

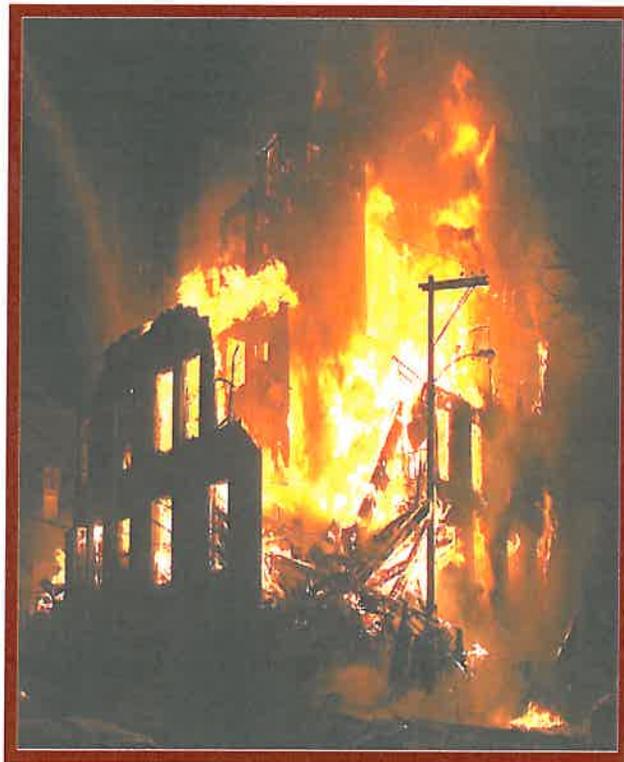
**FIRE SERVICE  
AFTER ACTION REPORT (AAR)  
LORRAINE APARTMENT BUILDING  
CITY OF GLOUCESTER, MA  
FINAL REPORT  
FEBRUARY 2009**

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**Fire Service After  
Action Report  
February 2009**

**FINAL REPORT**



**Lorraine Apartment Building  
80 Middle Street  
Gloucester, Massachusetts**

**Date of Incident  
December 14, 2007**

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**Municipal  
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Inc.**

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# ***EXECUTIVE SUMMARY***



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## **EXECUTIVE SUMMARY**

On the night of December 14, 2007, a multiple alarm fire occurred in Gloucester that tragically ended with one fatality, multiple firefighter injuries, two buildings completely destroyed, and numerous other reports of damage to buildings and businesses. The incident would eventually require multiple alarms, nearly 100 firefighters from around the region, and a number of outside agencies before the fire could be determined to be under control and the loss stopped. Whenever incidents of this magnitude occur within a community, many questions are raised as to the capability of that community's emergency services.

The purpose of performing a Post Incident Analysis (PIA) is to provide an operational perspective from which a fire department can strive to continually improve operations. Pre-emergency planning, standard operating procedures (SOPs), and training are all steps taken before an emergency to meet this improvement goal and to prepare for the next emergency. An effective PIA that combines street experience and lessons learned completes a system that will produce improvements in future operations.

Municipal Resources, Inc. (MRI) was retained to conduct a PIA and an After Action Report (AAR) to review fire department operations during the December 14, 2007, incident for the purpose of enhancing emergency service, identifying potential training needs, and increasing firefighter safety. The goal of the PIA was to review the response

of all resources to the scene, specific emergency operations including strategic and tactical decisions, adequacy of resources on scene, mutual aid resources, and finally, to determine if the Gloucester Fire Department (GFD) has made any significant changes in policies or procedures since that time.

While investigating this incident, it was evident that the members of the GFD who operated throughout the fire did so under extreme conditions, understaffed, without adequate support from the department's policies and procedures, and with minimal incident command and control. During the initial stages of the incident, there were many acts of heroism as the initial companies attempted to control the fire, evacuate the occupants, and attempted to make ladder rescues. As the fire incident progressed, the lack of a command structure, along with an inadequate water supply, doomed the Lorraine Apartment Building and the Temple Ahavath Achim Synagogue, as well as threatened several other structures including the YMCA, Sawyer Free Library, Trinity Church, and much of downtown Gloucester, between Main and Middle Streets. The lack of a command structure during the peak of the incident was an important factor in the final outcome of this incident. Through the process of evaluating the operations and the final outcome of the incident, the MRI team found that there was not only a lack of command structure throughout most of the incident, but there was also a lack of leadership. The issue of leadership by the fire chief appears to have been an ongoing situation with his command staff and officers in the department. This situation was a contributing factor to an inability to gain control over the incident at its earliest stages.

The methodology used to develop the information in this report included:

- A review and evaluation of all data that was developed by the members of the police and fire departments;
- A review of previously existing reports and those completed for MRI by on-scene personnel;
- Facilitating a post incident meeting that was held on November 12, 2008;
- Phone and personal interviews with emergency and city personnel that responded to the incident;
- Reviewing reports from and interviews with mutual aid fire departments and the State Incident Support Unit (ISU) ; and
- A review of photos, videos, and other media that were provided or found through an Internet search.

Based on the information evaluated, MRI's team of experienced fire professionals has developed a series of recommendations that the City of Gloucester and its fire department should consider as a foundation to improving public safety and the service level to the community.

An analysis of a fire department's operations and the final outcome for one incident, especially one of this magnitude, should only be considered as a "snapshot" of the fire department's capabilities or shortfalls. This report has identified symptoms that we believe are indicative of more severe problems within the GFD. In order to completely determine the capabilities and needs of the GFD, a more intense and comprehensive study of the department should be conducted.

The results of this AAR should be used to enhance departmental operations, increase the effectiveness of the department, and foremost, increase firefighter safety. This final report should be used to enhance officer development within the department by serving as a forum for review of incident management techniques, strategies, tactics, and the effectiveness of SOPs. This report also includes recommendations that extend beyond the fire department.

Some of the recommendations developed within this document can be implemented immediately with minimal cost, while others may take longer to implement and will have some primary and secondary costs associated with them. Information from this AAR should be disseminated throughout the fire department and the mayor should require written action plans be established by the fire chief and the fire department staff to deal with any deficiencies and areas in need of improvement that are outlined within this AAR.

## THE STUDY TEAM

The following MRI personnel participated in the study:

### ***Project Manager:***

**George Klauber** is currently the Fire Chief in Derry, New Hampshire. His career in fire service spans nearly three decades. Chief Klauber graduated from Charter Oaks State College with a BS in Fire Science and Technology, and has taken numerous courses at the National Fire Academy. He has completed course work for certification with the State of Connecticut's Office of State Fire Marshall; is a Certified Fire Officer in accordance with NFPA 1021; a Certified Fire Service Instructor in accordance with NFPA 1501, and a Certified Safety Officer in accordance with NFPA 1521. Prior to joining the Derry Fire Department, Chief Klauber was Fire Chief for the City of Waterbury, Connecticut. Chief Klauber is a member of the International Association of Fire Chiefs; the National Fire Protection Association; the New Hampshire Fire Chiefs Association; and the Connecticut Fire Chiefs' Association. Chief Klauber has been providing consulting services to MRI clients since 2001.

### ***Team Members:***

**Alan S. Gould** is a graduate of Saint Anselm College with a BS degree in Criminal Justice. He is certified as a Public Manager by the American Academy of Certified Public Managers and has completed numerous management and leadership programs including the Babson Command Training Institute and the FBI's LEEDS program. He is recognized for his creativity in community policing and his leadership in promoting ethics in the law enforcement community. Mr. Gould began his public sector career with the Salem, NH, Police Department where, during 21 years, he served in all ranks including Chief of Police. He served as Chief of Police in Rye, New Hampshire, where, upon retirement from law enforcement, he was appointed and served as Town Administrator until joining MRI in 2008. Mr. Gould served as the Ethics Instructor at the New Hampshire Police Academy for 15 years and has been an instructor of college courses in Criminal Code, Criminal Investigation, Report Writing, Constitutional Law and Juvenile Delinquency. Among his many community involvements, Alan served as an initial incorporator of the Greater Salem Council Against Family Violence; a founder of New Hampshire's second "visitation center" designed to protect children from abusive parents; an initiator of Rye Senior SERVE, a non-profit organization established to help seniors remain in their homes as they age; and he continues as the Emergency Management Director in his home town of Rye, New Hampshire.

**Donald P. Bliss** is the Director of the National Infrastructure Institute's Center for Infrastructure Expertise. The NI2 Center for Infrastructure Expertise is an independent not-for-profit applied research group dedicated to strengthening the security and resiliency of the nation's built critical infrastructure and key resources. Bliss served as the New Hampshire State Fire Marshal from August 1992 until November 2003. In the wake of the tragic events of September 11, 2001, Bliss took over responsibility for New Hampshire's emergency management and homeland security efforts and also served as homeland security advisor to both Governor Jeanne Shaheen and Governor Craig Benson. From 1983 to 1992, Bliss served as the fire chief in Salem, New Hampshire. From 1989 to 1992, he served as both fire chief and the town's emergency management director. In 1990, Bliss served as interim town manager for nine months. From 1980 to 1983, Bliss served as the director of the University of Connecticut Fire Department and as fire marshal for the University of Connecticut system. He began his career with the Durham-UNH Fire Department in 1970, rising from call firefighter to fire marshal/deputy chief. Bliss has served in leadership roles in numerous professional organizations, including the National Association of State Fire Marshals, the National Fire Protection Association, and the New Hampshire Association of Fire Chiefs. He is a past president of the New Hampshire Association of Fire Chiefs and a former chair of the New Hampshire Emergency Medical Services Coordinating Board. He served as President of the National Association of State Fire Marshals and chair of the association's Consumer Product Safety Task Force. Bliss chaired the National Fire Protection Association's (NFPA) *Uniform Fire Prevention Code* Technical Committee and currently serves on the NFPA board of directors. He chaired the National Electrical Code (NEC) panel on homeland security and mission critical facilities and currently chairs NEC Code Making Panel 13 (emergency systems). He also serves on the NFPA Technical Committee on Emergency Management and Business Continuity. He is an adjunct professor in the Master of Public Administration program at the University of New Hampshire and currently serves as the chair of the New Hampshire Building Code Review Board and as a member of the New Hampshire School Building Authority. Bliss received a Bachelor of Arts in political science from the University of New Hampshire in 1973 and he received a Master of Public Administration degree, also from the University of New Hampshire, in 1979. He has completed numerous courses at the National Fire Academy in Emmitsburg, Maryland.

## PURPOSE, SCOPE AND METHODOLOGY

### Purpose

The PIA and the resulting AAR should be used as a tool by the City of Gloucester, the GFD, and its command staff to identify areas of strengths, deficiencies, and needed areas of improvement. The AAR should be used to identify effectiveness of operations of the overall incident, starting from the initial call to the closure of the incident fire report. The AAR may also be used to identify other needs such as equipment needs, staffing deficiencies, and areas of training. The information collected may be useful for identifying service level gaps and providing a basis for initiatives that would adjust the service level to meet the community's needs or expectations.

### Scope

This AAR was developed by MRI and submitted to the mayor. Specific areas relating to the incident starting with vital statistics such as date, weather, dispatch times, units responding, injuries, and any other pertinent factual information are noted in the report. The report shall also address specific areas of assignment at the incident. Examples include:

- Narrative: Description of incident conditions, problems encountered, life safety considerations, and fire department actions.
- Incident Command: What positions were staffed and the assignments made.

- **Strategy and Tactics:** A review of the strategy developed and the tactics initiated. What changes had to be made to facilitate accomplishment and what special problems arose that required special attention.
- **Safety:** The safety issues that occurred at the incident.
- **Apparatus and Equipment:** Was the apparatus placed properly and utilized? Could special equipment not immediately available in the department have completed the assignment faster or in a safer manner?
- **Resources:** Were initial resources adequate? Were requests for resources timely? Was there a period of time when functions could not be performed due to a lack of resources at the scene?
- **Outside Agencies:** What agencies were requested and responded? Did they meet the needs of the department? What assistance did they provide? How can the agency better assist the department in the future?
- **Lessons Learned:** The main purpose of this section is the sharing of information that can assist all members in the future and should be written in a positive manner.
- **Recommendations:** Recommendations, if any, that would enhance operations such as procedural changes and training topics.

## Methodology

The methodology used to develop the information in this report included:

- A review and evaluation of all data that was developed by the members of the police and fire departments;
- A review of previously existing reports and those completed for MRI by on-scene personnel;
- Facilitating a post incident meeting that was held on November 12, 2008;
- Phone and personal interviews with emergency and city personnel that responded to the incident;
- A review of reports from and interviews with mutual aid fire departments and the State ISU that responded to the incident; and
- A review of photos, videos, and other media that were provided or found through Internet search.

