



National Fire Fighter Near-Miss Reporting System

Lightweight Construction Reports

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Report Number: 07-0001180

Report Date: 12/28/2007 08:42

Synopsis: Truss collapse traps FF

Demographics

Department type: Paid Municipal

Job or rank: Battalion Chief / District Chief

Department shift: Other : 24 hour, 4 in 12 days

Age: 43 - 51

Years of fire service experience: 27 - 30

Region: FEMA Region IV

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 12/18/2007 07:40

Hours into the shift:

Event participation: Involved in the event

Weather at time of event: Clear with Frozen Surfaces

Do you think this will happen again?

What were the contributing factors?

- Teamwork
- Command
- Individual Action
- Situational Awareness
- Decision Making

What do you believe is the loss potential?

- Lost time injury
- Life threatening injury

Event Description

This morning at 0740 hours [identifying information deleted]. A full box alarm was already enroute when the box was upgraded to a working fire. Engine [A] arrived at 0747 and reported a working fire in a two level single family dwelling with heavy fire involvement in the garage and bonus room area above. Two attack lines were advanced from the unburned portion of the house, one upstairs and downstairs. Primary searches were initiated and all companies were committed when Battalion [A] arrived at 0749. After a briefing from Command, Battalion [A] assumed command at 0752. At 0753 Command observed the fire conditions in the garage and bonus room area knocked down. However, heavy smoke was still visible from the main house attic area.

At 0754 Command observed conditions of the building and fire that just did not look right. Command ordered an evacuation of the structure. It was only a few seconds after Alarm transmitted the evacuation tone that the whole garage area bonus room with its roof, collapsed in a lean-to collapse to the garage floor. Crews from Engine [A] were conducting a primary on the second floor in the bonus room at the time of the collapse. All three firefighters self rescued by climbing back up to the second floor to the bonus room door. Engine [B] FF's, Captain [Eng-B], FF [Eng-B-1] and FF [Eng-B-2] were extinguishing fire in the garage area. They were in the process of extinguishing fire in the garage and had made their way closer to the kitchen door when the collapse occurred.

Captain [Eng-B] and FF [Eng-B-1] were able to exit the garage into the kitchen. FF [Eng-B-2] was trapped under part the of lean-to second floor collapse near the kitchen door. Had Engine [B]'s crew been further into the garage, the outcome of this incident would have been very tragic. All firefighters involved stated that there were no warning sounds, or other indications from the inside that a collapse was imminent.

Command immediately transmitted a 2nd Alarm and reported firefighters trapped. In the initial moment after the collapse, it was not clear who, or how many firefighters were missing. All hands went to work. The fire in the garage now had intensified as the result of the collapse. Exterior attack lines were used for a brief period to knock down the fire in the garage. At 0756 Command received a report that crews had contact with FF [Eng-B-2] and he was alert. A quick PAR was conducted and it confirmed that FF [Eng-B-2] was the only member missing. Engine [C] (0756) and Rescue [A] (0758) arrived on scene and began assisting companies on scene. Positive pressure ventilation was set up to keep the area in which FF [Eng-B-2] was trapped clear of as much smoke as possible.

At 0801 FF [Eng-B-2] was removed from the structure and transported to the hospital along with FF [Eng-B-1]. FF [Eng-B-2] sustained a small second degree burn to this buttocks and FF [Eng-B-1] was evaluated for a leg injury. Both firefighters were treated and released.

The fire is under investigation. As of this evening (1730) a cause could not be determined. However, we have no indications at this time that the fire was anything but accidental. Damage is estimated at \$ 100,000. The occupants had left for work and school earlier that morning. They were renting the home and fortunately had just secured renters insurance. Their dog was rescued before our arrival by neighbors. They were also being assisted by the Red Cross. The Red Cross and {a national} restaurant provided our firefighters with lunch at stations [D] and [B].

Only two companies from the 2nd Alarm were used. The balance of the 2nd alarm was released at 0819. Crews remained on scene throughout the morning assisting the family and the Arson Task Force team.

There are many thanks, and lots of praise to go around, too many to mention here. A follow up report will follow. A critique is planned for Sunday December 23 at 1000 at Station [C].

[Print contained in squared brackets denotes editing by the reviewer.]

