$35,000.00.

The construction industry throughout the country will be the first to admit that there are many ways to add additional safety into the buildings. The problem is not the additional safety measures but the cost of their installation. It must be noted that the 236 program covering housing for senior citizens is working because of the rent scales that are produced by the economy that is being built into the buildings. We are adding reasonable safety measures throughout the buildings. If additional safety measures are added at extreme cost, it would increase the rent for these occupants and would defeat the purpose of the buildings. If the rents are to be so high that people on social security or small retirements are unable to pay the rent the 236 program is defeated. The construction industry feels that there is a great need for multi-story for the elderly so our senior citizens can enjoy their senior years with a purpose that makes them feel wanted and needed. We feel that this is the most important project throughout the country and that if we can show our senior citizens that they are loved and needed and wanted, and if we give them housing where they can reside with others their own age who have similar interests, we can do a small part in making their final years at least happy and productive.

Senator WILLIAMS. Our next witness is Mr. Richard E. Bland, Chairman of the National Commission on Fire Prevention and Control.

STATEMENT BY RICHARD E. BLAND, CHAIRMAN, NATIONAL COMMISSION ON FIRE PREVENTION AND CONTROL

Mr. BLAND. Sir, it is a privilege and an honor to be here, and I intend to not read my testimony.

Senator WILLIAMS. Fine. Your prepared statement will be entered in the record.

(See prepared statement, p. 38.)

Mr. BLAND. I have listened carefully this morning, and I am going to reflect on some of my experiences as Chairman of the National Commission on Fire Prevention Control.

I find that the country is guilty of exactly what you and I have participated in today, that is talking about fires, instead of fire. We have sifted through the ashes of this country for nearly 200 years. The result is little progress.

Before this day is over, statistically, there will be in excess of 10,000 fires in this country.

We will burn at least 1,000 people to a degree.

That will require some medical attention. We burn people and property at a greater rate than any technological country in the world. We somehow have failed. It has led us, sir, to a jungle; we have been in it a little bit today.

Those firefighters you talked to did their best, but there is not much that can be done above the third or fourth floor with mobile fire equipment.

Secondly, I must point out that fire in its relationship to human beings gives them about 1-in-10 odds.

We heard that fire generally is a 2,000° phenomena; also, from fire comes a great deal of smoke. There are a lot of toxic products, and those attack us very quickly.

The people from the Baptist Towers are beautiful people. They are beautiful in the sense of their coolness, but the population is not made up of those kind of people, only survivors are.

PROBLEMS OF PANIC

Simply, if you look at fire, as a phenomenon, and you recall that roast beef is done at about 150°, water boils at 212°, and realize I am mostly water and flesh we see my chances are slim. I am expected to face a 2,000° phenomena; at 300° temperature, most people will panic. When you cannot see, you panic, when body temperatures are high, you panic.

If you combine smoke and heat, and I do not mean intense heat people will panic, people will naturally run. I hear about enunciation systems.

When people see, feel, and hear the threat of fire, they forget nearly all messages. That is the point where you and I must begin to build into the building those devices that are necessary to give a reasonable chance of escape.

There are no experts on fire; we just do not know enough to be experts. We do not know how fire works in a room. We cannot confidently predict what will happen in a fire-involved enclosure.

Our best choice is in automatic extinguishment.

That has been said for 100 years. In testimony, we trace similar statements from 1906. The solution is on the shelf, but somehow in the political, economic decisionmaking, we have refused to accept that solution.

We should go no further by adding, in my view, more fireproofing; we should go little further with enunciation systems. We must move toward quick extinguishment, the result will be a 95-percent fire safe situation. I suggest it be done immediately. Start tomorrow, the firefighters in this country have just about all they can handle in the system they have inherited from the last 100 years. To burden them further does not strike me as being economical or reasonable.

The highrise problem has a simple constraint, it is simple in the sense that people have no means of horizontal escape.

Here in this building, you have half a chance of getting out.

Above the third or fourth floor, you do not have much chance to step out onto the ground and run.

There is no horizontal escape.

Secondly, the fire in a highrise building will spread vertically. There is not much stopping it. These are problems that we are going to have to live with throughout our lives. Some experts tell me that by 1990, 125 to 150 million people will be living in highrise structures. So now is the time, not tomorrow, to require automatic extinguishing systems. I am afraid the decision rests in the Congress. I would neither expect the fire service, nor would I expect industry to voluntarily adopt these standards.

• Senator WILLIAMS. What is your professional situation?

Mr. BLAND. I am an associate professor of engineering research at Pennsylvania State University.

Senator WILLIAMS. Then you come to this with professional knowledge of physical principles here, you are an engineer.

Mr. BLAND. Yes, sir. I am a physicist, an engineer by profession. I am a firefighter by avocation; I have been with the fire service for some 30 years.

I have served as an assistant chief in the State College City Fire Department.

PROBLEM OF POISONOUS GASES

Senator WILLIAMS. The fellow that sold me my fire alarm system said that there could be a fire in the basement of the house, and you could be dead of breathing in the hot air on the third floor in a matter of, I have forgotten the minutes, but it was not very long.

Now, this is the problem, is it not, the air is a suffocator, the hot air rises, and it rises rapidly, does it not?

Mr. BLAND. Yes, sir.

Again, when we discuss air flows we do not really understand the patterns in an enclosure.

What would bother me about the fellow who sold you your detector, is that he presented himself as an authority.

Basically, we are very ignorant of how fire spreads in an enclosure.

We lack necessary knowledge about how the heat is transmitted within the building.

If we have a fire in the open we can talk about that, the buildup of heat in an area is a different problem. The rapidity of that build-up was suggested by the Atlanta Fire Department.

They said it was exponential, not linear; it was very rapid, and people acted quickly and emotionally. Time is short, viability deteriorates rapidly.

If a guy sells you a detector saying you will be dead in 2 minutes, I have to take his word for it. I would like to see his data, though.

You may very well be dead in 30 seconds, or it may take a half hour. One of the fire-related problems in this Nation today, is that sales persons go from door to door, selling what I consider to be ill-advised fire protection advice. The people are being sucked in by high-pressure types. The buyer is left with a feeling, if he installs the detector, he will live forever. You and I know that does not happen.

I had one of those fellows in my home, and I let my children receive him. He convinced my children that if I did not buy one of these by tomorrow morning, they would all die in bed before the night was over.

Now, we lived through that night, in spite of him. What this country needs, sir, is a consciousness of fire, a calculated consciousness, a

recognition of fire and its threat, and then it can decide what the risks are.

Your opening remarks suggested that we should not be panicked. We make a mistake by panicking people. The people in this country are not apathetic to fire, they are horrified by it. They are horrified to the point where they reject even thinking about preventing fire.

Senator WILLIAMS. Now, earlier you had been here, is that correct?

Mr. BLAND. Yes, sir.

Senator WILLIAMS. Two things seem to have registered, and been made persuasively, first is the knowledge of the fire, arrived at through the automatic sensors that sound the alarm.

Another, you might say that the people will react and panic if they know, but first they should know, as soon as possible that there is a danger present in the area, is that correct?

Mr. BLAND. Yes, sir.

AUTOMATIC DETECTORS

Senator WILLIAMS. Now, these automatic devices, they just cannot be that expensive, because houses have them, and more and more have them, and they do work.

I mentioned mine, the toaster, once I did not realize that the hot air was going up, and bingo, the system goes off, and it is not expensive, so that alarm system does add a big factor.

Mr. BLAND. It depends on what we do with the alarm system, and to where we transmit the alarm.

Senator WILLIAMS. I think, first, you know you are in trouble, and this can be done automatically, nobody has to pull anything.

