ELEVATOR OPERATIONS

Table of Contents

1. Introduction
2. Fire Department Policy at Elevator Operations
3. Elevator Incidents and Emergencies - Procedures
   3.1 Stuck Elevator Cars
   3.2 Size Up
   3.3 Primary Removal Procedures
   3.4 Summon Elevator Mechanic
   3.5 Precautions - During Secondary and Emergency Removal Operations
   3.6 Secondary Removal Operations
   3.7 Emergency Removal Operations
4. Elevator Pit Operations
   4.1 Elevator Pit Description
   4.2 Operating Procedure
5. Firemen Service
   5.1 Firemen Service Regulations
   5.2 Description of Firemen Service Components
   5.3 Operation of Firemen Service
6. Elevator Operations During Fire Operations
   6.1 General Procedures
   6.2 Affects of Fire on Elevator Components
   6.3 Firefighter Trapped in Stalled Elevator Cars During Fire Operations
   6.4 Firemen Service During Fire Operations
   6.5 Operational Considerations

7. Building Code Regulations Effecting Fire Department Operations
   7.1 Accidents
   7.2 Mechanical Features
   7.3 Emergency Removal

8. Elevator Terms and Definitions

ADDENDUM
1. Staley Swing Door Key
2. GAL Swing Door Key
3. Gal Elevator Pick Tool
4. Otis Swing Door Key
5. "Z" Tool
6. GAL Drop Key
7. GAL Vandal Resistant Key
1. **INTRODUCTION**

1.1 This bulletin will outline the following:

1.1.1 Operational procedures used at EMERGENCIES and INCIDENTS in which people are trapped in stuck elevators.

1.1.2 Guidelines for the utilization of elevators by this department during a fire situation.

1.1.3 Familiarization of members with elevator components and terminology which are essential in effective and safe operations.

1.2 The instructions and information presented here cannot be expected to cover all conditions that confront the department at elevator operations.

1.3 Members are advised that the training video "Elevator Emergencies" contains additional details.

2. **ELEVATOR INCIDENTS AND EMERGENCIES - DEPARTMENT POLICY**

2.1 The function of the Fire Department at elevator operations is limited to the safe removal of persons trapped in the elevator car or hoistway. Repairs to and reactivation of elevators are not carried out by members of this department.

2.2 Contact shall be made with responsible building management personnel for any information and assistance that will aid the operation. However the first units at the scene should start operations at once without awaiting arrival of the management personnel.

2.3 In the event there is evidence of injuries to trapped persons, the officer in command shall request the response of medical assistance.

2.4 Fire Department elevator operations are divided into two categories; INCIDENTS and EMERGENCIES.

2.4.1 INCIDENT:

A stuck elevator with trapped passengers not in immediate danger and no evidence of injury.

**Note:** Conditions must be constantly monitored, an INCIDENT may escalate to an EMERGENCY.
2.4.2 EMERGENCY:

A situation where one or more of the following exist:

A. Fire endangering passengers in a stuck elevator.
B. Passenger of stuck elevator injured.
C. Passenger of stuck elevator in panic.

3. ELEVATOR INCIDENT AND EMERGENCY - PROCEDURES

3.1 Stuck Elevator Cars.
Problems arise from defective or non-functioning electrical or mechanical devices and equipment.

3.1.1 Electrical problems are the most frequent cause of elevator malfunction.

A. Common causes of electrical problems:
   1. Car or hoistway door contacts open.
   2. Blown fuses.

B. When an electrical problem occurs the following can be expected:
   1. Elevator cars will be suspended on the hoistway cables.
   2. Elevator brake will be applied in the hold position.

3.1.2 Mechanical problems, though not as common, may also be encountered.

3.2 Size Up

3.2.1 Locate the car using the following.

A. Lobby control panel - check floor indicator.

B. If available use intercom or telephone system of the stuck car. Passengers may be able to give their approximate location.

C. Open the hoistway door at first floor with elevator key and look up shaft. Key devices are usually required at the lower levels and may be present at all levels.
1. If the hoistway door has a glass panel check the shaft before opening the door. Using a flash light, look for the governor ropes and the counterweight. Movement of either one of these is an indication that the car is in motion, do not open the hoistway door. The governor rope is generally located on either side near one of the far corners of the shaft.

D. The location of the counterweight can be used to approximate the position of the car. For example, in a 6 story building where the elevator serves the basement, if the counterweight is on the 1st floor, the stalled car would be at the 5th. The counterweight can be located by viewing through the wire glass door panel or by opening a hoistway door.

E. Enter a car in the same bank and open top hatch if no damage will be done to the elevator car.

F. Use the floor selector in the machinery room, it indicates the exact location of elevator car.

3.2.2 Methods of communicating with passengers:

A. Elevator car telephone.

B. Elevator car intercom.

C. Call or yell up hoistway, or speak through car and hoistway doors.

Note: If emergency bell is ringing instruct the car passengers to deactivate the alarm and emergency stop button. A ringing bell can cause anxiety, confusion and hamper communications.

3.2.3 Methods of passenger removal:

A. Primary Removal Procedures, section 3.3.

B. Secondary Removal Procedures, section 3.6.

C. Emergency Removal Procedures, section 3.7.

3.3 Primary Removal Procedures

Primary removal procedures are simple approaches performed without turning off the elevator power.