One of the difficulties in investigating and interviewing personnel was the length of time between the incident and the beginning of our process. It allowed for persons to talk amongst themselves, form opinions, and forget some details. The initial reports written and sent to Mayor Kirk were found to be the best recollection of the incident from MRI's perspective. It must be noted that each person involved in the incident reported from their own perspective and formed opinions based on the role or function that they performed, their position within the department, and their own technical knowledge base. It was the role of the MRI team to filter the opinions and perspectives and then determine the facts to the best of our ability.

The post incident meeting was conducted in an open and constructive forum focusing on lessons to be learned. A specific agenda was adhered to and those in attendance provided information that helped to reconstruct the incident, outline actions that occurred leading up to the incident, and determine what has occurred in the aftermath of this event. It was a formal analysis. All officers, mutual aid fire departments, city departments, and staff involved in the incident were invited to participate.

# INCIDENT OVERVIEW AND OPERATIONS

## Date

December 14 – December 19, 2007

## Incident Number

07-0004208

## Weather

15° F with winds 5-10 mph out of the NW

## Sequence of Events

The following is a synopsis of the events that occurred over a number of hours and lasted nearly four days, beginning at approximately 2345 hours (11:45 pm) on December 14, 2007. This compilation has been taken from the reports filed by officers, chief officers, mutual aid companies that responded, and the Gloucester Fire Chief. Many of the actions taken were done simultaneously and some of them may not appear exactly in sequence. Further, in that there was no fire department recording of the radio or dispatch communications available, most times had to be estimated based on responders' recollections. MRI has included many of those time recollections in this part of the report. The Gloucester Police Department was able to supply MRI with audio recordings to review. These recordings enabled the MRI team to establish pertinent information regarding times during the incident. Most times are estimates based on elapsed time of the recording, while some times were established by listening to the dispatcher give the time on the recording.

On December 14, 2007, the GFD was operating with on-duty staffing of fourteen personnel: a deputy chief who was the shift commander three engine companies (Engine 4 - one officer and three firefighters, Engine 3 - one officer and one firefighter, and Engine 6 - one officer and one firefighter); two rescue units (ambulances) (R-1 - two firefighters and R-2 - two firefighters); and a ladder truck (L-2 - one firefighter). This staffing was typical based on funds available to replace staff that were scheduled to be off-duty. At approximately 2345 hours, the GFD fire dispatcher received the first of two phone calls reporting audible alarms with no smell of smoke, thought to be a single telephone report of a smoke detector activated at 80 Middle Street, the Lorraine Apartment Building. The building was well-known to the GFD and was located only one-half block from the Central Fire Station/headquarters. At 2346 hours, Engine 4 was dispatched.

According to the GFD's SOPs, the normal response to an incident requiring investigation of an alarm activation is the closest engine company. That would have been Engine 4, the single engine company assigned to the Central Fire Station/headquarters, with a crew of four firefighters, including a fire captain. At the time of the initial dispatch, Engine 4 was returning from an emergency medical call in East Gloucester. Therefore, the personnel that were at Central Fire Station/headquarters were also dispatched at 2346 hours: the ambulance with a crew of two and the ladder truck with a driver/operator. One of the firefighters who was assigned to the ambulance took the initial telephone call. She was then replaced by the

on-duty dispatcher and responded with the ambulance. The ambulance crew and ladder truck arrived on scene at 2349 hours and reported “nothing showing.”

1. The initial responders operated in the investigative mode<sup>1</sup>, receiving information from some building occupants regarding a smoke detector activated in an unknown apartment. During their investigation they notified arriving companies of an odor of smoke, but no fire located at that time. Based on this report, the first due engine company (Engine 4) elevated their response from a cold response (without emergency lights and sirens) to a hot response (full emergency response).
2. Upon the arrival of Engine 4, the officer reported nothing showing and stated that the company was investigating. Based on the conditions showing and no audible alarms sounding, their initial thought was that this was a possible false alarm. This was compounded by finding no occupants evacuating the building. As the officer and one firefighter, operating as a team, entered the building they were met at the front door of 80 Middle Street by the caller, who guided them to where the odor of smoke could be detected.
3. Prior to the arrival of the complete first alarm assignment, personnel on scene discovered a smoke condition in the area of the School Street entrance and further investigation found fire in the hallway. During this

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<sup>1</sup> During an “investigative mode” of fire department response, firefighters attempt to determine the reason for an alarm, light smoke condition, odor, or other unusual condition. The process includes an exterior size-up of conditions, a search of the building, and talking with building occupants to determine if an emergency exists. Typically, no hose lines are stretched, although fire extinguishers and hand tools should be brought into the building, and personnel should be wearing their full PPE, including SCBA.

investigation, the initial interior team heard a single smoke detector sounding in the distance, but found no hallway detectors activated or sounding any alarm.

4. The firefighters on the interior of the building continued to investigate while the remaining crew from Engine 4, who were outside on School Street, did a “walk around” external investigation of the building to determine the possible location of fire. The outside team from Engine 4 determined that there was a fire on the first floor/lowest level. They notified all companies on scene and requested that a 1-¾ inch hose line be stretched to that location.
5. At 2351 hours the captain from Engine 4 radioed to fire headquarters to “strike a box” (box 51-80 Middle Street). This radio command was a recognized alert and required the fire dispatcher to respond a first alarm assignment. A box assignment under the GFD’s SOPs requires two engine companies (Engine 4, already on scene, and West Gloucester Engine 6), Ladder/Truck 2 (already on scene), a rescue company (the ambulance, staffed by firefighter/paramedics, already on scene), and the on-duty deputy fire chief. In addition, an engine company from the Bay View Station is dispatched to cover headquarters.
  - a. When a first alarm assignment is transmitted, it is the policy and procedure in the GFD for Engine 3, located in the Bay View Station, to respond to the Gloucester fire headquarters to provide coverage at the headquarters station.

- b. A box alarm assignment would dispatch and respond all remaining on-duty personnel and equipment including the on-duty shift commander, Deputy Chief Stephen Aiello.
6. At 0001 hours Rescue 2 is enroute to the scene.
7. The two members who located the fire met with other firefighters and they hand stretched a hose line from Engine 4 into the building. The driver/pump operator charged and pumped the hose line and also connected another hose to a fire hydrant to get an additional water source (water is carried in tanks on the engine). The operations now changed to an offensive firefighting attack mode with Captain Aptt, the Engine 4 officer on scene, taking a firefighting command role.
8. Upon entry into the basement area a small fire, which appeared to be a shirt, was discovered in a basement corridor. The three-person attack crew assigned to Engine 4 then located the apartment, forced entry into the apartment, and extinguished the main body of fire located in one basement apartment; this fire involved the entire apartment. The report to command was that the fire was knocked down and crews were checking for fire extension.
9. The on-duty deputy chief (DC) had now arrived on scene and assumed incident command.
10. As the attack crew completed the knockdown and suppression of the main body of the fire in the apartment, the officer directed his company to

search the areas around the apartment and the floor above to check for fire extension.

11. During the search for vertical and horizontal fire extension, they found fire in a vertical pipe chase in the basement and they determined that the fire had extended to the upper floors. This information was radioed to the Incident Commander (IC), Deputy Fire Chief Stephen Aiello, at 0009 hours.
12. IC immediately requested a second alarm assignment.
13. At 0010 hours the second alarm assignment was dispatched. A second alarm assignment will request mutual aid composed of two engine companies, one from Manchester and one from Rockport, and a ladder truck from Essex. They were notified and dispatched. The exact time of the mutual aid request and arrival of these units is unknown.
14. As the second alarm was sounded, Fire Chief McKay was notified and was reporting to the scene.

The following is an outline of events that were established through all reports and the meetings that were held with response officers personnel. Based on conflicting reports from those operating on the fireground at this time and from those that arrived after the fire chief's arrival, it is inconclusive regarding what, if any, command and control was established. All of the reports submitted by the fire chief showed his perception was that he was in command of the incident from his arrival and remained so throughout the incident. Interviews and reports with the officers on scene differed greatly from the fire chief's perspective and most indicated that they did not see any command structure or

understand there to be a formal command structure until the arrival of the Massachusetts Fire Services Incident Support Unit (ISU) on scene at approximately 0300 hours. (Chief Willette from the ISU assumed command after meeting with IC McKay and a number of the mutual aid fire chiefs and officers that were on scene.) Because there was such a difference in perspective from the fire chief and the other fire officers on scene who submitted a report to MRI, we have included Fire Chief McKay's After Action Report (Post-Incident Analysis Worksheet), dated November 26, 2008, as Appendix C.

15. The fire chief arrives and meets on the School Street (B)<sup>2</sup> side of the fire, with Deputy Fire Chief Steve Aiello, the IC.
16. Deputy Fire Chief Steve Aiello briefed Chief McKay on the conditions as his interior crews were reporting fire extending vertically and horizontally within the building.
17. Both Chief McKay and DC Aiello noted the smoke condition visible from the exterior was minimal and hoped the crews had found and stopped the extension of the fire.
18. The chief chooses not to assume command and walks around the building to perform a 360-degree size-up and to evaluate the interior conditions on the first floor. He does so without donning full personal protective

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<sup>2</sup> A uniform building sector identification system is used at fire scenes. Side A is the front of the building (usually the address side); working clockwise, Side B is the left side, Side C is the rear of the building, and Side D is the right side. Exposure buildings (structures that are close enough to the fire building to ignite from flames or radiant heat) are identified based on the same system (e.g., Exposure B would be located to the left side of the fire building).

equipment (PPE) including self-contained breathing apparatus (SCBA) which is in direct violation of all safety considerations.

19. The fire chief enters building and could only smell, but not see, smoke. He walks from the first floor corridor to the main entrance. He exits the building through the main entrance on the B side (School Street) near the A side (Middle Street). He assists a firefighter to advance a 1- $\frac{3}{4}$  inch hose line into the first floor.
20. The fire chief returns to the B (School Street) side of the building.
21. Arriving on the scene, Engine 3, as the third due engine/pumper, was assigned to bring an attack line to the second floor.
22. While these actions were taking place, the Rescue 1 (ambulance) crew started to search and evacuate the building beginning on floor 1. They continued their search to the upper floors.
23. Ladder 2 was positioned at the B/C (Middle Street/School Street) corner of the building; the aerial was raised and readied for ladder rescues on the School Street (B side) and the Library gravel parking lot (C side).
24. While checking for fire extension, firefighters forced entry into the garage of the building. Once entry was made into this area, large embers were noticed falling from a pipe chase. An additional 1- $\frac{3}{4}$  inch hose line was used to attack the fire in the pipe chase.
25. While this was occurring, third and fourth 1- $\frac{3}{4}$ " hose lines were placed into operation on the second and third floors for firefighting and to protect the interior stairway.

26. A thermal imaging camera (TIC) was used to check for fire extension. Fire and heat was found in the floor, walls, and ceiling.
27. Crews opened up walls and ceilings and used a 1-¾ inch hose line to extinguish fire in these hidden areas. Due to the large amount of fire, they were unable to make significant progress.
28. Incident Command was notified of fire conditions found on the second floor.
29. Crews re-located a line to the third floor with the personnel from Rescue 1.
30. Engine Company 3 then attempted to advance hose line down the hallway to the A/D side and found the floor to feel soft and spongy. High heat conditions and fire were detected in the floor, walls, and ceiling by the TIC.
31. Crews then passed two rooms with severe fire conditions. The floor was found to be very weak, and crews were unable to make progress. The crew notified the IC of conditions.
32. Simultaneously, the Rescue 1 crew (ambulance crew) was forcing entry into apartments and rescuing/evacuating residents on the second and third floors of the building. These two firefighters were operating without any charged hose lines and were operating above the fire floor.
33. Rescue 1 crew was joined by other firefighters in order to notify, evacuate, and assist the occupants from the twenty-two apartment units.
34. Those crews assisting in fire control and extinguishment, as well as those assisting in evacuation, were also continuing to look for fire extension throughout the building with the use of TICs.

35. The fire chief has not yet taken command, nor does he report back to DC Aiello, but instead gives direction to the evacuated occupants to go to fire headquarters for two reasons:
- a. First, to get them out of the cold as many were dressed in night wear and coats; and
  - b. Second, so that the tenants could do a head count and tell him which tenants were not with them.
36. The fire chief then makes contact with Deputy Chief Steve Aiello and they discuss the deteriorating conditions and how far the search and rescue process had progressed.
37. Fire chief now takes command and the transfer of command change was radioed to Headquarters by Deputy Chief Steve Aiello at 0020 hours. Deputy Chief Aiello is assigned as Operations Officer by the fire chief.
38. The fire chief immediately requests third and fourth alarms at 0021 hours.
39. The GFD dispatcher notifies command that they are in "Phase Two" and that Beverly Control<sup>3</sup> should be told they are in Phase Two. (Phase Two means Beverly Fire Dispatch/Control takes over the dispatching of mutual aid equipment. The written pre-planned mutual aid response running card requires two engine companies on the third alarm and two engine

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<sup>3</sup> The Beverly Control Fire Mutual Aid Radio Coordination Program is run from the Beverly Fire Department Fire Alarm Office. This program provides for supplementary dispatch assistance for neighboring communities suffering a major fire or emergency incident or multiple incidents which strain the local resources and require resources from other near-by communities. The assistance provided by the Beverly Control Dispatchers frees the local fire community's dispatchers from a large portion of the mutual aid radio traffic, and allows them to focus on supporting the local incident(s). The program uses 10 Alarm Running Cards to enable the efficient and orderly movement of emergency resources both to support the incident(s) in progress and to stand by for additional incidents.

companies and an aerial ladder company on the fourth alarm. This pattern of two engine companies and two engine companies with a ladder company is repeated for subsequent alarms.)

