U.S. Fire Administration/Technical Report Series

Multiple Fatality Highrise Condominium Fire

Clearwater, Florida

USFA-TR-148/June 2002

FEMA

U.S. Fire Administration Fire Investigations Program

The U.S. Fire Administration (USFA) develops reports on selected major fires throughout the country. The fires usually involve multiple deaths or a large loss of property. But the primary criterion for deciding to do a report is whether it will result in significant "lessons learned." In some cases these lessons bring to light new knowledge about fire--the effect of building construction or contents, human behavior in fire, etc. In other cases, the lessons are not new but are serious enough to highlight once again, with yet another fire tragedy report. In some cases, special reports are developed to discuss events, drills, or new technologies which are of interest to the fire service.

The reports are sent to fire magazines and are distributed at National and Regional fire meetings. The International Association of Fire Chiefs assists the USFA in disseminating the findings throughout the fire service. On a continuing basis the reports are available on request from the USFA; announcements of their availability are published widely in fire journals and newsletters.

This body of work provides detailed information on the nature of the fire problem for policymakers who must decide on allocations of resources between fire and other pressing problems, and within the fire service to improve codes and code enforcement, training, public fire education, building technology, and other related areas.

The Fire Administration, which has no regulatory authority, sends an experienced fire investigator into a community after a major incident only after having conferred with the local fire authorities to insure that the assistance and presence of the USFA would be supportive and would in no way interfere with any review of the incident they are themselves conducting. The intent is not to arrive during the event or even immediately after, but rather after the dust settles, so that a complete and objective review of all the important aspects of the incident can be made. Local authorities review the USFA's report while it is in draft. The USFA investigator or team is available to local authorities should they wish to request technical assistance for their own investigation.

This report and its recommendations were developed by USFA staff and by Varley- Campbell and Associations, Incorporated (Miami and Chicago), its staff and consultants, who are under contract to assist the Fire Administration in carrying out the Fire Reports Program.

The U.S. Fire Administration greatly appreciates the cooperation received from the Clearwater, Florida Fire and Rescue Department.

For additional copies of this report write to the U.S. Fire Administration, 16825 South Seton Avenue, Emmitsburg, Maryland 21727. The report and the photographs, in color, are available on the Administration's Web site at http://www.usfa.dhs.gov/

Multiple Fatality
Highrise Condominium Fire
Clearwater, Florida

Investigated by: J. Gordon Routley
Thomas H. Miller, P.E.

This is Report 148 of the Major Fires Investigation Project conducted by Varley-Campbell and Associates, Inc./TriData Corporation under contract EME-97-0506 to the U.S. Fire Administration, Federal Emergency Management Agency.

FEMA

Department of Homeland Security
U.S. Fire Administration
National Fire Data Center

U.S. Fire Administration

Mission Statement

As an entity of the Department of Homeland Security, the mission of the USFA is to reduce life and economic losses due to fire and related emergencies, through leadership, advocacy, coordination, and support. We serve the Nation independently, in coordination with other Federal agencies, and in partnership with fire protection and emergency service communities. With a commitment to excellence, we provide public education, training, technology, and data initiatives.

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Multiple Fatality
High-Rise Condominium Fire
Clearwater, Florida
June 28, 2002

Investigated by: John Lee Cook, Jr. and Thomas H. Miller, P.E.

Local Contacts Rowland E. Herald, Fire Chief
Terry S. Welker, Deputy Chief
Randy Hinder, Fire Marshal

Clearwater Fire Department
610 Franklin Street
Clearwater, Florida 33756

John Lee, President
Local 1158, Clearwater Firefighters Association
International Association of Firefighters
806 Lakeview Road
Clearwater, Florida 33756

OVERVIEW

At approximately 05:00 hours on the morning of June 28, 2002, a fire started in the kitchen of a condominium located on the southwest corner of the fifth floor of an eleven story residential high-rise, built of fire resistive construction. The adult occupant of the unit attempted to fight the fire with portable fire extinguishers and an occupant use fire hose from the building's standpipe system before notifying the fire department or activating the building's fire alarm system, which was monitored by a central station fire alarm service.

The delayed alarm resulted in the death of two occupants of the building and injury to five Clearwater firefighters, which included serious burns to one firefighter that required over three months of recovery. Challenges encountered by arriving firefighters included lack of knowledge of a working fire by the first engine company due to communication difficulties, a shutoff standpipe riser, an out-of-service hydrant on the south side of the building, and deviation from standard operating guides for alarms in high-rise structures. After addressing these initial difficulties, the operation recovered and the firefighters extinguished the fire with a combined exterior and interior attack. Three alarms were called because of the injured firefighters; the need to search and evacuate a large building with a wide occupant age range and evacuation capabilities; and the early problems encountered with insufficient fire flow to extinguish the fire.

KEY ISSUES

Issues	Comments
Alarm System	When the first units arrived on the scene, an evacuation was not evident in spite of multiple alarm activations within the building. The occupancy had a history of unwanted and false alarms (seven in a sixteen month period) that may have caused some residents to ignore the alarm and may account for their failure to promptly evacuate the building.
Communications	The countywide trunked 800 MHz radio system uses a dispatch channel and tactical channels for units assigned to an incident. Some information about the upgraded alarm may not have reached the first engine company. Units operating at the incident were initially operating on a single tactical channel. The size and complexity of the incident resulted in too much traffic for one channel. Units were canceling each other's radio messages and the inability to communicate created confusion and frustration.
Construction	The fire resistive construction limited both the spread of the fire and the amount of damage sustained by the building. Doors to the individual condominiums on the fifth floor exceeded building code requirements and the majority of them were closed when the fire occurred. The doors held the fire in the hallway and prevented the fire from spreading into the individual units.
Center Loaded Corridor	The condominiums were arranged to open into a single interior corridor with stairs at each end and elevators near the middle. Smoke filling the corridor prevented occupants on the fire floor from safely evacuating, especially those at the west end.
Delayed Alarm	The occupant in the unit where the fire started attempted to fight the fire, delaying the notification of the fire department by approximately seventeen minutes. He had also propped open the door, which allowed the fire and smoke to extend into the hallway.
Elevators	At least three crews used the elevator to gain access directly to the fire floor, which resulted in one crew becoming temporarily trapped in the elevator.
Fire Suppression Systems	The building was not equipped with automatic sprinklers. There was a Class III Standpipe System and fire pump. The center standpipe riser valve was closed at the time of the fire stopping water flow to the riser.
Personnel Protective Clothing	Five firefighters were injured in this incident, including three that were possibly caught in a flashover. While they were burned, all of them survived because they had all of their protective clothing on, including their SCBAs. One of the firefighters was rescued when her PASS device actuated and her fellow firefighters were able to find her in dense smoke by following the sound of the alarm.
Pre-Incident Planning	Major target hazards, which include high-rise residential occupancies, should be preplanned. It is critical for fire crews to know in advance the location of fire protection systems, stairwells, utilities, etc.
Time of Day	The fire occurred during the early morning hours when the majority of occupants can be expected to be asleep, which may delay their awareness that there is a fire and has the potential to create a significant rescue problem.

