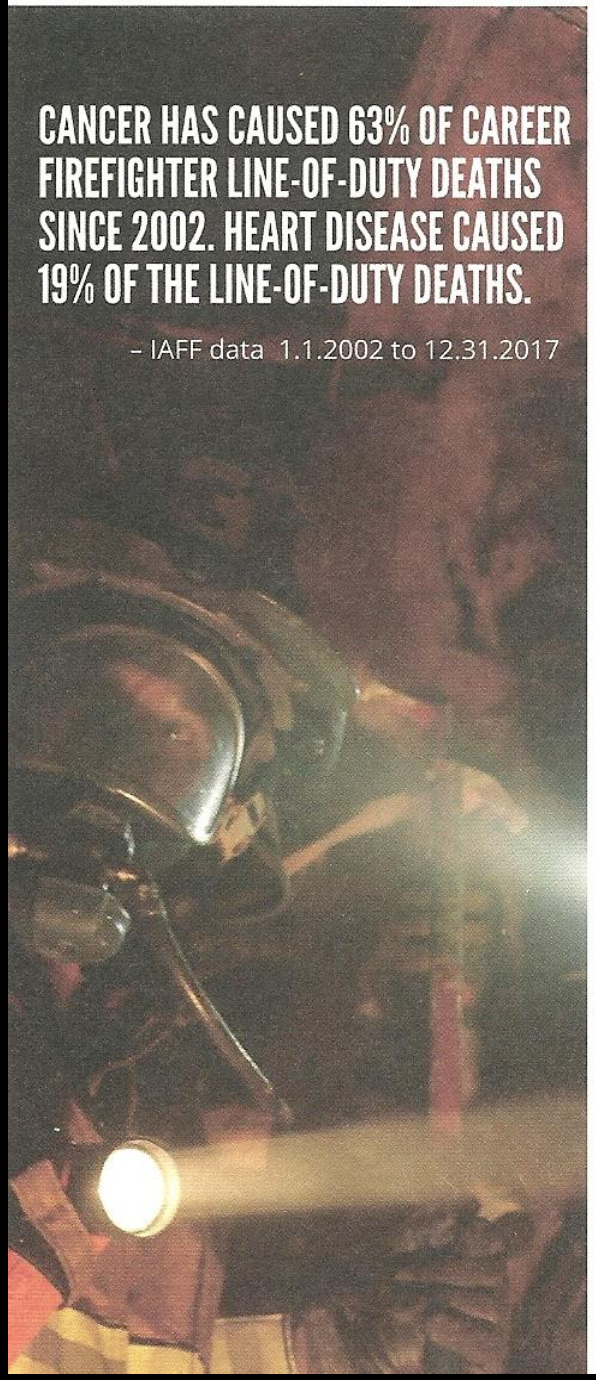
PUBLIC SERVICE ANNOUNCEMENT


SILENT
MAYDAY



Firefighter cancer fact check

Although cancer is the leading cause of firefighter line-of-duty deaths, firefighters are not "68 percent more likely to develop cancer than the general population." Accurate data is crucial when quantifying occupational cancer's toll on–and threat to–firefighters and their families. Recently, a number of well-intended journalists, legislators, manufacturers, and others have cited **inaccurate firefighter cancer statistics**, including **the following erroneous examples**:

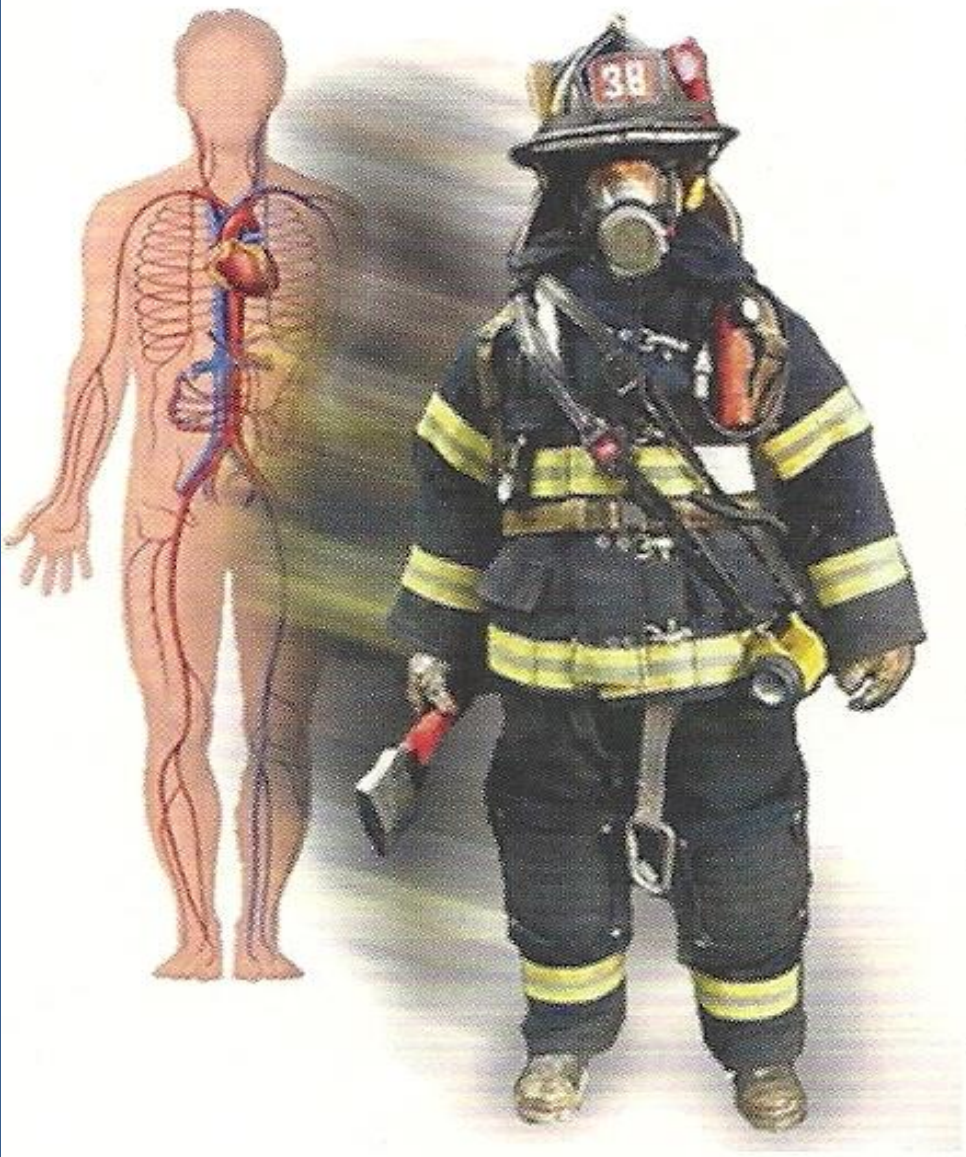
- "…the risk of cancer in firefighters is 250% greater than in people not in our line of work."
- "In all, researchers found that more than two-thirds of firefighters–68 percent –develop cancer, compared to about 22 percent for the general population…"
- "Firefighters…have a 68% higher risk of being diagnosed with cancer than the general population."
- "Research is showing 68% of firefighters will come down with cancer on average."
- "…More than two-thirds of firefighters are diagnosed with…cancer."
- "…63% of all firefighters will get cancer."
- "…[Researchers] found that firefighters are twice as likely to be diagnosed with cancer…"
- "…[F]irefighters are 50 percent more likely to be diagnosed with cancer than the…U.S. population."
- "A firefighter has a 29% higher risk of contracting cancer than the rest of our population."

129 percent increased risk of *dying* from mesothelioma. (The earlier LeMasters meta-analysis also reported a two-fold excess for testicular cancer.)

Firefighters have a 62 percent higher risk of getting esophageal cancer, and they have a 39 percent increased risk of *dying* from esophageal cancer, according to the NIOSH research.

Here's an overview with some specific additional risks for firefighters noted:

- testicular cancer - 2.02 times the risk (again: 100% = double = 2 times)
- mesothelioma - 2.0 times greater risk;
- multiple myeloma -1.53 times greater risk;
- non-Hodgkin's lymphoma - 1.51 times greater risk;
- skin cancer - 1.39 times greater risk;
- malignant melanoma - 1.31 times greater risk;
- brain cancer -1.31 times greater risk;
- prostate cancer - 1.28 times greater risk;
- colon cancer -1.21 times great risk; and
- leukemia - 1.14 times greater risk.



→ **Cardiovascular** (Increased HR and BP, Decreased Stroke Volume)

→ **Hematological** (Decreased Plasma Volume, Hemoconcentration)

→ **Thermoregulatory** (Elevated Core Temperature, Dehydration)

→ **Respiratory** (Increased Breathing Rate and Oxygen Consumption)

→ **Metabolic** (High Oxygen Cost, Increased Lactate, Fatigue)

→ **Immune/Endocrine** (Increased Leukocytes and Hormones)

→ **Nervous** (Sympathetic Surge and Increased Adrenaline)

→ **Muscular** (Increased Oxygen Use and Heat Production)

Firefighter Cancer Support Network

PROTECT YOURSELF FROM CANCER

C LEAN OR CHANGE-OUT YOUR PPE AFTER EVERY WORKING FIRE

A FTER EVERY FIRE, TAKE A SHOWER AND CHANGE YOUR CLOTHES ASAP

N EVER WEAR OR PLACE DIRTY PPE IN LIVING AREAS, INCLUDING YOUR CAR

C ONSIDER SUNSCREEN AND WEARING A HAT WHILE WORKING IN THE SUN

E XHAUST IS DEADLY, BE SURE TO USE YOUR STATION'S EXHAUST SYSTEMS

R EMEMBER TO GET ANNUAL PHYSICALS, INCLUDING CANCER SCREENINGS!

S CBA'S MUST BE WORN FROM ENTRY THRU OVERHAUL, NO EXCEPTIONS!