Lessons Learned

Recommendations and Lessons Learned

As discussed at this mornings critique here is a list of recommendations and some lessoned learned and reinforced about our near miss firefighter trapped incident.

Recommendations

- Have all officers and firefighters review the accountability procedures and PAR tag responsibilities. This fire occurred during morning shift change. Several members from the A division boarded the rigs and rode to the incident. When the collapse occurred the on-line CAD accountability showed all A shift personnel on the rigs. It does not change until 0800 hours. Thankfully, the company officers involved were aware of who was on

their trucks and alerted the IC to that fact. Several members self-dispatched to the scene. They did report to Command and none were engaged in active firefighting. Right now, the PAR tags are the only reliable system in place to determine accountability on scene. Their proper use and care can not be understated. Each firefighter must take responsibility to see that their PAR tag is either on or off the rig. There is not, and probably will never be a reliable electronic method short of scan enabled, skin imbedded ID chips that can take the place of a PAR tag. It is not the Engineer's job, or the Captains job to put their firefighter's PAR tags on the rig. It is the Captain's job to make sure the system is used as it was intended. The PAR tags on the rigs must be correct at 0735 hours as they are at 1530 hours, 1802 hours, or any other time 24/7, 365. A firefighter should treat their PAR tag like every other piece of PPE.

- All firefighters and officers should have three PAR tags. According the current G.O. on that subject ([policy number] states "Each first line supervisor or company officer will insure that each member has three accountability tags (PAR Tags)". As it stands now, our firefighters are only issued two PAR tags. Our current culture is to keep one on the turnout coat and one for the board at the firefighter's home station. This is the tag that gets put on the rig. A recent check in Battalion [A] B showed two time out personnel on the rigs with no accompanying PAR tag. Interviews with the personnel involved in the incident revealed that PAR tags are not a personnel priority. Most of the firefighters told me "the driver puts the tags on the truck". I was also told that firefighters are improvising a PAR tag for members who fail to bring their PAR tags on times or work subs by using tape and a marker over someone else's PAR tag. We are good at improvising! All Battalion [A] B personnel now understand that no matter how many PAR tags they have, it is their responsibility to make sure their tags are on, or off, the rigs they are riding, 24/7, 365.

- All company officers should review the building construction features of lightweight wood truss construction. Never underestimate the weakness of lightweight floor and roof trusses in a fire situation. This collapse occurred seven minutes after the first company arrived on scene. The outside bearing wall that supported one end of the second floor 22 ft long 2X4 web trusses were only sheeted on the outside. There was no drywall on the inside. Drywall on the inside of bearing wall in a garage is a luxury. The only walls in a garage that must be dry walled are the walls next to any heated area. Drywall on that outside wall may have provided additional protection for the columns (2X4's on 16' centers) from the fire that was burning in the garage. That wall failed fast. It brought with it the bonus room, its roof system, and all the room's heavy furniture. Bonus rooms seem to be a good place for hide-a-bed sofas.

- Always do a 360 walk around of a building on fire. Reinforce that a command officer's size up is not complete until this occurs. Size up has to go on continuously during all fire ground operations. My size up was not complete, that is one of the reasons for the evacuation order.

- Review the operation of assigned fire radios with all firefighters. Alarm sounded the evacuation tone over the operations channel. Very few if any firefighters or officers in the structure heard the tones before the collapse.

- Look into the possibility of using another tone for the standard evacuation tone. It was suggested at the critique that our CAD system has other distinct tones that can be used for evacuation orders. The current series of three short beeping tones are not enough or different enough to draw the appropriate attention.

- Include a firefighters "trapped" scenario in training for fire ground emergencies and Maydays. This will help everyone realize that cribbing and shoring are not just for USAR training. Cribbing is easy to build when you can see what you are doing. Building a lifting crib system in the dark is another challenge. Included in this training should be changing

SCBA bottles in the dark and smoke as well as using the RIT pack under the same conditions.

- All of our in service training for firefighter down paid off. No one panicked. All the officers had a plan and used initiative to solve the problem at hand.
- Trust your gut feelings about the safety of a situation. If something does not seem right, always make decisions on the basis of “everyone goes home”.
- Call for help early. The second alarm companies had over ten minute travel times to [the fire location].
- Accountability and use of the PAR Tag system must be in place at all times 24/7, 365. [Print contained in squared brackets denotes editing by the reviewer.]