THE COMMUNITY AND FIRE DEPARTMENT

Clearwater is situated on the Pinellas Peninsula, midway on Florida's west coast. The City is located directly on the Gulf of Mexico twenty miles west of Tampa and twenty miles north of Saint Petersburg. First settled in 1841, the community was incorporated on May 27, 1915. When the area, first known as Pinellas Point, was settled it was included as a portion of western Hillsborough County. As Clearwater, Largo, St. Petersburg, and other communities grew, the clamor for independence also grew because it was a daylong trip to travel to the county courthouse in Tampa. In response to the desires of the local residents, the Florida Legislature created Pinellas County on Jan. 1, 1912 and designated Clearwater as the county seat.

The population continued to steadily climb and after World War II, a number of soldiers who had trained in the community, returned there to live and the Philadelphia Philly's professional baseball team began spring training in Clearwater in the 1940s. Currently, there are approximately 109,000 permanent residents and an additional 20,000 winter residents. According to the 2000 Census, Clearwater has the highest percentage of residents age sixty-five and older for cities with populations greater than 100,000. The City's land area is 26.7 square miles and the City limits also include 8.6 square miles of water.

The Fire Department was organized in 1911 and currently operates seven fire stations with an eighth station scheduled to be built in the near future. With an authorized strength of 192 career employees (field and line: 162; fire prevention and public education: 12; and administration and support: 18), the department provides fire suppression and EMS first responder services at the ALS level. Pinellas County provides EMS transport service. Firefighters staff seven engine companies; two truck companies, six rescues (three with transport capability), and one heavy rescue company. Additionally, two fire command officers (District Chiefs) and one EMS Supervisor (Rescue Lieutenant) supervise each shift.

Firefighters are deployed in three platoons and work a series of rotating twenty-four shifts, which averages fifty-six hours per week. Minimum daily staffing is forty-four firefighters. The annual operating budget is $16 million. The Department responded to 21,500 alarms in 2001 (80% EMS); conducted 1,210 inspections, and made 13,000 public education contacts.

THE BUILDING

Constructed in 1974, the Dolphin Cove Condominium building is located at 255 Dolphin Point Road in the Island Estates area of Clearwater. The eleven-story building was built of fire resistive construction, which consists of eight to ten inch concrete block walls with six-inch concrete floors and ceilings and a flat, built-up roof. The first floor consists of a central lobby, an office, several public rooms, storage units, and covered parking; while floors two through eleven contain 134 dwelling units. There are thirteen units on floors two, seven, eight, nine, ten, and eleven and fourteen units on floors three, four, five, and six.

The interior of floors two through eleven consists of a T-shaped floor plan in a rectangular building, with two elevators and a laundry room in the center of the building on the short "T" leg. The main hallway is approximately 180 feet long and the corridors are constructed of drywall on metal studs with a one-hour fire rating. Doors to the units on the fifth floor exceeded the twenty-minute fire resistance rating required by code. A stairwell is located at each end (east and west) of the hallways and they are enclosed in concrete blocks with a two-hour rating. The u-return stairs are constructed with concrete steps and the stairwells discharge directly to the exterior of the building.

The streets of Dolphin Point bound the site on the north, Dory Passage on south, and Larboard Way on the east. There is parking along the two long sides of the building and there is no fire apparatus access to the west end because of a pool and marina.

BUILDING CODES

The most recent inspection of the building by the Clearwater Fire Prevention Bureau was January 23, 2002. At that time, the manager had been served notice to retrofit the building with an automatic fire sprinkler system due to recent legislative changes. The Florida Legislature adopted Statewide Building and Fire Prevention Codes based on the 2000 editions of the National Fire Protection Association Standard Numbers 1 and 101. The Building Code had an effective date of January 1, 2000 and is similar to the Standard Building Code. The Fire Prevention Code had an effective date of January 1, 2002 and requires the installation of automatic fire sprinkler systems in all existing high-rise structures greater than seventy-five feet in height. In May 2003, the Florida Fire Prevention Code was modified to allow condominium associations to exempt themselves from the automatic sprinkler system retrofit by a two-thirds vote of the association membership. However, the condominium association cannot exempt out from retrofitting automatic sprinklers in the common areas of the building. Building retrofits must be completed no later than 2014.

FIRE PROTECTION

The unit of origin (#501) is located on the southwest corner of the fifth floor adjacent to the west stairwell with an occupant use hose cabinet located next to the unit's door. The unit consisted of two bedrooms, one of which had been converted into a home office, two baths, a kitchen, and living area. The unit also had an exterior sliding glass door with a small balcony about twelve inches deep.

Fire protection in the building consisted of the following:

- Class III Standpipe with three eight-inch diameter risers
- 2-1/2-inch, valved hose outlets located in the stairwells on each floor
- Three interior hose cabinets equipped with 1-1/2-inch hose; one each in the hall by the door to the stairwell and one in the center of the building near the elevator lobby
- Three 5-lb. 3A40BC rated fire extinguishers on each floor located in the hose cabinets
- Main 1,000 gpm at 90 psi rated fire pump and jockey pump; free standing fire department connection on north side of building with adjacent fire hydrant
- Central station monitored, fire alarm system that is zoned by floor, but does not sound a general alarm throughout the building
- Three smoke detectors in the corridor on each floor
- Manual pull stations at each stairway entrance door and near the elevator lobby on each floor
- Alarm control panel located in the second floor fire pump room
- Annunciator panel located in the first floor main lobby entrance
- Single station smoke detectors in each unit to alert the occupant
- Emergency diesel engine driven generator

The control valves for the fire pump and standpipe system were monitored for position, except for the valve controlling the water supply to the center riser. For some reason the monitor for this valve was not connected to the fire alarm system. The control valve that was closed was approximately fourteen feet from the ground and not readily visible.

Clearwater has adopted an ordinance regulating the number of unwanted and false fire alarms that a building can have annually and the owner can be fined after three unexplained fire alarms. Currently, this ordinance is not being enforced as it is being rewritten.

THE INCIDENT

During the early morning hours of Friday June 28, 2002, the male occupant, age 57, of Unit 501 awoke to the smell of smoke and to the sounds of crackling from a fire. He told investigators that he regularly slept in the living room on a day bed and that when he woke up, he observed a small fire on the electric stovetop in the kitchen. The occupant did not use the stovetop and at the time of the fire, combustible materials were stored on top of the burners. It is believed that one of the electric burners was accidentally turned on and heat from the burner ignited the stored material. According to his statement to investigators, rather than calling 9-1-1 or manually activating the building fire alarm system, he attempted to smother the flames by repeatedly wetting towels. Investigators believe that the approximate time when these events began was 05:05 hours.

The man stated that he woke up his daughter, age 14, and told her to go next door (#502) and wake up his mother, to call 9-1-1, and then for both of them to leave the building. As he attempted to extinguish the fire, a male occupant, age 40, from unit #504 came to his aid with a fire extinguisher. When the extinguisher failed to put the fire out, they secured and emptied three additional extinguishers, all without success and there are indications another fire extinguisher was being secured as the fire department units were on the fire floor. Each floor had three fire extinguishers located one in each occupant use fire hose cabinet. The use of four extinguishers by the two men attempting to fight the fire suggested that they had to travel to and from the ends of the fire floor and to the floor above or below the fire to acquire all the extinguishers used.