There are two types of primary removal procedures. The order in which they are tried is not important. Try all if necessary.
3.3.1 Checking Electrical Contacts.

The first type of primary removal procedures checks whether simple electrical contacts might have been broken. However, if the passengers have activated the Emergency Stop Button, these methods will not work. The passengers must be instructed to deactivate the Emergency Stop Button.

A. Have a passenger press Door Open Button. If the car is level with the landing this may open both the car and hoistway door.

B. Press lobby call button.

C. Instruct passengers to insure the car door is fully closed. Have a person push the door towards the closed position.

D. Have members physically close all hoistway doors on the shaft. Air movement in shaft may have opened an interlock cutting power to the car. Check the hoistway doors in the vicinity of the stuck car first.

3.3.2 Firemen Service.

The second type of primary removal procedure is activating Firemen Service if available. Firemen Service will over ride the Emergency Stop Button.

A. Activate Firemen Service - Phase I. The stuck elevator may return to the main lobby or sky lobby and open its doors.

B. Firemen Service should be deactivated when the car responds by returning to the lobby or if it's clear that the car isn't responding.

3.4 Summon an elevator mechanic if Primary Removal Procedures fail.

3.4.1 Telephone number of the mechanic is required to be posted in the machinery room near the elevator power switch.

3.4.2 Consider the possibility of an elevator mechanic on duty in a nearby building.

3.4.3 Secondary Removal Procedures may be initiated prior to the arrival of the mechanic.

3.5 Precautions During Secondary and Emergency Removal Procedures.

3.5.1 Power Removal

Whenever Secondary or Emergency Removal Procedures are used, power removal is essential. Dispatch two members to the elevator machinery room to shut off the power to the stalled car. The machinery room may be located at the top of the shaft, at the bottom of the shaft or two levels above the highest floor serviced by the elevator.
A. Members should be equipped with a handie-talkie and forcible entry tools. Communication between members in machinery room and on landing is necessary.

B. Building maintenance personnel may be able to provide members with keys to the elevator machinery room.

C. Members assigned to the elevator machinery room will:

1. Determine which shaft the stalled car is in.

2. Shut off power to the stalled car when directed. Each elevator is controlled by its own power switch. Elevator power switch boxes and motors are required to be labeled in a manner which relates motor to switch. (Ex. Switch #1, Motor #1)
   a. If any doubt exists, open as many elevator power switches as required to insure a safe operation. Allow passengers to exit a serviceable car before removing power.

3. Remain at the power switch throughout the operation to insure the power is not restored.

4. Upon completion of the operation DO NOT restore power to the stalled car.

**Note:** When operating in elevator machinery rooms, located above the shaft, members should avoid stepping on the cover or grating over the elevator shaft ventilation opening. The grating may be improperly seated or removed and replaced with cardboard or other flimsy material. A member stepping on an unsafe grating or covering could fall the entire height of the shaft. The ventilation opening is also known as the smoke hole.

3.5.2 Other Precautions.

Once you move beyond the Primary Removal procedures there are several precautions you should be aware of.

A. Members are not to enter the shaft or remove passengers from the car until assured power has been removed.

B. When passengers are removed from a car between floors they should be taken up and out of the car if practical. This eliminates the possibility of a passenger falling down the shaft after exiting the elevator. If they are removed to the lower landing, the shaft opening must be protected.

C. Members operating in the shaft are to be secured by a life saving rope.
D. Members shall not normally be permitted to enter the shaft below the elevator car. During a rescue necessitating members entering the shaft below the car, the power switch must be turned off.

E. The elevator shall never be jacked up or moved in an upward direction. This action may free the car safeties causing the car to move either upward or downward depending on the live load in the car.

F. No adjustment to or prying of the elevator machinery brake shall be attempted. The brake will be in a safe position and should not be tampered with.

G. In older elevator installations if the condition of the elevator brake is doubtful additional protection can be provided by placing a heavy timber, iron bar or tool between the spokes of the hoisting drum after power is removed. In most newer installations this procedure can be dangerous and impractical. Electrical components are usually in a close proximity to the drum and most drums are constructed in a manner which prevents getting an effective purchase.

H. If conditions indicate that the elevator is unstable, additional precautions must be taken to prevent the movement of the car in either direction. Consider securing the car to structural members of the building using utility ropes, chains or shoring.

3.6 Secondary Removal Procedures

3.6.1 All efforts must be made to remove passengers via elevator car and hoistway door using an elevator tool or key or the procedures following in sections 3.6.3 & 3.6.4.

A. See addenda to this bulletin for a description of elevator keys and tools and instruction for their use.

3.6.2 Passengers of the stuck car can assist in their removal. Direct the passenger of the car to attempt to open the car door by physically exerting pressure toward the open position. If they succeed in opening the car door instruct them to lift the locking arm on sliding hoistway type doors, or to depress or lift the roller on hinge type hoistway doors.

3.6.3 If the elevator has a two speed system, commonly found in buildings over 10 stories, the following procedure may work:

A. If Emergency Stop Button has been activated have passengers deactivate it.

B. Have members in elevator machinery room shut power to the stuck car and turn it on again.
Note: This is the only circumstance in which the elevator power may be restored by members of this department. If this procedure fails, power must be shut off and members are not to restore power after completion of operations.