Report Number: 08-0000277

Report Date: 05/28/2008 22:47

Synopsis: Roof and truss system collapses on firefighters.

Demographics

Department type: Paid Municipal

Job or rank: Other: Division Chief

Department shift: 24 hours on - 48 hours off

Age: 43 - 51

Years of fire service experience: 27 - 30

Region: FEMA Region IV

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 05/28/2008 09:06

Hours into the shift: 0 - 4

Event participation: Involved in the event

Weather at time of event: Clear and Dry

Do you think this will happen again?

What were the contributing factors?

- Situational Awareness
- Procedure
- Decision Making

What do you believe is the loss potential?

- Lost time injury
- Minor injury

Event Description

A fire in a 2200 Square foot single story masonry construction single family dwelling results in 2nd degree burns to career firefighter. The fire was discovered by neighbors as the occupants were out of town. Undetermined burn time results in early collapse of light weight truss system. 1st arriving units found fire through the roof in the Bravo/Charlie section of the structure. With the presence of multiple vehicles, time of day at 0906, no smoke conditions in the dwelling and neighbors stating they should be home, the incident commander ordered an attack crew with 1 3/4" line and rescue crew to enter the structure. Supply line was hand jacked 100' and they made entry and were met with rapidly changing conditions that included heavy smoke. All firefighters that entered the building were properly wearing all recommended personal protective equipment. Between 6 and 8 minutes of the on scene time, a mayday was declared as the portion of the roof and truss system collapsed down on the Rescue crew doing search. They were separated by the debris and were able to self-rescue. One was not under the debris and exited to the exterior by the rear door, the other was under the rubble and was able to free himself and exit the front door. His air-pack was damaged, helmet and hood dislodged. A mayday was called and reaction by all on scene was per IMS manual. Each search team firefighter was quickly accounted for, entire structure was evacuation, and PAR was conducted to confirm.

Lessons Learned

Emphasis must be place on the advancement of fire, structural integrity to include lightweight truss systems, and the need to conduct a primary search. The departments

on scene were fortunate, in that only one member received minor burns during this fire, as it could have easily been much worse. Training is planned in the areas of building construction, tactics, and Incident Management System guidelines.

Report Number: 07-0000731

Report Date: 02/17/2007 10:40

Synopsis: FFs fall through tile / truss roof at attic fire.

Demographics

Department type: Paid Municipal

Job or rank: Captain

Department shift: 24 hours on - 48 hours off

Age: 25 - 33

Years of fire service experience: 7 - 10

Region: FEMA Region IX

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 07/01/1989 13:00

Hours into the shift: 24+

Event participation: Involved in the event

Weather at time of event: Clear and Dry

Do you think this will happen again? Yes

What were the contributing factors?

- Decision Making
- Human Error
- Procedure
- SOP / SOG
- Situational Awareness

What do you believe is the loss potential?

- Lost time injury
- Property damage

Event Description

We responded to a working residential house fire that was caused by children playing with fireworks that are illegal in this state. Fire quickly spread to the attic of this 3,000 square foot semi-custom home with a tile roof. Occupants were on vacation as this was the 4th of July weekend. The first engine company to arrive assumed command and reported a working fire. Upon arrival of my unit, a ladder company, we were instructed to provide vertical ventilation. Time in the incident was about 20 minutes. I completed the cut with a power saw and was preparing to exit the roof when I saw 2 members of my crew (the captain and other driver) fall through the roof sheathing and into the well involved attic. I attempted to rescue both, as my side of the roof was still intact. While en-route to their location, I too, fell into the well involved attic. I became trapped for approximately 7 seconds in heat and fire that was approximately 2000 degrees. For reasons unknown, I was able to jump out of the hole I had fallen into, and self extricated myself off of the roof. I received 1st and 2nd degree burns to my left hand and left leg. The only reason that I am able to share this story is because I was wearing full protective clothing with my SCBA face piece on. This would not have been a survivable incident if we had not been wearing full protective clothing.

Lessons Learned

#1 Lesson learned. The wearing of full protective clothing with the SCBA face piece on saved our lives.

National Fire Fighter Near-Miss Reporting System
Lightweight Construction Reports
November 18, 2009

- #2 Residential light weight truss construction with tile roofs is a killer for firefighters.
- #3 Our department policy is not to vertical ventilate these roofs any longer.