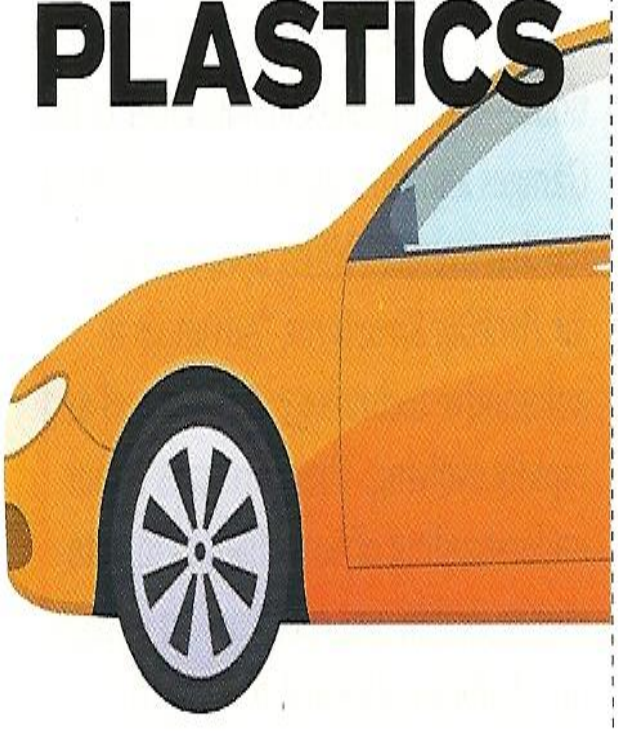
For Immediate assistance call toll free **(866) 994-FCSN.**
For further information about
Firefighter Cancer Support Network
visit us on the web: **www.FirefighterCancerSupport.org**

Proudly endorsed and supported by:

Supporting Those Who Serve

BUG

ONE WORD: PLASTICS



THE AVERAGE MODERN VEHICLE IS

50%

PLASTIC BY VOLUME

AND

10%

PLASTIC BY WEIGHT

BY 2020, THE TYPICAL VEHICLE WILL CONTAIN

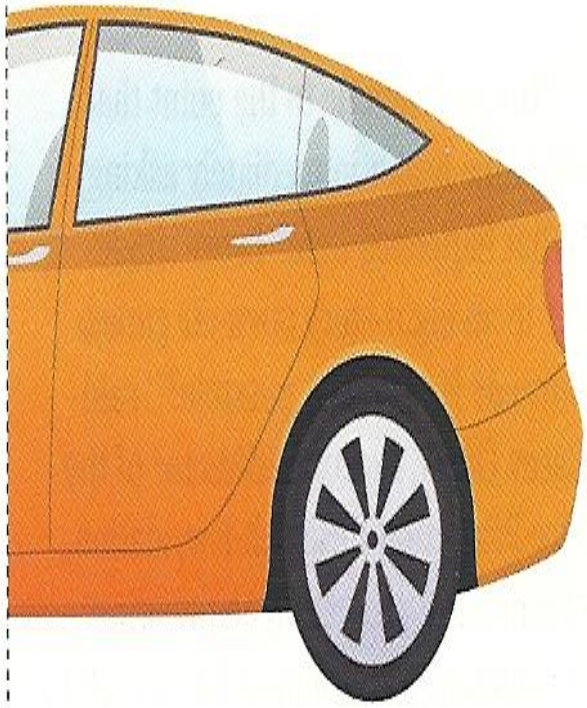
770

POUNDS OF PLASTIC MATERIAL

COMPARED TO

440

POUNDS IN 2014



Phoenix Fire Department
Electronic Toxic Exposure Form Reporting Process

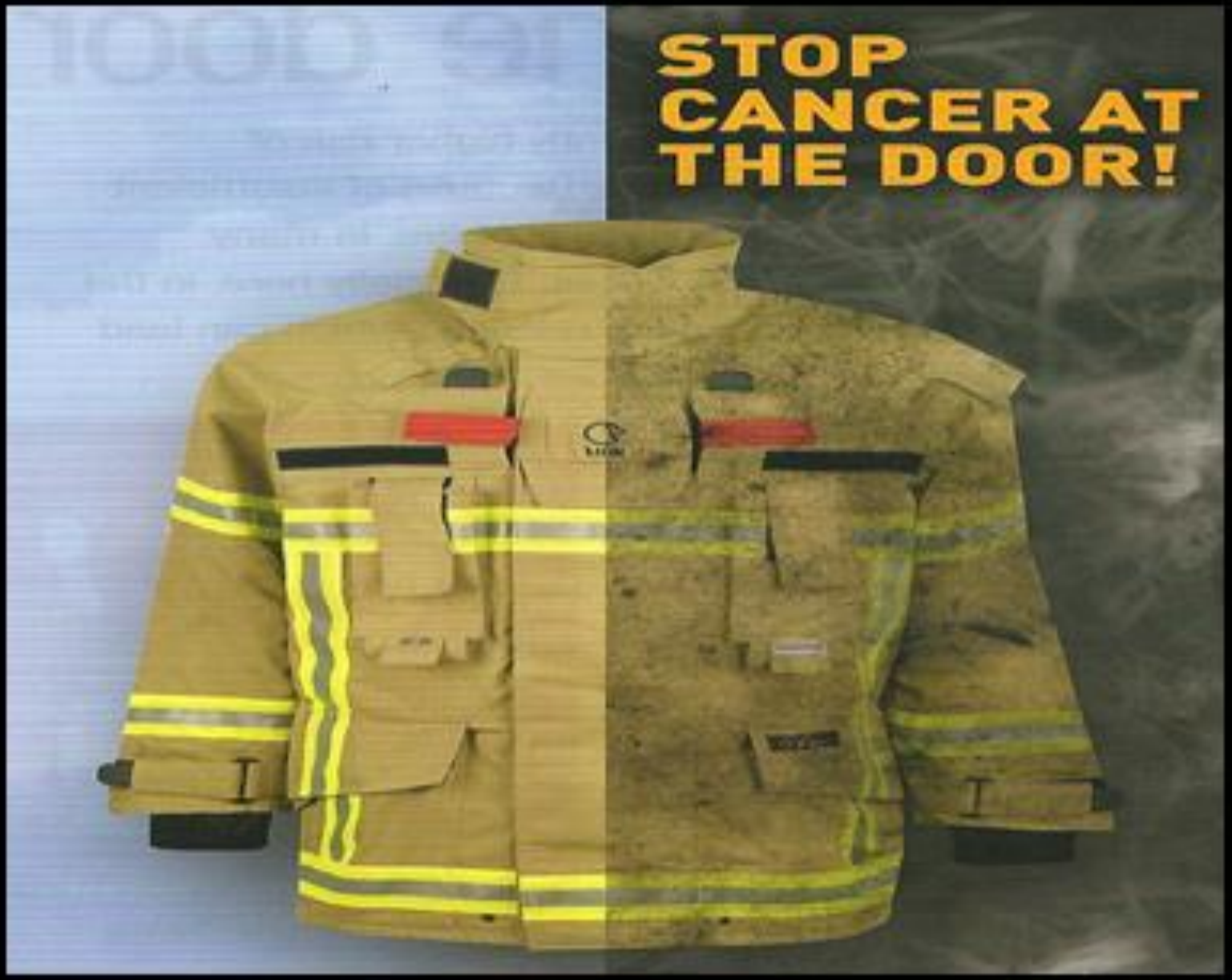
Reminder: The hard copy paper Toxic Exposure reporting forms are no longer being utilized. There are three ways to access and complete your electronic Toxic Exposure Form.

Option 1: **Toxic Exposure Reporting using a fire station computer**	**Option 2:** **Toxic Exposure Reporting from your home computer**	**Option 3:** **Toxic Exposure Reporting using your Cell Phone**
1. Log on to a Fire Department computer using YOUR login ID and password 2. Access the FireWire Web Page. If it is not your home page type in the following link in the search bar of your browser http://firewire/FireWireHome.aspx 3. At the far upper right of the FireWire home page under Links click on the Red and White FirePoint icon FirePoint 4. This will take you to the "pick an account" screen. Click on the first item in the listing this should be your Employee ID#@phoenix.gov 5. This will take you to the SharePoint/FirePoint web page 6. Scroll down to the bottom of the page under Health Center click on Toxic Exposure Form 7. Click on NEW ITEM 8. Complete all the required fields and "Save" 9. Your form will then be reviewed and completed by the Toxic Exposure officer and this form will become a permanent record that you can access at any time.	1. From any computer type the following link into your web browser search field exactly as shown here. http:cityofphoenix.sharepoint.com/sites/fire/ 2. When prompted log in to Microsoft Office using your city of phoenix email address and password (example: john.smith@phoenix.gov + password) 3. Once you have access to the SharePoint/FirePoint web page scroll down to the bottom of the page under Health Center click on Toxic Exposure Form 4. Click on NEW ITEM 5. Complete all the required fields and "Save" 6. Your form will then be reviewed and completed by the Toxic Exposure officer and this form will become a permanent record that you can access at any time.	To access the toxic exposure form on your cell phone please type the address below in your phones internet search browser and follow the prompts to log into Microsoft Share Point / Fire Point. You can then save this site to your favorites on your cellular device for faster log-in access. http:cityofphoenix.sharepoint.com/sites/fire/ You can also scan the attached QR (Quick Response) code from your phone to gain access to Fire point.

- **Wear your PPE on ALL fires**
- **Don't put your fire gear in:**

the cab, in the living and/or sleeping quarters/area area and don't take them home

- **Decon at the scene**
- **Wipe down**
- **Shower after fire**
- **Wash gear**
- **HAVE TWO SETS of GEAR**


STOP
CANCER AT
THE DOOR!

Decision to destroy gear probably

By SKIP HESS
The Indianapolis News

WARREN TWP.

Warren Township Fire Department Safety Director Capt. Don Abbott made a decision last year that didn't win him a popularity contest among fellow firefighters.

And that's strange, considering Abbott's decision to destroy their protective gear may have prevented them from being seriously burned — even killed — at a later time.

"It wasn't a popular decision at the time, but in hindsight, it was the right decision," Abbott said this week.

Abbott was on the scene of a Sept. 21 fire at RAE Co., 2828 N. Webster Ave.

He and other veteran firefighters noticed unusual colors of some of the smoke.

"Obviously, something was burning other than wood and other (usual) products," said Abbott.

Abbott, who also serves as hazardous materials coordinator and training officer, suspected chemicals had contaminated the protective gear and other equipment.

When the fire was extinguished, officials learned that chemicals had spilled from containers and onto the burning floor. Labels on the containers were destroyed. The person who knew what chemicals were in which containers was company president Beth Burnett.

But Burnett was injured critically in the fire. She was taken to Wishard Hospital with burns over 25 percent of her body.

Abbott decided to have firefighters remove their gear at the scene. Some firefighters stripped off all clothing and washed their skin in portable showers at the fire site.

Twenty sets of gear — gloves, coats, helmets and other items — much of the gear, valued at $1,000 a set, is owned by the firefighters.

Results of the lab tests were frightening.

The gear was saturated with chemicals which not only would have contaminated firefighters' bodies, but could have ignited, Abbott said.

"What we basically learned is that if we would have let people go back in (at a future fire) with their gear, they could have come back looking like toasted marshmallows," he said.

Abbott credits the Marion County Health & Hospital Corp.'s hazardous materials division with helping the department discover the contamination.

Four men who fought the RAE blaze from inside the building were contaminated and are still being monitored by department medical director Dr. Steve Smith. A few hours after the fire, the men began experiencing skin irritation, rashes, burning sensations and flu-type symptoms, said Abbott.

The symptoms stopped, but Abbott said Smith has continued to give them periodic blood tests. The monitoring will continue though March, he said.

Value of the destroyed equipment is $30,000.

In addition to firefighters' gear, Abbott said breathing masks, communications equipment and hoses were destroyed

Training officers have had to change their philosophy on the best ways to fight fires, he noted.