Upon exhausting the fire extinguishers, they attempted to deploy the 1-1/2-inch hose line located in the hallway standpipe cabinet next to Unit #501 and adjacent to the doorway to the west stairwell. Apparently, however, they did not get all of the hose out of the semiautomatic hose rack in the cabinet and did not understand how to clear the fire hose from the rack, as a result they could not get water to flow from the nozzle. The post-fire investigation revealed that the riser in the west stairwell that fed the hose cabinet was operational.

At 05:21 hours, the alarm company that supervised the building's fire alarm system notified the Pinellas County 9-1-1 Center that they had received a fire alarm actuation from the Dolphin Cove Condominiums located in Clearwater at 255 Dolphin Point Road. At 05:22 hours, Clearwater Station 46 was dispatched by the County Communications Center to investigate the automatic fire alarm activation. As Station 46 prepared to respond with their engine and rescue, the alarm was upgraded to smoke in a structure because of the numerous 9-1-1 calls that the 9-1-1 Center was receiving reporting the presence of smoke in the building.

When the alarm was upgraded, the Engine, Truck, Rescue, and District Chief from Station 45 were dispatched as well as Engine 44, Rescue 47, Truck 48, Squad 49, District 48, and the EMS Supervisor from Station 48. A total of twenty-eight firefighters, including chief officers, responded on the first alarm. All of the first alarm companies arrived within sixteen minutes of being dispatched.

Rescue 46; staffed by two paramedics, and Engine 45, with a crew of four firefighters were the first two units to report at the location. The companies arrived almost simultaneously at 05:27 hours, five minutes after being dispatched, but approximately seventeen minutes after the fire is believed to have been first discovered by the occupant of the unit. Rescue 46 entered the parking lot on the south side of the building and reported thick smoke coming from the southwest corner of the building (Unit #501). Engine 45 arrived on the north (front entrance) side of the building and reported nothing visible from their vantage point. Engine 45 partially heard Rescue 46's size-up reporting smoke visible and requested a repeat of the information but did not receive one. Rescue 45, with two paramedics on board, and District 45 arrived within the next minute. District 45 assumed command of the incident. District 45 was staffed by a Lieutenant acting as District Chief. The Clearwater Fire Department does not have a Captain's rank.

The pump operator for Engine 45 laid to the freestanding fire department connection (FDC) for the standpipe system on the north side of the building. A fire hydrant is located adjacent to the FDC to allow the fire department to supplement the standpipe system. Engine 45's driver hooked to the hydrant and began to pump the lines to FDC, thinking that interior hose lines would soon be deployed on the fire. The engine crew carried in a high-rise hose pack with 100 feet of 1-3/4-inch hose, a nozzle, Halligan tool, axe, gated wye, and assorted adaptors.

Engine 45's Lieutenant and two firefighters, along with the two paramedics from Rescue 45, entered the lobby from the north and were met by an individual thought to be a maintenance worker. The man had unlocked the lobby doors as well as the door to the west stairwell and he told the firefighters that the alarm was coming from the fifth floor. But gave no indication of the presence of smoke or a fire on the floor. Later, it was determined that the individual was actually the homeowners' association president. A check of the annunciator panel confirmed that an alarm had actuated on the fifth floor. The alarm most likely was from the smoke detectors in the corridor.

The initial dispatch to a fire alarm investigation, absence of visible flames or smoke by Engine 45, the fact that no one was observed to be evacuating the building, and the casual attitude of the individual that greeted them at the door, led these firefighters to decide to take an elevator to the fifth floor to investigate rather than walk up five flights of stairs even though the Department's SOGs dictated that elevators should not be used if a fire was below the sixth floor. Before entering the elevator, the Lieutenant secured the building keys from the lock box.

As the crew exited the elevator onto the fifth floor, they encountered whitish to gray colored smoke that was banked down approximately three-fourths of the way from the ceiling. Visibility was reported to still be relatively good at that point, however. Firefighters encountered a number of residents coming out of their condos and told them to return to their units, close their doors, and wait for the firefighters to come after them.

Due to the smoky conditions of the fifth Floor, the Lieutenant radioed Command and requested a second alarm. Communications transmitted the second alarm at 05:31 hours. The firefighters then turned to the east from the elevator lobby, located the standpipe cabinet on the north wall, and a firefighter connected the high-rise hose pack to the 1-1/2-inch outlet. The smoke propagation did not readily suggest the location of the fire and the other firefighters were searching to the east stairwell to locate the seat of the fire. Conditions in the hallway rapidly deteriorated with increasing temperature and reduction in visibility.

Meanwhile, Rescue 46's crew attempted to enter the east stairwell through the first floor discharge door but found that the door was locked, so they entered the lobby on the south side of the building. They took an elevator to the fifth floor and were confronted with the smoky conditions. Firefighters stated that they originally intended to stop below the fire and get off on the fourth floor, but could hear cries for help, so they elected to get off on the fifth floor to help evacuate the residents.

Interior operations attempted a number of times to update command about their situation with limited success. The heavy volume of radio traffic and possible interference caused by the building construction, made communications difficult and in some cases impossible. Meanwhile, Rescue 46's crew arrived on the fifth floor and, hearing cries for help, began search and rescue efforts, directing and leading residents to the east stairwell. Engine and Rescue 45 were also assisting occupants to the east stairwell.

Truck 45, with a crew of three, arrived at 05:30 hours and set up the truck on the southwest corner and raised their tower to the fifth floor to assist with rescue and suppression efforts. While in the east stairwell, Engine 45's Lieutenant met a man on the fourth floor with a fire extinguisher who informed him that the fire was in the opposite end of the hallway. He asked the man to escort the occupants that the firefighters had taken to the stairwell out of the building. Then he returned to the fifth floor hallway and was informed that there was no water in the center standpipe. At the same time, Engine 46 was attempting to lay a water supply line to Truck 45 on the south side of the building and was reporting that the fire hydrant on the southwest corner of the building was inoperable. The hydrant had been damaged four days earlier and was out of service, but that fact had not been passed on to the fire department.

Unable to locate the fire and believing that there was a water supply problem inside and outside the building, interior operations abandoned all efforts to extinguish the fire and redirected all of their efforts toward search and rescue. During this time, Engine 45's crew encountered a male resident in the hallway and attempted to lead him to safety, but somehow became separated. They began to search for him again.

By 05:35 hours, visibility had decreased to zero; as thick, black smoke completely filled the hallway. Firefighters from Station 45 and Rescue 46 reported that they could hear each other, but could not see one another and are believed to have actually passed each other in the hallway completely undetected by the other. Rescue 46's crew located the female occupant of Unit #502, age 81, at approximately 05:39 hours and was attempting to lead her to safety near the elevator lobby.

Engine 45's Lieutenant notified Command that it was too hot and interior crews were beginning to withdraw from the floor. At approximately 05:41 hours, it is believed that a flashover[1] occurred in Unit #501 and that a rollover[2] occurred in the hallway enveloping the two civilians and three firefighters. While there is some disagreement as to the fire phenomenon that occurred in the hallway, the limited amount of combustibles on the walls and floor, including the carpet, were consumed from the west stairwell to the elevator lobby in the center of the building. The eastern portion of the hallway was heat and smoke damaged, but not as severely.