Report Number: 06-0000165

Report Date: 03/16/2006 16:59

Synopsis: Fire in walls and floors of lightweight construction lead to collapse.

Demographics

Department type: Combination, Mostly volunteer

Job or rank: Battalion Chief / District Chief

Department shift: Respond from home

Age: 34 - 42

Years of fire service experience: 21 - 23

Region: FEMA Region II

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 03/02/2006 12:01

Hours into the shift:

Event participation: Involved in the event

Weather at time of event:

Do you think this will happen again?

What were the contributing factors?

- Other

What do you believe is the loss potential?

- Minor injury

Event Description

Residential structure fire involving a town home with light-weight wood truss roof and floor. Medium smoke condition on arrival. 1st hose line, with 4 firefighters, went into operation on 2nd floor. They encountered medium fire conditions in the rear bedroom/bathroom area. Attic scuttle opened to check for extension. Heavy smoke and some heat encountered. Hose line directed into attic as firefighter crawled into bathroom to ventilate via window. Floor collapsed causing him to fall through.

He first hung onto bathtub. He was unable to pull himself into the bathtub and fell to the floor below. Remaining members on hoseline gave Mayday. Firefighter was located on 1st floor with minor injuries. Fire was started by plumber in basement and was burning within walls and floor prior to FD arrival.

Lessons Learned

Be more aware of building construction. Have additional staffing available for a properly staffed RIT.

Report Number: 08-0000169

Report Date: 04/08/2008 14:52

Synopsis: Sounding floor averts disaster

Demographics

Department type: Volunteer

Job or rank: Other: Fire Marshal

Department shift:

Age: 43 - 51

Years of fire service experience: 27 - 30

Region: FEMA Region II

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 03/08/2008 19:38

Hours into the shift: Volunteer

Event participation: Told to and submitted by safety officer

Weather at time of event: Clear and Dry

Do you think this will happen again? Yes

What were the contributing factors?

- Command
- Decision Making
- Other
- Situational Awareness

What do you believe is the loss potential?

- Property damage
- Other
- Life threatening injury

Event Description

At 1936 hrs on March 11, 2008 the [name deleted] department received an alarm for a reported fire from [name deleted]. It seemed the caller, a security guard on the premises, was unaware of his location other than [address deleted]. The dispatcher questioned the county to discover that the security guard was [address deleted]. The alarm was transmitted at 1938 hours and responding chiefs were on the road at 1939 hours. The dispatch center received additional information at 1940 hours that [unit name deleted] was on the scene confirming a fire. Second assistant chief arrived on scene with the chief of department at 1941 hours and reported a working fire at the same address. The building is a 2 1/2 story single family attached row frame newly constructed with wood open web truss floors and roof. The building was unoccupied, without any furnishings or appliances. Smoke detectors were hard wired interconnected and left with construction covers on the detectors.

The following is a narrative from the second assistant chief: Approaching the scene, I noticed heavy smoke pushing from the rear of the townhouse. As I arrived on scene and was donning my gear, I performed a quick size up of the front of the townhouse. At this time, I noticed the second floor windows with heavy blistering on them. The front door was forced open to find the 1st floor filled with smoke. I entered the townhouse about 10 feet into a hallway and was met with a heavy smoke and heat condition. I radioed the IC that we had a confirmed working fire. I exited the townhouse to inform the first engine