Firemen have been taught to stay low, even crawl, when they are inside buildings. But because more chemicals are being used

2015

LEUKEMIA

It returned in 2018

NOW I need a liver transplant

FF have a 14% higher cancer rate than he general public

There is a 400% increase in skin absorption for every **5 DEGREE INCREASE** in body temperature

Q&A

The National Firefighter Registry

Key questions and answers about a critical new research initiative

1. What is the National Firefighter Registry (NFR)?
The NFR will be a large database of health and occupational information for firefighters that can be used to analyze and track the incidences of cancer and search for common links to help the public safety community, researchers, scientists and medical professionals find better ways to protect those who protect our communities.

With voluntary participation from firefighters, the privacy-protected National Firefighter Registry will include information about demographics, work assignment and exposure, and relevant health and medical details to monitor, track and improve our knowledge about cancer risks for firefighters, especially those linked to work-place exposures.

2. Why was the NFR created?
Studies of cancer in firefighters, including a study published by the National Institute for Occupational Safety and Health, found that firefighters may have a greater risk of some types of cancer. But many of these studies did not include volunteer firefighters or enough female and minority firefighters. NFR will add information on members of these groups, providing a broader cross-section between firefighters, and track more data from a larger sample of the firefighter population to gain greater insights into the connection of the firefighter occupation and cancer.

3. How will the NFR help firefighters?
It will provide critical information needed to protect the health of firefighters. By learning more about the rate of cancer among firefighters, we might find that some groups of firefighters or response activities have a greater risk of cancer than others due to exposure, geography, gender or other factors. We also may learn more about certain protective measures that are associated with reducing the risk of cancer.

4. What is NIOSH?
The National Institute for Occupational Safety and Health is the part of the Centers for Disease Control and Prevention responsible for researching workplace illness and injury.

5. How do I enroll?
Enrollment is not yet open, but there will be an opportunity in the near future for all firefighters to enroll. The target date to begin enrollment is the fall of 2020. NIOSH will keep their webpage updated as the enrollment period approaches.

6. Can a firefighter enroll if they have never had cancer?
Yes. In fact, cancer-free firefighters are just as critical to making the NFR a success as those who have cancer. NIOSH would like all firefighters to be part of the NFR, not just those who have cancer or other illnesses. Anyone who has ever been a firefighter should join the NFR. This means all active and retired firefighters, including volunteer, paid-on-call, part time and career firefighters are strongly encouraged to join the NFR.

7. Do firefighters have to join the NFR?
No. Being part of the NFR is completely voluntary, and no one can make a firefighter join. NIOSH needs your consent for you to be part of the NFR. However, participation is strongly encouraged, because it will help improve the health and safety of the firefighter community today and in the future. The NFR is your opportunity to leave a legacy for those who follow you.

8. How will the data be collected?
We will collect information from firefighters through web-based surveys, well-known exposure tracking applications and fire department records after obtaining consent from each firefighter. Long term, NIOSH will monitor potential cancer diagnoses for firefighters enrolled in the NFR by linking information with state cancer registries.

9. Do firefighters need to contact NIOSH if they have cancer?
No. NIOSH will be able to track information related to cancer by linking individual firefighters' information with state cancer registries. Firefighters should consult with their doctor if they have any concerns about their health and to ensure that, if you are diagnosed with cancer of any kind, you are entered into your state cancer registry.

10. How will the registry be used?
Data from the NFR will be matched with information from national and state databases to track cancer cases or find out about causes of death among firefighters. Researchers will use these data to compare the risk of cancer among firefighters to that of the rest of the U.S. population.

11. Will NIOSH share information collected for the NFR?
No personal information about any individual firefighter ever will be shared. However, the overall or aggregate findings from the NFR will be shared with the public and researchers using the database.

To repeat, any information that identifies an individual will not be shared with any outside organizations, including fire departments, unions, elected officials or other researchers without permission of the registry participant.

For more information on the NFR visit www.cdc.gov/niosh/firefighters/health.html or contact NFRegistry@cdc.gov.

NFRegistry@cdc.gov

Firefighters can start tracking their exposures automatically in the National Fire Operations Reporting System (NFORS) Exposure Tracker available now and downloadable free from app stores. The NFORS Exposure Tracker is a private data gathering tool that creates a career diary for individual firefighters.

“I urge you, for your family’s sake, if you think something is wrong, get checked OUT”

2021 PROJECT MAYDAY CAREER 2015-2020

PROJECT MAYDAY

is

of

acini

ott

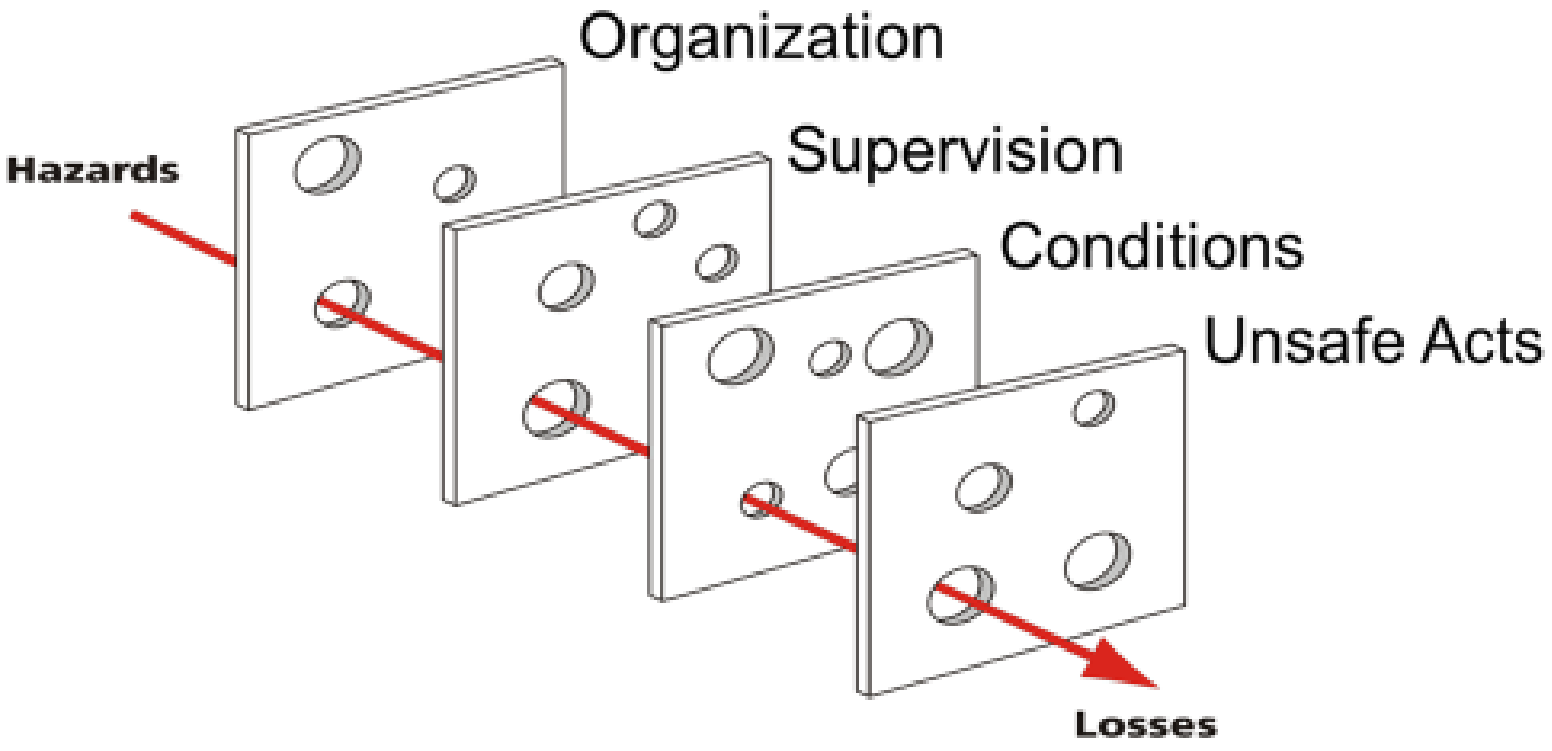
"You will be missed,
Chief Cool Command"

PROJECT MAYDAY

Concepts

"Cumulative Act Effect" (1990)