C. If the car is to restart it will do so within 10 seconds.

D. Communications must be maintained when attempting this procedure. Passengers and members must be prepared for the sudden movement of the car or car door.

3.6.4 If stuck car is in a multi car hoistway "POLING" can be used to remove the passengers:

A. Have member work from an adjacent car which is nearest the leading edge side of hoistway door of the stuck car.

B. Adjacent car should be positioned to give access to upper portion of the hoistway door to be opened.

C. Have one member remain on the landing at the hoistway door of the stuck car.

D. Member in the adjacent car inserts pole or hook between the striking post and the hoistway door and trips the lock by either depressing the roller or pushing on the locking arm.

1. Hinge type door - Depress the roller.

2. Sliding type door - push up on locking arm.

E. Member on the landing near hoistway door of the stuck car opens hoistway door when the lock is disengaged.

F. If an elevator car door zone lock is encountered, follow procedures to disengage device as outlined in Addendum 8.

3.7 Emergency Removal Procedures

This section outlines procedures which may only be used during an EMERGENCY as defined in section 2.4.2, or when directly advised by an elevator mechanic. Primary and secondary procedures are usually quicker and more efficient than the methods outlined in this section. The decision of what method to use will be based on the size-up of the officer in command.

3.7.1 Power to the stuck elevator must be off when you use Emergency Removal Procedures. This should have been done before trying Secondary Removal Procedures.

3.7.2 An elevator car will have a top hatch or a side exit - sometimes both. One of these may provide a route by which you can remove trapped passengers.
A. Top Hatch Removal.
   Although the law prohibits welding or bolting top hatches shut on elevators, it does happen and it can make this procedure very time consuming.

1. Open a hoistway door or access panel (required in single car blind hoistways) on floor above the stuck car.

2. Provide adequate lighting.

3. Lower a portable ladder to the elevator roof. Use straight ladder if possible. If an extension ladder is used tie the halyard around the rungs of both sections of the ladder. This will prevent the lower section from dropping on to the car roof.

4. Climb down to the car roof. Maximum of two firefighters are to be permitted on the roof of the car at one time.

5. All members working in the shaft are to be secured with a life saving rope.

6. Open the top hatch.
   a. This may require the use of a wrench or screw driver.
   b. Forcible entry tools may be required.

7. A small portable ladder is lowered into the elevator.

8. One member equipped with a handie talkie enters car. Member in the car must determine the order of removal. Secure each person with a life saving rope.

9. Members are to remain in physical contact with trapped persons while they are being removed.

B. Side Exit Removal.
   Useful under conditions of partial power loss in multi-car hoistways. It may not be useful where a structural beam blocks a side exit or the rescue car can't be brought level with the stuck car.

1. Members must work from a car that is in the same bank and is adjacent to the stuck car. This will become the rescue car.

2. Bring rescue car even with stuck elevator.
   a. If mechanic is present, use his operating key to bring the car level with stuck car.
3. Remove power to rescue car. Power to the stuck car was previously removed.

4. Open side exit in rescue car.
   a. A key or forcible entry is required to open panel from inside the car.

5. Open side exit of stuck car. It is openable by hand from the shaft side.

6. Planks of sufficient lengths (6' or longer) should be used as a bridge between cars.

7. Member equipped with a handie talkie and secured with life saving rope crosses planks to the stuck car.

8. Member determines the order of removal. Secure each passenger with a life saving rope and assist them to the rescue car.

9. After passengers are removed restore power to the rescue car.

3.7.3 Forcible Entry

Forcible entry of hoistway and elevator car doors should only be attempted under the direct advisement of an elevator mechanic or as a last resort during EMERGENCY REMOVAL PROCEDURES. The deformation of the doors and locks may add to the problem and delay the rescue. Upon completion of forcible entry operations have maintenance personnel secure the hoistway door or have police or security warn people of the danger.

Choose one of the following procedures based on the type of hoistway door.

A. Hinged door.

1. Knock out glass panel if present. If not, breach hoistway shaft above hoistway door

2. Push down roller, located near side opposite hinges, on shaft wall.

3. Open hoistway door.

4. Push open elevator car door.

B. Slide type door.

1. Maxi Force Air Bag System.
   This is the preferred forcible entry method. It is less likely than the others to push the door off its hangers or out of its track.
   a. Take a small purchase with a forcible entry tool.
b. Place bag between the leading edge of the door and jamb as high as possible to apply a more direct force on the linkage and the locking mechanism.

c. Position the bag to permit the center of the air bag to be as close as possible to the door edge. This increases the spreading capability of the air bag. It may be necessary to have a passenger in the car push open the car door to permit the air bag to obtain a good purchase.

d. Inflate air bag until hoistway door opens.

ey. If necessary push open elevator car door.

2. Rabbit Tool

a. Use forcible entry tool to gain a purchase for the jaws of the rabbit tool.

b. Insert the jaws of the Rabbit Tool between the jamb and the leading edge of the hoistway door, as high as possible.

c. Ensure that the tool is flush with the hoistway door.

d. Operate tool to open door taking care not to cause the door to come off its track.

ey. If necessary push open elevator car door.

3. Forcible entry tools

a. Go to landing directly above door to be opened.

b. Use a forcible entry tool to lift hoistway door out of its guide.

c. Tilt bottom of the hoistway door slightly into the shaft, just enough to allow the passing of a hook into the shaft.