crew that we had heavy smoke and heat condition on the first floor. Again I entered with the hose team and search team. We were advised by Command via fire ground radio through dispatch radio, that the townhouse was constructed with truss type floors and roof. Armed with this information, we proceeded with an aggressive offensive attack as is common practice. As the first hose line was making their way into the building, I took a left hand lead and discovered heavy fire in the first floor bathroom which appeared to be coming from the basement with extension to the second floor. I reported the conditions to command. The third assistant chief had made his way to the second floor stairwell and reported heavy smoke and heat on the second floor. The line that entered with me went to the basement stairwell to protect the interior stairs. The second or backup line was ordered to the second floor via the interior stairs to the second floor. We had one line pushing into the seat of the fire in the basement and one line operating on the second floor. As I made my way to the basement stairs to check the progress of the line in the basement, the captain with the line reported to command that fire appeared to be burning in the ceiling or first floor truss system. I noticed a hole in the first floor living room area along the back wall of the bathroom. The floor felt spongy and significantly sagging down towards the basement. Once again I gave this report to the hose lines in operation and command. The hose team on the second floor advised that similar conditions existed on the second floor. I radioed command of the imminent collapse situations that we had on both floors and requested that we evacuate building and reevaluate our options. We decided to cut a hole in the front room on the number one side and use the Breslin distributor nozzle to knock down the fire in the basement. This tactic seemed effective. After regrouping and placing the distributor nozzle to knock down the fire, it was decided to reenter the basement to assess fire progress and the damage to the truss flooring on the first floor. Upon reentry, it was noted that the first floor was sagging even more than during our initial report. Progress was being made on knocking down the fire in the basement as crews were working on the second floor. All visible fire on the first floor was knocked down with no members working on the first floor due to the partial failure of the truss flooring and probable collapse. As the process of extinguishing the fire in the basement was conducted, an urgent message transmitted to command from interior operations for all units working inside to evacuate the building once again due to deteriorating smoke and fire conditions. A message was also transmitted to the crew on the second floor not to use to interior stair case and to exit through the windows onto ground ladders that were placed outside of the windows due to the possible collapse. The only way out for me and the crew working in the basement were the basement stairs. As I made my way to the top of the stairs, the first floor was now severely compromised and I felt the floor was beginning to give way. I was a few steps out of the basement stairwell onto the first floor when a firefighter assisted me and directed us to safety. I advised command that the basement operations had safely evacuated the basement and were safe outside. A team was sent into the building with a ladder placed over the partial collapse of the first floor to complete extinguishment and perform overhaul operations with limited manpower as to not cause further truss failure. Brackets [] in this report denote identifying information removed by the reviewer.

Lessons Learned

Unprotected open web floor trusses can fail rapidly without warning. Pre-fire planning is imperative with truss construction. Fire departments must inspect all construction within its district. Good fireground communication and command and control can actually save firefighters lives. Accountability is a must. SOP or SOG must be in place for response to known truss type constructed buildings.

Report Number: 07-0000726

Report Date: 02/13/2007 04:20

Synopsis: Truss roof collapse causes near miss at church fire.

Demographics

Department type: Paid Municipal

Job or rank: Fire Fighter

Department shift: 24 hours on - 48 hours off

Age: 25 - 33

Years of fire service experience: 14 - 16

Region: FEMA Region IV

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 01/13/2007 22:45

Hours into the shift: 17 - 20

Event participation: Witnessed event but not directly involved in the event

Weather at time of event: Clear and Dry

Do you think this will happen again? Yes

What were the contributing factors?

- Situational Awareness
- Task Allocation
- Decision Making

What do you believe is the loss potential?

- Life threatening injury

Event Description

We were involved in fire suppression activities on a working attic fire at a church. Company crew members were attempting to perform a trench cut to ventilate and confine the fire to an area adjacent to the fire wall. Upon laddering the roof, and while crew members were still operating on and from the aerial apparatus, a sudden collapse of the truss roof occurred, endangering the crew due to fire and radiant heat. The collapse involved approximately 40 ft. of the roof line and a fire ball extended upward approximately 30 ft. in the air. The ventilation crew had to make an immediate descent down the aerial to escape harm. The collapse occurred about 10 minutes after arrival of first in companies. All firefighters involved were in full PPE and SCBA. Awareness of wood truss construction must always be considered during fire suppression activities.

Lessons Learned

Fire ground accountability, awareness of wood truss construction, the fires impact due to direct impingement, and the duration of the fire must always be considered during fire suppression activities. Had the crew actually been actively ventilating or on the roof, there would have been serious injuries and most likely firefighter fatalities.

Awareness training for wood truss construction should be included in any ventilation and structural fire suppression training. Command and control, fire ground accountability and fire ground safety officer training should also be included. We must always keep in mind that the fire ground is a dynamic, ever-changing scene and we must adapt to those conditions and stay aware. Remember; no structure is worth our lives. Everyone goes home.

Report Number: 05-0000227

Report Date: 05/27/2005 14:10

Synopsis: It's been several years since this fire so the times are going to be off.
Dispatched on a building fire, (occupancy nam)

Demographics

Department type: Paid Municipal

Job or rank: Lieutenant

Department shift: 24 hours on - 48 hours off

Age: 34 - 42

Years of fire service experience: 11 - 13

Region: FEMA Region V

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 07/22/1998 16:19

Hours into the shift: 21 - 24

Event participation: Involved in the event

Weather at time of event:

Do you think this will happen again? Yes

What were the contributing factors?