University of Manchester



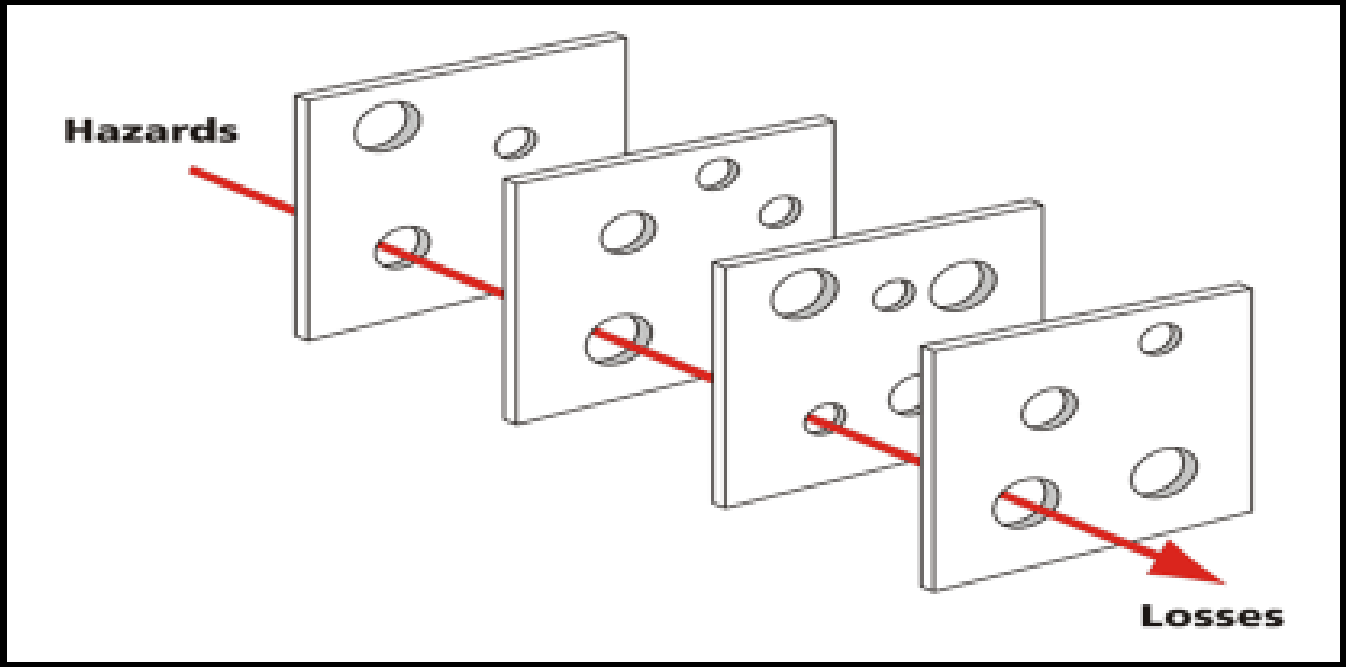
PROJECT MAYDAY

Errors

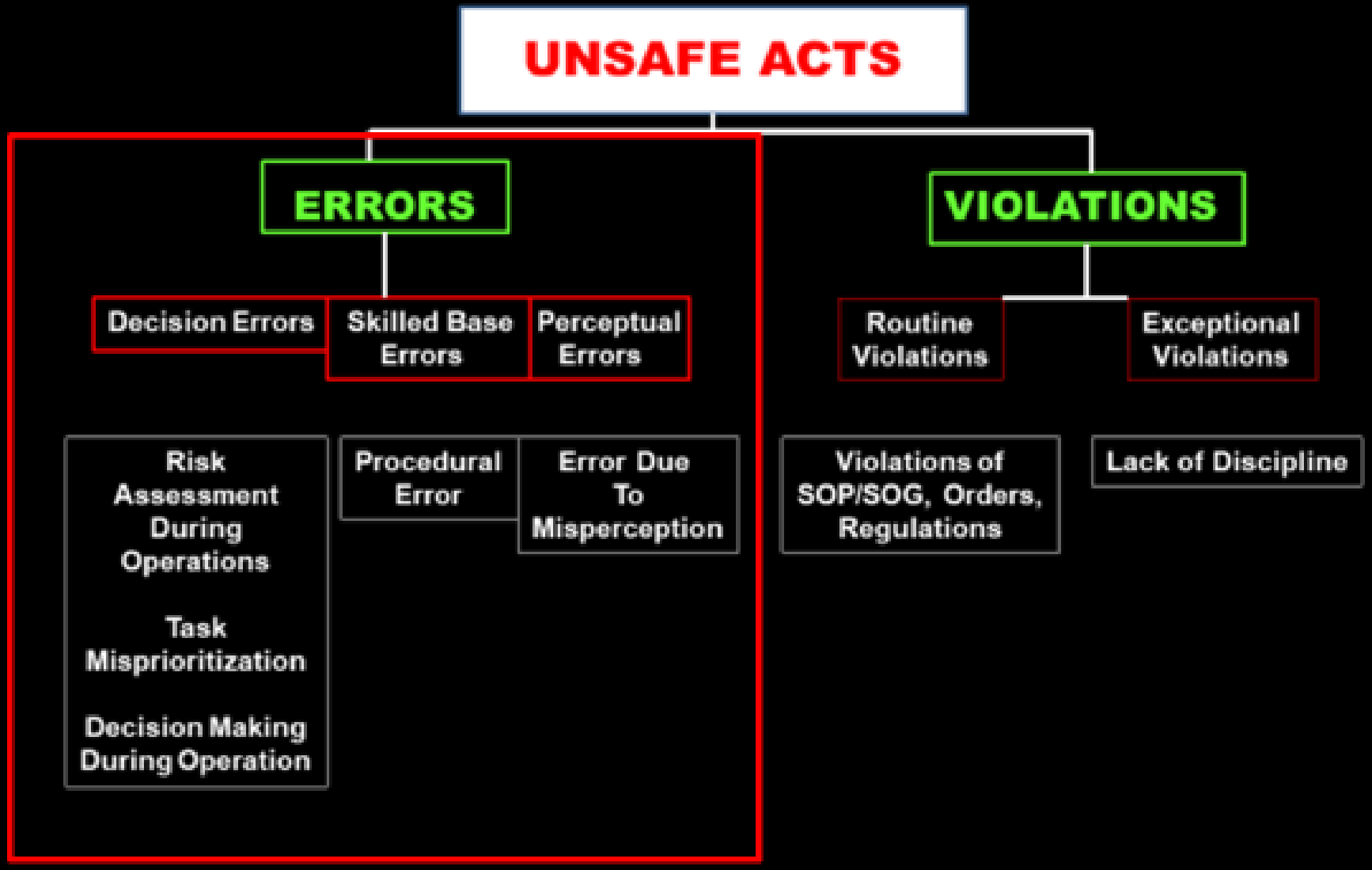
- *Critical* … Difficult to recover from, (30-75 seconds)

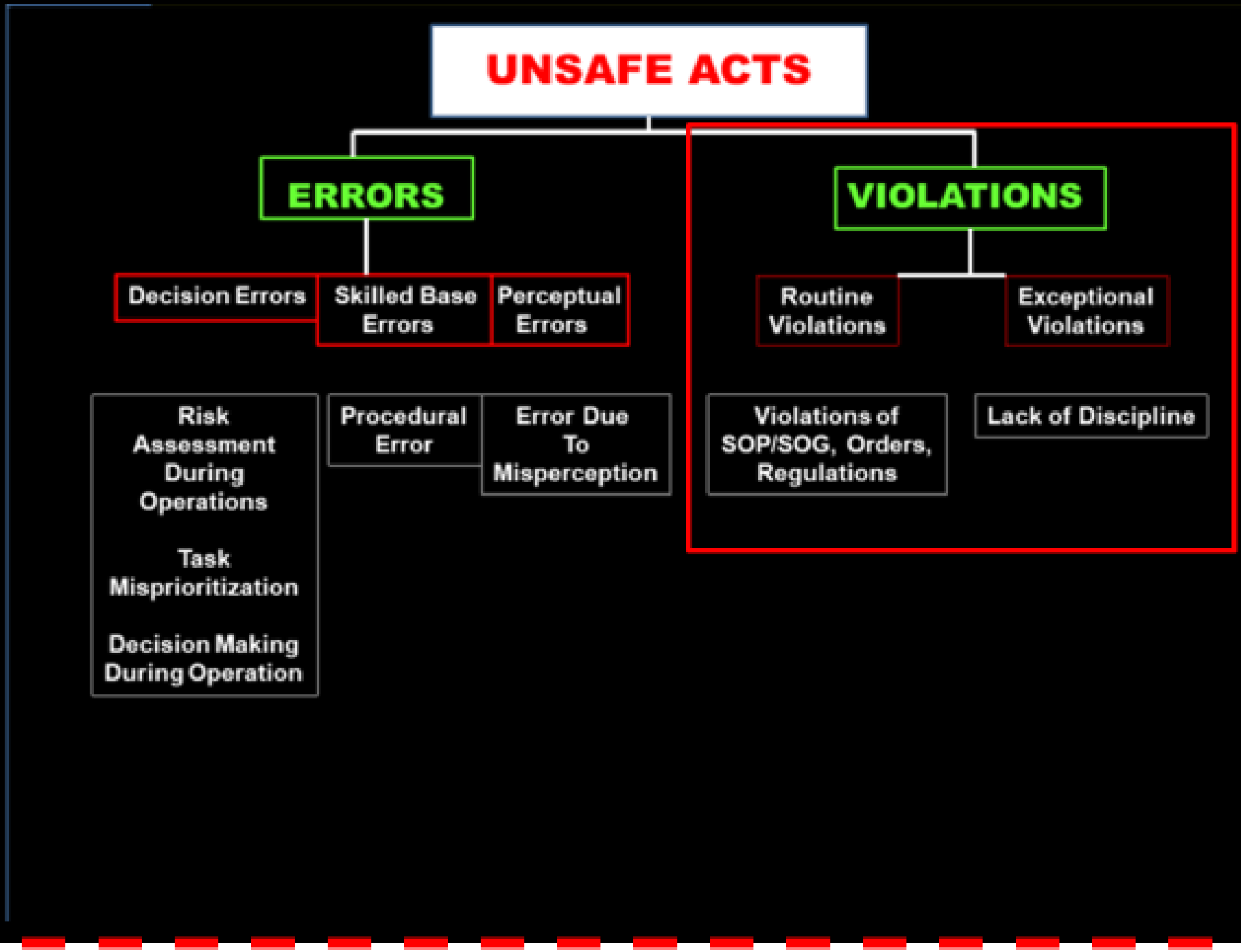
- *Serious* ….. Need to fix issue to *evacuate* (60 to 180 seconds)

- *Minor* ….. Can be overcome with changes in strategy/ tactics, additional rescources



“Mayday” Victim ……. 36%
Company Officer ….. 25%
Incident Commander ….. 21%
Other firefighters, etc. ….. 19%
(4,236)