40. IC assigns staging officer and directs Captain Joseph Aiello (GFD) and dispatch to use the Shaw's Market parking lot on Railroad Avenue as a staging area to prevent the surrounding streets from becoming parking lots for apparatus arriving.
41. Deputies Dench and Schlichte arrive on scene. The two deputy chiefs had reported to Central Fire Station/headquarters for radios and PPE and then report to IC. At this time, they do not receive any specific direction.
42. Both deputies determine that there is a serious need for water and make attempts to use hydrants in the area.
43. When they determine that the supply is ineffective, they establish a water relay and supply from hydrants near the harbor.
44. The water supply was established with mutual aid engine/pumpers that laid hose down Hancock Street to the Rogers Street hydrants.
45. The water main on Rogers Street is a twenty inch in diameter main with a large fire flow capability. The deputies' knowledge of the water system, combined with input from the Gloucester Department of Public Works (DPW) (Keith Keating on scene), confirmed that Rogers Street was the best place to obtain additional water from hydrants instead of Main Street's smaller and older main.

46. It is apparent at this time that command has not filled several key positions within the incident command system (ICS<sup>4</sup>). The only position established by the IC was the operations officer. The water supply officer positions were apparently self-assigned. There is no documentation of who was assigned to sectors A, B, C, and D.
47. Engine 3 and Rescue 1 crews transmit a report to Operations Officer DC Aiello and IC Chief McKay that at that time there was one known resident that was unaccounted for on the third floor.

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<sup>4</sup> ICS is a major component of the National Incident Management System (NIMS). It is a widely applicable management system designed to enable effective, efficient incident management by integrating a combination of facilities, equipment, personnel, procedures and communications operating within a common organizational structure. ICS is a fundamental form of management established in a standard format, with the purpose of enabling incident managers to identify the key concerns associated with the incident—often under urgent conditions—without sacrificing attention to any component of the command system.

ICS is used to organize on-scene operations for a broad spectrum of emergencies from small to complex incidents, both natural and manmade. The field response level is where emergency management/response personnel, under the command of an appropriate authority, carry out tactical decisions and activities in direct response to an incident or threat. Resources from the federal, state, or local levels, when appropriately deployed, become part of the field ICS as prescribed by the local authority.

As a system, ICS is extremely useful; not only does it provide an organizational structure for incident management, but it also guides the process for planning, building, and adapting that structure. Using ICS for every incident or planned event helps hone and maintain skills for the large-scale incidents, such as the Lorraine Apartment Building fire.

ICS is used by all levels of government—federal, state, tribal and local—as well as by many non-government organizations (NGOs) and the private sector. ICS is also applicable across disciplines. It is normally structured to facilitate activities in five major functional areas: Command, Operations, Planning, Logistics, and Finance/Administration. Intelligence/Investigations is an optional sixth functional area that is activated on a case-by-case basis.

In order to receive grants from the U.S. Department of Homeland Security, jurisdictions must be able to demonstrate that they have instituted ICS. Training and procedures are not limited to fire and police departments. All agencies and personnel that could be involved in an emergency event or disaster response must be trained in ICS and institute ICS policies and procedures. At the local level, examples of agencies and personnel who should be trained in ICS include the chief executive, public works, public health, finance, purchasing, and harbormaster.

For further information about NIMS and ICS, see:  
[http://www.fema.gov/pdf/emergency/nims/NIMS\\_core.pdf](http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf)

48. Operations Officer (Deputy Chief Steve Aiello) reports to command that a person was seen in a third floor window on the D side of the building and requests personnel and a ladder for a rescue attempt.
49. IC (Chief McKay) directs two firefighters to take a 35-foot ladder off Ladder 2 and take it to Deputy Aiello. (A police officer and a bystander, later identified as an off-duty police officer, assisted in carrying the ladder from the C side around to the D side.)
50. Within moments of this tactic being ordered, the fire vented through the roof, either via the stairs to the roof, the light tower, or the elevator shaft.
51. While the fire was spreading quickly:
  - a. A rescue attempt was on-going on the D side;
  - b. Off-duty personnel were reporting in for assignment; and
  - c. Additional apparatus, both in a staging area and to surround the fire building with master streams and aerial ladder pipe streams, were arriving on scene.
52. A crew of three firefighters still remained on the third floor landing and began to move down the hallway in order to initiate a rescue. While moving down the hallway, the floors began to soften and the sound of the fire increased. There were two rooms in front of the crew heavily involved in fire, which could be heard and were also visible with the use of a TIC.
53. Due to the large amount of fire, crews are unable to make much progress. They were aware that the floor was beginning to feel soft and spongy, which is an indication of imminent collapse. They also detected high heat

conditions and found fire in the floor, walls, and ceilings through the use of a TIC. The crew passed by two rooms with heavy fire, reported severe fire conditions, and made the following radio transmission: "Floor very weak, large amount of heat and fire; unable to make progress."

54. At this point of the incident any further attempts to reach the fourth floor by firefighting companies were unsuccessful due to the untenable conditions because of heavy fire and heat conditions.
55. The operations officer communicated with the interior crews and continued to evaluate the conditions on the A (Middle Street) side and D (Temple) side.
56. At this point the IC or the operations officer (it is unknown who is directing interior companies at this time) orders crews operating in the interior to evacuate the building. It is undetermined whether this order was the result of a decision to change tactics and strategy from an interior, offensive firefighting effort to an exterior, defensive operation, or whether this was an order for an immediate emergency evacuation due to dangerous conditions and the potential for imminent collapse of the building or portions of the building.
57. An order for the emergency evacuation of the building was sounded and all firefighters began to exit.
58. It is uncertain as to who actually gave the order to evacuate - the fire chief, who was concerned about smoke showing from the mortar joints (another indication that collapse was imminent) - or an officer on the interior who

determined that the conditions were rapidly deteriorating. It is possible that both the IC and the interior officer simultaneously directed personnel to leave or evacuate the building. (The GFD'S SOP for radio announcements includes ordering the evacuation of the building by all firefighters and air horns being activated five times as an audible evacuation signal. This procedure was followed.)

59. As the order was given for the emergency evacuation, there was a concern that the interior crews had not exited the building, and it was believed that some crews might be trying to reach a potential victim on the third floor. This was of grave concern as stairwells were beginning to ignite from the first floor to the fourth floor on the C side of the building and heavy dark smoke was beginning to push out of the apartment windows.
60. Chief McKay reported that he ordered all firefighters to evacuate the building and he assigned Captain Aptt to conduct a personnel accountability report (PAR).
61. Once all firefighters were accounted for they were assigned to other tasks. It is uncertain if they were directed by the operations officer (DC Aiello) or the IC (Chief McKay).
62. The firefighters exited the building and a PAR was completed face-to-face in order to keep the radio frequency clear of excessive traffic. There was no documentation of a PAR being conducted and no company reports documented. This is true for the remainder of the incident.

63. After evacuation of firefighters from the building, engine companies from Essex and Rockport were assigned to the A side for exposure protection at the YMCA and the building next to the YMCA to keep the fire from spreading to those buildings.
64. It is apparent at this time that command and control is minimal and that no specific divisions or groups or other positions within the ICS have been assigned. (At this stage of an incident we would have expected to see some of the following positions filled: Safety Officer, Rapid Intervention Team (RIT), specific officers designated as Sector Officers or an Exposure Group, Water Supply Officer, and EMS or medical officer. Based on staffing, the IC would not have been able to fill all of these positions; however, he should have established some of them.)
65. A command post is established at the southwest corner of fire headquarters (B/C side of building).
66. Though a command location was established, it is uncertain if a command **structure** was established. There is no indication that any divisions or groups that are required under ICS were assigned.
67. Operations officer (Deputy Chief Aiello) notifies the IC that the rescue attempt failed on the D side and that they had at least one deceased victim. (This would turn out to be the only fatality of the fire.)
68. Deputy Chief Aiello as the Operations Officer runs operations from the A side of the building. (A Division assigned yet not properly notified or named.)

69. IC (Chief McKay) requests a fifth and sixth alarm for both off-duty manpower and for mutual aid due to heavy fire conditions noted by the IC on the C side lower and upper floor stairwell. He realized that they would require multiple hose streams and aerial ladders to surround the fire building.
70. IC made contact with the mayor simply to keep him informed
71. IC also tried to contact the Gloucester Police Department (Lieutenant Joe Aiello) as there was a need for a senior ranking police officer in the command post to coordinate traffic control, routing of apparatus into the fire scene from staging, and spectator control.
72. IC directs the Essex mutual aid aerial ladder to the A/D side to establish an elevated master stream and IC requested an engine/pumper from staging to provide the ladder truck's water supply.
73. Gloucester Ladder 1, manned by off-duty, recalled Gloucester firefighters, was dispatched into the Library's gravel parking lot to establish an elevated master stream<sup>5</sup> on the Lorraine Apartment Building and for exposure protection of the Temple on the D side of the building.
74. Sparks and brands from the fire were falling on downwind properties. A mutual aid company was assigned to the downwind area to patrol and search for any roof, gutter, or exterior surface fires.

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<sup>5</sup> A master stream is the term for the delivery of water on a fire at a rate of 350 gallons per minute (gpm) or greater. Master stream devices include deck guns (attached to fire pumpers or placed on the ground) and deluge guns that are attached to the end of aerial ladders or aerial towers.

75. Heavy fire was impinging on the aerial ladder of Gloucester Ladder 2, which was operating a master stream on the building. The IC (McKay) ordered a firefighter on scene to rotate Ladder 2's aerial ladder away from the flames and directed the aerial ladder master stream to be flowed into the rapidly spreading fire on all floors of the C side.
76. The IC (McKay) directed Ladder 2 to put the nozzle directly in the building windows. The operator encountered a control failure on the master stream nozzle rotation that hampered his ability. The problem cleared within minutes. (This is an example of micro-managing a job function or duty versus the use of a chain of command and span of control where each person has only one supervisor at an incident. The ICS is established to eliminate this type of situation.)
77. The IC (McKay) directed Engine 4 to use its deck gun to flow water into the building from the A/B side of the building.
78. Both master streams should have been flowing between 500 and 1,000 gallons per minute (GPM). Visual evidence indicated: "No master stream was supplying more than 150-200 GPM".
79. All master streams were operating ineffectively at this time. This was due to an inadequate water supply because the city hydrant system in this area was being taxed beyond its capacity.
80. The building was becoming fully involved with fire.

81. Ladder 2 and Engine 4 were now in a “collapse zone” from the B (Middle Street) side wall. The equipment and its crews were at risk from damage and injury if the wall collapsed in their direction.
82. No specific collapse zone was established by the IC. The establishment of a collapse zone requires the immediate removal of personnel and equipment from the zone.
83. The IC made repeated radio announcements concerning the collapse potential of walls and the need to observe an initial 50-foot collapse zone.
84. Though there was a collapse potential, the Command Post was never relocated and remained very close to the collapse zone.
85. The IC directed (or operators did so independent of any direct orders) Ladder 2 and Engine 4 to be shut down and moved away from the building to prevent loss of these vehicles in a collapse. (Apparatus are moved in an “emergency mode” with hose lines attached.)
86. Within minutes of the apparatus repositioning, the B side wall collapsed into Middle Street.
87. After the initial collapse of the Lorraine Apartment Building, this zone was increased to 100 feet based on the experience of the initial collapse and masonry being thrown 50 to 75 feet from the walls.
88. The collapse was made more violent and dangerous by the B side wall knocking down utility wires and poles as the wall collapsed. The electrical wires were arcing and sparking, and two pole-mounted transformers, immediately opposite fire headquarters, were impacted. One transformer

spun on the pole and the other was catapulted into the air and crashed to the ground. Both were spewing transformer oil creating a hazardous waste incident. No one was hurt in this major collapse with electric wires thrown around and transformers flying.