- Situational Awareness
- Procedure

What do you believe is the loss potential?

- Life threatening injury

Event Description

It's been several years since this fire so the times are going to be off. Dispatched on a building fire, (occupancy name deleted), after lightning had struck the building. Automatic (fire department designator deleted) called, (for a) 2 alarm fire. I was a private at the time and responded with our rescue unit. Our assignment was to pull a 2 1/2 inch line and assist 2 crews already inside to extinguish the fire. After it was all said and done the next shift day our arson investigator had the crews who responded return to the scene to critique the fire and show us why I am submitting this report. Once inside he directed our eyes up to the lightweight steel truss supports. There were approx. 12-20 in total. Every single lightweight truss that had been exposed to the fire was twisted anywhere from 45 degrees to two that I noted were twisted a complete 180 degrees. All were still supported amazingly by the vertical steel uprights. It was at that time that I realized how close that roof was to collapsing. There were at the time at least 5 crews inside working that fire. Luckily no one was injured.

Lessons Learned

1. Appreciate preplans and the study of building construction.
2. Consider the time that structural members have been exposed to heat and flame. You've always read how steel can elongate and twist when exposed to heat. Seeing it first hand, and having been involved in a fire with them, I will take all that into consideration next time.

Report Number: 07-0000628

Report Date: 01/02/2007 13:53

Synopsis: Lessons learned from LODD earlier in the day pay off when floor collapses.

Demographics

Department type: Paid Municipal

Job or rank: Captain

Department shift: 24 hours on - 48 hours off

Age: 34 - 42

Years of fire service experience: 17 - 20

Region: FEMA Region V

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 03/21/2003 22:00

Hours into the shift: 13 - 16

Event participation: Involved in the event

Weather at time of event:

Do you think this will happen again? Yes

What were the contributing factors?

- Communication
- Situational Awareness
- Command
- Human Error

What do you believe is the loss potential?

- Life threatening injury

Event Description

Due to a LODD suffered by a neighboring department earlier in the morning on this same day, the crew at Station A reviewed RIT and Mayday procedures. Later the same night, Engine A was dispatched to a working structure fire along with the standard one-alarm assignment of 4 Engines, 1 ladder, 1 heavy rescue, 1 ALS transport unit and 1 (Acting) Battalion Chief. On Engine A's arrival, heavy smoke and flames were reported inside a "routine" ranch residential dwelling with a basement and attached garage. Police officer on the scene relayed information of potential occupants still in the house due to car in driveway and neighbor reports of not seeing the homeowners. An LDH supply line was secured and a 1 3/4" handline stretched to the front door. Report was made to the IC concerning possible entrapment and fire involvement into the attic area with lightweight wood truss construction. Entry was made with Capt. A and firefighter A (probationary < 2 months) through the enclosed breezeway between the kitchen and the garage. The fire appeared to be located only in the living areas of the home and had not extended into the garage. The primary attack/rescue crew also had a thermal imaging camera and hand tools along with their handline. Additional crew arrivals began other essential duties. The interior crew knocked down the fire in the kitchen and was preparing to move into the living room to determine conditions in the hallway near the bedrooms. At this time, the fire appeared to be on the main floor only. As the crew began their advancement, the Captain advised his partner that he had left his TIC by the kitchen door (approximately 3-4 feet away). Firefighter A then turned around to retrieve the TIC. As he was doing this, Captain A decided to "lean" into the living room to look down the hallway. (It should be noted that the crew did not separate, rather the firefighter simply had to turn