UNSAFE ACTS
ERRORS
VIOLATIONS
Decision Errors
Skilled Base Errors
Perceptual Errors
Routine Violations
Exceptional Violations
Risk Assessment During Operations
Task Misprioritization
Decision Making During Operation
Procedural Error
Error Due To Misperception
Violations of SOP/SOG, Orders, Regulations
Lack of Discipline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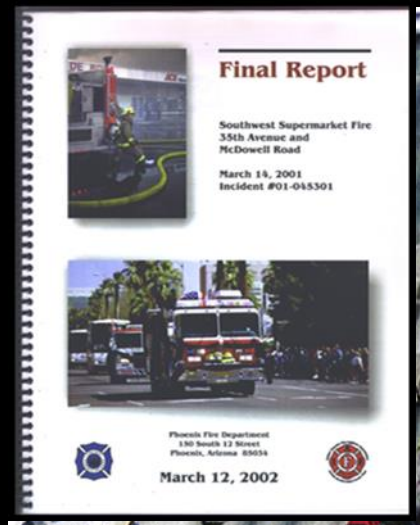
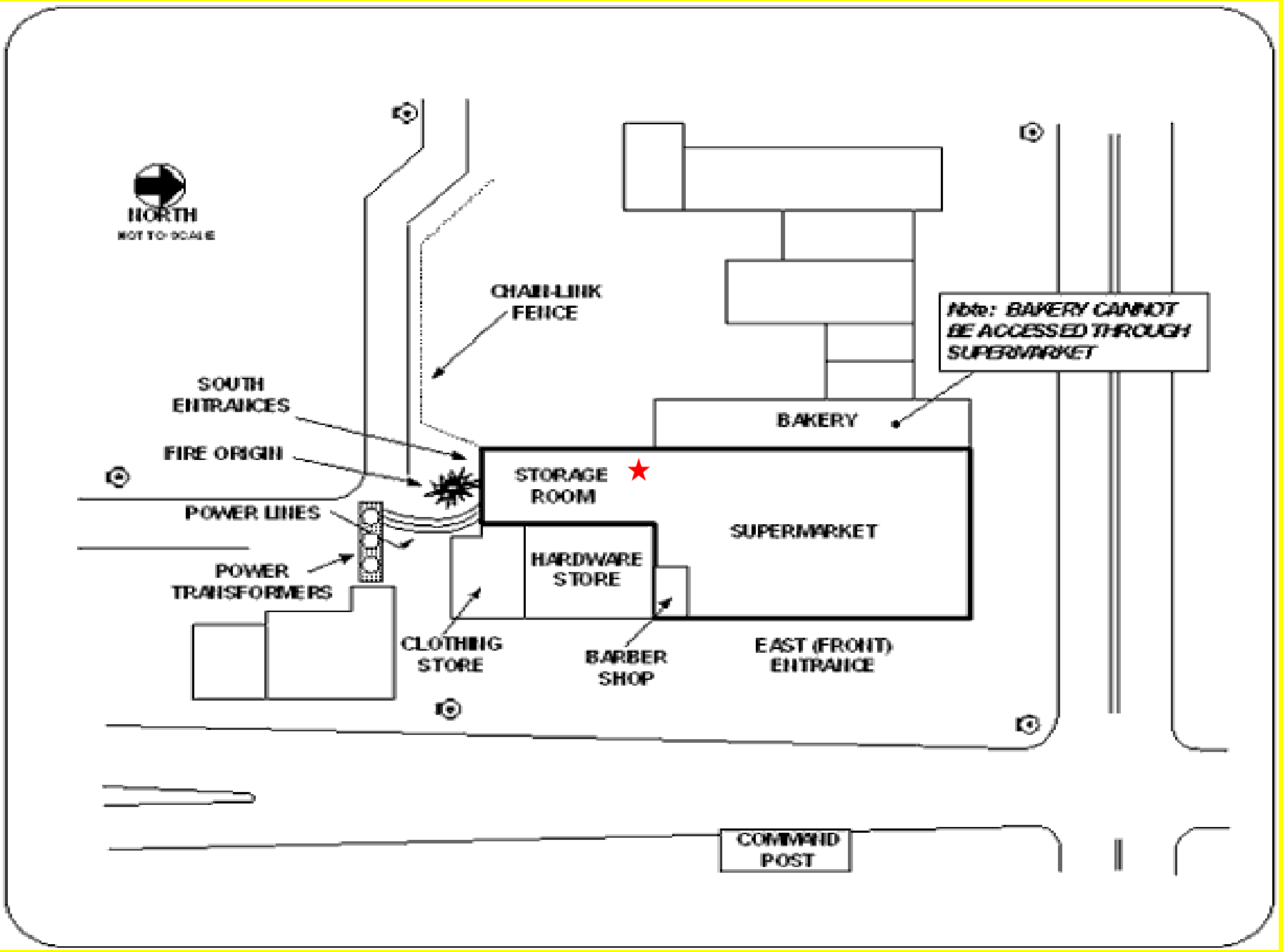
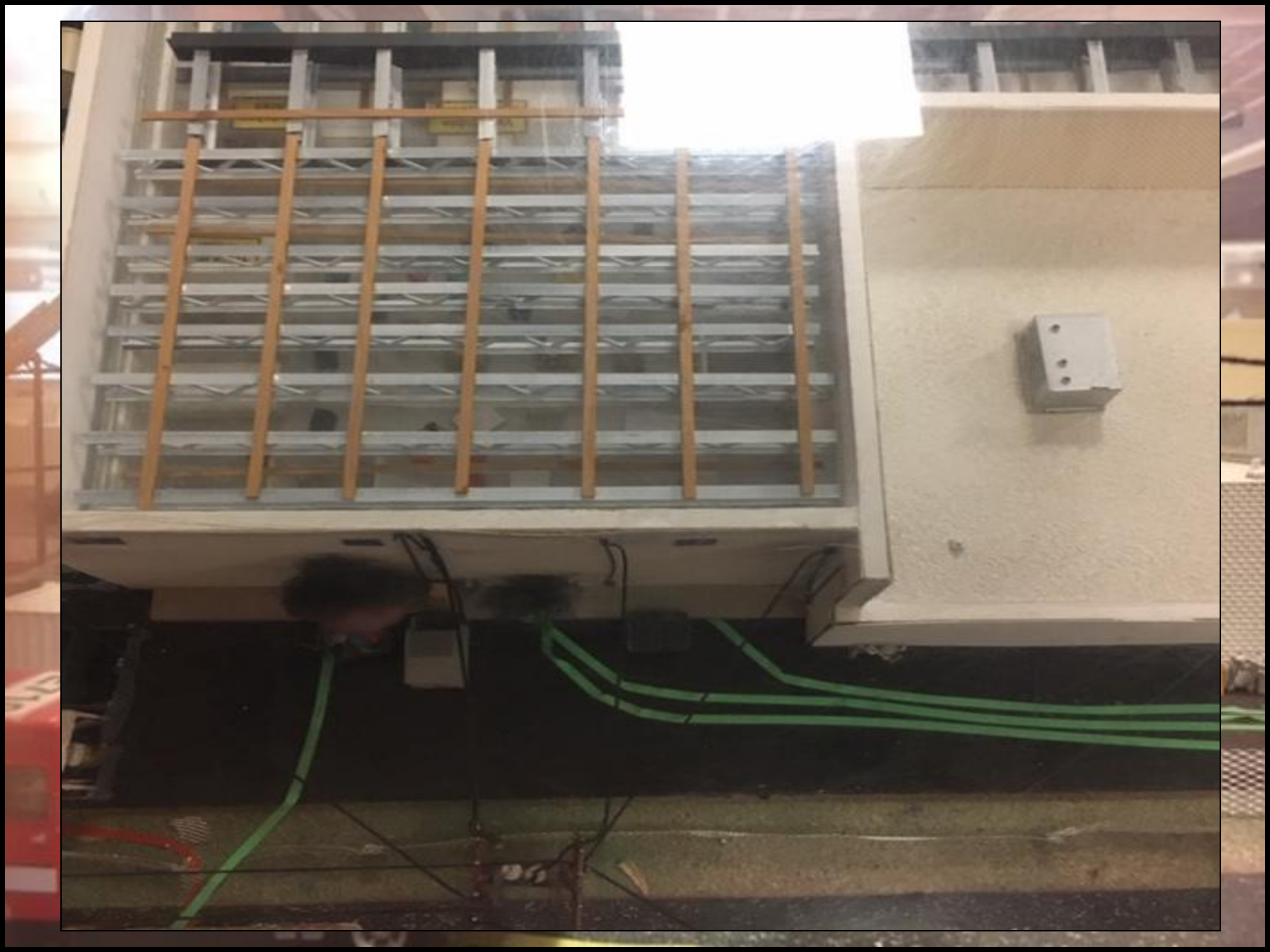
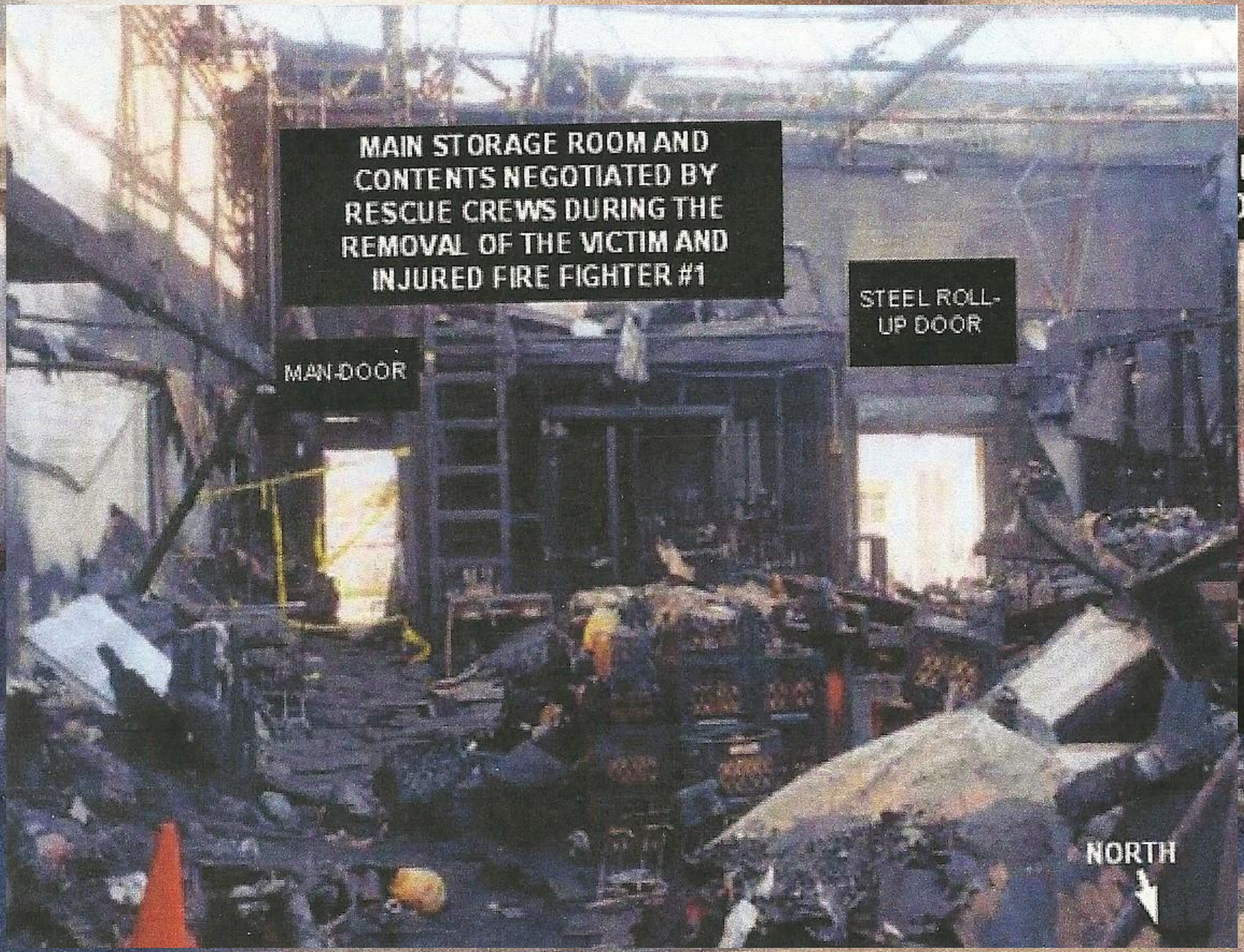
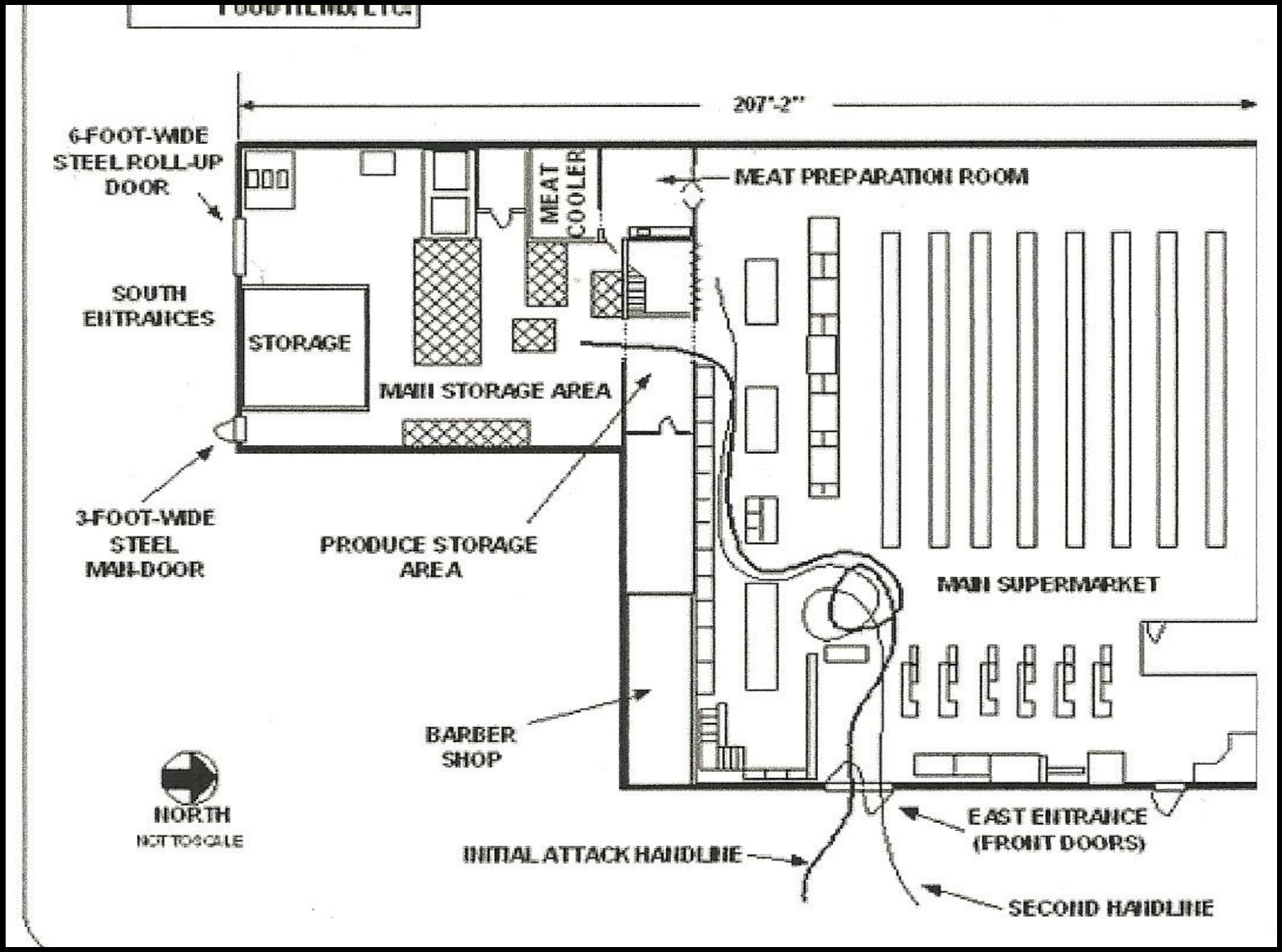