Mr. BLAND. Let us keep hand pulls out. Let us keep it automatic when possible.

Senator WILLIAMS. The other is the application of what puts the fire out, and water evidently is the agent, the easiest agent to reach the fire, and that would be automatic, it would be the sprinkler system.

Mr. BLAND. Yes, sir. Sprinkler performance data is irrefutable data. A large part of the property insurance industry is based on the fact that high value buildings must have sprinklers.

It is irrefutable data, that sprinklers are the way to cut property damage, and I think to cut life loss from destructive fire.

Built in extinguishment will reflect its way back to your cities, in the sense you will be able to change fire department forces, from the kind we expect to jump up ladders and do heroic things, to those who work professionally, in fire prevention.

Senator WILLIAMS. You know, we are most concerned here in this committee, this is basically a housing committee, we are concerned with sanitary, decent housing to older people, this is the Committee on Aging, and we wish to have housing at a price these people can afford.

Older people are working basically on that \$200 of Social Security income, and I am sure at the level of costs, anything can be made perfectly safe, but also at certain levels of costs, we would never have any housing, so we have the practical problem, can we do the job, and still keep the rents within range of people living with incomes of \$250 a month.

SPRINKLER SYSTEM IS BEST

Mr. BLAND. If we continue to pile compromise on top of compromise, then ultimately we will drive rents out of reason. Let us look at the basic fire problem, make some assumptions, and think what is required to be something like 95 percent safe.

I have no concept of 100 percent safety.

The sprinkler system, I must not back off 1 foot, the sprinkler system is the best way at the current state of the art.

There are some developments downstream, but in the life of the buildings that you and I are planning today, the automatic sprinkler system is the way.

All is not perfect with the automatic sprinkler system.

Senator WILLIAMS. Mr. Bland, you are Chairman of the President's Commission on Fire Prevention and Control.

Mr. BLAND. Yes, sir.

Senator WILLIAMS. And under the law you are asked or directed to report by June of this year?

Mr. BLAND. Yes, sir.

Senator WILLIAMS. Now, I would hope personally that your experience will be different than other President's Commissions.

There have been several, and they have been professional, and they have been magnificently motivated, and they have done a great job, they have reported, the President has thanked them, and forgotten completely their conclusions, and in fact gone the other way.

What are some of the outstanding suggestions that we have had from the Commissions, John?

Mr. EDIE. We have had one on crime, one on riots in the cities.

Senator WILLIAMS. Did we have a Commission on Aging?

Mr. EDIE. We had a White House Conference on Aging.

Senator WILLIAMS. Well, I will say that I hope your experience is better, and that your report will be more than received gratefully, and that you will have some good results.

That has not happened on other President's Commissions within the last 4 years.

Mr. BLAND. Sir, that is always a possibility, and one of the problems of any advisory commission.

Senator WILLIAMS. Now, the Scranton Commission was thanked and forgotten.

Let us hope the Bland Commission is not treated as blandly as the Scranton was treated.

COMMISSION ON FIRE PREVENTION AND CONTROL

Mr. BLAND. I hope not, sir, because this Commission is the most interesting group of people that I have ever met.

It is a Commission that I think the Congress can be very proud of. There are 18 people on the Commission. As an example, they convened last Friday afternoon, met until about 2 at night, ran on through Sunday, and we are still working.

Every Commissioner was there, over 2 years now we have averaged 14 Commissioners at any time we have had a Commission meeting.

They have done their best within the time you have assigned, and within the dollars you have allocated.

We do not intend to ask for additional appropriations. You will get your support, we have done the best we can within the time limits established.

What is done with that report rests with the White House and the Congress.

Senator WILLIAMS. What is the legislative background of this Commission?

Mr. BLAND. Public Law 90-259, under title II.

This Commission has two Members of the House, two Members of the Senate, and we have the Secretary of Housing and Urban Development, and the Secretary of Commerce.

Senator WILLIAMS. Where did you have your meeting last week?

Mr. BLAND. Last week we were in a hotel adjacent to the airport.

Senator WILLIAMS. Here in Washington?

Mr. BLAND. Here in Washington.

Senator WILLIAMS. Was the hotel sprinkled?

Mr. BLAND. No, sir.

Senator WILLIAMS. Two stories?

Mr. BLAND. No, sir.

Senator WILLIAMS. More?

Mr. BLAND. Yes, sir, and very uncomfortable.

As we are dealing, as you are, with the aged, we have a different problem.

A person presumably with my reaction time can do a lot of things that a person 65 cannot do, although I am approaching that stage.

The one thing that bothers me, sir, I have great concern for the people who are in retirement housing. I have a mother in a nursing home, and I am not only concerned about her, I am concerned about myself, because I am going to experience increasing disabilities. I just want to make sure when I move in, it is sprinkled.

Senator WILLIAMS. I agree with you so completely.

My father is in a nursing home, and I know the others there, 70 percent are not really ambulatory, so if you do not have a system that deals with the fire, you have a tragedy.

Mr. BLAND. There is an interesting aspect of that, Senator.

If I were a member of a working staff in a nursing home, one of my conditions for employment would be that there would be a sprinkler. If there is a fire, I would feel my responsibility would be to perform a rescue mission. I would not want to have to bear the burden of having to extinguish that fire.

I would want a system that would attempt to extinguish it, while I would do my best to get the people out.

An extinguisher system will respond to a fire, depending on the enclosure, about the size of a human being. If a fire that gets that big, we will get a response from the system.

I think I should make very clear my position for the record. I would like to have both a fire detection system, in the sense of an alarm system, and an automatic extinguishing system.

If you force me to a trade-off, give me the automatic extinguishing system.

Senator WILLIAMS. Thank you very much, Mr. Bland.

[The prepared statement follows.]

PREPARED STATEMENT OF RICHARD E. BLAND, CHAIRMAN, NATIONAL COMMISSION
ON FIRE PREVENTION AND CONTROL

There is an unexplainable flaw in the fundamnetal argument that safety is everybody's business. Safety as everybody's business holds that no one intentionally designs, builds or maintains a system that would constitute a threat to the life and limb of innocent parties, no matter what their state of physical, mental or economic capability. It is an argument of *fundamental implied* safety requirements. It's everybody's concern and no one's responsibility. The fact is, however, that relying on purely moralistic safety obligations has resulted in uncontrollable personal injury and property damage.

We are led reluctantly to the necessary formulation of *express* safety requirements generated and enforced by some authoritative level of our social or political structure. That means contract provisions, performance standards, local, state and federal statutes and regulatory orders of various government agencies. Those who have been involved in this process recognize that for every regulatory action, equal and opposite forces act to nullify undue constraints or in some instances to evade completely their specific situations. This is why the fire safety professional is so familiar with the coordinate-it-to-death approach, the consensus-standard principle and the after-the-fact shadow effect of compliance definitions. Progress in fire safety has been slow; the applicable technology has not been challenged and the resulting direction is unnecessarily complicated. The constraints have been primarily political and economic.

There are those within and without the family circle of fire experts who are far from satisfied with the current level of required protection. Working outside that circle they are succeeding in imposing *extrinsic demands* for near perfect safety. There is an increasing interest on the part of the public in fire safety. That interest will require design for fire safety at the current state-of-the-art; it will not accept compromise when catastrophe strikes. If consumer product safety experience is a valid indicator, the judicial process will be used as the forcing function. This leads to the contention that the professional engineer or politician has no recourse but to take affirmative action.