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[1] Flashover is the sudden transition from local burning to wide spread burning of all exposed combustibles in a room. After flashover, flames often project from open doors or windows.

[2] Rollover is the travel of visible flames through the upper gas layer in a room or corridor. The flames are usually not constant and may extend and recede several times.

Regardless of the phenomenon that occurred, the event resulted in burns and injuries to three fighters and the death of a male occupant, age 75. Additionally, in an attempt to escape the flames, the female resident with Rescue 46's crew apparently knocked a female firefighter from Rescue 46 down and became separated from the firefighters.

Following the flashover in the unit of origin, an immediate search was undertaken for the two civilians known to have been in the hallway and any firefighter that might have been injured. When the flashover occurred, one firefighter was in the elevator lobby. Although burned and disoriented, he escaped in the direction of the east stairwell, where firefighters found him. He was escorted to the stairwell and taken outside the building by a civilian. As firefighters returned to the hallway to continue their search efforts, they could hear a PASS device actuating. The source of the alarm was found, and the downed female firefighter was found by another firefighter, who took her into Unit #506. While both firefighters were burned, one was able to signal fellow firefighters operating outside of the building, and both were rescued by an aerial device.

The deceased, male occupant of Unit #506 was found in the elevator lobby. Firefighters were unable to detect a pulse, noted extensive burns, and determined he was obviously deceased. Therefore, they left him there to search for other victims.

Engine 46 attempted to lay a supply line, but as was previously mentioned, they laid to a damaged hydrant. When Engine 44 arrived at 05:36 hours, they laid a line in from the east and supplied Truck 45 with water. Truck 45 was joined on the building's south side by Trucks 48 & 41 (Largo). These companies eventually worked the exterior of the building and rescued a number of civilians and injured firefighters.

Truck Company 48, with a crew of three firefighters, arrived at 05:35 hours. When they heard the report that firefighters were possibly trapped on the fifth floor in an elevator following the flashover, they attempted to enter the east stairwell to attempt a rescue, but found the door to be locked. They also discovered that the keys were missing from the lock box, having been removed by Engine 45. Therefore, they took the elevator to the fifth floor, but became trapped for a short time due to the warping of the elevator doors by the intense heat on the fire floor. They were able to force their way out of the car and onto the fifth floor.

Truck 48's crew found the missing female resident from Unit #502 and determined that she was still alive. They first removed her to Unit #511 and she was subsequently taken out of the building via a stairwell by firefighters. She was transported to Tampa General Hospital where she died the next morning, June 29th of smoke inhalation and burns over forty-three percent of her body.

Squad 49, with a crew of three, arrived at 05:36 hours. Upon hearing that firefighters were down on the fifth floor, advanced a 1-3/4-inch hand line from 3rd floor standpipe in the west stairwell. When they reached the fifth floor, they found an injured firefighter at the floor landing and left a crewmember to treat him. As they advanced their line on to the fifth floor they found that the fire was out and discovered water entering from the exterior of the condominium to the hallway. The two company members searched the hallway to the elevators and found the deceased victim by the elevator and removed him to the west stairwell. While doing so, they noticed that the elevator was partially open and that the doors were partially melted from the heat. The elevator is believed to be the one that Truck 48 forced open and part of the damage may have been from that effort. After removing the victim, they went to rehab. After their rest period they went to the 6th floor; but one of their firefighters felt light headed, left the building and was transported to Morton Plant Hospital for treatment for heat exhaustion.

Figure One: Chronology of Events

Time	Event
05:05	Approximate time of ignition in Unit 501
05:10	Neighbor reports hearing fire alarm from Dolphin Cove Condo, however, it is not clear whether or not this was the building alarm system or an individual smoke detector within a condo unit
05:21	Alarm company notifies Pinellas 9-1-1 center of alarm activation
05:22	Clearwater FD dispatched to an alarm activation, which is quickly upgraded to a report of smoke in the structure
05:22	Occupant in Unit 505 notifies 9-1-1 Center that the hall is full of smoke
05:24	Occupant from Unit 501 reports fire in kitchen, call was placed from Unit 502
05:27	Rescue 46 on-location and reports thick smoke showing from the southwest corner, but no evacuation in progress
05:28	Engine 45 on location and reports nothing showing; Firefighters enter the building
05:30	Engine 45's crew enters fire floor, finds smoke, and asks Command for a Second Alarm
05:31	Pinellas County 9-1-1 Center transmits the second alarm
05:36	Firefighters report that the interior center standpipe is inoperable
05:39	Companies on fire floor indicate conditions have deteriorated and that it is "too hot"
05:41	Possible flashover occurs
05:42	Dispatch provides twenty minute notification
05:43	Report of firefighters trapped in elevator on fifth floor and that a fire hydrant is not functioning
05:55	Fire department suppression operations begin
05:59	Third Alarm requested by Command
06:02	Dispatch provides forty-minute notification
06:03	Injured firefighters rescued from fifth floor
06:06	Fire is under control
12:20	In-service

Figure Two: List of Injuries

Victim	Status	Unit	Nature of Injuries
Female, age 58	Occupant	#807	Smoke inhalation, transported
Female, age 60	Occupant	#904	Smoke inhalation, undetermined
Female, age 80	Occupant	#803	Rescued by tower ladder; transported as precaution
Male, age 57	Occupant	#501*	Shock, burns
Male, age 74	Occupant	#511	Had chronic obstructive pulmonary disease. Smoke inhalation; woke up by fire alarm; signaled with flashlight, rescued from balcony;
Male, 33	Firefighter		Heat exhaustion, transported
Male, 36	Firefighter		Burns; transported
Male, 38	Firefighter		Dehydration, heat exhaustion; transported
Male, 47	Firefighter		Burns, transported
Female, 50	Firefighter	R46	Burns, transported

* Unit of origin

Command was transferred to District 48, who set up a command post on the south side of the building. A tactical worksheet was not used to track company locations or to map out the operation reportedly because of the volume of radio traffic and the lack of an assistant for the IC. When the Operations Chief arrived, he assisted the District 48 Chief. Working together, they attempted to assert command via radio, but were thwarted by heavy radio traffic and the confusion that was present during the earlier stages of the incident. Through combined efforts they were able to establish a more controlled operating environment through face-to-face communication. Command assigned the east stairwell for use in occupant evacuation and placed a firefighter there to coordinate efforts. He assigned the other stairwell to suppression efforts. A separate radio frequency was secured for EMS operations. He also requested two additional truck companies before requesting the third alarm, but they were never dispatched by the communications center.

Clearwater's EMS Supervisor assumed EMS command and requested ambulances to transport the injured civilians and firefighters. The EMS Lieutenant supervised the triage and transportation activities.

The second alarm brought in Engine 47 and companies from the Town of Bellaire; Bellaire Bluff; and Largo. A total of eleven personnel responded on the second alarm and arrived within twenty-minutes of the initial alarm. The third alarm brought in Engine 48 and companies from Seminole, Dunedin and additional companies from Largo. Approximately fifty-two firefighters and four command officers were required to bring the fire under control and they used seven engines, four trucks, four rescues, and three squads.