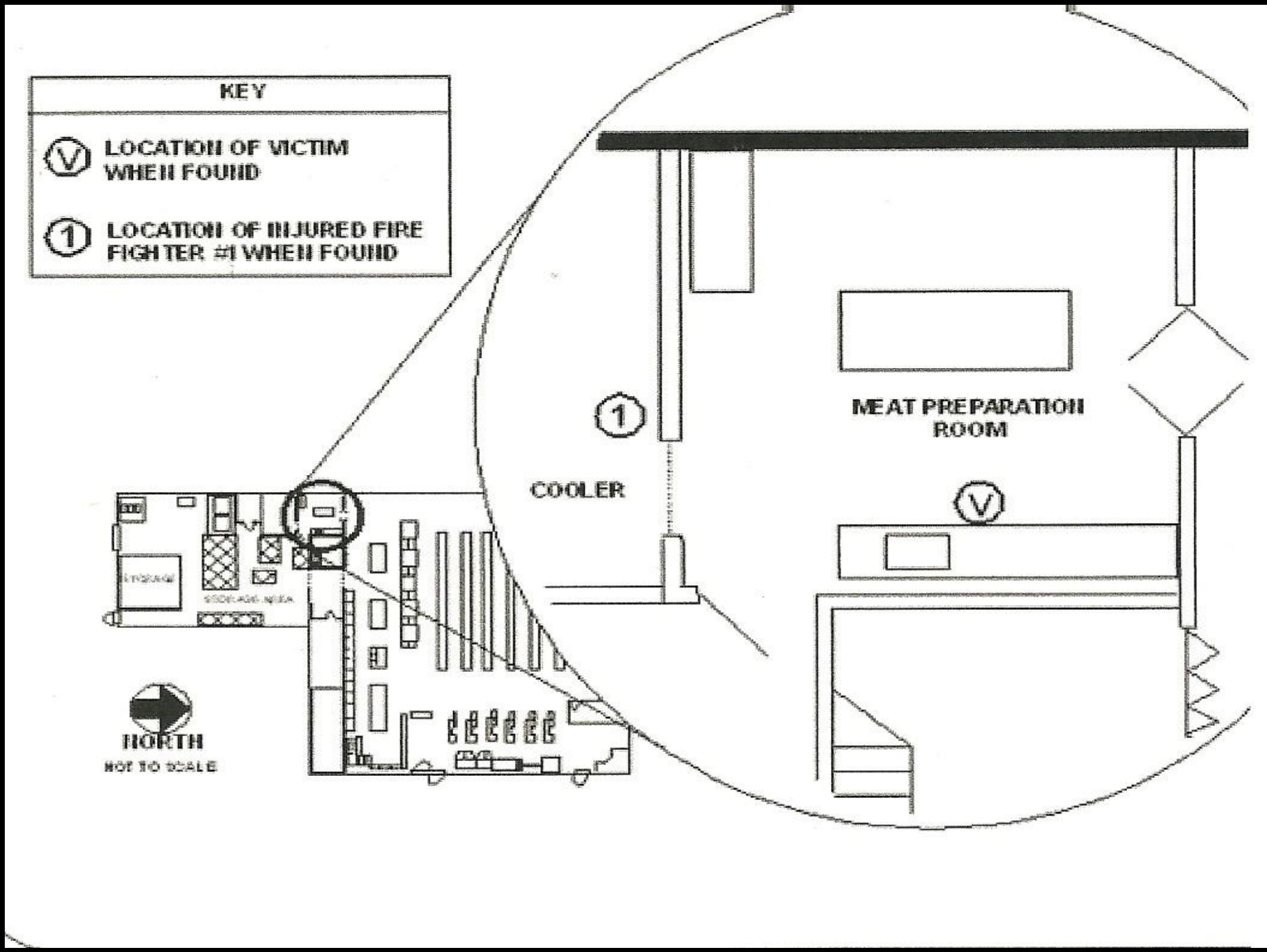
This program honors the memory of Brett Tarver

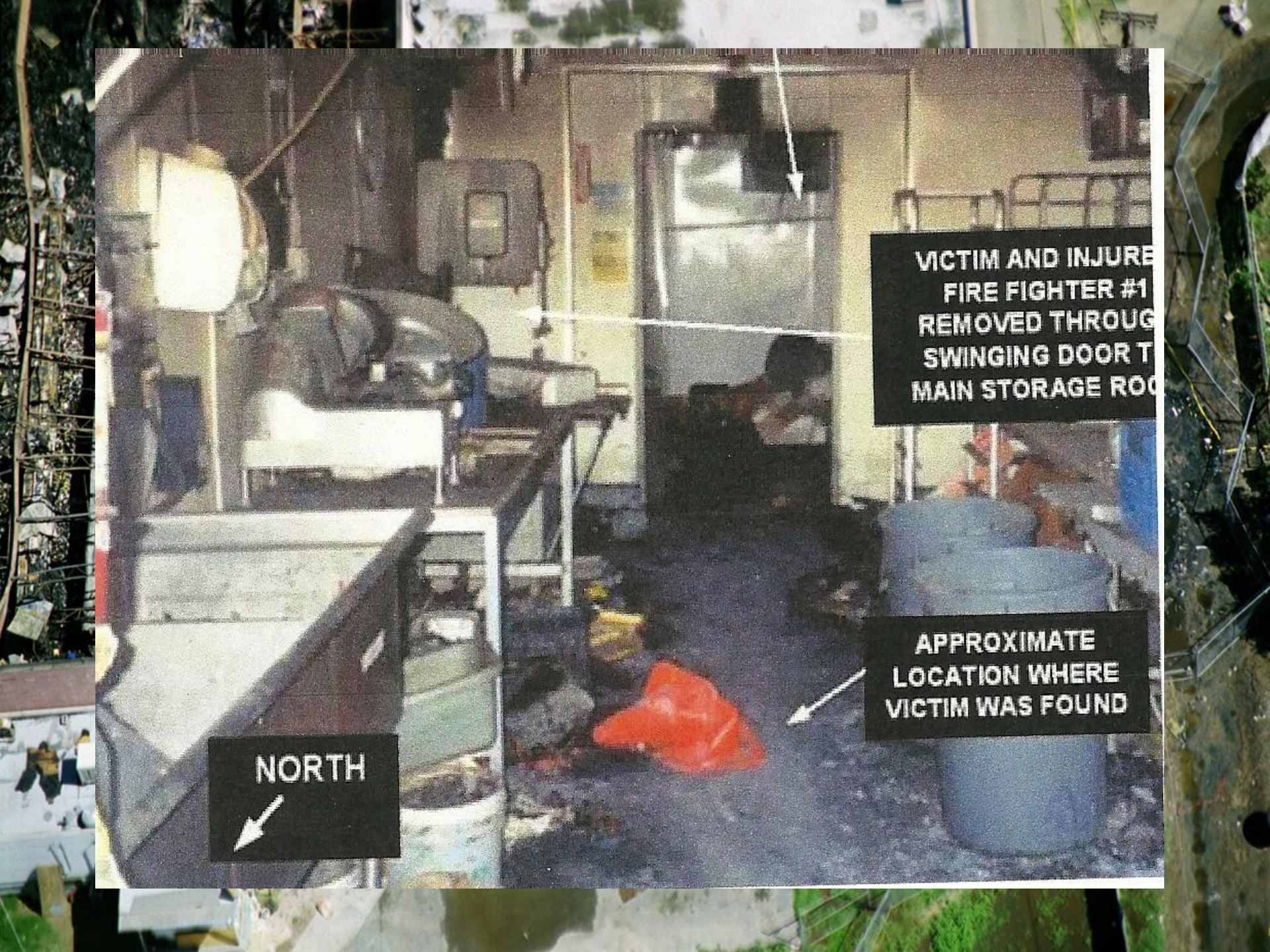

NORTH
NOT TO SCALE
CHAIN-LINK FENCE
Note: BAKERY CANNOT BE ACCESSED THROUGH SUPERMARKET
SOUTH ENTRANCES
FIRE ORIGIN
BAKERY
STORAGE ROOM
POWER LINES
SUPERMARKET
HARDWARE STORE
POWER TRANSFORMERS
CLOTHING STORE
BARBER SHOP
EAST (FRONT) ENTRANCE
COMMAND POST




MAIN STORAGE ROOM AND CONTENTS NEGOTIATED BY RESCUE CREWS DURING THE REMOVAL OF THE VICTIM AND INJURED FIRE FIGHTER #1
STEEL ROLL-UP DOOR
MAN-DOOR
NORTH


207'-2"
6-FOOT-WIDE STEEL ROLL-UP DOOR
SOUTH ENTRANCES
STORAGE
MEAT COOLER
MEAT PREPARATION ROOM
MAIN STORAGE AREA
3-FOOT-WIDE STEEL MAN-DOOR
PRODUCE STORAGE AREA
MAIN SUPERMARKET
BARBER SHOP
NORTH
NOT TO SCALE
EAST ENTRANCE (FRONT DOORS)
INITIAL ATTACK HANDLINE
SECOND HANDLINE


KEY
LOCATION OF VICTIM WHEN FOUND
LOCATION OF INJURED FIRE FIGHTER #1 WHEN FOUND
1
COOLER
MEAT PREPARATION ROOM
V
NORTH
NOT TO SCALE


VICTIM AND INJURE
FIRE FIGHTER #1
REMOVED THROUG
SWINGING DOOR T
MAIN STORAGE RO
APPROXIMATE
LOCATION WHERE
VICTIM WAS FOUND
NORTH

- 1700hrs …E24 arrives, smoke coming from Southside of the structure. E-24 CAPT. Assume IC (unaware structure is L shaped
- Outside fire quickly moves into the attic area
- 1707hrs…E-3 arrives made RIT, reports heavy smoke 4 ft from the ceiling
- 1711hrs… E-14/R-3 advance hose through roll-up door Southside of structure
- 1714hrs…E-14 reports heavy black smoke to the floor in the storage area
- 1715hrs…B-4
- 1716hrs…T-14 report roof ventilated (6ft square)
- 1726hrs…E-14 reports ceiling collapse, E-14 CAPT reports low-air alarm, E-14 exiting the structure, FF (2) become disoriented, got off the hose line, became lost. Both FFs low-alarm goes off, MAYDAY call delayed by 3-4 minutes.