89. IC directs that ground level deluge gun be set up in the Library's gravel parking lot as exposure protection for the Temple.
90. IC directs another deluge gun to be set up at the corner of School and Middle Streets.
91. There is insufficient water supply for fire building or any exposure.
92. Operations officer (Deputy Chief Aiello) reports the Temple was igniting and that crews on D side are attempting an interior fire attack in the Temple.
93. The interior fire attack teams were quickly driven out of the Temple by heavy fire conditions.
94. A second aerial ladder was set up near the Temple to attack the Temple fire with handlines and portable monitors.
95. A Salem engine company was positioned at the back of the Temple in the paved parking lot of the Library and a Wenham engine company was positioned on Center Street.
96. Both engines used their deck gun master streams effectively on the Temple and the Lorraine Apartment Building respectively.

97. IC determines that the strategy was now to keep the fire from spreading to the Sawyer Free Library on the east side and the Trinity Church on the west side.
98. The radiant heat from the collapsed B side wall of the Lorraine Apartment Building was causing the Trinity Church to smoke.
99. IC directed a street level deluge gun stream to be turned on the Trinity Church to cool and protect the church. This exposure protection was effective.
100. IC directs the placement of two additional aerial ladder trucks to protect the Sawyer Free Library exposure on Dale Avenue and one at the intersection of Dale Avenue and Middle Street.
101. There was a severe water supply issue at this time.
102. Master hose streams are ineffective.
103. It is apparent at this time that IC has not yet established several key positions within the ICS.
104. Chief McKay retains command for a time period of two and one-half hours beginning approximately twenty-five minutes after initial response and arrival of fire companies and maintains command until the Massachusetts Department of Fire Services ISU arrives with Fire Marshal Steve Coan, Concord Fire Chief Kenneth Willette (Northeastern Massachusetts Operations Chief), and a number of other area fire chiefs.

105. At approximately 0300 hours, Chief Willette assumes command after meeting with IC McKay and a number of the mutual aid fire chiefs and officers that were on scene.
106. Chief McKay believes that he has retained command of the incident.
107. The ISU begins to plan for continued operations for a 12-hour operational period from 0700 to 1900 hours.
108. Command develops an Incident Action Plan (IAP).
109. Command decisions were made by the ISU to confirm and/or appoint an operations officer, water supply officer, safety officer, and several other key command positions to survey the scene and focus on the responsibilities of these positions with a report back at 0700 hours.
110. Command plans for:
  - a. food and rehabilitation for the responders;
  - b. relief crews for personnel that had to leave or were changing shifts; and
  - c. assignment of a public information officer (PIO).
111. Chief McKay is assigned by Command as the PIO at fire headquarters. His role was to give updated information to the media and to answer questions along with the mayor and the state fire marshal. A press conference is scheduled for 0630 hours.
112. An initial size-up around the entire fire scene perimeter resulted in a proposal to bring in a task force from other communities that were farther away (e.g., Boston, Chelsea, etc.). The goal was to replace deployed

apparatus so they could return to their quarters and bring in fresh firefighters. (Utilization of task forces is established in the written Massachusetts Fire Mobilization Plan. This plan is utilized to deploy resources for significant or long duration incidents.) Because of the scope of the incident, along with the probability of multiple days for the overhaul of the buildings and continued search for any victims, it was thought that this strategy would be safer and more effective than by only using overworked, cold, and tired Gloucester firefighters.

113. Chief McKay did not approve of outside fire departments responding and felt that the Gloucester fire firefighters could handle the tasks required over the next few days. Despite suggestions by the ISU, the fire chief prevailed and no additional task forces were deployed:

*Chief McKay, "However, my years of experience and size-up of the fire indicated that we could begin to start releasing operating mutual aid companies around 7 AM by which time the majority of the heavy fire would be controlled. I suggested and ultimately prevailed on a plan for mutual aid apparatus to pick up hose, take down aerial ladders, and release mutual aid companies. The intent was to position Gloucester fire apparatus in key locations using existing water supply hose lines to operate deck gun master streams and ground deluge guns to continue the fire control and extinguishment. Breakfast was changed from hot dogs (offered by the rehab 5 truck) to donuts, coffee, and muffins solicited from Jim's Bagel and Dunkin*

*Donuts, as well as MacDonald's meals such as pancakes and breakfast sandwiches."*

State Senator Tarr, City Councilor Romeo, and other community leaders arrange for food to be delivered to on-scene personnel.

114. Based on the fire chief's decision, the scene was left vacant a number of times throughout the next several days while unmanned hose streams poured water onto the site.
115. The light tower structure in the Lorraine Apartment Building had collapsed earlier and the potential for collapse of the four-story elevator shaft was a concern for firefighter and spectator safety. The elevator shaft was fire weakened and the strong west-northwest wind was hitting the shaft, creating a lateral load that could topple the structure.
116. Sander Schultz, Emergency Medical Services (EMS) Coordinator, was not contacted by the department and as such did not respond to the incident until sometime early the next morning (as a staff position, not a line position, he was not notified with the other line personnel). There was no method established in the GFD for the notification of the EMS Coordinator for an incident of this scope. Further, no EMS position was established through the ICS. Even after the EMS Coordinator's arrival, there was no formal filling of the EMS position.
117. Schultz established the EMS coordination for the city as well as establishing EMS for the incident. He made contact with the captain at the

Central Fire Station/headquarters, who was in charge of the watch. The EMS plan was to utilize and effectively dispatch the Lyons and Beauport EMS resources until the GFD rescue companies could be re-established.

118. Two concerns were to have an EMS unit available to the scene and then to re-establish the capability to respond in Gloucester. A plan was developed that would staff the outlying fire stations in Gloucester. They identified available and appropriate crews and assigned them to the outlying stations and the rescue squads.
119. Lyons Ambulance Service and Beauport Ambulance Service both had resources on scene. Lyons had a supervisor near the GFD watch station who reported that he had a BLS and an ALS unit close by and ready to respond, and Beauport had an ALS Ambulance in Bay 1 of the GFD headquarters. Neither knew exactly who they should report to and the Beauport Ambulance would not have been able to respond due to multiple obstacles, including hose lines and apparatus that were located on School Street. This ambulance should have been relocated to a more effective location earlier in the incident.
120. Once they re-established the outlying stations with rescue squads, the EMS officer released the Beauport and Lyons ambulances.
121. At approximately 0530 or 0600 hours, an incident command briefing was held in Bay 5 of the GFD headquarters. (It bears stating that this was the closest the incident came to having an established ICS.) However, this briefing was limited to fire personnel only, with no other disciplines in

attendance, such as police or public works. No time was set for the next meeting. (State Fire Marshal Coan was present, along with Chief McKay, the senior staff of the GFD, and a number of fire chiefs and senior personnel from fire departments around the North Shore.)

122. At 0600 hours the EMS branch gave a briefing of the current status of EMS and what the plan would be for the next hour or so.
123. As 0700 hours approached, the plan to release mutual aid companies was implemented. Several mutual aid companies requested diesel fuel which was accommodated by refueling at the Gloucester DPW yards, using the GFD's diesel keys for access.
124. We cannot confirm whether or not a formal demobilization plan was established.
125. When outside agency resources were not needed, they would leave, checking out if possible. It is uncertain how these fire departments determined if they were no longer needed other than with possible discussions with the Gloucester fire chief.
126. When GFD personnel decided they should leave or were released by their officers, they were expected to check out with the watch captain, who was located at the Central Fire Station/headquarters.
127. Several neighboring mutual aid companies (Rockport, Essex, and Manchester) provided coverage in Gloucester fire stations.
128. During the rest of the day, EMS Coordinator Schulz assisted with scene security, scene safety, and became the liaison officer with outside

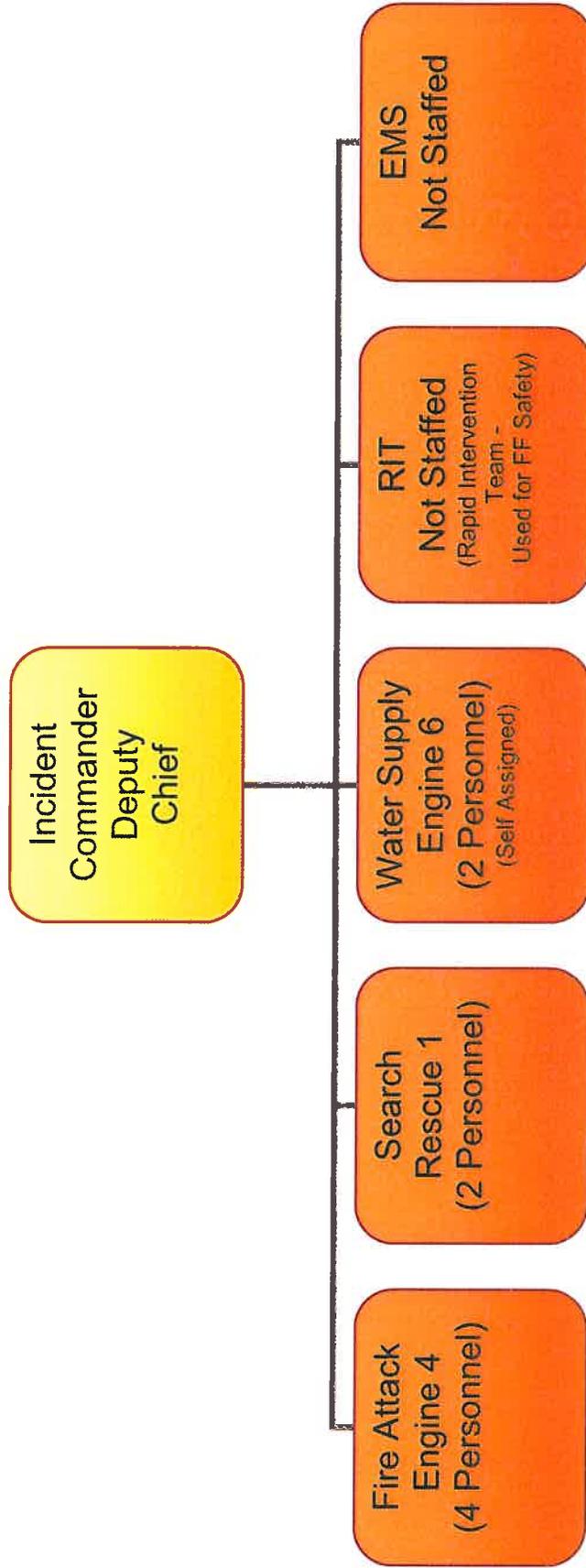
agencies, such as the crane operator, and the telephone, electric, and gas utilities.

129. Flare-ups were expected and they were easily controlled by the master streams, deluge guns streams, and/or handlines. Firefighters reconfigured hose lines and re-positioned Gloucester fire apparatus and equipment (e.g., ground deluge guns) to provide effective control of the open flames and smoldering remains. This would continue for the rest of the incident.
130. Handlines were advanced by firefighters, often to get below or behind collapsed structures that could not be reached by straight streams from the master stream appliances.
131. Because of the freezing temperatures, sand was spread to prevent apparatus from sliding and personnel from falling.
132. The Essex aerial could not be retracted because of ice, and portable heaters were requested. The heaters were rented at a local rental shop and kerosene was purchased at a local garage. A make-shift tent was placed over the Essex aerial ladder, which was now in a horizontal position, extending beyond the rear of the truck chassis. The heaters were placed inside the tent. The thawing process took approximately one hour to allow the ladder to retract without damaging the ladder.