We know the causes of fire and how to remove them; we have devices for discovering and extinguishing such fires as we cannot prevent; we know how to construct our buildings so as to retard fire and barring accidents, which will never disappear from human activities, there is no excuse for destructive fires. (Mr. Peter Joseph McKeon in a book entitled "*Fire Prevention*," copyrighted 1912).

Where the upper floors are beyond the effective fire fighting operations of the city fire departments, the use of sprinklers is strongly to be recommended. (Joseph Kendall Freitag in 1912).

For years we have worked to increase the number of pails, standpipes, and hydrants, and to add to water supplies and yet the total destruction of risks continues, without much diminution. Experience brought us another viewpoint and proved that fires could be controlled only by eliminating as far as possible, hazards and dangerous features and then applying the fire extinguisher in the first stages of a fire. The automatic sprinkler and not the hose stream was the dominate factor in the transformation. (V. C. Crosby 1906).

To show some assemblance of being modern, I substitute for "pails," fire engines, trucks, fire fighters, computers, program planning and budget systems. Our present day experience with automatic suppression systems does not alter this position; it strongly reinforces that positive statement made 67 years ago based on data available 10 years earlier.

The serious losses in life and property resulting from fires causes me deep concern. I am sure that much unnecessary waste can be reduced. The substantial progress made in the sciences of fire prevention and fire protection in this country during the past forty years, convinces me that the means are available for limiting this unnecessary destruction.

Accordingly, I am calling a national conference on fire prevention to be held in Washington * * * (Harry S. Truman, White House, January 3, 1947).

Everyone is, of course, concerned at least indirectly, about casualties and loss of life due to fires. However, it would seem that many codes and proposed standards have been formed primarily to preserve buildings and their contents, rather than human lives. The architect shares fully the concern of the owners, the technicians and economists over the stupendous financial losses due to fire * * *.

We shall include and stress all precautions toward prevention of loss of life due to fires. Buildings and contents may be called expendable and may be recoverable, human life is not expendable and not recoverable.

There are many complex requirements of modern building which he (the architect) must completely coordinate and specify in advance of construction, he must include fire safety considerations in plan, structure, escapes, alarms, fireproofness, or fire resistance controls for fire, smoke and gases, built in fire fighting equipment and so forth * * *

If in buildings for competitive use * * * the precautions are not legally required, or are not strictly enforced, the urgings of the architect or even the conscience of the owner, may not prevail, and the hazards will get by for reasons of economy.

It is, therefore, obvious that the importance and potential success of this campaign (fire safety) lies in the participation of many large and influential groups outside the architectural and engineering profession, whose interests are solely humanitarian and civic. (Mr. James R. Edmunds, Jr., 1947.)

The fire problems continue to be primarily a people problem in contrast to a technological problem. The political system is not stressing the technology for the simple reason that it does not choose to use the tools already at hand.

After the Rault fire in New Orleans and the Atlanta fire, I spoke publicly to the advantages of automatic extinguishment systems as life safety systems. The position that lives could have been saved has been challenged, yet I have seen no later reports which change my opinion. Certainly, I do not speak to the individual victim's prior condition or to the exact circumstances of death.

It can certainly be claimed that one of the reasons for the outstanding success of automatic sprinkler systems is that the principle on which they operate is a simple one * * *. The record shows clearly that except under the most extraordinary conditions it is possible to control fire automatically with a minimum of loss of life and property. The evidence suggests * * * there can be no better way of safeguarding life and property in the majority of buildings than by equipping them with automatic sprinkler systems.

An important aspect of the question of safety to life in buildings is that experience with multiple fatality fires in buildings in many countries has shown that in * * * the majority of cases * * * loss of life is due to asphyxiation rather than the effects of burns * * *. The automatic sprinkler system deals with the asphyxiation problem by preventing the growth of fire and minimizing the generation of smoke and gases * * * there can hardly be a better way of dealing with a smoke problem in a building than to extinguish the fire promptly and at worst to limit the spread and control it until the fire brigade arrives, which is exactly what an automatic sprinkler system would do. (H. W. Marryatt, April 1971).

I submit to this Subcommittee on Housing for the Elderly that the requirement of complete automatic sprinkler systems is the available technical solution toward control of fire in housing for the elderly. I make no distinction between the types of care or housing unit.

The National Commission on Fire Prevention and Control is carefully deliberating its position on sprinklers for protecting the aged. We have received opinions from many fire conscious individuals through position papers and public testimony. These papers and hearings combined with the expertise of the Commission, will lead to a strong position regarding automatic systems in institutions and certain residential buildings. There is also a strong sentiment that the Federal Government must assume an active leadership role in all government aided housing.

It would appear that the only factor that inhibits the recommendation for complete installation of automatic extinguishment systems is that of cost. It is my personal belief that some of the fire retardance requirements of building construction can be set aside if automatic suppression and control systems are required.

I raise the following questions in a heuristic sense. The complete answers will only arise from thorough study, and perhaps full scale tests, and from specific analysis of each building or class of buildings in question:

1. What reduction in cost and what increase in risk would occur if hourly fire resistance ratings were substantially reduced when automatic extinguishing systems are installed.

2. Would the cost/risk ratio remain acceptable if the requirements for fire resistance of supporting structural members was reduced.

3. Would loads be reduced sufficiently to permit smaller and less expensive structural members if structural fire proofing was removed and hourly fire resistance ratings of walls and partitions were reduced.

4. In some cases could existing conventional building service water supplies be adequate for properly designed sprinkler systems, thus reducing cost. Do water service charges penalize building owners for having sprinklers.

5. Are the materials required for sprinkler systems today reasonable considering materials currently available or are they too costly.

6. Would increased use of hydraulically designed sprinkler systems increase competition in the market place and reduce cost.

7. Can decreased costs to the community fire service be realized by requiring built-in extinguishment and control systems thus transferring responsibility for immediate fire response to the building system. Can the highly competent manpower now in the fire service be used more effectively in fire prevention.

The action of this Committee of the Senate will help set the future trends; those of us concerned are carefully watching your deliberation. I only argue that those who need protection the most should be given the best available. It is a risk argument, an argument of uncertainty that only the public can decide for I as an engineer have no data upon which to establish an absolute dollar value for human life or suffering.

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Senator WILLIAMS. Our last witness for the day will be Mr. Chester W. Schirmer, president of the Schirmer Engineering Corp., Niles, Ill.

STATEMENT BY CHESTER W. SCHIRMER, PRESIDENT, SCHIRMER ENGINEERING CORP., NILES, ILL.

Mr. SCHIRMER. Thank you, Mr. Chairman.

It is possible to provide a reasonable degree of life safety from fire in residential facilities.

When these residential facilities are occupied by elderly persons, however, certain special problems exist. These include exiting difficulties, greater susceptibility to physical fire effects, and a greater tendency to be involved in the cause of fire.

Physical infirmities or reduced agility tend to increase time necessary for exiting by elderly persons, even in well-lighted stairways.

Certainly exterior fire escape stairs and fire department ladders are of very limited value.

Normally, the habitual movement, particularly of older persons, within a building will be by elevator rather than stairs.

Therefore, the degree of familiarity with stair exits, or alternate stair exits is extremely low.

The elevators, which are usually used, are of limited or extremely reduced value in a fire emergency. Impaired hearing makes notification difficult, which compounds the problem.

Some elderly persons are susceptible to confusion and in many fires have returned to their rooms, rather than leaving the premises.

Lower thresholds of submission to smoke, heat, and toxic gas are found in persons of advanced age.

These factors lead to the need to design housing facilities for elderly persons with an improved degree of fire safety.

A fire should be confined to the room, or certainly to the apartment, in which it originates. Notification of fire emergency should be automatic. Exitways must remain usable for a long enough time to provide complete evacuation.