**Note:** Care must be taken not to tilt the door too much. It may dislodge from hanger and drop into the shaft.

d. Use a hook to reach down to the lock arm mechanism and pull it up.

ey. If necessary push open elevator car door.

C. Blind hoistway.

1. Determine the side of hoistway the car door faces.

2. Breach hoistway wall on that side.

3. Push open elevator door.
4. **ELEVATOR PIT OPERATIONS**

4.1 Elevator Pit Description.

The Elevator Pit is the lowest portion of the elevator shaft.

4.1.1 Types of Elevator Pits.

A. Jump Pits.

1. Usually 4' to 6' from lowest landing level to base of pit.
2. Elevator descends to within a couple of feet of the bottom of the shaft.
3. Pit is entered by opening the lowest hoistway door and using a portable ladder.

B. Walk In Pit.

1. Usually 6' to 10' from lowest landing to base of pit.
2. Car descends to the floor level above bottom of shaft.
   a. A high buffer and lower limit switch prevent the car from entering the pit.
3. Access to the pit is via a door located at the bottom of the shaft.
   a. Door is not required to have an interlock switch.
   b. Door is opened by a regular key. Emergency elevator keys are not usable.

4.2 Operations in Elevator Pits

4.2.1 Jump Pit.

A. Shut off elevator power switch.
B. Open the lowest hoistway door on shaft.
C. Use portable ladder to enter shaft.
D. For additional safety, trip lower limit switch and secure it in an open position.
4.2.2 Walk In Pit.

A. Shut off elevator power switch.

B. Enter via pit door.

C. If there is a fire in the pit, be cautious of the buffers (a device designed to stop a descending elevator beyond the normal limits of travel), they may be filled with combustible or inflammable liquid.

D. In an EXTREME EMERGENCY (immediate action necessary to save life) entry to a Walk in Pit before the elevator power switch is off may be made using the following precautions:

1. Open a hoistway door on shaft to be entered. The interlock will prevent car from moving.

2. Use caution around mechanical and electrical components.

3. Turn off power as soon as possible.

5. FIREMEN SERVICE

All Fire Department personnel should be familiar with the operating procedure and limitations of Firemen Service. This section describes Firemen Service components and operational procedures. Section 6.4 outlines use of Firemen Service during fire operations.

Note: Members of the EMS Command have been issued FDNY 1620 keys for use of the Fire Service feature in elevators. Members arriving at incidents and discovering Fire Service elevators in use shall contact the EMS unit on Fire HT Channel 1 to coordinate elevator operations.

5.1 Firemen Service Regulations.

5.1.1 Firemen Service is required in all elevators that serve three or more landings or travel 25 feet or more if plans for the elevator were filed after January 1, 1980.

5.1.2 Firemen Service elevators are required in all buildings classified in occupancy group E whose plans were filed subject to Local Law #5.

5.1.3 Firemen Service elevators are required in buildings classified in occupancy group E and deemed as an "existing building" under Local Law #5 if the building is 100 feet or more in height.
5.1.4 In all buildings classified in occupancy group E, 100' or more in height, the number of elevators that must be equipped for Fire Service is as follows:

A. Where a floor is serviced by three or less elevator cars, every car shall be equipped for Firemen Service.

B. Where a floor is serviced by more than three elevator cars, at least three elevator cars with a total rated capacity of not less than 6,000 pounds shall be equipped for Firemen Service. Such cars shall include not more than two cars which serve all floors, and at least one other car in another bank servicing that floor.

C. If the total load capacity of all cars servicing the floor is less than 6,000 pounds, all such cars shall be Firemen Service.
SKY LOBBY
Elevator transfer point to reach top or return to bottom of structure.
Fireman Service Lobby Switch Plates

Often Abbreviated as
Off *
On **
DO ***

Fig. 2A

Fig. 2B
5.2  Firemen Service Controls.

5.2.1  Lobby Keyed Switch.

A. A switch at the street floor or terminal floor for each bank of elevators. Terminal floor is the lowest landing above the street floor of any elevator that does not serve the street lobby floor, also known as a Sky Lobby. (Fig. 1)

B. The key switch is required to be within 4 feet of the lobby call button.

C. The key switch is operated by use of the Fire Department 1620 key, or by city wide standard elevator 2642 key.

Note: Worn keys may not work.

D. Switch Configurations.

1. Three position key - Normal, Firemen Service and door open. (Fig. 2A)

2. Two position key - Normal and Firemen Service with a door open button. Door open button is required to be located in the same faceplate as the key switch. Button is only operable when key switch is in the Firemen Service position. (Fig. 2B)

Note: In both situations the cylinder face is approximately 1 1/2" in diameter and colored red. Switch faceplate is required to be inscribed "for fire department use only" or similar terminology.

E. The Normal and Firemen Service position in the keyed switch permit the removal of the key. The key is not removable in the door open position.

5.2.2  Elevator Car Keyed Switch.

A. Firemen Service keyed switch is provided inside each Firemen Service elevator car.

B. This switch is identified by red lettering "FOR FIRE DEPARTMENT USE ONLY" and has two positions. Normal and Firemen Service.