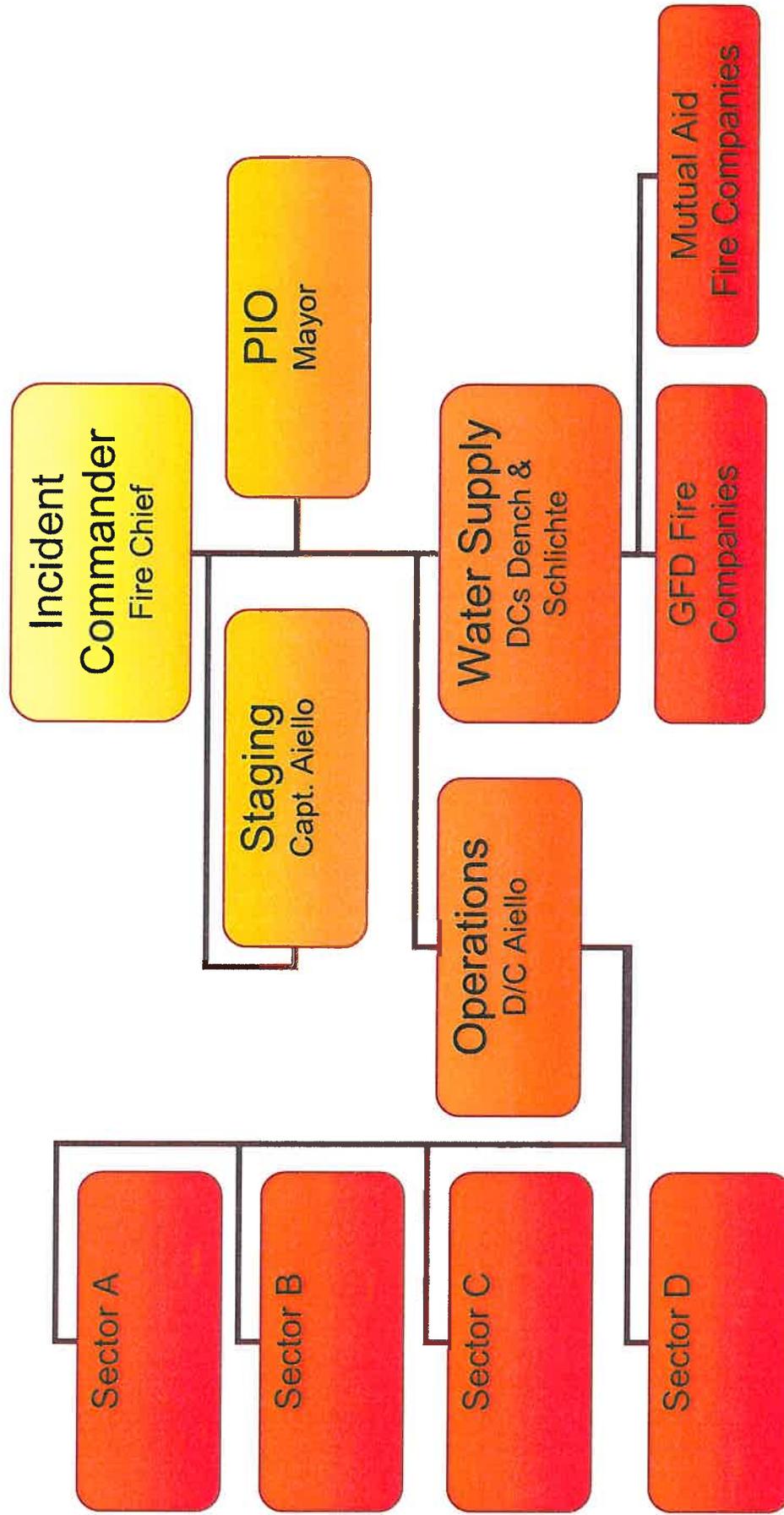
The incident continued for at least four more days as companies and agencies remained on scene for victim recovery, overhaul and extinguishment, fire investigation,

and restoring the downtown area to a safe and secure area. The final companies left the scene on December 19, 2007.

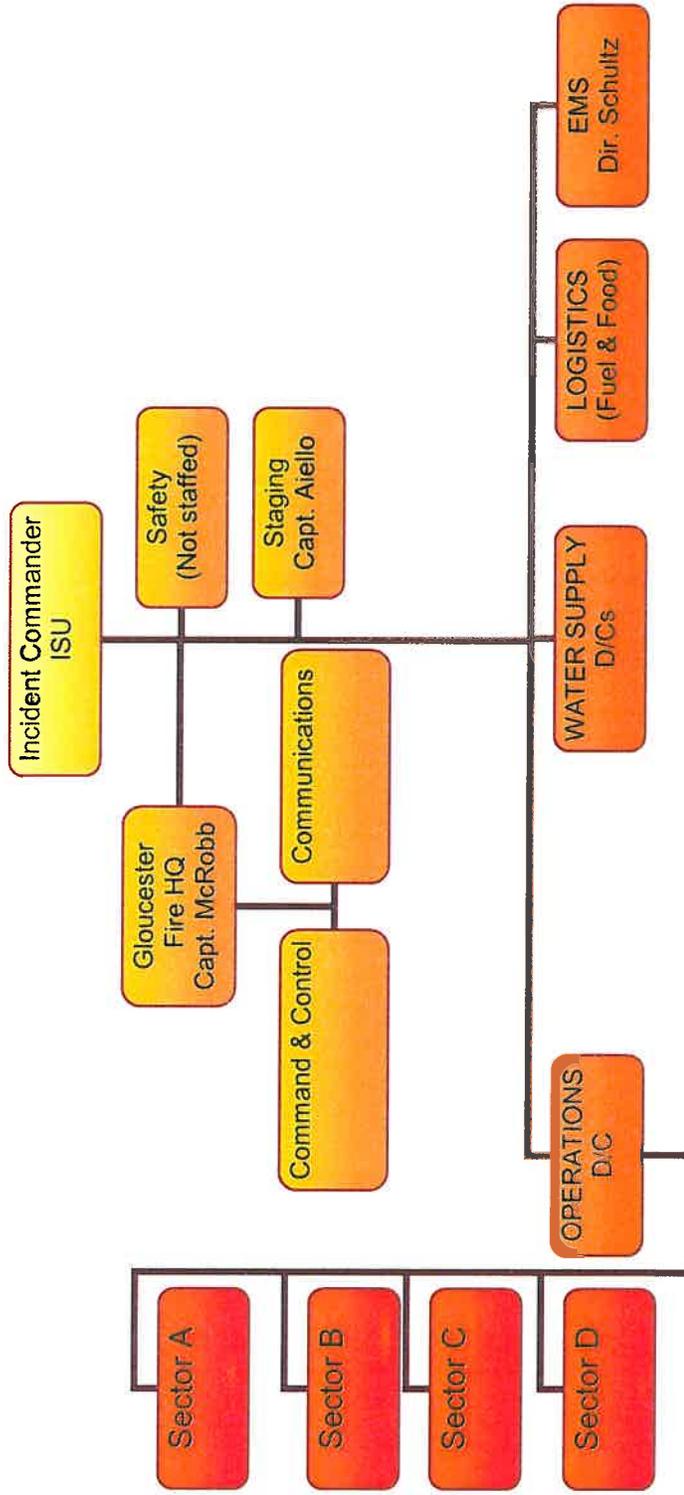
# Initial Incident Command System



# Incident Command System at Operational Period (0030 – 0300)



# Incident Command System at Operational Period (0300 -0730)



## APPARATUS AND SUPPORTING AGENCIES

### Summary of Units and Responding Organizations and Agencies

While many of these agencies were requested by the IC, there were also many emergency service, state and local agencies that arrived on the scene on their own accord. This overwhelmed the IC, who was not able to get enough of the right type of resources when needed. This is a symptom of the weak ICS in place during the first three hours of the incident.

- ❖ Mutual aid fire companies
  - Nineteen engine companies from eighteen communities
  - Six ladder companies each from a different community
- ❖ Utilities
  - Verizon (telephone utility)
  - National Grid (electric utility)
- ❖ Rehab Five (private volunteer) unit – (Rehabilitation and food)
- ❖ American Red Cross
- ❖ Building owners and/or representatives
- ❖ Public assistance specialist
- ❖ Gloucester Department of Public Works
  - Highway Division for sand and salt
  - Water Division as a liaison to the water pumping stations and to support water supply sector
- ❖ Gloucester Police – on-duty and call back personnel
- ❖ Elected Officials
  - Mayor's office (Mayor Bell)
  - City Councilors (three)
- ❖ State Fire Marshal and resources
- ❖ Fire investigators
- ❖ Incident support command van and staff
- ❖ Rehab van and staff
- ❖ Massachusetts State Police helicopter
- ❖ Support staff (ex. Tents for meetings/security)
- ❖ Massachusetts Executive Office of Public Safety (Under Secretary Kurt Schwartz)
- ❖ Massachusetts Department of Environmental Protection
- ❖ Massachusetts Emergency Management Agency
- ❖ Massachusetts Office of the Chief Medical Examiner
- ❖ U.S. Bureau of Alcohol, Tobacco, and Explosives (ATF)
- ❖ Essex County District Attorney's Office

- ❖ Urban Search and Rescue Team members and resources (e.g., trailer lighting towers)
- ❖ Cape Ann Transportation Authority
- ❖ The media
  - Print media
  - TV media
- ❖ Number of volunteers that showed up to offer assistance

## ORIGIN AND CAUSE

### Area of Origin

Investigators have determined that in all probability, the fire began in the basement in an area near the center of the building. Due to the destruction, it is impossible to determine with greater specificity the area of origin. The fire's origin in that particular area greatly contributed to the quick progression and spread of the fire to other floors within the building.

### Cause

Due to the complete destruction of the building, the exact cause of this fire is undetermined. Several possible unintentional (accidental) sources of ignition were identified (such as electrical malfunction, human carelessness, etc.), but cannot be independently corroborated due to the damage to the building. Nonetheless, investigators have not found any information or evidence that this fire was either a criminal act or was intentionally set.

State Fire Marshal Coan said, "Some of the possible ignition scenarios identified by investigators were: improper disposal of smoking materials in either the furnace room or apartment A, an electric lamp igniting a couch, other combustibles too close to the lamp, or a mechanical or electrical malfunction. There is insufficient evidence to render one scenario as the most probable."

## DESCRIPTION OF THE STRUCTURE

### **80 Middle Street - Lorraine Apartment Building: Building Construction and Features**

The occupancy of the building was classified as "mixed use" business and multi-family residential. The business occupancy, a doctor's office suite, was located on the basement level, accessible from the Middle Street side. The first through the fourth floors contained twenty-four residential apartments.

The Lorraine Apartment Building was constructed as a hospital in 1910. It was a four-story, wood frame, building with a brick shell, known as ordinary construction. The building was 50 feet in length on the Middle Street side and 113 feet on the School Street and Temple (B & D) sides of the building. The Middle Street side was flush with the Temple (D) side and extended towards School Street for 28 feet. On the School Street (B) side, the front, Middle Street side, remained 28 feet wide for 34 feet and then expanded out to 113 feet, creating an "L" shape on the School Street side where the first floor main entrance was located at the base of the "L". The building had uniquely configured apartments with layouts of corridors and units (example, Unit 21, a third floor apartment, was only accessible from the fourth floor).

The Lorraine Apartment Building was of a building construction type known as "balloon construction", an inexpensive building method devised in the 19th century in which long studs run from the foundation to the eaves line, without fire stops. It had unprotected vertical openings to skylights designed to provide light to the inside apartments, but which also acted as a chimney for superheated gasses and advancing flames during

the fire. The building had unprotected pipe chases from the basement to the top floor. These features give flames and superheated gasses a direct route from the basement areas to the attic/cockloft, as well as across floors and ceilings at each level of the building.

There was no automatic fire sprinkler system or remote monitoring of the fire alarm system.

The interior of the structure had unenclosed wooden stairwells leading to the B and D sides, a mechanical elevator, and an air/light shaft located towards the C side, in the 50 foot deep by 113 foot long section of the building.

The number of occupants, based on the police interviews following the fire, was twenty-five. There were four vacant apartments at the time of the fire.

## **Fire Code and Building Inspections**

It is uncertain when the last inspection was conducted in the building. According to the Gloucester Building Inspector William Sanborn, the Lorraine Apartment Building was more than three years overdue for a safety inspection and did not have an occupancy permit. According to Inspector Sanborn such inspections, which are required by the State Building Code, look for "life and safety issues". The building did not have an occupancy permit since at least 1998. In December 2004, the Gloucester Inspection Services Department's zoning enforcement officer notified 80 Middle Street Partners that "an inspection is due on your multi-family dwelling." Sanborn said his department apparently took no action in response to the owners' failure to schedule the required

inspection. Sanborn said there was also no record of a response to a May 2006 letter to the owners informing them that an "egress" from a basement apartment was not operating properly. The letter directed the owners to repair the egress within three days.

## **Fire Protection and Warning Systems**

Based on statements from Fire Chief McKay and his reviews with all parties, the fire protection was thought to be battery-powered smoke detectors throughout the structure, both in the common hallways and apartments. It is unknown if these detectors were interconnected or if the building had hard-wired interconnected smoke detectors in the hallways. However, it appears that this system did not operate properly and sound alarms throughout the building. The fire department has no record relative to the last time the detectors were tested or inspected.

Because of its age, the building was classified as pre-existing and non-conforming. Therefore, it was not required by the State Fire Code to be equipped with automatic fire sprinklers. However, the lack of protected vertical openings (stairwells, light shafts, pipe chases) and means of egress issues (e.g., a third floor apartment accessible only from the fourth floor) created an imminent hazard to building occupants that should have been corrected.

## **Pre-Incident Plan**

A pre-incident fire plan was developed in 1991 by the GFD. It has not been updated and it is unknown when the plan was last reviewed. Neither the first arriving units, nor

the IC, had the plan available throughout the incident. The plan was reviewed for this report and it was determined that it was outdated and of minimal use for the building on the night of the incident. Further, there was no access to the plan during the fire.