The tendency toward forgetfulness of aged persons must also be recognized as adding to fire causative features—irons and stoves left on, portable heaters left unattended near curtains and drapes, smoking materials dropped in the lap or on to the bed or sofa, and so forth.

These problems are common to both low rise and highrise structures. For purposes of this discussion, I will consider a high rise building as one beyond the reach of the normally responding fire department ladder equipment.

BUILDINGS AS DUTCH OVENS

Senator WILLIAMS. One of the witnesses described that as a Dutch oven. I gather that is what keeps the heat in.

Mr. SCHIRMER. That is correct. Buildings under codes are designed to have certain fire-resistant features. They will contain a fire for a predetermined period of time.

The one referred to in the Atlanta fire is essentially a 3-hour fire-resisting rating.

I think the features we are looking at are fire prevention, with early warning evacuation and fire suppression.

The fire prevention features are about 90 percent commonsense, and they include the elimination or the control of possible sources of ignition within the building.

Here we deal with proper trash disposal, control of electrical systems, control of heating devices, and we look toward a policing activity on the part of the local fire prevention bureau to eliminate these causes and hazards.

SPRINKLERS ARE BEST ANSWER

When we get into the other three areas, the best of all answers is the automatic fire suppression system or automatic sprinkler system.

This kind of system will confine the fire to the area of origin.

There have been a number of fire tests conducted on the type of rooms that we are discussing, in elderly housing facilities that indicate with that type fire loading, the automatic sprinkler will confine the fire to the room of origin.

Automatic sprinkler systems also serve as a detection or early warning system, and will sound an alarm not only in the building but can also be connected to and should be connected to the fire alarm system of the municipality or to the responding company.

It is very true that the deaths that occurred in these buildings—and we saw the movie this morning that indicated the death from smoke, and from little fire damage as far as that body was concerned, if any.

The sprinkler system will control that smoke; it will also control the temperatures. There have been quite a number of large-scale fire tests conducted, confirming this, and I happen to be the chairman of the test planning committee of the rack storage committee dealing with some of these tests.

This is probably one of the hardest, fastest developing fires that you can conceive with ordinary combustibles.

With a properly designed sprinkler system, we can expect excellent control of the temperatures and effect that control very quickly.

The major concern, as I understand it, of your subcommittee is saving lives.

DATA ON SPRINKLERS

I believe Mr. Bland's Commission reported in 1971, and in 1972, over 12,000 people died in the United States each year due to fire.

Within those 2 years, there were, as I understand it, less than 10 persons per year killed in sprinklered buildings.

These are in all kinds of buildings, all kinds of occupancies, all kinds of processes.

If we look to Australia and New Zealand, for the period 1886 to 1968, sprinklers were 99.76 percent effective in controlling or extinguishing fires.

During this long period there were a total of five people killed in sprinkler buildings in Australia and New Zealand.

If we look into the way they were killed, and the reason they died, there would be no reason for their dying today with the present technology that we have.

In reviewing practical achievable levels of life safety design for highrise housing for the elderly, I would like to first consider the building in the planning stage.

I had an occasion some years back after our Lady of the Angels fire in Chicago to be asked what could be done about a three-story wood frame school building to make it safe.

This building had to continue to exist for another 2 to 3 years before it could be replaced.

The answer I gave was sprinkle the building totally, with a supervised sprinkler system.

There are other construction methods that can be used, and we have heard about them.

We have heard about additional compartmentalization, fire proofing of structural members, areas of refuge, and so forth, ad infinitum.

Unfortunately, these particular methods are not nearly as effective and they are also costly, more costly than the automatic sprinkler installation.

I would just like to go through very quickly what we might think of in terms of highrise fire protection.

EVACUATION PROCEDURES

I think it is important to have a planned evacuation procedure, and that this evacuation procedure should probably be a phase 1, phase 2, phase 3, one of which would call for the people on an individual floor to move out of the immediate fire area, to another portion of the floor, or as in the case of the Baptist Towers, they stay put within their apartment when the fire is not in their individual apartment.

Phase 2 is evacuation, to other than the fire floor, and phase 3, total evacuation of the building.

Now, if we start to think of what happens in a highrise office building, or even in this office building we are in right now, at the time the people quit and go home, all of the elevators are in use, there is no smoke, there is no heat, there is no panic, but how long does it take to get out?

It is virtually impossible to provide total emergency evacuation facilities.

We should think in terms of an alarm system, and I would of course suggest that the alarm system consist of an automatic sprinkler system, with water flow enunciation by floor, to pinpoint the fire locations.

There should however be a point where the fire department is notified of sprinkler system operation and fire emergency conditions.

We have heard about smoke control. With automatic sprinkler protection this is a minor problem. Without sprinkler protection it is a major problem.

Adequate heating facilities should be provided to minimize the use of portable heaters in the individual living units.

Standard approved combustion safety controls should be provided on the heating units. Periodic inspections should be conducted by competent fire department or fire prevention personnel to assure that building service equipment and fire equipment is being properly maintained and that excellent housekeeping standards are adhered to.

ESSENTIAL ELEMENTS IN DESIGN

The other three essential elements in life safety design of highrise structures for housing of the elderly, compartmentation, fire alarm and evacuation, and fire suppression must from a practical standpoint be treated in different ways in:

One, buildings in the planning stage.

Two, buildings under construction.

Three, completed buildings.

The records of the National Fire Protection Association and records from Australia and New Zealand indicate the best tool available for reduction of life loss from fire is the automatic sprinkler system.

NFPA fire records indicate sprinklers effective in controlling or suppressing fires in 96.2 percent of all reported cases in all classes of occupancy.

It is possible to design systems for over 99-percent efficiency. The life safety record is considerably more impressive if the number of persons killed in sprinklered buildings is compared to the approximately 12,000 persons who lost their lives in fires in 1971 alone, NFPA reported fire deaths in 1972 are essentially the same as 1971.

In Australia and New Zealand for the period 1886-1968, sprinklers were 99.76 effective in controlling or extinguishing fires.

In this same period, only five persons lost their lives in all classes of construction and occupancy in sprinklered buildings. No other method of construction or protection even approaches this lifesaving performance.

In reviewing practical achievable levels of life safety design for highrise housing for the elderly, I would like to first consider the building in the planning stage.

The primary recommendation for buildings in the planning stage is that they be protected throughout by an approved system of automatic sprinklers.

SPRINKLER INSTALLATION

This system should be installed in accordance with chapter 8 of NFPA-13-1972, "Standard for the Installation of Sprinkler Systems."

The sprinkler system should not be added on top of all other code requirements for this type building, but should be considered an integral part of the building's life safety design.

Codes normally require the installation of wet standpipes in high-rise buildings. These standpipes should be installed and used as a supply for the sprinkler system.

Sprinkler water demand should not be added to standpipe demand in calculating water supplies and standpipe sizes.

With sprinkler protection, it is highly unlikely that hose streams will be necessary. Therefore, the total 250 gpm for sprinklers and small hose, specified in NFPA-13 is considered completely adequate.

This contemplates 150 gpm for sprinklers and 100 gpm for small hose. It is not necessary to provide hose for tenant use within the building.

Two and one-half inch valved outlets with 1½-inch adaptors should be provided on standpipes for fire department usage.

The cost of such a system, using standpipes as supplies, and taking advantage of hydraulic calculations which are encouraged by NFPA 13, should be approximately \$.40 to \$.60 per square foot.

Considering the fact that few changes are made in partition locations in this type structure, floor control valves for the sprinklers, as suggested in NFPA 13, are not necessary.