Note: Elevators approved for installation after March 1991 are required to be equipped with a three position switch:

NORMAL  HOLD  FIREMAN SERVICE

The Hold Position has the following features:

1. Permits the firefighter to remove the 1620 key from the switch.

2. Allows the firefighter to leave the car without the danger of an individual, without a key, moving the car to another location.
3. A firefighter with a 1620 key can move the car by changing the switch position from HOLD to FIREMAN SERVICE.

THIS ACTION SHALL NOT BE TAKEN WITHOUT FIRST INFORMING THE FIREFIGHTERS OPERATING ON THAT FLOOR.

4. Elevator cars equipped with a two position switch are not required to be retro-fitted with a three position switch.

C. To operate the car, the switch must be placed in the Firemen Service position while the car is at the landing where the lobby keyed switch is located.

D. The lobby keyed switch must be in the Firemen Service position prior to placing the car keyed switch to Firemen Service.

E. Once the car switch is in the Firemen Service position it can not be overridden by the lobby keyed switch.

F. The 1620 key is not removable from the elevator car keyed switch when it is in the Firemen Service position.

5.3 Operation of Firemen Service.

5.3.1 Phase I - Recall Phase.

The recall of ALL elevators in the bank to the street or terminal floor either automatically or manually.

A. Manual Recall.

By the use of the 1620 key at the keyed switches located in the elevator lobby at the street floor or terminal floor.

Note: For elevators whose terminals are above the street floor (sky lobby), a two position keyed switch will be at the fire command station. The switch will allow the elevators to be brought down non-stop to their lowest floor landing. A three position keyed switch will also be at their terminal floor landing.

B. Automatic Recall.

1. Activation of elevator landing smoke detector.

2. Water flow from a sprinkler system.
Note: If the Firemen Service Phase I was initiated automatically by the activation of a lobby smoke detector or sprinkler water flow, the elevator cannot be returned to normal operation until the smoke detector or water flow alarm has been cleared.

C. Initiating Phase I Recall.

1. If Phase I (recall phase) has not been initiated upon arrival, Phase I shall be initiated and all cars accounted for and examined as they arrive at the street lobby floor.

2. If Phase I has been initiated before arrival and all elevator doors are closed, the following procedures are to be followed.
   a. Determine if Phase I was initiated manually or automatically.
   b. If Phase I was initiated manually the Firemen Service lobby keyed switch will be found in the Firemen Service position. Place the Firemen Service lobby keyed switch momentarily in the "Normal" (OFF) position. Then return it to the Firemen Service position. This will cause all elevator car doors in this bank to open.
   c. If Phase I was initiated automatically (by lobby smoke detectors or sprinkler water flow), place the lobby keyed switch in the "Door Open" position. The doors of the Firemen Service cars will then open. In some older installations the doors of the non-Firemen Service cars will not open and must be opened by use of the emergency hoistway door key.

D. Results of Initiating Phase I Recall.

1. By placing the keyed switch in the Firemen Service position, all elevators in that bank will be returned to the street lobby or terminal floor.

2. An elevator traveling away from the street floor or from its lowest landing floor will reverse direction at the next landing without opening its doors, and return non-stop to the street lobby or terminal floor.

3. Doors opened at any floor will immediately close and the elevator shall return non-stop to the street or terminal floor.

4. Door reopening devices for power operated doors, which may be affected by smoke, heat or flame so as to prevent door closure, shall be rendered inoperative except for those mechanically activated by a safety edge.

5. "Emergency Stop" buttons will be rendered inoperative.
6. When the elevator car reaches its terminal floor, one of the following will occur:
   a. All car and hoistway doors open. The doors remain open for at least 8 seconds and no more than one minute and then close.
   b. All car and hoistway doors open. The Firemen Service elevator car and hoistway doors remain open with the car lights remaining on. Non Firemen Service elevator car and hoistway doors close between 8 seconds and one minute after opening.
   c. All elevator car and hoistway doors open and remain open. The car lights in the Firemen Service elevator cars remain on and the lights in the Non Firemen Service cars go off.

   Note: Option "c" is required for all installations for which plans were filed after 1980.

   Caution: Do not return the switch to the "normal" position at this time.

5.3.2 Phase II - Operational Phase.
   The actual operation of the elevator car by use of the controls located within the car.
   
   A. Operations:

   1. Place the 1620 key in the car Firemen Service switch and turn to the Firemen Service position.
   2. Press the car "Door Close" button and select a floor. It is not important which floor button is pressed first.
      a. In some elevator cars there may be two floor selection panels. The one to use for Firemen Service is the one nearest to or the one with the Firemen Service keyed switch.
   3. As soon as the car begins to move, press the "Call Cancel" button to verify the operation of the "Call Cancel" button.
      a. If the car stops at the next available landing in response to the "Call Cancel" button, select the desired floor on the "Floor Selection" panel.
      b. If the car does not stop at the next available floor in response to the "Call Cancel" button:
         1) Immediately select the next available safe floor. If the car stops at the next available floor, press the "Door Open" button and leave the car. Notify the officer in command that the car is out of service.
2) If the car does not stop at the next available floor, attempt to stop the car by forcing the car doors open, thus interrupting the interlock relay switch. Notify the officer in command and initiate emergency evacuation procedures.

4. If more than one floor selection is made, the elevator car will stop at the nearest floor selection in the direction of travel.