Ten ambulances from the County EMS service were dispatched to the incident and eight were used to transport patients to area hospitals. Each ambulance was staffed by two crewmembers. A County EMS ambulance supervisor was also dispatched to the scene to assist with the triage, treatment, and transportation of the victims. A helicopter with a crew of three was also used at the scene for the more critical patients.

Level II staging was established in the parking lot of the Island Estates Mall located one block away from the fire. The Rehab unit from Station 48 also responded to the incident and was staffed by an off-duty firefighter. Shift change occurred at 08:00 hours and the on-coming shift relieved the crews at the incident scene.

The fire was extinguished by using 5-inch supply lines and 1-3/4-inch hand lines. Once Truck 45 was able to establish a water supply, the crew extended a hand line from the platform into the interior of the fifth floor via Unit #504 and knocked down the fire in Unit #501 from the inside hallway, driving the heat and smoke out of the sliding glass door and windows. The fire was declared to be under control 05:52 hours, thirty-minutes into the incident. Following secondary search, salvage and overhaul efforts, the final company returned to service at 12:20 hours, nearly seven hours after the initial alarm.

The blaze caused approximately $1 million in damage. The majority of the destruction was contained to the unit of origin and the fifth floor hallway. There was significant water damage on the fourth floor as well, particularly immediately below the fire in Unit #401. Firefighters also forced the doors on the sixth floor in order to search and evacuate residents. After the fire, the majority of the fifth floor was renovated and the entire structure has been retrofitted with automatic sprinklers. In addition, a new fire detection and alarm notification system has been installed throughout the building.

INVESTIGATION

Officials from the Clearwater Fire and Police Departments and the Florida State Fire Marshal's Office, which is charged with the investigation of all fire where a fatality occurs, investigated the fire. They were assisted in their efforts by investigators from the Palm Harbor Fire Department who used their K-9 to check for the presence accelerants. The medical examiner also ruled that the two deaths were accidental and caused by smoke inhalation.

Investigators concluded that the fire was accidental and caused by the burner on the right front of the electric stove located in the kitchen of Unit #501 being left in the on position, which ignited combustibles that were present on the stovetop.

The male occupant of Unit #501 reported that he did not have any insurance. He told investigators that he had four glasses of wine before going to bed and voluntarily submitted a blood sample to determine if he was intoxicated. His results were above that which would have allowed him to operate an automobile. He denied using the stove, and stated that it had not used in three years. He and his daughter are alleged to have their meals with his mother, in Unit #502. His mother also owned Unit #501 and he rented the unit from her. He lived there with his daughter, age 14.

The protective clothing worn by the three burned firefighters was submitted to independent third party tests in order to determine if the equipment worn met current NFPA standards. The test concluded that all of the equipment met or exceeded the standards.

The three SCBA worn by the burned firefighters were inspected by an authorized service center for the manufacturer and were found to be fully functional except for one unit with a torn hose. The SCBA was determined to have been functional up until the point the hose was torn during the suppression operations.

The weather at the time of the fire was not a contributing factor. The temperature was 80 degrees Fahrenheit, the sky was clear, and the winds were calm. The absence of a breeze, no doubt, prevented the spread of the fire when the exterior sliding glass door and windows were either opened or failed due to heat.

SUMMARY

The most significant fire damage was contained to the unit of origin and about half of the common corridor with the accompanying loss of two lives and injuries to five firefighters. The outcome could have been much worse in both property damage and death and injuries to occupants and firefighters.

The occupants' decision to fight the fire before notifying the Clearwater Fire Department and their fellow occupants of the working fire placed everyone at greater risk of death and injury. The delayed alarm allowed the fire to reach flashover intensity and the blocked open condo entrance door allowed the spread of heat, smoke, and fire into the common corridor creating deadly conditions. With the center standpipe riser shutoff, the first firefighters on the fire floor were left without an immediate means to suppress the fire and protect themselves and the other occupants. These firefighters did not follow department SOG's when they used elevators to travel directly to the floor where the fire alarm originated. The first in company was routinely investigating a smoke condition and was unaware of a working fire apparently because they did not hear reports from other arriving units due to communication difficulties.

Although, the fire was successfully suppressed with a hose line through the balcony door, this tactical operation could have injured interior sector firefighters. However in this instance, interior firefighters were in safe locations before the exterior hose line was applied. As well, had the fire been on a floor above the reach of an exterior hose line, the interior suppression effort would likely have taken longer, been more difficult, and would have required substantially greater suppression and rescue resources.

LESSONS LEARNED

1. **Prompt notification of a fire in progress is essential.**

   The resident attempted to fight the fire for nineteen minutes before his daughter called 9-1-1 from next door. Two minutes earlier, the alarm company and the resident of Unit #505 contacted the 9-1-1 Center. The delayed alarm, no doubt, significantly contributed to the fire loss and allowed conditions to develop that resulted in the flashover. Ultimately, the incident progressed to a third-alarm assignment because of the delayed alarm of the fire, problems encountered with the standpipe and fire hydrant, need to attend to the injuries to the initial fire suppression personnel and occupants, and the subsequent search and evacuation of the building. The staffing levels of the initial responding units would likely have been sufficient had the fire department been notified in a timely manner of a working fire and had they not encountered the inoperable standpipe and the out-of-service hydrant which caused the initial units to delay operations while attempting to establish reliable water supplies in support of both interior and exterior operations. The building's compartmentation and fire resistive construction also played a major role in limiting further damage, fatalities, and injuries.

2 **Appropriate management systems must be in place and followed.**

   During the early stages of the fire, freelancing occurred and established procedures were not explicitly followed. High-rise fires are generally best attacked from the stairwells by connecting to the standpipe system below the fire. Elevators should be used only when it is conclusively known that they are safe to operate. Staging personnel and equipment below the fire is critical as are a strong incident management system, accountability, and prohibition against mixing an interior and exterior attack with firefighters and residents in harms way. Ensuring an adequate air supply to firefighters on the fire floor is also critical.

   Personal accountability systems should include periodic notification as to the amount of time that has elapsed since the firefighters arrived on the scene. Critical benchmarks include the ten-minute mark and the twenty-minute mark. Flashover often occurs within ten minutes and lightweight structural components often will fail with ten minutes of exposure to flames. At the twenty-minute mark, firefighters will be typically using up their initial SCBA bottle and will need to exit the building for another bottle. It is easy to overlook these mileposts without a system of automatic notification. The Pinellas County 9-1-1 Center provided the twenty minute notification and a forty minute one (see Figure One).

3 **Communications must convey important information to all units and require that it be acknowledged and be of sufficient capacity for the task.**

   The upgraded alarm may not have reached the first due company who still believed they were on an alarm investigation when they traveled to the fire floor. In addition, information regarding the floor and unit number of the fire's location received by the 9-1-1 Center was not promptly

passed along to the responding fire companies. Critical information about fire conditions on arrival should be repeated by communications to all companies and acknowledged by companies at the scene. Management of the communications system is also of paramount importance. During multiple alarms, the competition for radio airtime often results in units canceling out each other's message, which can lead to confusion and frustration. Each major function and division should be assigned a separate tactical channel and adequate support must be given to the incident commander to ensure that all of the channels are properly monitored. The incident commander reported that the Communications Center would provide information received from 9-1-1 telephone calls over the tactical channel disrupting fire ground communications.