To achieve the 99 percent effectiveness previously mentioned, all control valves, power supplies and similar items related to the ability of the sprinkler system to operate, should be electrically supervised.

Off-normal conditions should cause an alarm at a constantly attended location either on or off the premises.

CHANGING STANDARDS

Changes which have been made in the National Fire Protection Association standards in 1972 and further changes contemplated in 1973 increase the economic practicality of this excellent means of protection.

Maximum area to be covered by each sprinkler in this type building was increased from 200 square feet to 225 square feet in 1972.

At that time, encouragement was also included in the standard for development of sprinklers covering even greater areas as the 225 square feet limitation will not apply when "such installations are made in accordance with approvals or listings of a nationally recognized testing laboratory."

This simple statement indicates that anyone can develop a sprinkler to cover an configuration or pattern, round, square, rectangular, and so forth, or any area, 300 square feet, 500 square feet, and so forth.

He must then have the new sprinkler tested and evaluated by a nationally recognized testing laboratory, after which the sprinkler may be installed as indicated by the test results.

The 1973 standard will allow piping to be run in concrete. Former section 3068 which prohibited this has been proposed for deletion.

Architectural and structural designers should therefore consider placing the sprinkler pipe prior to pouring floors, much as reinforcing rods are placed.

This will reduce installation costs by eliminating hangers and simplifying construction.

Piping may, under present rules, be either steel or copper. Any other type of tubing which has been listed and approved by a recognized testing laboratory for fire protection purposes can also be used. Listed plastic pipe, placed in the concrete slabs, is feasible, and could materially reduce costs.

This, of course, would require plastic pipe, or other type material, manufacturers to submit their product to a nationally recognized testing laboratory for test, evaluation and approval or listing.

The installation of a total automatic sprinkler system eliminates the need for any other automatic detection system. A manual fire alarm system should, however, be provided for tenant use.

Sprinkler water flow alarm devices are important and must also be installed. Either the manual fire alarm or the sprinkler water flow alarm should activate an audible building alarm system and also should be automatically transmitted to the fire alarm headquarters of the first response fire department.

In communities where this is not possible, the alarm should be transmitted to an approved alarm company or to another location with constant reliable manning.

Sprinkler protection is considered essential for life safety in buildings in the planning stage to confine the fire to the room of origin, minimize smoke development and reduce air temperature.

The system also acts as a fire alarm system to alert occupants and the fire department and institute emergency procedures.

This installation should make it possible to reduce all code required fireproofing by at least 1 hour.

In addition, allowable exit travel distances required by code should be increased as should exit capacities.

Other trade-offs are undoubtedly available depending on local code requirements involved.

To further improve the life safety considerations in a building in the planning stage, consideration should be given to pressurization of the corridors, elevator shafts and stair shafts.

Specific designs for pressurization should take into account results of tests recently conducted at the Henry Grady Hotel in Atlanta, Ga.

DANGERS OF ELEVATORS

Many reports are available on highrise fire deaths associated with elevators. The elevators should automatically return to grade level and remain there, with their doors closed, whenever the building fire alarm system is activated.

Doors should be openable manually but should require depression of the "open door" button to remain open. The responding fire department should be capable of commandeering elevators by use of a special key and switch at the ground level.

Many lives have been lost in highrise residential facilities due to occupants of a room fleeing a fire and leaving the corridor door open.

Smoke and hot gases from the fire then enter the corridor, endangering persons in other portions of the building.

With this in mind, all doors leading from individual tenant units to corridors should be equipped with self-closing devices.

It is important that emergency procedures be preplanned. An emergency program should be established for each facility and tenant drill programs should be established.

Composite or standard basic programs are advisable, with individual programs refined from the basic programs to meet local conditions.

These recommendations are sound and economically practical in all buildings in the planning stage. All of the items should be reviewed and included where possible in buildings under construction or in existing buildings.

PRE-PLANNED EMERGENCY PROCEDURES

The pre-planned emergency procedures are obviously applicable to all buildings.

The following suggestions should also be applied to all buildings, either in the planning stage, under construction, or completed.

First, "hazardous use areas" such as boiler rooms, trash rooms, laundries, maintenance rooms, crafts rooms and general storage rooms should be separated from the remainder of the building by minimum 1-hour construction. Doors to these rooms should be automatic closing class B fire doors.

Two, where "community" kitchens are provided, automatic extinguishing systems, in accordance with NFPA 96, should be installed for hoods, ducts and cooking surfaces.

Three, first aid fire extinguishers for tenant use should be of the lightest possible, most easily used type. Approved multi-purpose dry chemical units are suggested with installation in accordance with NFPA 10.

In buildings under construction, a total automatic sprinkler system may not be economically feasible. In these cases, sprinkler protection should be provided in the "hazardous use areas" previously mentioned.

Water flow alarms, connected to the building fire alarm system, are desirable with these sprinklers in order that they may act as fire detectors.

In order to increase time for evacuation, an automatic detection system, using products of combustion type detectors, should be installed in the corridors.

Actuation of these detectors should sound the building fire alarm system and the signal should be automatically transmitted to the fire department.

Thermal detectors, connected to the building fire alarm system, should be located inside of the door to each living unit and should also cover all areas of the ground floor and basement, if any, not protected by either sprinklers or products of combustion detectors.

A pressurization system should be provided for corridors and for stair and elevator shafts. The system should start automatically on actuation of the building fire alarm system.

Automatic elevator controls should also be provided as outlined under suggestions for buildings in the planning stage.

SELF-CLOSING DOORS

As indicated for buildings in the planning stage, all doors from living areas to the corridor should be self-closing. To improve the compartmentation it is suggested that one sprinkler, supplied from the domestic water line, be located inside the apartment door.

This sprinkler should be located as to totally wet the inside door surface at a rate of 4 gallons per square foot per hour.

The effectiveness of such protection is outlined in an article by Mr. T. E. Waterman of the Illinois Institute of Technology Research Institute in the January 1973 issue of the Fire Journal.

In completed buildings, the practical economic level of life safety fire protection is further reduced.

BUILDING UNDER CONSTRUCTION

The majority of these items mentioned for buildings under construction remain feasible, however. In my opinion, these include:

One, an automatic detection system consisting of products of combustion-type detectors to be installed in the corridors. This system should be connected to the fire department and the building fire alarm systems, as previously indicated.

Two, preferably, sprinkler protection should be provided in all "hazardous use" areas. Inasmuch as these areas usually have exposed ceilings, the slight increase in cost as compared to fire detection is justified, considering the hazards involved.

Three, pressurization systems, automatically actuated by the building fire alarm system, should be provided in stair and elevator shafts.

Four, elevators should be automatically controlled as previously indicated.

Five, apartment doors or doors from living spaces to corridors should be self-closing. Where these doors are not minimum 1-hour doors, sprinklers supplied from domestic lines should be provided on the apartment side of the doors to provide a water wash.

In my opinion, the provision of sprinklers in corridors only, is not an adequate means of protection. Fires normally do not occur in the corridors, but rather in living areas or in "hazardous use" areas.

By the time temperatures in corridors are sufficient to activate corridor sprinklers, the corridors are already untenable and smoke has probably permeated many other areas of the building.

As in most areas of fire protection, there is no simple single solution. Many aspects of construction and building operation and utilization must be reviewed and properly integrated with various available means of protection.

Costs and possible trade-offs between construction or compartmentation features and fire suppression system application should be made. It would certainly be wise to include a fire protection engineer in the professional design team.

This fire protection engineer is trained to evaluate the many variables of the fire-life safety equation. His input and professional advice are invaluable aids, both at the time of deciding on general overall policy, and when specific projects are being planned.