5. If the car is operating normally when you reach the selected floor, press the "Door Open" button. You must keep your finger on this constant pressure button until the door is fully open, otherwise the door will close on its own. This is a built in safety feature.

6. If the doors open on heat and smoke, the simple removal of the finger from the "Door Open" button should enable the doors to close.
   a. If they fail to close automatically, press the "Door Close" button and manually assist the closing.
   b. If the car doors still fail to close, don Mask facepiece, evacuate the elevator and proceed to the nearest safe stairway.

7. When the elevator doors have fully opened, the elevator car will remain at the selected floor, with the doors open.

8. The elevator car shall not be returned to the lobby street floor until the officer has determined that the unit has arrived at the proper location.
   a. Due to internal building security, it is often necessary to force your way out of an elevator landing area on upper floors. Units may have to force their way from the elevator lobby to a fire stair or fire tower, either for reasons of safety or in order to operate. Someone should stay with the elevator, to see that it is not moved from the floor, until safe access to the fire stair or fire tower is assured.

9. To move from any floor, the "Door Close" button must be pushed, and another floor selected.

10. An elevator can be placed on Firemen Service or taken off of Firemen Service only when the car is at the landing where the lobby keyed switch is located.

11. Once a Firemen Service car has been placed in Phase II operation, it will continue in Phase II operation, regardless of the Position of the lobby keyed switch. This feature may be utilized to restore other cars in the elevator bank to normal operation, while the Fire Department continues to use the Firemen Service car or cars.

12. When an elevator car has been placed on Firemen Service, it shall be operated by a member equipped with a handie talkie and forcible entry tools.
5.3.3 Controls for Phase II.

A. Door Close Button.

1. It is a momentary touch type button.
2. Once fully opened the elevator car doors close only in response to the Door Close Button.

B. Floor Selection Button.

1. When the car is in Firemen Service, the car responds only to the floor selected by the Floor Selection Button in the car.
2. All elevator landing call buttons are rendered inoperable on landings served by this elevator.

C. Call Cancel (reset) Button.

1. The Call Cancel Button allows the operator to change floor selection or direction of travel prior to reaching the original selected floor.
2. When the Call Cancel Button is operated, the elevator car stops at the next available floor landing (i.e., the first floor, in the direction of travel, that the elevator is electrically and mechanically capable of serving). The doors remain closed. A new floor selection must then be made.
3. It is recommended that the Call Cancel Button be pressed whenever a member enters a car on Firemen Service to clear the floor selection panel of any previous floor selection that may have been made.

D. Door Open Button.

1. The elevator door opens only when the Door Open Button is pressed.
2. The Door Open Button must be held until the doors are fully opened.
3. If the Door Open Button is released before the doors are fully opened, the doors return to the closed position. This feature is provided so that the release of the Door Open Button will automatically close the doors in the event the car inadvertently stops at the fire floor.
4. Members leaving the elevator car must verify that the doors are fully opened. If the member leaves the car before the doors are fully opened, the door will close behind him, isolating the car and placing it out of service.
E. Emergency Stop Button.

1. The Emergency Stop Button is rendered inoperative during the Phase I operation.
2. The Emergency Stop Button should be operational during Phase II operation.
3. Activation of the Emergency Stop Button in Phase II will quickly stop the elevator car.

6. ELEVATOR OPERATIONS DURING FIRE OPERATIONS

6.1 General Procedures.

6.1.1 Account for all elevators serving the fire floor, checking them for victims.

6.1.2 When it is confirmed that the fire is on the 7th floor or below units should avoid the use of elevators. It is safer to utilize the stairway to reach the fire floor.

6.1.3 Do not use an elevator in a bank which services the fire floor if a lower bank of elevators reaches within five floors of the fire floor.

6.1.4 When it is necessary to use an elevator in a bank which serves the fire floor:
   A. If Firemen Service is available, use a car with the Firemen Service feature.
   B. Select a floor at least two floors below the fire floor or two floors below the lower level of an access stair in the fire area, whichever is lowest.

6.1.5 Be aware that in many high rise office buildings the service/freight elevators have been converted for Firemen Service.

6.1.6 Before entering the elevator car, all members shall have donned their mask. The facepiece shall be maintained in the standby position.

6.1.7 There must be a member equipped with a handie-talkie in each car whenever the elevator is in use.

6.1.8 Not more than six members are to be permitted in any elevator car. This precaution is required to prevent overloading.

6.1.9 Forcible entry tools must be carried aboard each elevator car.
   A. In the event the car does not stop at the selected floor, a tool may be used to pry the elevator car door open disengaging the car door interlock.
   B. In the event the car should become disabled a tool may be needed to extricate the members.
   C. Tools may be required if elevator gives access into a secured area.
6.1.10 Elevator should be stopped every five floors (precautionary stops) to confirm that the elevator will respond to the selected floor. At each stop a new selection must be made.

6.1.11 Before leaving the lobby and at each precautionary stop direct a flashlight up between the elevator car and the hoistway shaft to determine if there is any accumulation of smoke in the elevator shaft.

6.1.12 The relationship of the elevator to the stairway should be noted. This can be accomplished by inspecting the "YOU ARE HERE" sign which is required to be posted at each floor near the call button. This should be done at the first and last precautionary stop. Floor configurations may change.