- 1732hrs…E21 reports finding the victim (misunderstood) follow them out, collapses (respiratory arrest)
- 1734hrs… RIT-1 / RIT – 2, hear PASS unit but cannot locate (low air alarm) (1 MAYDAY)
- 1739hrs… RIT-3/ RIT-4, hear PASS unit, find SCBA, but NO FF (low air) (2 – MAYDAYS)
- 1741hrs… RIT-5 /RIT-6, find TRAVER, standing-up …… walks away (2 MAYDAYS)
- 1746hrs…RIT-7/ RIT-8, locate TRAVER, unconscious respiratory arrest/ no pulse, begin to remove TRAVER (fire coat). (1 – MAYDAY)
- 1750hrs…RIT-9 / RIT -10 assistance, TRAVER is removed … 1756hrs

Lots of free-lancing, not enough informative communications


SAFEWAY


Granite Mountain
R-3
Prescott Fire
Interagency Hot Shot Crew


2013 TucsonSentinel.com

PROJECT MAYDAY

A forensic study focused on saving lives, through research and learning

PROJECT MAYDAY

The "MAYDAY" Project is a comprehensive study of "mayday" incidents, responses, and prevention. Funded for one year (2015) by a private foundation grant to:

CERT
Command Emergency Response Training, Glendale, Arizona
Don & Bev Abbott

Dr. J. Bebermeier
Statistics & Analytics

PROJECT MAYDAY

Dr. A. Grisson
Cardiologist

Dr. A. McCourtee
Sleep Deprivation Specialist

Dr. G. Grant Capt/Dr. P. Stuart
Physiologist

Dr. M. Walker
Epidemogist

Dr. L. McNeil
Audiologist

L. Watson
Radio Specialist

G. Stovish
SCBA Specialist

PROJECT MAYDAY

Participation in this project is voluntary and confidential, department names or individual names are not released or used in this project without their written permission.

We thank all these departments, Chiefs, Officers and Firefighters for their time and interest in furthering firefighter safety.

PROJECT MAYDAY

In the Fire Service, we get *lucky* every day. Sometimes, even in the worst of conditions, things turn out all right. But, at *Project Mayday* our phone rings every day. Every day we hear about a firefighter somewhere who wasn't so lucky.

What would it look like to actually manage risk? How much better could we be in our decision-making? What actions can we perform to identify threats, assess vulnerabilities, and predict consequences? What if we didn't leave everything to luck?

Better risk management begins with a *Change in culture.*

PROJECT MAYDAY

Mayday Project Surveys

Component 1: **Survey of department information; organization, number members, apparatus, runs, response type/numbers, SOPs, and training.**
(96 questions)

Component 2: **Upon the completion of Component 1, Component 2 will be sent, it deals with all the identified components of your Mayday, size-up, critical factors, IAP, communications, response, etc.**
(177 questions)

PROJECT MAYDAY

Component 3: **Upon completion of Component 2, Component 3 will be sent, it deals with the department's handling post action response, critique, follow-up Training, etc.**

(84 questions)

"In order for a firefighter to survive the dangers of firefighting, he must know how other firefighters have died or been seriously injured."

Vinny Dunn, Deputy Chief FDNY (ret.)

PROJECT MAYDAY

We hope that this "Mayday Project" will be the most complete informational analysis on "maydays" ever conducted and proven recommendations on communications, command/ operations, response, training, and follow-up.

We have a twenty-four person Advisory Board that is preparing a "Project Mayday" Report with recommendations for prevention, training, response and follow-up.

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PROJECT MAYDAY

TERMINOLOGY

"Mayday, Mayday, Mayday"

RED ALERT

PERSONAL EMERGENCY

PROJECT MAYDAY

NFPA 1500

10 - 101 - 472 - 473 - 475 - 1001 - 1002 - 1003
1006 - 1021 - 1051 - 1071 - 1221 - 1051 -
1071 - 1221 - 1403 - 1404 - 1521 - 1561 - 1581
1582 - 1583 - 1670 - 1700 - 1851 - 1852 - 1901
1906 - 1911 - 1912 - 1925 - 1931 - 1932 - 1936
1951 - 1952 - 1961 - 1962 - 1964 - 1971 - 1975
1977 - 1981 - 1982 - 1983 - 1984 - 1989 - 1991
- 1992 - 1994 - 1999 - 3000

PROJECT MAYDAY

MAYDAY ….

"The term *mayday* should not be used for fire ground communications in that it could cause confusion with the term used for acronautical and nautical emergencies"

(NFPA 1500-45,8.2.3) 2007

Instead use the (past tense) we should use terms like "firefighter down, firefighter missing, or firefighter trapped"

(NFPA 1500, Appendix A.8.2.3) 2013

Maydays for "life-threating situations" and provides examples of "lost or missing member an SCBA malfunction or loss of air, a member seriously injured or incapacitated, member trapped or entangled or any life-threating situation that cannot be immediately resolved.

PROJECT MAYDAY

NFPA 1500 ….
Defines mayday readiness “as the ability to donn, doff, and manipulate the SCBA in zero visibility while wearing firefighters gloves.”

MAYDAY ….

anytime a firefighter(s) cannot safely exit a IDLH hazard zone.

PROJECT MAYDAY

MAYDAY,
MAYDAY,
MAYDAY

PROJECT MAYDAY

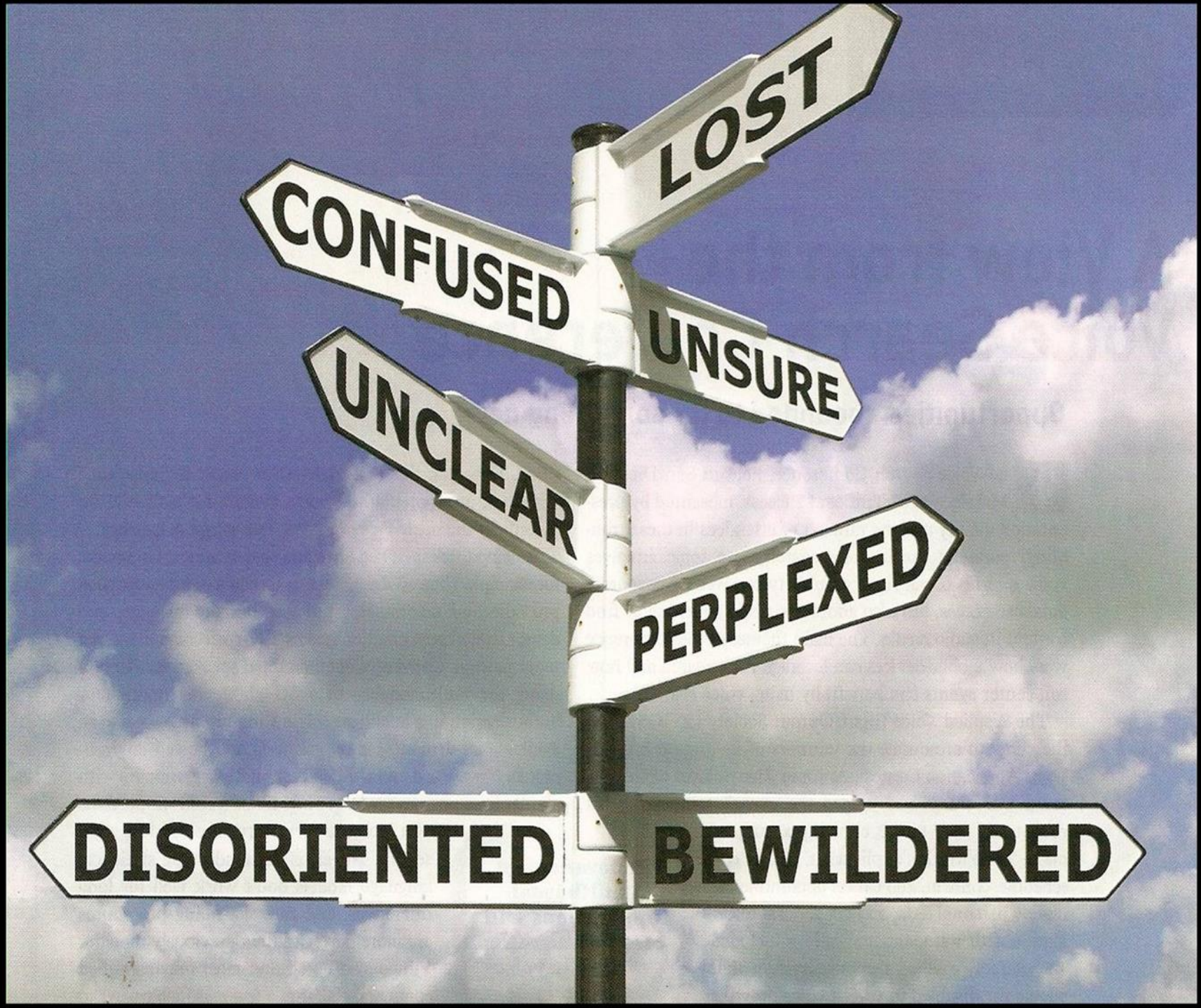
Shut-Up,
Shut-Up,
Shut-Up

PROJECT MAYDAY

Initiation or transmission of a firefighter distress signal, “Mayday, Mayday, Mayday” produces more stress and potential chaos than any other single type of incident we may encounter throughout our careers.

A trapped or disoriented firefighter has two factors working against them. 1) Limited air supply and, 2) flame impingement barring the fact that direct physical trauma is not involved.