Senator WILLIAMS. I thank you very much, Mr. Schirmer, for a very fine statement.

That concludes today's hearing, and we will return tomorrow at 10 a.m. right here in this same room.

[Whereupon, the hearing was recessed at 1 p.m.]

APPENDIX

ORLANDO, FLA., PROPOSED SPRINKLER ORDINANCE, SUBMITTED TO SENATOR EDWARD J. GURNEY * BY M. W. RIVENBARK, CHIEF, OR- LANDO FIRE DEPARTMENT, JANUARY 24, 1973

PROPOSED CODE

Sec. 24.14-11. Certain practices prohibited.

The use, by any person, firm or corporation engaging in the business herein described, of equipment, including motor vehicle, made to resemble that used by the Fire Department including the painting on such equipment "fire engine," is hereby prohibited.

Sec. 24.14-12. Sprinkler and alarm systems required.

1. Buildings which are occupied above the heights permitted by the following table shall be equipped with approved automatic sprinkler systems:

OCCUPANCY CLASSIFICATIONS

	Height in stories	
	Wood frame construction	All other types of construction
Institutional buildings:		
Occupants bedridden voluntarily or involuntarily detained.....	0	0
Other institutional buildings.....	0	1
All other buildings irrespective of occupancy classification.....	2	4

2. Provided, however, that this section shall not apply to existing structures, currently in use under a permit of occupancy for residential use, issued by the City prior to the effective date of this ordinance, but said structure shall be regulated by that provision of the portion of section 24.14-1 of the City Code pertaining to section 24.14-12 of the Fire Prevention Code.

3. The following shall be provided in all buildings listed in section 24.14-12-1:

(a) An approved automatic sprinkler system shall be installed in all storage rooms, laundry and linen rooms, laundry and trash chutes, kitchen, public assembly and/or meeting rooms of all hotels, motels, and motor inns which are primarily utilized for transient rental purposes.

(b) An approved fire alarm system connected to the Fire Department alarm office shall be installed in all institutional and educational buildings, and all other buildings irrespective of occupancy classification, four (4) stories or more in height.

(c) Emergency lighting shall be installed in all stairwells, hallways, and public assembly areas in all buildings.

(d) An emergency generator of sufficient size to supply power for the fire pump, one elevator, and emergency lighting.

(e) Standpipe system shall be a Class III with 1½" connections in top of cabinet with 1½" hose and 2½" outlet in bottom of cabinet.

(f) All standpipe hose cabinets shall be equipped with 1½" rubber-lined single jacket hose with control nozzle.

(g) Install one (1) all purpose type fire extinguisher (2A rating minimum) in each standpipe hose cabinet.

(h) An approved automatic fire extinguishing system shall be installed in all commercial hoods over cooking equipment as per NFPA, Pamphlet No. 96.

(i) A fire pump of sufficient size shall be installed to maintain a residual pressure of 65 pounds per square inch at the topmost outlet of each standpipe (including the roof outlet) with 500 GPM flowing as per NFPA, Pamphlet No. 14. 1971 edition.

* See statement, p. 3.

(j) Provide two (2) siamese connections for Fire Department use (one (1) each end of building) in case of emergency.

Sec. 24.14-13 Standpipe required.

A. Buildings exceeding four stories in height shall be equipped with wet standpipes conforming to nationally recognized good practice.

B. The type of hose, nozzles or equipment used in connection with standpipes shall be under the complete jurisdiction of the Chief of the Fire Dept.

Sec. 24.14-14 Fire pumps required.

The Chief of the Fire Dept. may at his discretion require the installation of a fire pump of sufficient volume and pressure to adequately supply standpipe or sprinkler systems in buildings where height, nature of occupancy, or area involved would, in his judgment, reduce the effectiveness of such systems below acceptable standards when supplied only by primary water and pressure systems.

Sec. 24.14-15 Portable fire extinguishers.

Suitable portable fire extinguishers shall be installed in all occupancies as may be specified by the Chief of the Fire Department or his designee.

LETTER FROM Z. C. GREENWAY, DIRECTOR, FIRE OPERATIONS, ST. PETERSBURG, FLORIDA; TO SENATOR GURNEY, DATED JANUARY 24, 1973

PUBLIC SAFETY AGENCY,
St. Petersburg, Fla., January 24, 1973.

DEAR SENATOR GURNEY: Thanks for your inquiry regarding fire problems in hi-rise buildings.

. . . This material is being used as work copies by the St. Petersburg Fire Department.

It is our endeavor to provide a safer place for the citizens and visitors in St. Petersburg. The report from Captain Smith covers our basic recommendations for additional safety factors in high-rise occupancies. The work copy of the ordinance shows what we are presently trying to do in St. Petersburg.

Please feel free to use this material in any way to help further the safety of people in regard to fire protection. If I can furnish more information, or assist you in any way in this project, please let me know.

Yours truly,

Z. C. GREENWAY,
Director, Fire Operations.

Attachment.

REPORT ON HIGH-RISE BUILDING FIRES

BAPTIST TOWERS, ATLANTA, GEORGIA

RAULT BUILDING, NEW ORLEANS, LOUISIANA

Captain Coy R. Merchant, Training Division.

Captain P. J. Smith, Fire Prevention.

Captain J. R. Logan, Lieutenant F. J. Hagan, Fire Suppression.

BAPTIST TOWERS FIRE, ATLANTA, GEORGIA

On November 30, 1972, at 2:19 A.M., the Atlanta Fire Department received a report of a fire at the Baptist Towers, 1881 Myrtle Drive S.W.

This building was an eleven story High Rise of fire-resistive construction (masonry). The floors were concrete floors on reinforced concrete columns. The interior partitions were gypsum board on metal studs, and the apartment doors were solid core (partical filled).

The building was built in a "T" shape configuration with a staintower at each end (total of three). Each tower contained a 6" standpipe riser. An additional riser was located near the center of building to serve hose cabinets on each floor. Exit facilities were in accord with NFPA 101.

The local alarm system was an Edward 1303-2, Class B type. This consisted of four pull stations and three horns on each floor. Each floor has three 1½" hose cabinets with fire extinguishers inside. The first floor was sprinklered in the storage and service areas. The standpipe system was supplied by a 1,000 GPM pump. Siamese connections were provided for Fire Department hook-up.

Occupants of building were 62 years and older. The building housed 300 apartment units. Each apartment was furnished according to wishes of occupant (no restrictions). Building was occupied approximately seven months prior to fire.

The fire originated in room 710 that was occupied by a woman resident. The fire (of undetermined origin) apparently burned undetected for a long period of time. Upon discovering fire, occupant left room leaving door open. The fire then communicated into corridor and damaged several apartments on the seventh floor. Occupant of room 710 was found in hallway.

The security guard's office, which was on the second floor, received a call for help on the seventh floor (not fire alarm). He proceeded by elevator to the seventh floor to investigate and when elevator door opened he was overcome by heat and smoke. He died in elevator.

The local alarm in the building was pulled sometime during this period. The first call to the Fire Department did not indicate that there was a fire in the Baptist Towers (reason for initial small response).

The first attack on the fire was made through south stairtower using 2½" line from outlet on sixth floor stairtower. Firemen encountered intense heat and smoke on seventh floor. Other attacks were also made from north and east stairtowers. The fire was knocked down in approximately 20 minutes after arrival of Fire Department. Rescue operations were carried out on floors six through eleven.

The intense heat on seventh floor caused elevator doors on eighth floor to warp and open 8 to 10 inches. Someone on this floor pulled hose from hose cabinet and placed nozzle in opening which is believed to have kept damage to a minimum on this floor. Smoke spread from the sixth floor through eleventh floor by elevator shaft and stairtowers. Fire damage was confined to the seventh floor.