around to retrieve the TIC). As the Captain "leaned", the floor in the living room collapsed and the Captain fell into the basement without the charged hoseline. Captain A immediately called for a Mayday in the basement and advised IC of the hole in the floor. After trying to pull himself back up through the hole, another crew had made entry and Firefighter B made contact with the Captain in the basement. Firefighter B laid down on the floor of the kitchen and held his hand down through the hole to hold the Captain's hand to keep the Captain oriented and note his location. Firefighter B then radioed command and notified of contact with Captain A and location. Captain B had located Firefighter A and they both utilized the handline to keep the fire off of Captain A and Firefighter B. The IC immediately advised all crews of the incident and notified the RIT crew to respond to the kitchen area. As is protocol, a second alarm was dispatched. Additional staff officers and units began arriving. After approximately 5-7 minutes, Captain A was able to self-extricate after locating the stairwell through the dense smoke and heat. As he was extricating himself, a third crew had set up operations at the front door to assist with Captain A's removal. As this third crew was setting up, Firefighter C crawled in to the living room approximately 2 feet; the floor immediately collapsed sending him to the basement. Firefighter C subsequently also called a Mayday. Captain A had already escaped the basement when Firefighter C fell in. The RIT crew had already begun working on getting a ladder to Captain A and quickly changed to use it for Firefighter C. Firefighter C climbed up the ladder and out the front door. The IC immediately called an end to RIT operations and changed incident strategies to making this a defensive fire.

Lessons Learned

1. Better recon on arrival to determine occupancy and fire involvement.
2. NEVER leave the side of a partner, even though Firefighter A simply had to turn around, his attention was diverted from the Captain and subsequently became disoriented when he turned back around and didn't see the Captain. Likewise, the Captain had a probationary firefighter inside on his very first fire. He needed to take things a little more methodically and assist Firefighter A with essential functions and procedures.
3. Be more aware of structural conditions. There were no primary indications of a basement fire since most of the fire observed was on the main floor. Had it been identified that there was fire in the basement, as well as also in the attic, tactics may have been different.
4. IC maintained his composure and followed procedures. He was able to keep the situation calm and did not allow emotions to escalate on the scene. He ensured firefighting activities continued during the RIT evolution.
5. Post-Incident critique and review is ESSENTIAL. Due to extraordinary events happening within the department and surrounding areas, this essential piece was omitted!
6. Teamwork. Having a concerned care and "bonding" within a crew can produce extraordinary results. Firefighters will always help other firefighters, but the crew cohesion and attachments provide an intangible asset that is sometimes overlooked.

Report Number: 09-0000485

Report Date: 05/12/2009 00:02

Synopsis: Lightweight failure causes firefighter to fall.

Demographics

Department type: Combination, Mostly paid

Job or rank: Driver / Engineer

Department shift: 24 hours on - 24 hours off

Age: 34 - 42

Years of fire service experience: 14 - 16

Region: FEMA Region IX

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 11/26/2006 06:00

Hours into the shift:

Event participation: Witnessed event but not directly involved in the event

Weather at time of event: Clear and Dry

Do you think this will happen again?

What were the contributing factors?

- Human Error
- Situational Awareness
- Decision Making

What do you believe is the loss potential?

- Lost time injury

Event Description

A total of seven personnel staffing 2 Engines, 1 Squad and a Chief Officer were dispatched to an automatic water flow alarm supported by a 911 telephone call at a local fast food restaurant. Once on scene, a cold smoke situation was encountered and two firefighters were assigned to locate and extinguish the fire. Visibility inside the building was zero and a thermal imaging camera was used to identify the seat of the fire. It was determined that the fire was in the attic space above the kitchen. Due to the visibility issue it was determined that vertical ventilation needed to be conducted to support the attack. The interior crew exited the structure and one of the firefighters was reassigned to the roof for vertical ventilation. After ventilation was completed the initial two interior firefighters were ordered back into the structure to locate the seat of the fire. Visibility was still zero. The interior crew made several attempts to pull ceiling and locate the seat of the fire but were unsuccessful in their efforts. Two additional firefighters were assigned back to the roof to extinguish visible fire in the attic. While attempting to assess the extent of the fire in the attic, one of the firefighters operating on the roof fell through the weakened roof decking.

The firefighter suffered burn injuries as a result of this fall. His SCBA and facepiece were torn off by the rafters during the fall. Thankfully, the firefighter landed feet first about 10 feet from an exit and walked out to safety. This firefighter had been assigned to the interior attack team, redirected to the roof for vertical ventilation and assigned once more to the roof for extinguishment at the time of this incident

Lessons Learned

The limited staffing assigned to this incident required multiple tasks to be completed one after another without coordinated efforts. This allowed for a longer burn time. It also required that the firefighter who fell to be reassigned to multiple tasks without rehab. This problem can be solved with an automatic mutual aid agreement or increased staffing levels.