## **Exposures**

The location of the building in the central downtown and historic area of the city and the proximity of the buildings around the fire building posed additional problems for firefighters on scene. This is not unusual in most cities in the country, but is especially common in older New England cities and towns with older buildings and congested downtown areas.

The synagogue was located less than ten feet away from the fire building. Once the Lorraine Apartment Building became fully involved with fire, the radiant heat, as well as the embers, brands and the probable direct flame contact, involved the synagogue. This was exacerbated by the lack of adequate water supply for fire extinguishment.

When the Lorraine Apartment Building began to collapse, it was inevitable that the buildings immediately in the collapse zones would become involved.

As the incident escalated, buildings within 50 to 100 feet were now exposed to the extreme radiant heat. Windows in some exposed buildings cracked from the extreme heat conditions.

Many buildings in the downtown area were exposed to this fire from large fire embers and brands (as large as 6") that were rising from the building, being carried by the wind, and falling throughout the downtown area. The previous day's snowstorm helped keep

the burning embers and brands from spreading the fire to the YMCA and buildings along Main Street because rooftops were snow covered.

## FIREFIGHTER SAFETY

- It appeared as though most, but certainly not all, firefighters on scene were wearing appropriate PPE, including helmets, coats, pants, boots, gloves, hoods, personal alert safety system (PASS) devices, and SCBA. (During the early stages of the incident, the fire chief enters the building to do a “walk through check” without full PPE.)
- No safety officer is assigned or even found to be included in the operating procedures of the department.
- A personnel accountability system was non-existent.
- No rapid intervention team (RIT<sup>6</sup>) was assigned or deployed.
- Overall, there was no evidence of the use of nationally recognized fireground safety practices.
- There is no record of PARs. However, after the emergency evacuation that occurred about twenty-five minutes into the incident, the initial IC (Deputy Chief Aiello) was assured that all fire personnel were accounted for. The MRI team cannot confirm that the PAR was complete at that time, and believes some members may have continued to operate inside the building attempting a rescue.
- There was no formal ICS established during the initial stages of the incident. The incident continued without an ICS for the first three hours.
- There was no chain of command or an appropriate span of control.

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<sup>6</sup> A rapid intervention team (RIT) is a team of two or more firefighters dedicated solely to search and rescue of other firefighters in distress. The RIT team has no other operational assignment during an incident. Multiple alarm fires may require multiple RIT teams.

- There was an insufficient number of fire personnel on scene to attempt the activities that were conducted in the initial stages of operations. Crews were operating unsafely above the fire floor without access to charged hose lines.
- Companies operating within the fire building without having the protection of charged hose lines.
- No operational periods, which would establish set times for crew replacement and rest/rehabilitation, were established.
- Resource management was inadequate and the accountability and tracking of outside resources was non-existent.
- Interagency organization and liaison was next to non-existent. The coordination of public health, American Red Cross, and other aid agencies was established separately from the incident command efforts.
- Scene security was inadequate to non-existent.

## COMMUNICATIONS

- Radio communications were disorganized, untracked, not recorded, and inadequate.
- There were problems throughout the incident with portable radios. Members on scene were unable to communicate even when there was clear line of sight.
- The department does not use pagers to notify call back of the GFD members. The department relies on a telephone tree methodology. The dispatcher contacts the off-duty deputy chief from the next shift, who then calls the members of their shift. This method is antiquated and highly inefficient.

- The deputy chief in charge of Group 1 knew his group was being called back to work. (When an off-duty group is called back, it is the job of the off-duty officers to individually call each member of their group to inform them of a call back. This practice is exceptionally slow and inefficient and does not allow the IC to have any idea of how many persons he/she has available and responding. According to Deputy Chief Schlichte, "I keep all of my group's phone numbers in my cell phone. I call Captain Joseph Aiello first, then we split the phone calls so as to get them done quicker. The school department can call any number of persons automatically. The fire department should have the same capability.")
- This problem was compounded later in the incident when the utility wires/poles collapsed due to the building collapse and all power, communication/radio and phone service was lost at the Central Fire Station/headquarters.
- None of the mutual aid departments responding were on the same radio frequency.
- Dispatching was difficult because by this time telephone communications into the Central Fire Station/headquarters had been lost. Dispatching was managed in cooperation with the Gloucester Police Dispatch Center using two-way radios, the NEXTEL phone in the GFD watch room, and personal cell phones.

## WATER SUPPLY AND INFRASTRUCTURE

Water supply was a major concern throughout the first two and one-half hours of the incident. There was sufficient water supply for the initial handlines (three 1-¾ inch handlines). Within twenty minutes of the arrival of the first firefighting companies, it became obvious that the firefighting strategy would change from an interior offensive fire attack to a defensive fire attack requiring a substantial water supply. As additional companies connected to hydrants in the immediate area and began flowing master streams, it was evident that there was not sufficient fire flow capability.

The fire department assumed that the fire hydrants in the immediate vicinity of the fire would be adequate. From the reports filed, including the pre-fire plan (though this plan was somewhat dated) and discussions with on scene personnel, it was expected that there would be sufficient fire flow for any building in that area of the city.

Because of the inadequate supply and diminishing water pressure, each additional apparatus that tied into the water distribution system in that area only exacerbated the problem. Because no water supply division or sector was established under ICS, each company was on their own in determining how to obtain sufficient water flow.

The problem continued to grow until two Gloucester deputy fire chiefs (who had arrived on scene separately yet simultaneously determined the need for a water supply plan) acted to relieve the problem. The two deputy chiefs started to work together to establish additional water supply lines down to Rogers Street where the most volume is

available. The plan ultimately ended up with five mutual aid engine companies pumping water up from five different hydrants on Rogers Street.

## Water Supply

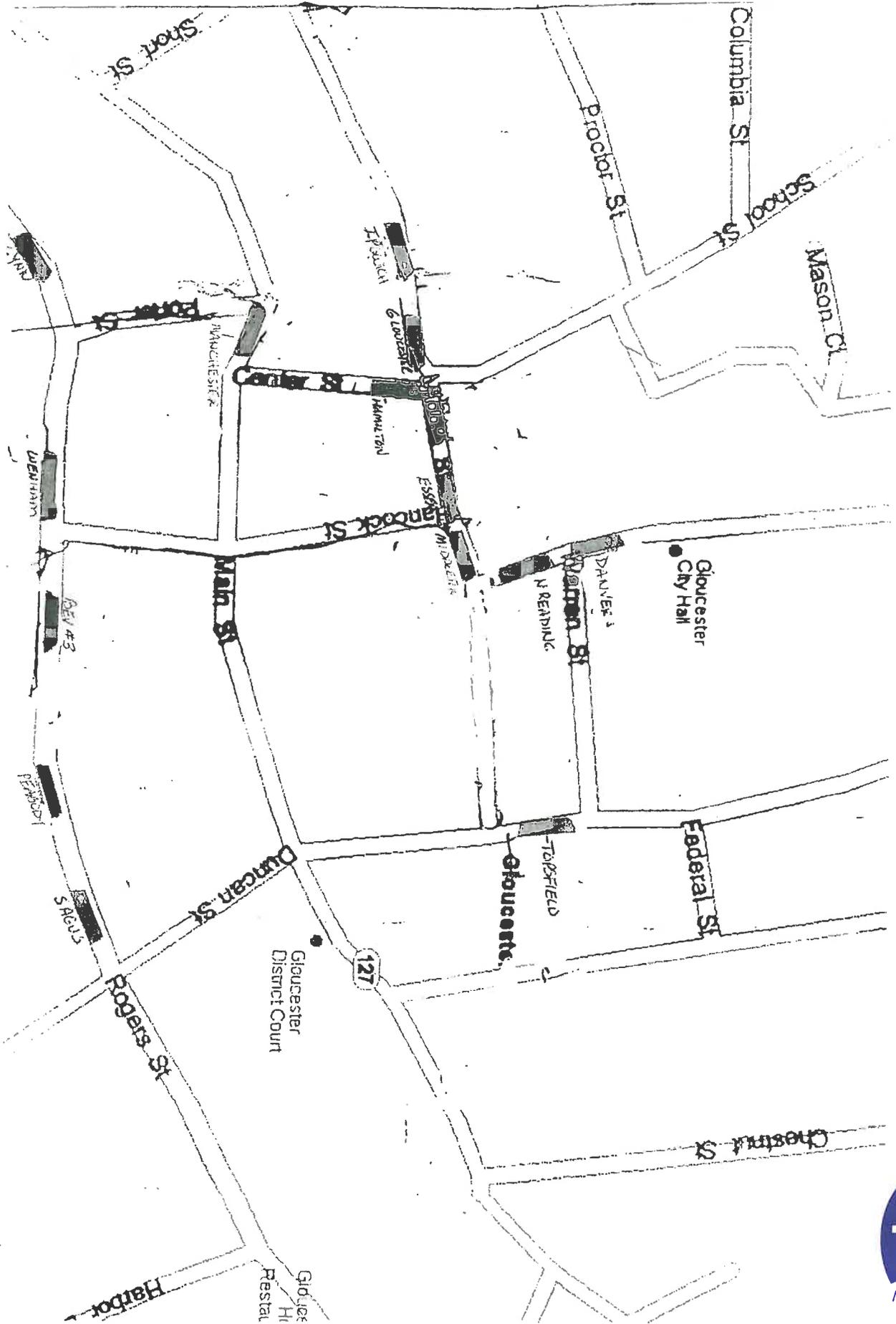
- Ipswich Ladder 1 on Middle Street fed from the hydrant on Short Street.
- Ipswich was feeding Gloucester lines on the corner of Middle and School.
- Lynn's engine, located on a hydrant at Rogers Street south of Porter Street, was feeding Manchester's Engine 4 (the 4 inch line going up Porter Street) on Main Street, and Manchester was feeding Hamilton's engine at the corner of Center and Middle Streets (the hose line going up Hancock Street).
- Wenham's engine, located on a hydrant at Rogers Street by Hancock Street, was feeding Danver's quint<sup>7</sup> on Dale Street and Middleton's ladder was located in or by the intersection of Dale and Middle Streets (the hose line going up Hancock Street).
- Beverly's Engine 3 was held in reserve on Rogers Street by Hancock Street.
- Peabody's engine, located on a hydrant at Rogers Street, north of Hancock Street, was feeding Essex's ladder on Middle Street. Middleton also had a line into the Essex engine.
- Saugus' Engine 5, located on a hydrant at Rogers Street by Duncan Street, had a 4 inch line going up Hancock Street to Danver's quint.

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<sup>7</sup> A quint, or quintuple combination pumper, serves the dual purpose of an engine and a ladder truck. The term refers to the five functions that a quint provides: pump, water tank, fire hose, aerial device, and ground ladders.

- North Reading's engine, located on Dale Street, was being fed from Topsfield, located on Pleasant Street. Danvers also had a line into North Reading.

It was determined that there had been a significant water main infrastructure problem at the time of the incident. Weeks after the fire it was discovered the main water valves in both Maplewood Avenue and Prospect Street were closed. This was determined by Mike Hale of the Gloucester Public Works Water Division.



## EMERGENCY OPERATIONS PLAN<sup>8</sup>

When an incident of this magnitude and probable duration occurs, command must immediately consider initiating the city's emergency operations plan. Though this investigation did not specifically review the entire Gloucester Emergency Operations Plan, it was understood that the fire chief also holds the position of emergency management director. This situation often leads to problems if the fire chief attempts to perform both roles without adequate staff support. Understanding and using the National Incident Management System (NIMS) makes these incidents easier to manage in a more efficient, effective, and safer manner.

It was evident that the emergency operations plan was not implemented until early the next morning with the assistance of the State Fire Marshal's Office, the Massachusetts State ISU, and the Mayor's Office.

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<sup>8</sup> A jurisdiction's emergency operations plan (EOP) is a document that:

- Assigns responsibility to organizations and individuals for carrying out specific actions at projected times and places in an emergency that exceeds the capability or routine responsibility of any one agency, e.g., the fire department.
- Sets for lines of authority and organizational relationships, and shows how all actions will be coordinated.
- Describes how people and property will be protected in emergencies and disasters.
- Identifies personnel, equipment, facilities, supplies and other resources available—within the jurisdiction or by agreement with other jurisdictions—for use during response and recovery operations.
- Identifies steps to address mitigation concerns during response and recovery activities.

An EOP should be reviewed and updated on a regularly scheduled basis, and table-top and full-scale exercises should be performed to test the plan.

## **Sheltering and Caring for Victims**

In addition to firefighting responsibilities, the IC must be aware and plan for victims requiring medical attention, rehabilitation, and sheltering. Short-term sheltering was established in the Central Fire Station/headquarters, but it was inadequate due to a lack of security, inadequate facilities, and insufficient staff to care for the victims.

There is a plan for sheltering at a local school although it was not initiated until much later in the incident.