4. Establish an adequate and reliable water supply early in the incident.

Much has been said and written about the dead hydrant and closed standpipe valve. Engine 45's operator did in fact, however, establish an adequate and reliable water supply that would have been sufficient to control and extinguish the fire had procedures been properly followed by making an attack from the stairwells. Both the east and west standpipe risers were functional at the time of the alarm. The fire was ultimately extinguished, however, by the creation of an exterior standpipe via Truck 45's waterway.

5. When staffing levels are less than desirable, an aggressive interior attack is often the best option.

During the early stages of most incidents, staffing is limited until the full alarm assignment is assembled on the scene and working. Even then, very few departments have the staffing to both suppress a fire and perform the ancillary, but critical functions of search, rescue, ventilation, property conservation, and forcible entry at a high-rise fire. Often, the best strategy is to protect the occupants in place and mount an aggressive extinguishment effort. Given that the unit of origin was in the southwest corner of the structure adjacent to a stairwell would seem to have made this approach an even more viable option. In this instance, water was not put on the fire for approximately twenty-eight minutes, well after conditions lead to a flashover, which ultimately resulted in two fatalities and ten injuries.

Evidence from the post fire investigation indicates that the concrete ceilings and floors held the fire to the fifth floor and that the interior corridor doors did a superior job of confining the fire to the unit of origin and the hallway. Had the occupant left his condo and closed the door when the fire was discovered the outcome might well have been different. The two civilians likely might not have died had they either evacuated when they first heard the alarm or had remained in their condos.

6. Mayday!

After the flashover and it became known that a number of firefighters were missing, the only radio messages that were transmitted simply indicated that some firefighters were down. Yet, no one knew exactly where they were due to the heavy smoke and intense heat in the fifth floor corridor. When an event of this magnitude and severity occurs, a procedure should be in place (and followed) that prompts someone to issue the Mayday distress call. The procedure should cause the cessation of all but emergency radio traffic and should prompt an accountability check to determine who is missing. Once the number of missing firefighters is ascertained, a rescue effort can begin. Fortunately, in this instance all of the lost firefighters were quickly found and all were rescued.

APPENDICES

Appendix A: Photographs

Appendix B: Diagrams

APPENDIX A

Photographs

The following photos were provided by the Clearwater Fire Department:

#1 View of southwest corner of building; note location of Truck 45 and open sliding glass door of Unit 501 (area of origin) and extension up exterior face of building

#2 View of southeast corner

#3 Note occupants on 10th floor balconies. This provides indication of the narrow depth of balcony landings.

#4 View of damage to fifth floor hallway.

#5 View of FD line attached to standpipe connection near west stairwell.

#6 Representative occupancy door to condo units. This unit is three floors below unit of origin and is equipped with automatic door closure.

#7 Door to Unit demonstrating how well the doors held.

#8 Smoke penetration around door into unit on fifth floor.

#9 Stove and hood in Unit #501, note door opening into hallway right hand portion of picture. Photo shows metal studs, typical of interior construction.

#10 Area of origin, kitchen of Unit #501.

#11 Note top of photo: shows concrete floor typical of building construction.

#12 Interior view of kitchen showing extent of damage.

#13 View of interior of kitchen and ceiling.

#14 Control valve to central standpipe riser found to be closed during fire.

#15 Two discharged 5-lb. ABC extinguishers and 11/2-inch house line found outside Unit 501.

#16 Hydrant that failed to operate during fire; note parts in background.

#17 Electrically powered fire pump rate at 1,000 gpm at 90 psi.

#18 Alarm panel located in second floor mechanical room.

#19 Extent of damage to fifth floor hallway.

#20 Damage to hallway east of elevators, note less damage midpoint to floor.

#21 Fifth floor elevator lobby

#22 Fifth floor elevator doors and call buttons

Appendix A (continued)

1. View of southwest corner of building; note location of Truck 45 and open sliding glass door of Unit 501 (area of origin) and extension up exterior face of building

2. View of southeast corner

Appendix A (continued)

3. Note occupants on 10th floor balconies. This provides indication of the narrow depth of balcony landings.

Appendix A (continued)

4. View of damage to fifth floor hallway.

Appendix A (continued)

5. View of FD line attached to standpipe connection near west stairwell.

Appendix A (continued)

6. Representative occupancy door to condo units. This unit is three floors below unit of origin and is equipped with automatic door closure.

Appendix A (continued)

7. Door to Unit demonstrating how well the doors held

8. Smoke penetration around door into unit on fifth floor.

Appendix A (continued)

9. Stove and hood in Unit 501, note door opening into hallway right hand portion of picture. Photo shows metal studs, typical of interior construction.

Appendix A (continued)

10. Area of origin, kitchen of Unit #501.

11. Note top of photo: shows concrete floor typical of building construction.

Appendix A (continued)

12. Interior view of kitchen showing extent of damage.

13. View of interior of kitchen and ceiling.

Appendix A (continued)

14. Control valve to central standpipe riser found to be closed during fire.

15. Two discharged 5-lb. ABC extinguishers and 1-1/2-inch house line found outside Unit 501.

Appendix A (continued)

16. Hydrant that failed to operate during fire; note parts in background.

Appendix A (continued)

17. Electrically powered fire pump rate at 1,000 gpm at 90 psi.

Appendix A (continued)

18. Alarm panel located in second floor mechanical room.

Appendix A (continued)

19. Extent of damage to fifth floor hallway.

Appendix A (continued)

20. Damage to hallway east of elevators, note less damage midpoint to floor.

Appendix A (continued)

21. Fifth floor elevator lobby

Appendix A (continued)