6.1.13 Determine as soon as possible if the location of the fire could affect the elevator operation.

6.1.14 Members must be careful during any emergency stop. They should prepare themselves for the jolt of a fast moving elevator car stopping abruptly.

6.1.15 If you are in a smoke filled hallway, remember, elevator doors will swing toward you and apartment doors will swing away from you. If the electric interlock malfunctions it might be possible to open the elevator door and not have the car on that floor.

Some elevator doors are of the sliding type. If forced by mistake due to smoke conditions, they may pop inward and be mistaken for an apartment door.

6.2 Affects of Fire on Elevator Components

6.2.1 Mechanical or electrical systems can become affected by heat or water causing erratic behavior of the elevator car.

A. Elevator car may move leaving a hoistway door in open position.

1. Consequences:
   a. Injury to operating personnel.
   b. Elevator shaft unprotected, possibly indiscernible in a smoke environment.
   c. Delay in firefighting.

2. Precautions:
   a. During fire operations do not straddle elevator doors to hold the car. Use Firemen Service if available or folded lengths of hose to hold car.
   b. If the elevator moves leaving the door open, close the hoistway door manually if possible.
B. Hoistway door warped by heat.

1. Consequences:
   a. Interlocking device inoperative.
   b. Elevator stalled in shaft.
   c. Possibly trapped passengers in car.

2. Precautions:
   a. If possible avoid using elevator cars that service the fire floor.

C. Malfunction of interlock of hoistway door.

1. Consequence:
   a. Member might be able to open swing type door with no elevator car at landing.

2. Precautions:
   a. Feel for floor before moving through doorway.

D. General Precaution:

1. In any situation where the elevator operates erratically, exit the car at the nearest safe floor. Place the car out of service, either via the car controls or by blocking the car door. Notify the Officer in Command immediately.

6.3 Firefighters trapped in stalled elevator cars during fire operations.

6.3.1 Operations of Fire Department members in a stalled car.

A. If elevator car door opens on fire floor (heat, smoke), attempt to close the door.

1. Push Door Close Button.
2. Force door closed.

B. Select lower floor.

C. If car fails to move:
1. Check Emergency Stop Button, it may have accidentally been activated. Deactivate it by pulling it out, or if switch type, moving switch to off position.

2. Open Top Emergency Exit to relieve smoke in car.


4. If necessary don Mask facepiece. Remember it is important to conserve air.

5. Communicate situation to officer in command.

6. If necessary use side emergency exit for rope slide to the safety of lower floor. Have power removed to the adjacent car if this is to be attempted.

7. In an EXTREME EMERGENCY, Fire Department hose can be used to slide down to the floor below. If more than one length of hose is used, first tie the lengths together, then couple them.

8. Members can be lowered to the hoistway door interlock and exit at the floor landing below the fire.

9. Hose line on the floor below can be used to spray a fog stream between the car and the hoistway door. A 30 degree fog pattern should be used to cool and protect trapped persons during the rescue operation.

6.4 Firemen Service During Fire Operations

6.4.1 Assure the elevators serving the affected areas have been placed on Firemen Service.

6.4.2 When Firemen Service is available use the elevator cars so equipped.

6.4.3 First arriving units should, if possible, initially avoid a Firemen Service elevator which is capable of stopping at all floors. Many of the converted "Service" freight elevators are so arranged, and therefore are capable of being affected by fire on any floor. Only after the officer in command has determined that the fire is not adjacent to the shaft should these elevators be utilized. (Experience indicates that many fires in high-rise office buildings have been found in the service elevator lobby, in piles of collected rubbish. Heat and flame have affected the doors and control wiring of nearby service elevators).

6.4.4 Members shall never take a Firemen Service elevator which services all floors to go above the fire. When assigned to go above the fire via an elevator, choose an elevator which has a blind shaft on the fire floor. Remember a "Firemen Service" elevator is not necessarily a "safe" elevator. It can still be affected by heat, smoke or water entering the shaft. If there is no blind shaft elevator to go above the fire, stairs shall be used.
6.5 Operational Considerations

6.5.1 Locked Hoistway Doors.

A. For security reasons, some occupants lock the hoistway door on their floor when closing.

B. If your elevator arrives at the selected floor, but the car door does not open, make no attempt to force it. In this instance, the locked hoistway door, attached via the vane to the elevator car door, is keeping both doors closed. Any attempt at forcing them open may damage the interlock putting the car out of service.

C. If your car arrives at a floor and the car door opens revealing a locked hoistway door, the following considerations must be made:

   1. If the hoistway door security lock can be removed or opened with no damage to the door, do so.

   2. If removal of the locking device threatens any bending or warping of the door or door buck, make no attempt at removal. Warping or springing of the door assembly may interfere with the car’s electrical circuits, putting the car out of service.

D. A preferable method, in both 1 and 2, is to drop down to a floor where exit is possible. Find the stair and move up to the original floor.

Note: In high rise buildings, on the street floor and above, any locks placed on passenger elevator car or hoistway doors must be openable with a 1620 key.
7. BUILDING CODE REGULATIONS EFFECTING FIRE DEPARTMENT OPERATIONS

7.1 Accidents.

7.1.1 The Building Department is required to investigate elevator accidents. Officers in command at such occurrences are to notify the Building Department via the dispatcher.