## OBSTACLES TO COMPLETING PIA

- The time between the actual incident and the time this process of a formal PIA began.
- There was no formal incident critique or after action meeting for the incident conducted by the department.
- There was no recording log of fire department dispatches or radio transmissions.
- What records or reports were available were poorly kept (building inspections, surveys, SOPs, day logs, etc.).
- Records from the GFD were not easily accessible.
- Records from the GFD were not maintained electronically and were only available in handwritten documents.
- Memories of some of the people interviewed are blurred after nearly one year.
- Some persons had become defensive or forgetful.
- Other people's opinions may have impacted some people's memories.

# ***CONCLUSION***



**Municipal  
Resources  
Inc.**



**Municipal  
Resources**

## CONCLUSION

In completing this PIA, it must be stated that members of the department were very eager to assist in providing their perspective and opinions. Most officers were willing to offer their personal recommendations that will enhance future operations for the department. Many of those specific comments and recommendations have been included in this report without specific members being noted. Further, Mayor Kirk and her staff were accommodating and helpful throughout the entire process. Without the cooperation of the GFD, its members, and the City of Gloucester Police, Public Works and building departments, MRI would not have been able to successfully complete this report.

Due to a number of circumstances, the total involvement and loss of the building at 80 Middle Street was predestined from the moment that the fire occurred in the first floor/basement apartment.

The GFD was unprepared to battle a fire of this size prior to their initial response. The department had organizational problems, based upon the occurrence of another call the initial response was minimally staffed with firefighting personnel, personnel had not been sufficiently trained, and pre-planning and inspections were not routinely done. The extent to which the incident expanded might have been better controlled and possibly minimized through a stronger and more effective command structure. Further, additional training for all fire department personnel in strategy, tactics, and operations, as well as incident command training for all Gloucester departments, would have

provided a safer and more effective fire ground attack that could have reduced the scope and intensity of this fire.

In addition to the problems that we have identified in the fire department, one should not overlook the extreme challenges of fighting a fire in the Lorraine Apartment Building. The construction type (ordinary wood frame with brick exterior), with unprotected vertical openings, meant that any fire would spread rapidly. The lack of an automatic fire sprinkler system meant that the fire would not be controlled in its early stages. The lack of an automatic fire detection system with transmission of the alarm to an alarm receiving point probably resulted in the delayed notification of the fire department. Based on our understanding of conditions that existed in this building prior to the fire, it is remarkable that only one person perished in the fire. Many of the problems in the building could have and should have been corrected through regular building maintenance and repair efforts by the owners. An aggressive fire and building inspection and code enforcement program could have resulted in the mitigation of many of the problems that led to the fire spread.

The lack of adequate water supply was a major contributing factor to the spread of the fire from the Lorraine Apartment Building to the other buildings. The valve closures that resulted in reducing the fire flows could have been detected through a program of fire flow testing and record keeping.

During our analysis, the MRI team requested current copies of all policies and procedures, as well as any that were in affect at the time of the incident. The MRI personnel found that since the incident, neither the fire chief, nor the department, had

initiated any changes to the department's SOPs even though interviews with both the chief and other Gloucester fire officers believed that changes in operations were required.

## **Organization and Incident Command**

It was apparent during our investigation that there was a lack of command and control throughout the first few hours of the incident. Prior to the incident there was minimal cooperation between the fire chief and the fire department command staff. It was evident to the MRI team that there was no coordination of efforts in day-to-day operations. As a result, there was no coordination of efforts during the incident. Based upon the information received during this investigation, the MRI team believes that the fire chief is a "top down" manager and is doing most of the management of the department independently. The fire chief does not endorse or routinely practice the implementation of the incident management system.

The initial first alarm companies attempted to establish a command structure as they attempted to conduct search and rescue activities and extinguish the fire. The first deputy chief on scene continued to establish a command structure by assigning specific roles and functions. It was uncertain if those groups and divisions were specifically named, but with minimal resources and companies on scene this is typical of many fire departments.

The time to utilize a formal ICS should have occurred from the beginning of the incident. ICS was absolutely essential when the incident progressed and multiple alarms were

assigned. Establishment of a formal ICS did not occur during the first three hours of the incident. The fire chief arrived on scene at about twenty-five minutes after the initial response (it is difficult to determine as no radio logs or accurate records were maintained). He took command of the fire, but never established a functional command structure.

The National Response Framework, established by the US Department of Homeland Security, clearly states what type of incident command organization is needed to properly manage an incident of such magnitude. NIMS guides emergency responders, public and private sector executives, and emergency management planners in how to establish the correct type of incident command.

## **Safety**

The MRI investigation revealed numerous serious safety concerns. Firefighters on scene appeared to be appropriately equipped with PPE, including SCBA. There were no reports of malfunctions or misuse of SCBA.

The issue of inoperable portable radios was a problem throughout the incident, which increased difficulties in personnel accountability, safety, and tactical operations.

The lack of an ICS increases risks to firefighters and increases the likelihood that safety procedures will not be followed. The GFD's SOPs were not adhered to throughout the incident. Though some AARs supplied to us for review stated that roles were filled and safety functions occurred, we do not believe that these functions and roles were performed as established in the GFD's SOPs.

The following is a list of the most severe safety issues that occurred throughout the incident:

- There was no formal incident command.
- There was no chain of command with appropriate span of control.
- No safety officer was assigned or even found to be included in the operating procedures of the department.
- No RIT was deployed.
- Personnel accountability of firefighters, police, and other individuals on the fire scene (to determine their location, function, and well-being) was non-existent.
- No record of PARs. After the emergency evacuation that occurred about twenty-five minutes into the incident, the initial IC (Deputy Chief Aiello) was assured that all fire personnel were accounted for. The MRI team cannot confirm that the PAR was complete and believes that some members may have continued to operate inside the building attempting a rescue.
- Interagency organization and the liaison to outside agencies was non-existent without any coordination of public health, American Red Cross, and other aid agencies established separate from the incident.
- Insufficient fireground staff was on scene to support the operations that were attempted in the initial stages of operations.
- Crews were operating unsafely above the fire floor without access to charged hose lines.

- Companies were operating on the interior without adequate communications.
- No operational periods were ever established, thus the chief and other chiefs were required to operate throughout the entire incident without relief.
- Resource management was inadequate and accountability of outside resources non-existent.
- Scene security was inadequate to non-existent.

## **Staffing and Response**

The current shift staffing that is used by the GFD is done so based on the current collective bargaining agreement and the funds available through the fire department's municipal budget. Based upon the guidelines provided in NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (National Fire Protection Association, Quincy, MA, 2004 edition), response to an incipient level structure fire would have been adequate if all available units were in station and available and allowed to respond directly to the fire scene. A typical fire in an occupied building of this construction type would require up to twenty-four firefighters on the initial response in order to complete all the tasks required.

On the night of this incident the first due engine (Engine 4), which would have been located only less than 100 yards from the incident, was returning from a medical call in East Gloucester. This reduced the initial assignment by one person, as Engine 4 with

four firefighters normally would have responded to the incident. When the first three firefighters arrived on scene and determined that there was a need for additional personnel they radioed their report and Engine 4 immediately responded Code 3 (emergency mode with lights and sirens).

After arrival and determining that there was a probable fire, the officer of Engine 4 upgraded the response and requested a full structural assignment, which means a response by all available firefighters/officers on-duty. That would be a total of fifteen firefighters, including the deputy chief, who assumes a command role. This would be insufficient resources to fill all the functions that would be required to effectively combat a moderate fire within an occupied four-story apartment building. By the time the fire department arrived on scene, the fire had already extended beyond the area of origin and was extending throughout the building. At this point, the total destruction of the building was highly probable.

The initial tactics and strategy were correctly initiated and carried out. By watching the videos supplied, it was evident that there was a lack of staffing and issues with some basic firefighting operations. It is difficult to determine if this was a unique situation for this event or a general inability to perform some basic firefighting skills due to lack of knowledge, training, or experience.

As the incident progressed there was a delay in the arrival of mutual aid companies from surrounding communities. This is not unusual due to the method of notification and that some of the responding companies had limited staffing and some were relying on call or volunteer firefighters. In addition, the method of notifying off-duty Gloucester

firefighters by phone delayed their response. It is during this time that it appears that the incident began to rapidly escalate.

With minimal on-scene staffing and no command structure in place, it does not appear that there was any single strategy in place. Further, the officers on each “side” of the building were viewing the incident from a different perspective with independent ideas as to tactics. It was during this time that a single well communicated strategy with specific assignments needed to occur. After review of all reports and interviewing on scene personnel, MRI does not believe this occurred.

Once the building became totally involved it was obvious that a defensive strategy for the Lorraine Apartment Building was appropriate. At the same time an offensive strategy could have been employed to protect all the exposure properties (this would have included investigating for fire extension in surrounding buildings and positioning charged hose lines with staff in positions to protect those buildings). It was uncertain after reviewing video tapes, pictures, audio tapes, and eyewitness accounts if this had occurred sooner whether the Synagogue might have been saved. Certainly a more timely and aggressive tactic of protecting the Synagogue may have allowed more religious artifacts and items of importance to be saved or recovered.

This tactic may not have been employed because of the water supply issue as well as overtaxed manpower. However, an extension from the original fire building should have been anticipated and additional alarms or multiple task forces could have been requested sooner to overcome some of these issues.

As the incident escalated, there was a need for a stronger ICS, a written IAP, and for the IAP to be communicated to all divisions and groups. None of this was done.

The staging function was staffed and worked well throughout the incident. The officer who was tasked with this function successfully filled needed positions on scene as requested and kept the downtown area around the fire “workable” despite some fire companies directly responding to the scene or being directed to do so by the IC.

Chief McKay retained command for a time period of two and one-half hours, beginning approximately twenty-five minutes after initial response and the arrival of additional fire companies. He maintained command until the incident is out of control. This situation continued until the ISU arrived with the State Fire Marshal, Fire Chief Kenneth Willette, and a number of other fire chiefs. Chief Willette met with Chief McKay and a number of the mutual aid chiefs/commanders that were on scene reviewing the situation. He then assumes command at approximately 0300 hours.

The ISU established an ICS command structure and developed an IAP for continued operations. Later that morning (approximately 0600 hours) a command staff meeting was held and plans were developed for the next twelve-hour operational period from 0700 hours to 1900 hours.

Beginning that morning a plan was developed to demobilize units and firefighters and to establish a fire watch to complete extinguishing. The process of victim retrieval, final extinguishment, an evaluation of the environment, and fire cause investigation would continue for the next four days.

## Strategy and Tactics

The initial strategy employed by the initial companies was appropriate – investigate, locate, and extinguish fire. The three personnel (one on the ladder truck and two on the ambulance) performed the initial investigations, searching for the fire and the location of the alarm sounding. The first officer on scene and the two two-person teams were successful in locating and extinguishing the initial fire location. The officer was appropriate in requesting additional help. Initially, only ten firefighters arrived with the first alarm assignment. One of those was the deputy chief and three were apparatus operators. This left six firefighters to do all the necessary tasks.

Additional arriving companies attempted to search for and evacuate occupants. Handlines were stretched into the interior, and egress for evacuating occupants was protected.

Upon arrival, the deputy chief recognized the severity of the incident and appropriately requested a second alarm. Although he did not realize the extent of the hidden fire, additional alarms could have been requested at this time. The delay in response from mutual aid companies and the lag time from notification to arrival was at least twenty-five minutes.

The strategy of aggressive search and rescue while interior firefighting was being conducted was appropriate. Due to lack of personnel on the scene the types of tactics and functions required to conduct those tactics were stretched beyond the capabilities of the firefighters on scene.

Occupancies and buildings of this construction type require a number of tactics to be performed simultaneously to successfully fight a fire. Though the firefighters on scene were working diligently to complete their jobs, many significant tactics were not completed.

The reasons for this included:

- Insufficient personnel on scene at the time;
- Unfamiliarity with the building, its layout, and alarm systems; and
- Inability to execute the tactics and functions required based on limited training. (This includes basic training and then practice, practice, practice.)

## **Water Supply**

There was an inadequate water supply available once the fire extended beyond the room of origin. As fire expanded throughout the building and exterior exposures became issues, the existing water from hydrants was insufficient. MRI was unable to determine what water flow was available on that night as records were incomplete. Further, we were notified that flow tests and records of those tests were either not available or did not exist in recent history.

It was later determined by the City of Gloucester Public Works Department that on the night of the fire, the water valves were shut or partially closed in the water mains in the vicinity of the fire. With reduced water supply available and companies attaching to hydrants off the same water mains, this made the master streams that were in use

ineffective. With each additional stream put into service, the remaining streams became less effective.