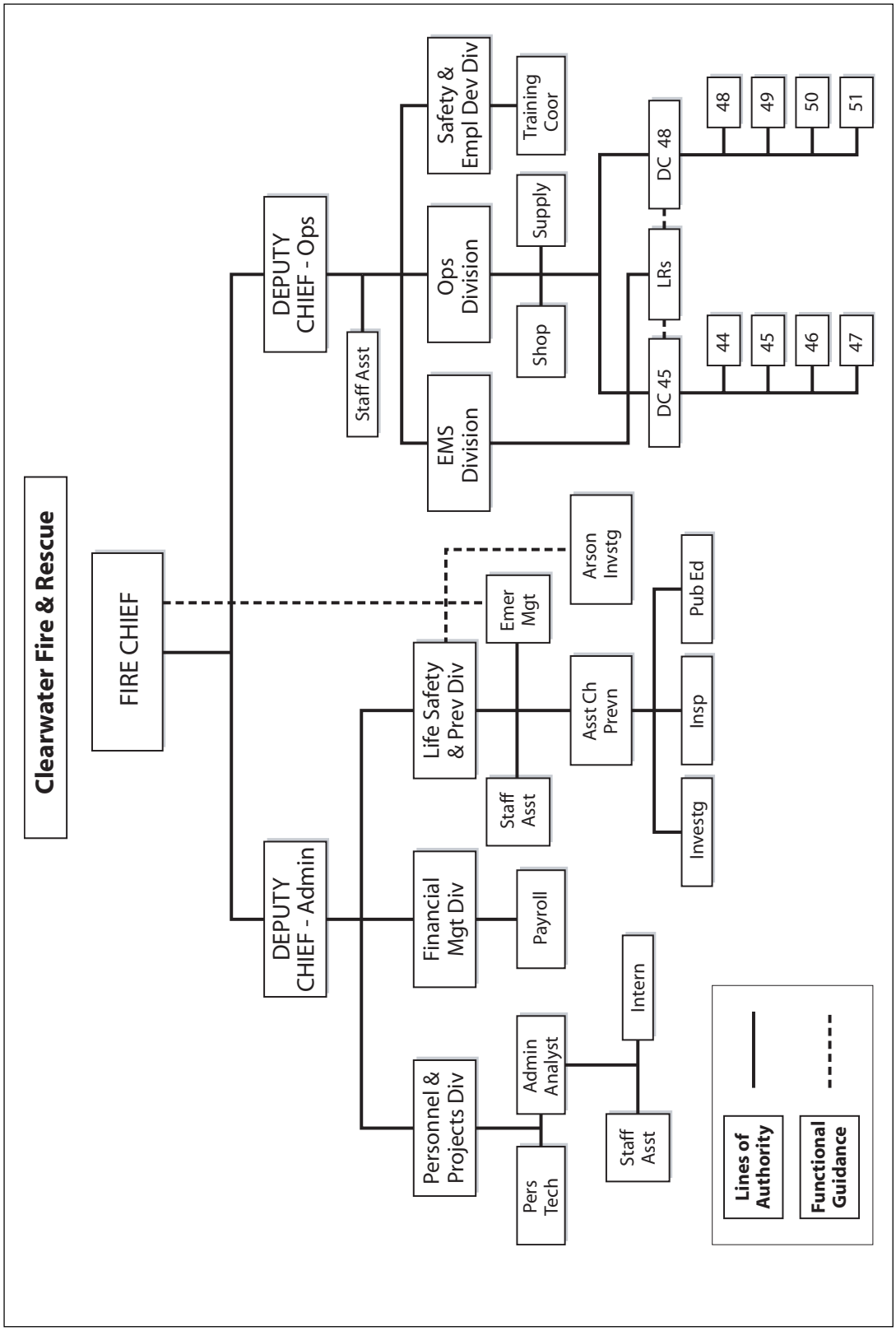
22. Fifth floor elevator doors and call buttons

APPENDIX B

Diagrams

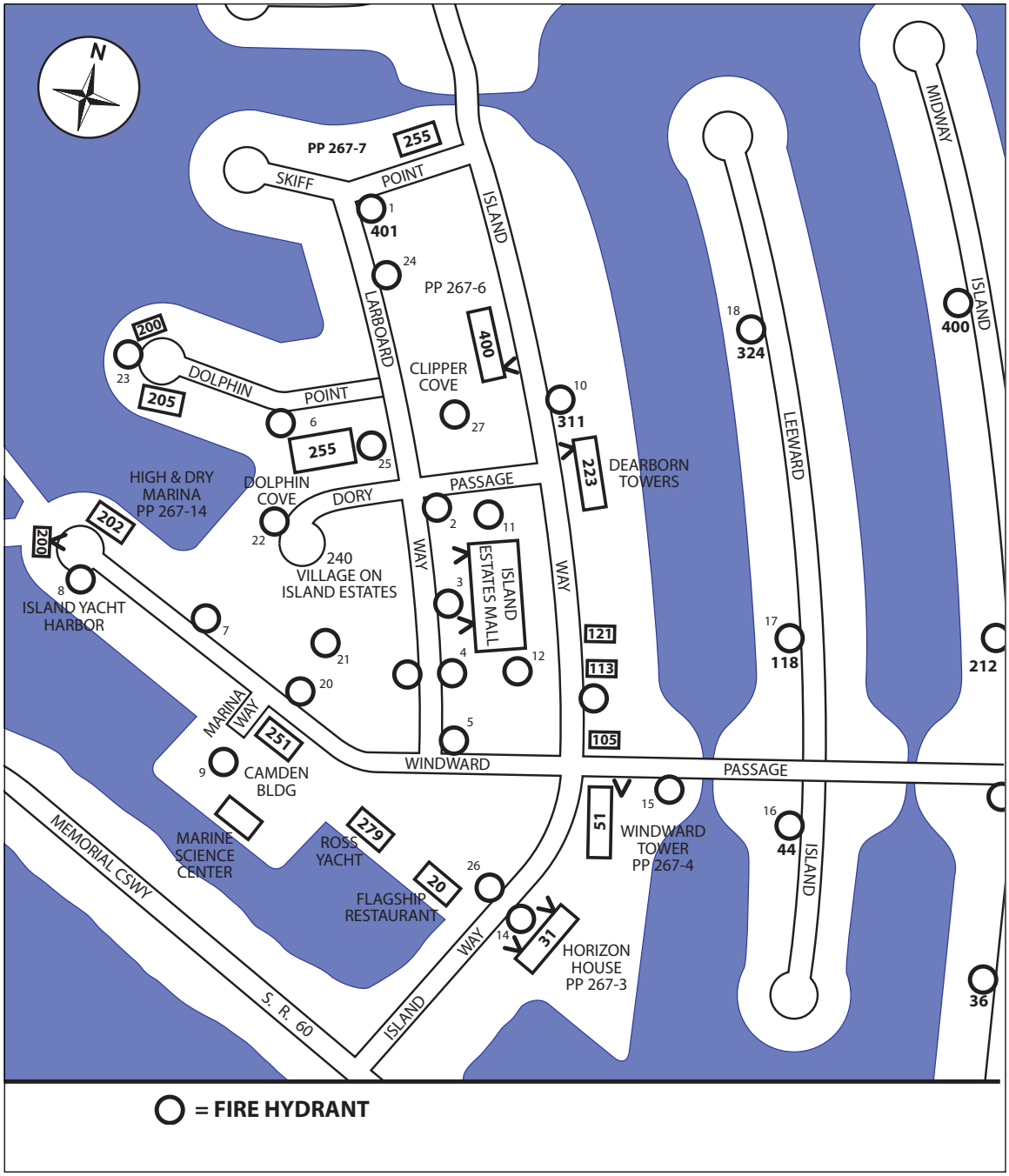
1. Clearwater Fire and Rescue
2. Area Plan
3. Apparatus Positions
4. Floor Plans

Appendix B (continued)