7.2 Mechanical Features.

7.2.1 The winding drum or traction sheave machinery is required to have a mechanical brake that is applied automatically when the power is removed from the system. The brake shall only release when the power is restored.

7.2.2 A manual power control switch for each elevator is to be located adjacent to, and visible from, the elevator machinery.

7.2.3 A mechanical safety device is attached to the car frame. It will be brought into play when any of the following conditions exist:

A. Car over speed.
B. Car free fall.
C. Slackening of the hoistway cable. Car safety devices will apply with downward motion of the car and may be released by reverse or upward motion of the car.

7.2.4 In automatic cars a transfer switch that puts the car solely under the control of the car operator must be provided. Elevator mechanics and some building service employees have operating keys.

7.3 Emergency Removal.

7.3.1 Emergency hoistway door key hole and keys themselves are to be of such a design that inhibits the use of common tools.

7.3.2 In a single car blind hoistway, emergency access openings shall be provided at every third floor, but not more than 36 feet apart.

7.3.3 If emergency side exit door is provided it must have the following features:

A. Hinged to open into the car.
B. Locking device that requires the use of a key inside the door.
C. A means of being opened by hand from the shaft side.
D. Line up with the door of adjacent car.
E. Be within 3 feet of the adjacent car side door.
F. An electrical door contact that will prevent motion of the car when the door is open.

7.3.4 Top Emergency Exit.

A. Cars installed under the 1938 Building Code.
   1. Top hatch required in all cars.
   2. Opens outward.
   3. Designed to unlock by thumbscrew from inside and outside of the car.
      
      **Note:** To prevent access to the car roof by juveniles and vandals many have been bolted closed in the interest of safety.
   4. May have a contact power switch.

B. Cars installed under the 1968 Building Code.
   1. Top hatch required in all cars.
   2. Opens outward.
   3. Not required to be openable from the interior of the car.
   4. Openable from exterior, wrench or screwdriver usually required.
   5. May have contact power switch.
   6. May be concealed by grill work, lights, mirrors or other decorative finish.
8. ELEVATOR TERMS AND DEFINITIONS

Alarm button (switch) - Button (switch) in elevator car which activates the alarm bell.

Car Door - Elevator car door.

Car Door Contact - An electrical device used to prevent the operation of the car unless the car door is in the closed position.

Car Safeties - Stop car in the event of an emergency. Controlled by car governor.

Counterweights - Used to counterbalance the weight of the elevator car.

Elevator Car Selector - Panel inside car containing emergency stop button, alarm button, door open button, floor selection buttons and Firemen Service key switch if required.

Elevator Control Panel - A visual display unit located in the lobby which indicates the status and location of all elevator cars and the necessary controls for the operation of the cars. Common in High-Rise buildings.

Elevator Door Vane - The connection between the elevator car doors and the hoistway doors. It allows the elevator car door to drive the hoistway door.

Elevator Machinery Room - Area where the equipment that raises and lowers the elevator is located. Usually located at the top of the shaft, machinery room may also be found at shaft bottom or two floors above the highest floor serviced by the elevator.

Elevator Motor - Turns winding drum raising and lowering elevator car.

Emergency Stop Button - Elevator car button which when activated cuts power to car and sounds alarm bell. Note: Do not rely on this button, elevator power switch must be used to insure motor power is off.

Emergency Escape Ladder - On the top of some elevator cars used to assist in top hatch removal operations.

Emergency Exit - Side door of a car in multi car hoistways.

Final Lower Limit Switch - A switch located in the elevator pit which prevents the elevator from descending too low in the shaft. When tripped by elevator it cuts the power to elevator motor. Acts as a backup to lower limit switch.

Firemen Service - A feature required in many elevators which enables the department to gain control of the elevators.
Floor Call Button - Located at elevator floor landing, used to call car to the floor when service is desired.

Floor Selector - Located in the machinery room can be used to determine the exact location of the elevator.

Governor - Regulates elevator car speed. Also engages car safeties and shuts off electrical power in the event of free fall or over speed.

Governor Rope - A wire rope or cable which travels with the car. If engaged by the governor it mechanically activates the car safeties.

Hoistway - The shaft the elevator moves in. Types: Single car (local service), multi car (local service), single car blind (express service), multi - car blind (express service).

Hoisting Cable - Cable (cables) used to raise and lower the elevator.

Hoistway Door - door leading from landing to elevator shaft.

Interlock - A switch on hoistway door, and some emergency exits that will prevent the elevator from moving when in open position.

Key 1620 - An official Fire Department alarm box key.

Key 2642 - Standard key used by elevator industry. This key is interchangeable with 1620 key for operation of Firemen Service elevators

Limit Switch - A mechanical electrical device which is located at the top or bottom of the shaft. Its purpose is to prevent over extension of elevator car in an upward or downward direction.

Lower Limit Switch - A switch which stops the car in pit area, below lowest landing.

Main Electrical Power Switch - Located in machinery room, each switch controls the operation of one elevator.

Terminal Landing - lowest landing for discharge of passengers, may be at ground floor or above in which case it is known as a Sky Lobby.

Traction Sheave - Free turning pulley for elevator cables.

Ventilation Opening - "Smoke hole" - opening providing for the movement of air in the shaft caused by the movement of the elevator.