When it was determined that there was a problem with water supply a decision was made to use a water relay system from water mains from streets that were up to five blocks away. This decision process is related to the ICS that was not existent at this time. The IC should have established a water supply officer and water supply group. Though it was not assigned by the IC, the function was taken on by two deputy chiefs that had arrived on scene, became aware of the problem, and were capable of establishing an adequate water supply. This evolution took nearly two hours to complete using up to five mutual aid fire companies. By the time an adequate water supply was established, the Lorraine Apartment Building had partially collapsed and the Temple Ahavath Achim Synagogue was fully involved.

It is probable that without this action/strategy the fire may have expanded and involved many of the other exposed buildings in the vicinity of the incident.

A formula that could have been quickly used during the initial stages of the incident to gauge water availability consists of the following: water flow required:  $(L \times W \times H) / 3 = \text{GPM}^9$  required for building and exposures.

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<sup>9</sup> L is length of building, W is width, H is height; GPM is gallons per minute.

## Communications

Though this analysis did not specifically evaluate the communications' systems of the GFD, we determined that there were a number of deficiencies in every aspect of the communications' systems.

- The GFD relies on the on-duty personnel to receive the emergency calls and to then dispatch the companies. Communications has become a specialized vocation, requiring specific skills, training, and experience. The use of civilian dispatchers should be considered and firefighters should be redeployed to staff apparatus.
- Call back system relies on an antiquated "telephone tree" method recalling fire department staff. This occurred on the night of this fire. It is time consuming and ineffective. Fortunately many of the off-duty personnel monitor the fire department through personal radio scanners and as such self-dispatched. Though this expedited the arrival of needed staff that night, this method of self-dispatch is inefficient and can be unsafe.
- There were consistent and ongoing problems with portable radios. Though MRI did not perform a communications' test, the problems relayed to the MRI team included inability of radios to maintain battery charging, inability to communicate directly with each other even when they were in clear sight of one another, and "weak" coverage and ability to clearly understand radio communications. Without effective radio communications on scene, directions and commands cannot be effectively

communicated. This is a situation that severely impacts fireground safety and creates ineffective and inefficient fireground operations.

- Communications with outside agencies were severely hampered when the primary fire department communications' center became inoperable when the Lorraine Apartment Building collapsed, knocking down utility and phone lines on School Street. Without phone lines the dispatch center could not receive incoming phone calls or make outgoing calls.
- Communications to the public and to the media was non-existent until a PIO was established. The fire chief originally assigned that function to the mayor, but the fire chief assumed that role sometime the next morning after the state ISU took command of the incident.
- Radio communications and telephone calls are not recorded. This prevents playback of critical emergency communications and places the city at risk.

## **The Lorraine Apartment Building**

The age, building construction type, and the lack of a complete and functional fire alarm and/or sprinkler system were all major contributors to the outcome of the fire in the Lorraine Apartment Building. Other factors included:

- Balloon frame construction which contributes to the rapid spread of hidden fire.
- An inadequate fire and building code inspection and compliance program.

- Required inspections for multiple family residential/multiple use buildings are not routinely completed.
- Poor record keeping of inspections.
- A failure to meet the requirement to enhance the alarm system in accordance with Massachusetts CMR 527 Chapter 24 Sect 7 sub.par.3 *Fire Warning Systems* when the building was altered, renovated, or the fire alarm system was altered.
- Without interconnected alarms and notification systems not all occupants evacuated the building and some that left their apartments returned to those apartments and back into their beds. It is uncertain if the occupants were able to hear alarms.
- An inadequate emergency pre-planning program for the fire department.

# ***RECOMMENDATIONS***



## RECOMMENDATIONS

The MRI team of experienced fire professionals developed thirty recommendations that would benefit the City of Gloucester and its fire department.

An analysis of a fire department's operations and the final outcome for one incident, especially one of this magnitude, should only be considered as a "snapshot" of the fire department's capabilities or shortfalls. This report has identified symptoms that we believe are indicative of more severe problems within the GFD. The primary issue that was discovered through this post incident analysis revolved around a clear lack of leadership from the fire chief. This situation, compounded by the lack of the use of an incident command system, created a dangerous and ineffective plan of attack.

The results of this report should be used to enhance fire department operations, increase the effectiveness of the department, enhance the service level provided to the City of Gloucester, and foremost, increase firefighter safety. This report also includes recommendations that extend beyond the fire department. This final report should be used to enhance officer development within the department by serving as a forum for a review of incident management techniques, strategies, tactics, and the effectiveness of SOPs.

Because of the number and depth of some of the problems discovered during this process, the initial recommendation would be that the City of Gloucester conduct an organizational analysis of the GFD including staffing facilities, resources (apparatus and equipment), communications, policies, procedures, and training.

Some of the following recommendations can be completed at minimal cost and effort by the GFD personnel. The GFD personnel should be supported in their efforts to do so. Others will require budget considerations as well as time and commitment from the city and the department.

MRI recommends that many of these recommendations should be worked on immediately by the current Gloucester Fire Department staff. We believe that the fire chief should be directed to immediately begin evaluating the recommendations and developing action plans to implement those attainable recommendations, and that he be supported in doing so.

## **Organizational Analysis**

**Recommendation 1:** *In order to completely determine the capabilities and needs of the fire department, a more intense and comprehensive study of the department should be conducted.*

## **Organization and Incident Command**

**Recommendation 2:** *Department wide training in NIMS and ICS, that will work within the limitations of the current staffing and mutual aid as established, should be delivered.*

**Recommendation 3:** *All GFD personnel should complete NIMS 100/200 level training within six months.*

**Recommendation 4:** Goal to have all senior command staff (fire and police) trained to 100, 200, 300, 400, 700, and 800 levels within 24 months.<sup>10</sup>

**Recommendation 5:** After training is complete, a city-wide tabletop exercise should occur to review NIMS and ICS.

**Recommendation 6:** Funding for this training should be pursued through the regional Homeland Security Council.

**Recommendation 7:** Pursue a regional exercise/mutual aid tabletop exercise to review NIMS and mutual aid policies including interoperable communications and unified command.

**Recommendation 8:** Use the ICS system and assign staff positions, divisions, and groups at any incident involving the response of more than a single unit.

**Recommendation 9:** The EMS coordinator's role and responsibility should be predetermined. This includes the following:

- When he/she will be called in, or under what circumstances (i.e.: second alarm); and
- Determine his/her responsibility and assignment.

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<sup>10</sup> It is important to note that the city is not eligible to receive U.S. Department of Homeland Security grants unless a comprehensive, city-wide adoption of NIMS can be documented.

## **Safety**

**Recommendation 10:** *Establish predetermined mutual aid RIT crews that respond automatically upon the confirmation of a working structure fire or major rescue incident.*

**Recommendation 11:** *At all working fires or major rescue incidents establish and staff the position of safety officer.*

## **Staffing and Response**

**Recommendation 12:** *Review current responses to similar occupancies throughout the city and establish appropriate responses with available on-duty personnel.*

**Recommendation 13:** *Establish mutual aid and automatic aid to meet the requirements of NFPA 1710 , Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (National Fire Protection Association, Quincy, MA, 2004 edition) on the initial response to all “working fires”.*

## **Training**

**Recommendation 14:** *Provide a comprehensive knowledge, skill, and ability review, and update all personnel in accordance with the knowledge, skills, and abilities outlined within NFPA 1001, Standard for Fire Fighter Professional Qualifications (National Fire Protection Association, 2008 edition) and NFPA 1002, Standard for Fire Apparatus*

*Driver/Operator Professional Qualifications (National Fire Protection Association, 2009 edition).*

**Recommendation 15:** *All new firefighters should be trained through the thirteen week recruit program at the Massachusetts Firefighting Academy, and as a part of that program, be certified by the National Professional Qualifications Board to the level of Firefighter I/II as a condition of employment.*

**Recommendation 16:** *All existing personnel should be encouraged and supported to obtain National Professional Qualifications Board certifications, including, but not limited to, Firefighter I/II, Fire Officer I, II, III, and IV.*

**Recommendation 17:** *Review and update all current fire department policies and SOPs. Create additional SOPs in the areas of communications, safety, operations, water supply, and ICS. Provide all employees with a copy of these documents and post electronic copies on the city computer server as well as on the fire department's web page. A participative process to develop these SOPs should be created.*

**Recommendation 18:** *Train and educate all GFD members on current and updated SOPs and mandate the review of one policy or SOP per shift.*

**Recommendation 19:** *Encourage personnel to attend National Fire Academy courses for the "Command and Control of Multiple Alarm Incidents".*

## **Water Supply**

**Recommendation 20:** *Update water main maps with the assistance of the Gloucester Department of Public Works. These maps should be electronically available through a mobile data connection.*

**Recommendation 21:** *Complete flow tests and document the expected fire flow from hydrants throughout the city, especially in high hazard or target hazard areas. The Gloucester Department of Public Works should color code these hydrants based on expected flow per the recommendations of NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants (National Fire Protection Association, 2007 edition).*

**Recommendation 22:** *Develop a plan to enable all mutual aid companies in the region with the ability to connect to each other's hydrants, master stream devices, and hose lines.*

## **Communications**

**Recommendation 23:** *Evaluate all mobile, portable, and stationary radio equipment within the department. Utilize grants to develop a better system of communications inclusive of new portable radios with digital unit identification capability. Increase the funding for communications.*

**Recommendation 24:** *Establish protocols for communications interoperability between police and fire departments.*

**Recommendation 25:** *Develop a redundant emergency communications and telephone system for the fire department at either the police station or at a fire station in an adjacent community. The city should join the on-going effort of twelve Essex communities<sup>11</sup> to establish a county-wide emergency communications center.*

**Recommendation 26:** *Purchase radio pagers and as a backup, develop an automated cell phone text messaging recall system for recalling off-duty personnel.*

## **Inspections and Pre-Planning**

**Recommendation 27:** *Establish a commercial, industrial, and multi-unit residential inspection program. Prioritize high hazard buildings, target hazard buildings, and vacant buildings. Assign on-duty companies to complete these inspections. Encourage all personnel to obtain Fire Inspector I certification. The inspection program should be coordinated with the Gloucester Building Department to ensure that: a) code violations and hazards are promptly cited and abated; b) the fire department is notified of construction, renovation, and demolition projects in commercial, industrial, and multi-unit residential occupancies; and c) vacant buildings are boarded up and posted with the appropriate symbol indicating that interior firefighting operations are prohibited.*

**Recommendation 28:** *Establish a method to document and maintain records for inspections. All data gathered through site surveys, life safety inspections, and preplanning activities should be entered into a suitable computer aided dispatching*

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<sup>11</sup> Middleton, Topsfield, Danvers, North Andover, Ipswich, Hamilton, Wenham, Essex, Manchester, Beverly, Swampscott, and Methuen have pooled their resources to obtain a grant from the state to establish a county-wide emergency communications center. The goal of the group is to include all 34 towns and cities of Essex County in the center.

*system with mobile data capability. Numerous off-the-shelf computer programs are available for such purposes.*

**Recommendation 29:** *Establish a pre-fire planning program for fire companies to conduct. Utilize mobile data in each piece of attack apparatus to ensure that this data is available when an incident occurs.*

## **Emergency Operations Plan**

**Recommendation 30:** *Review and update the City of Gloucester's Emergency Operations Plan and create an emergency operations team to assist in the development of emergency management planning and operations.*

## GFD's Officers' Comments and Recommendations

The following comments and recommendations were taken from direct quotes offered by the officers of the department. MRI felt that these comments and suggestions showed a commitment from members of the department to continue to make the department a safer, more efficient and effective fire department.

- *This incident quickly increased to eight alarms and crews were quickly overwhelmed with the magnitude before mutual aid companies arrived.*
- *Initially, only ten firefighters arrived with the first alarm assignment. One of those was the deputy chief and three were apparatus operators. This left six firefighters to do all the necessary tasks.*
- *The ICS was not used.*
- *Multiple tasks were given to few officers.*
- *The lack of training for both officers and firefighters was evident.*
- *Automatic calling system (maybe something like the schools have to call personal back). Dialing each person takes some time.*
- *Some type of up-to-date data communications center which has a back-up if the main system goes down (which it did).*
- *Most of all, with reduced manning, stations closing, and no stability in assigned personnel, I feel that a full-time training officer is needed and has been needed for a long time. This would ensure that all personnel are trained to the same level, the same way, by the same instructor, ensuring that when an incident like this fire as well as any incident*

*happens.*

- *We should utilize the Incident Command System the way it is designed to be used, eliminating any chaos and keeping all of our personnel as safe as possible.*
- *I feel without a continuous training program, staffed with a permanent instructor, it is only a matter of time before one of us is seriously injured or killed.*
- *Increase manpower; greatly understaffed during initial operations.*
- *Improvements in radio equipment are needed.*
- *We need broader-based, more in-depth training at all levels.*