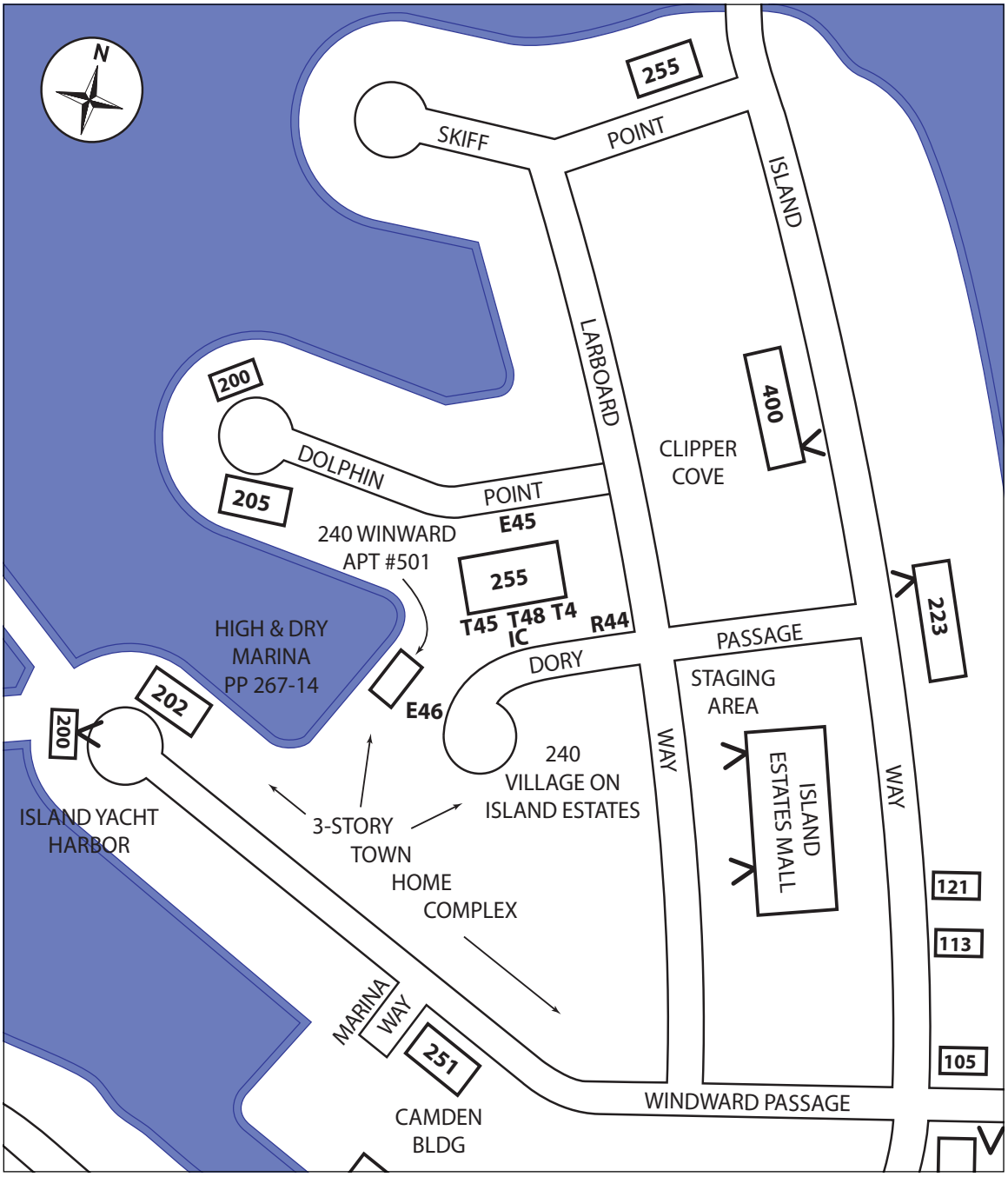
1. Clearwater Fire and Rescue

Appendix B (continued)



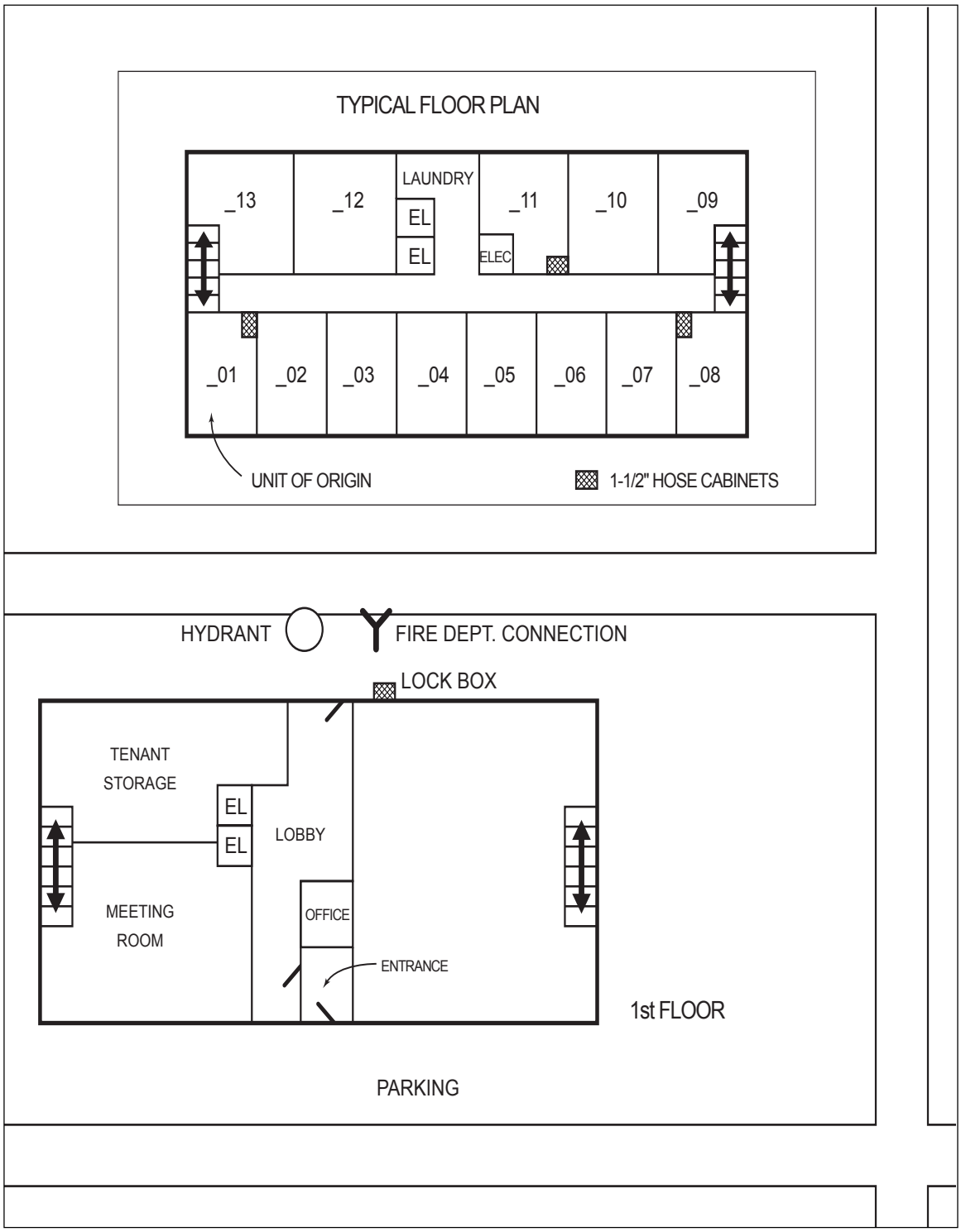
2. Area Plan

Appendix B (continued)



3. Apparatus Positions

Appendix B (continued)



4. Floor Plans