Ten persons died as a result of this fire. Nine persons died during the fire and they are believed to have died prior to the arrival of the Fire Department. (Fire burned undetected for a long period of time; the local alarm pulled did not summon fire department; the fire department was summoned by phone.)

Nine of the ten persons who died were occupants of the seventh floor. One person from the tenth floor died later as a result of her injuries.

RAULT CENTER FIRE, NEW ORLEANS, LOUISIANA

On Wednesday, November 29, 1972 at 1328 hours, a fire occurred in the Rault Center which is a 17 story fire-resistive, masonry constructed High Rise. Four persons died as a result of this fire.

The building was constructed approximately five years ago in compliance with the Southern Standard Building Code and the "101" Life Safety Code.

Occupancy was mixed. There were apartments on lower floors along with offices. The 15th floor was made up of conference rooms and a Beauty Shoppe. The 16th floor housed a restaurant, lounge, and swimming pool. The 17th floor was a health center.

The building contained elevators located in the rear, center of building with stairtowers on either sides of elevator shaft. The building had a standpipe riser in stairtower with outlets and hose cabinets and extinguishers on each floor. A local fire alarm system was also provided.

The fire was reported to have started on the 15th floor of undetermined origin and spread very rapidly to 16th floor by means of vertical extension through windows.

The fire spread very rapidly from point of origin and cut off escape of persons in beauty shoppe. This was partially attributed to persons in shop breaking windows thereby causing a draft effect and drawing fire toward them.

Persons in the beauty shoppe jumped before firemen could rescue them. This was the cause of three deaths. Two persons survived the jump of approximately eight floors. One person died of smoke inhalation on another floor.

THE FOLLOWING TRAINING IS RECOMMENDED FOR OCCUPANTS OF BUILDINGS AND FIREMEN

I. Education of Occupants

- A. A fire marshal is recommended for each building.
- B. A safety committee should be appointed.
- C. Each occupant should be schooled on the following: Exit locations, hose cabinet locations, procedure for reporting fire to the fire department, evacuation signals and procedures, what to do if means of escape is cut off by fire, doors should be closed when leaving rooms, etc.

II. Proper Training for Firemen

A. Two command posts should be set up. One on ground floor and one on floor below fire floor.

B. Command post should have the capability of receiving and transmitting on both channels of radio simultaneously. One channel to be kept as free from traffic as possible for emergency messages.

C. Command post should be provided with a list of all utilities that will be needed at a fire of this magnitude.

D. Command Post should have means of identifying dead, also documented as to where body was found.

E. A portable radio is a necessity for each company officer.

F. Company Officers must keep track of their men and know what each is doing.

G. Necessary equipment to fight fire must be carried to second command post on first ascension. Valuable time is lost returning to ground floor for such things as forcible entry tools, keys, air bottles, lights, hose, etc.

H. Rescue is paramount, stairtowers will be used for evacuation. Designated stairtowers should be used so as not to impede the flow of firefighting equipment to the fire floor. Elevators can be used if they can be controlled by the fireman. Company Officers must acquaint themselves with elevators in their territory.

I. Smoke removal: if no other means are available, stairtowers can be used. These towers must not be the same that is used for evacuation and supply.

J. The rapid spread of fire in the Rault building points to the need of heavy stream devices used from adjoining high-rise buildings.

K. Standpipes alone can not be depended upon to contain a fire such as that in the Rault Building. Sprinklers are needed.

L. In buildings where people are of a transient type personnel; permanent employees in building must be trained to direct persons to exits in emergency situations.

M. Manpower is critical in these type fires; a minimum of 90 men was needed to combat both of these fires.

It is recommended that the pamphlet "The High-Rise Problem for the Fire Officer" (drawn up by the St. Petersburg High-Rise Committee) be adopted by the Training Division as SOP in High-Rise Training and as new methods and procedures are discovered that these be incorporated into this manual.

The High-Rise package under study now should also be standard equipment on both engine and ladder companies. This package contains equipment that is essential for all companies arriving at a High-Rise emergency. This equipment can also be used at numerous other type fires, keeping the new men familiar with items in this package and their use.

CAPTAIN COY R. MERCHANT.

BUILDING FIRES

BAPTIST TOWERS, ATLANTA, GA.

RAULT BUILDING, NEW ORLEANS, LA.

Both of these buildings were of fire resistant construction—masonry and steel. Both of them met the requirements of the Building and Fire Codes in use in each of the cities at time of construction.

In Atlanta, the 11 story Baptist Towers is a residential type building for the elderly; 62 year old minimum age requirement. This building has 300 apartments and had approximately 350 registered occupants. It also contains the necessary recreation areas, maintenance shop, laundry, offices and a beauty parlor.

The building has the required number of stair towers, exiting space, fire alarm system, with annunciating panel in the lobby, four standpipe risers, one in the center of the building and one in each of the three stair towers. The latter three each had a 2½" F.D. connection in the stair tower. The stair towers all had rated doors with closers.

The trash chute was in a separate room with a rated door and closer on the room. The chute door was automatic closing and rated.

What this building lacked to prevent a tragedy such as happened was not required by the codes.

A sprinkler system in this building, although it would be costly, could have prevented 10 deaths. It would have extinguished the fire at its point of origin, Apt. #710 in the living room. At the same time it would have notified the security, and residents, of a fire in the building making possible a faster notification of the Fire Department.

A smoke or heat detection system in conjunction with the manual alarm system, would have automatically actuated the alarm again notifying the residents and security who in turn could notify the Fire Department, also preventing the deaths.

Closers on the room doors would have closed the door behind the occupant of Apt. #710 and contained the fire in a one hour room behind a 1½ Hour door, giving all residents a chance to escape and preventing the spread of fire down the corridors.

Fire Department takeover on the elevators would have returned the elevators to the ground floor, making them available for fire-fighting operations as well as rescue operations. This would be required under the 1970 Life Safety Code.

The 30 to 90 minute delay in Fire Department notification could have been overcome by a sprinkler system or a POC detection system tied into the municipal alarm system.

The City of Atlanta is working under the NFPA Code and their Building Code is basically the National Building Code amended to make it more stringent in certain areas and called the Atlanta Building Code.

Assistant Fire Marshal J. P. Gossett, has said he will be asking for amendments to the fire code to require sprinkler systems in this type of high-rise structure. Also requesting that closers be provided on all room doors by code. In structures where a sprinkler system is not provided, will ask that the Code require POC detectors for alarm actuation.

The 17 story building in New Orleans has mixed occupancies. The floors 1 thru 9 contained offices; floors 10 thru 14 were apartments, 10 on each floor; and the 15th floor was meeting rooms and a beauty salon. The 16th floor was a plush restaurant; the 17th floor pent house was a health facility.

This building has required stair towers with rated self-closing doors. It also has a standpipe system with hose cabinets and has a 2½" fire department connection in the stairtower. Fire extinguishers were also provided.

The fire originated on the 15th floor, apparently in a meeting room called the Ski Chalet. This room was about 24 x 20 and contained a bar of sorts for dispensing drinks during meetings.

This was a rapidly spreading fire and apparently extended into and down the corridor cutting off the escape of the occupants in the beauty salon which was at a 20' dead end corridor in relation to the nearest stair tower.

Construction in this area was up to code, being sheet rock on metal stud walls, suspended acoustic tile ceiling on T bars. The floor above was concrete and steel.

This fire extended into the beauty salon and consumed almost everything in that area as it did in the Ski Chalet. While the room next to the Chalet and beside the beauty salon, escaped heavy fire damage. This was attributed to the probability of the occupant in the beauty salon breaking the windows creating the necessary draft to suck the fire from the Ski Chalet into the beauty salon area, by-passing the meeting room on the corner of the building.