There was an activated sprinkler in the attic space that was confining the fire. This created a pressurized smoke condition at the floor level. Once the sprinkler system was shut down, the smoke vented as we would have expected and the visibility cleared up instantly. This issue could be corrected with better situational awareness.

The decision was made to make an attack on the fire from the roof on a fire that had been burning for at least 20 minutes. The building was made of lightweight truss construction and an offensive attack was contraindicated.

The firefighter who fell failed to continually sound the roof. This situation could have been averted by sounding a roof while you travel.

Report Number: 07-0000827

Report Date: 03/25/2007 21:00

Synopsis: Light weight construction gives way.

Demographics

Department type: Combination, Mostly paid

Job or rank: Captain

Department shift: 24 hours on - 48 hours off

Age: 25 - 33

Years of fire service experience: 11 - 13

Region: FEMA Region III

Service Area: Suburban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 03/16/5007 19:50

Hours into the shift:

Event participation: Involved in the event

Weather at time of event: Cloudy and Snow

Do you think this will happen again?

What were the contributing factors?

- Individual Action
- Situational Awareness
- Decision Making
- Training Issue

What do you believe is the loss potential?

- Lost time injury
- Life threatening injury

Event Description

I was working as the first due engine officer on a structure fire in a middle of the row townhouse. Normal response for my department is 4 engines, 2 trucks, 1 heavy rescue, 1 EMS unit, and 2 battalion chiefs. The fire building backed up to woods with no vehicle access to side C. The configuration created access restrictions. Access to the fire building was via sidewalk and stairs off the parking lot. Fire had started in the basement of the townhouse, extended to the 1st and 2nd floors in the walls. The weather was cloudy and snowing. The original call was an adaptive response of 2 engines and 1 truck for an odor of smoke reported by the neighbor. The response was upgraded to a full structure fire assignment enroute to the call.

I arrived on scene with smoke showing from the roof line on side A and Side C. I was a member of a two person team leading the initial entry into the house via the side A entrance with a 1 3/4" handline. I assisted the truck company with forcible entry of the front door with a Hydra-ram. A large volume of gray smoke began pushing out the door. The engine driver charged the handline and I got on my knees to enter the structure when I noticed smoke coming from the threshold of the entrance. I sounded the floor inside the threshold, smoke and flame pushed through the floor boards, and I felt the floor sag. I hit the floor a little harder and I made a hole in the floor where I could see a heavy volume of fire in the basement. I stayed in position outside the door to protect the stairs from extension and redirected my back up crew to Side C to attack the fire. I made a radio announcement of the situation of a hole in the floor inside the front door and the change in tactics. I scanned the area with a thermal imager and determined there to be a

large volume of heat directly under the floor inside the entrance. I directed my crew to remove some of the floor boards for ventilation purposes from outside the front entrance. When my crew pried on the boards inside the threshold from the exterior landing, the exterior landing began to sag. My crew reported this to me and we determined that an approximately 4'x4' section of exterior landing in front of the front entrance was over the basement. This landing appeared to be made of brick and slate on the exterior of the structure. I ordered my crew to back up to a confirmed safe location. Due to radio traffic and lack of situational awareness, the radio message reporting the hole in the floor and limited access had to be repeated several times to keep people from walking in the front door. Caution tape and a firefighter had to be posted at the entrance for the duration of the incident to stop multiple individuals from trying to walk through the door.

I believe that if the first crew had entered the structure without crawling and sounding the floor prior to entry that they could have fallen through the floor and been injured or killed. The initial crews could have fallen into the basement from outside the front door during size-up and forcible entry had the fire been burning just a little longer prior to arrival. After the fire was out the area under the entrance was inspected, light-weight truss construction was noted, and the trusses had been burned completely away in the area.

Lessons Learned

I learned to always determine the construction of the building that you are going to enter and recognize the inherent risks of each type of construction. I also learned to always enter a structure on your knees and sound the floor ahead of you and to utilize all tools and technology available for proper size up. I learned to listen to my crew when they report conditions that do not sound "normal." I feel that all unit officers should listen to the radio closely during an incident for reported safety issues. I feel that basic fireground skills should be reviewed. Too many firefighters enter a smoke environment walking. If my crew had "walked" into this fire, I believe we would have been injured or killed.