The rapid vertical extension is attributed to, and witnessed by, the Assistant Supervisor of Fire Prevention, W. D. Kientz. The breaking of the windows in the Chalet by the fire, subsequently this fire breaking windows on the 16th floor and entering the restaurant, the fire then swept throughout the 16th floor completely destroying this area.

Construction on the 16th floor again was steel and concrete and metal stud with sheet rock. The complete consumption of the restaurant area, the cracking, chipping and failing concrete, attested to the intensity of the fire on this floor.

The 17th floor, a health facility, sustained no fire damage except to a punching bag, but the heat and smoke intensity was evident in this area.

The best preventative for this type of fire in a similar situation would be a complete sprinkler system. This would have operated at the time of the initial fire and in all probability, assuming a correct installation, would have extinguished the fire. It most assuredly would have held it in check to allow the escape of the occupants on this floor.

A detection system would have assured prompt notification of the fire to the occupants if tied into the municipal alarm system, thence the fire department. This would have prevented four deaths also.

It is unknown if the room door was closed or not as it was on the floor on the arrival of the Flying Squad, the first in firefighters so we cannot say a door closer would have helped, but we do feel they should be required.

We found that the Flying Squad could not open doors from the stair tower to the corridor on the 14th floor in their efforts to pull a standpipe line in to fight a fire to the 15th floor. This could seriously hamper, or cripple firefighting operations.

To sum up the findings on these two fires:

1. Sprinkler systems should be required in all buildings that are above the reach of fire department ladders. This system should be in conjunction with the POC detection system.

2. A POC detection system should be required in an existing building if not required to provide sprinklers, in conjunction with the manual alarm system to provide prompt notification of an emergency situation to all occupants as well as to the fire department and end the delay in alarm problems.

3. Automatic door closers should be required in all buildings of this type, as well as others, to prevent the spread of fire, heat and smoke throughout the building when an occupant leaves the room.

4. Fire department take-over, phase 2, should be provided on the elevator in this type of building to speed up rescue of occupants on upper floors as well as attack of fire areas. This is required by code in certain type occupancies now. Also emergency power should be supplied to the elevator in the event of power failure within the building. This is not now required by code but has been recommended. Keys for elevator take-over should be available at the desk.

5. Access to all floors from the stair tower for firefighters for rescue purposes, as well as fire attack. This can be accomplished by a key at the desk in the event the security is a problem.

6. A study should be made of the type of glass used in buildings of this height. Falling plate glass in New Orleans cut hose lines and can seriously hamper fire-fighting operations as well as injure and kill firefighters and civilians. (Herkulite Glass).

7. Required numbers on each stair tower door on the tower side to tell rescue and firefighters which floor they are on.

8. Work is already started on a program for residents of this type of building. It will include fire safety, evacuation procedures and fire drills and will be available to all interested parties. Most residents of this type of building have never had occasion to leave their building by any other means than the elevator and do not know the location of any stair tower. Education in this area would be an asset in rescue of the occupant in an emergency.

9. Under consideration by the NFPA also is the fact this type building does not require any special protection when occupied by the elderly. They feel, as do most fire department personnel, that additional protection is a must when the building is used primarily by the elderly.

CAPTAIN P. J. SMITH.

**LETTER FROM MR. THOMAS A. BUTLER, SR., TO SENATOR HARRISON
A. WILLIAMS, REF: HOUSING PROGRAM 202 AND PROGRAM 236;
DATED MARCH 30, 1973.**

ABCO BUILDERS, INC.,
Atlanta, Ga., March 30, 1973.

Ref: *Housing Program 202 and Program 236*

DEAR SENATOR WILLIAMS: During the testimony on "Fire Safety In High Rise Buildings for the Elderly" held on February 27 and 28, 1973, you asked that I write and give you a contractor's view on the pros and cons of the 202 and 236 programs. We find the main difference in the 202 program would be the elimination of the following items which are required by the 236 program: $\frac{1}{2}$ of 1% FHA mortgage insurance premium, .3 of 1% FHA examination fee, $\frac{1}{2}$ % FHA inspection fee, 2% financing fee, and 1 $\frac{3}{4}$ % FNMA-GHMA fee. The interest paid by the sponsor under the 202 program is 3%. Under the 236 program it would be whatever the market was carrying at the time the project was financed. Under the 236 program, the government subsidizes all interest paid with the exception of approximately 1% for which the sponsor is responsible. Under the 202 program, the maximum interest would be 3% paid by the sponsor, which would mean the sponsors would have to be financially stable in order to propose the building. In addition, the sponsor must be able to put up 25% of the anticipated first year operating cost. This 25% could be waived provided the apartments were 75% rented prior to completion of the building. We feel that the 202 program would require a stronger sponsor which would practically eliminate failures under the Federal Housing Bill. Under the 236 program the sponsor would be required to pay this 1% only if after completion and 100% occupied by beginning level income participants. If the tenants in the building are not beginning level, then the interest could be higher.

Under the 236 program, the sponsor is allowed to select his contractor and architect. The contractor and architect may work together from the inception of the building until its completion. This allows the contractor to help build in the economy as well as quality and efficiency. By the time the architect has finished his plans and specifications, the contractor has his final figure ready within the sponsor's budget and is ready to start work. His subs are dependable and can be relied on to finish within the time schedule set for construction. This naturally would be under a negotiated contract.

A negotiated contract is a contract between the sponsor, the architect and the general contractor. By negotiating with a contractor at the inception of the building, the contractor can use his many years of experience along with the architect's experience in helping the owner assure himself that they will have a quality building that will be efficient and economical, and that when the plans and specifications are finished they will have a workable project. When the project has been completed, FHA-HUD certifies and examines the cost.

Under the 202 program, a consultant will develop the sponsor and in most cases the consultant will select the contractor that will be working with the sponsor and the consultant during the inception of the building. We know of cases in the past where the architect and the contractor selected have had no prior experience in high rise senior citizen construction. We feel the buildings are special type construction and the architect and the contractor should have past experience in order to bring the project in within the budget. Under this program the plans and specifications are drawn. After they are finished it usually takes from 60 to 90 days to advertise and take bids. When the bids are taken there is no guarantee that the figure will be within the budget and it usually isn't. Sometimes running as much as 20% higher than the budget. After the bids have been taken you start all of the paper work for getting the project approved by FHA. This takes an additional 3 to 5 months. This period is used for redesign of the building, refiguring the building, trying to bring the building down within the budget and then going back to FHA for a new feasibility and then following through to the initial closing.

When bidding in competition, a contractor if he is to be competitive, must accept the low subcontractor even when he may know that this contractor will give him shoddy work and drag out the time required to finish his part of the project. Therefore, the contractor must protect himself and increase his price to offset the anticipated loss due to having to work with "just any" subcontractor. He will use the excuse that it is a public job with public money to force you to accept his bid, therefore, adding additional time and money to the anticipated project. This does not happen when the contractor is allowed to work with his own subs that he knows will give him an economical and time schedule job.

We believe both programs to be good programs for the elderly and we are sure both programs could be improved; however, we sincerely believe regardless of who the contractor or the architect may be that in order to give the most per dollar the contracts should be negotiated with a contractor and architect who are experienced in high rise buildings for the elderly.

We appreciate the opportunity to send this information to you, and thank you for the courtesy shown us when we were in Washington.

If we may be of any further assistance, please do not hesitate to call on us.

Respectfully yours,

THOMAS A. BUTLER,
Executive Vice President.