PROJECT MAYDAY



Larger Homes

+

Open Spaces

+

Evolving Fuel Loads

+

Void Spaces

+

Changing Bldg. Materials

+

Smaller Lots

+

New Technologies

=

- **Faster fire propagation**
- **Shorter time to flashover**
- **Rapid changes in fire dynamics**
- **Shorter escape time**
- **Shorter time to collapse**
- **Exposure problems**
- **New and Unknown hazards**

PROJECT MAYDAY

FIREFIGHTER SAFETY RESEARCH INSTITUTE

UL's FSRI is dedicated to increasing firefighter knowledge to reduce injuries and deaths in the fire service and in the communities they serve.

2006 DHS Grant 2007 DHS Grant 2008 DHS Grant 2009 DHS Grant 2010 DHS Grant 2011 DHS Grant Attic Fire Basement Fire Basement Fires Chicago Fire Department Dimensional Lumber Door Control Engineered Lumber Exterior Fire FDIC FDNY Fire Dynamics Firefighter Smoke Exposure firehouse expo fire protection engineering fire service Flashover Furniture Governor's Island Horizontal Ventilation Legacy Legacy Home Lightweight Construction Modern Modern Home NIST Overhaul Photovoltaic PV systems shock Smoke Smoke Particulate solar panels Structural Collapse Suppression tactics Training Ventilation Vertical

UL

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

PROJECT MAYDAY

Fire Fighter Key Points

Some important points to remember regarding fire dynamics are:

- The stages of fire development change when a fire becomes ventilation-limited; it is common with today's fire environment to have a decay period prior to flashover, which emphasizes the importance of ventilation and its timing.
- The absence of visible smoke means nothing! A common event noted during the experiments was that once the fire became ventilation-limited, the smoke being forced out of the gaps of the houses greatly diminished or stopped altogether. No smoke showing during the size-up should increase awareness of the potential conditions inside.
- Structural collapse should always be considered in your size-up. All residential floors can collapse in your operational time frame, especially with an unprotected engineered floor system.

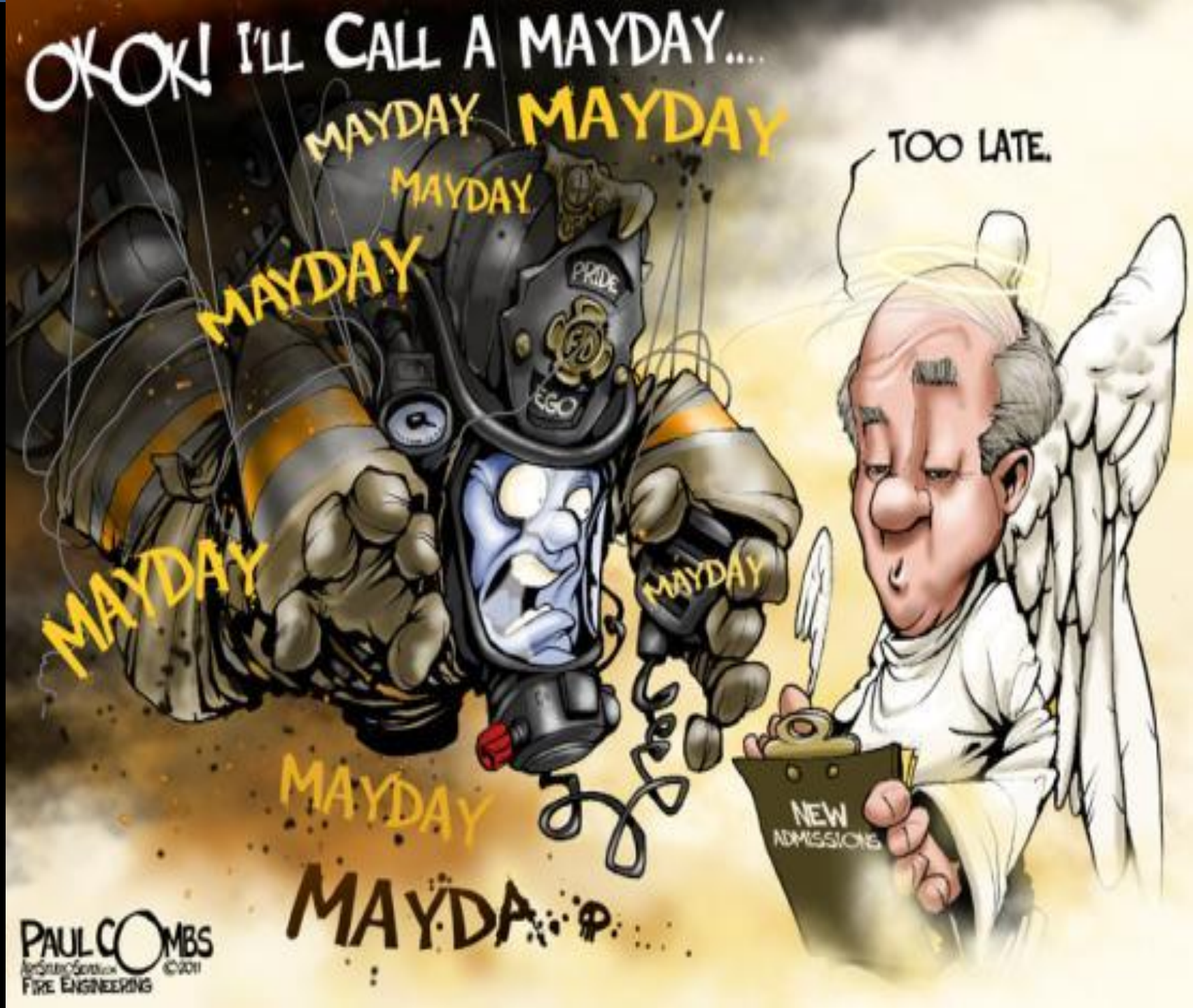
PROJECT MAYDAY

FLOW PATH

- Improving the inlet and/or exhaust paths from the seat of the fire will result in fire growth and spread.
- Interrupting the fire flow path by limiting or controlling the inlet or controlling the outlet can limit fire growth.
- Controlling the door—keeping doors closed allows less oxygen into the fire and equals lower temperatures.
- Anyone in the exhaust portion of the flow path—between the fire and the direction of its travel—is in a high hazard location.
- Controlling the flow path improves victim survivability.

Courtesy of NIST.

PROJECT MAYDAY



“MAYDAY” PROJECT

PROJECT MAYDAY

"Mayday,Mayday,Mayday"

RED ALERT

PERSONAL EMERGENCY

MAYDAY PROJECT

2015-2021
72 months
CAREER

"Mayday" reports from 12,851 career fire departments representing 50 states

Completed Components

(December 31, 2021)

Component 1: **12,585 departments**

Component 2: **12,227 department**

Component 3: **9,727 departments**

PROJECT MAYDAY

MAYDAY FD Information

“Project Mayday” has accumulated 11,826 radio traffic audio and 2,341 dash/video tapes, confirming almost all of our information and data, along with tactical worksheets, notes, dispatch logs, SOPs, mayday training information, follow-up reports, internal investigation documents

NOT ALL MAYDAYS ARE CREATED EQUAL

“There is a tendency to believe that since a certain practice has thus far not killed us, that it is an acceptable practice”

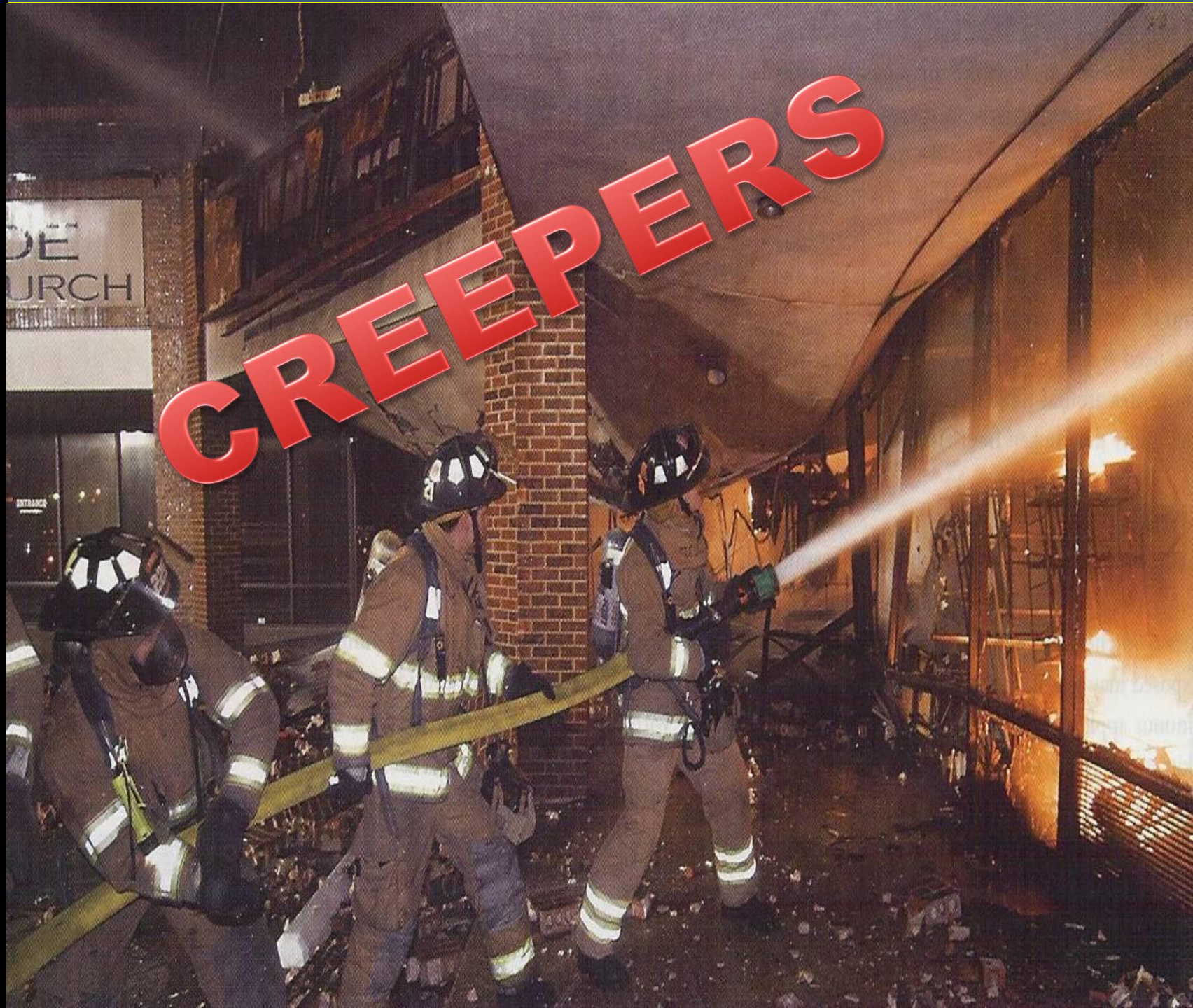
Capt. John Peters

PROJECT MAYDAY

Courtesy of DeMaria Design Associates / Christian Kienapfel

PROJECT MAYDAY

PROJECT MAYDAY



PROJECT MAYDAY

Component 2: On-Scene Information

REMEMBER

Whatever you allow to happen, without intervention is your …

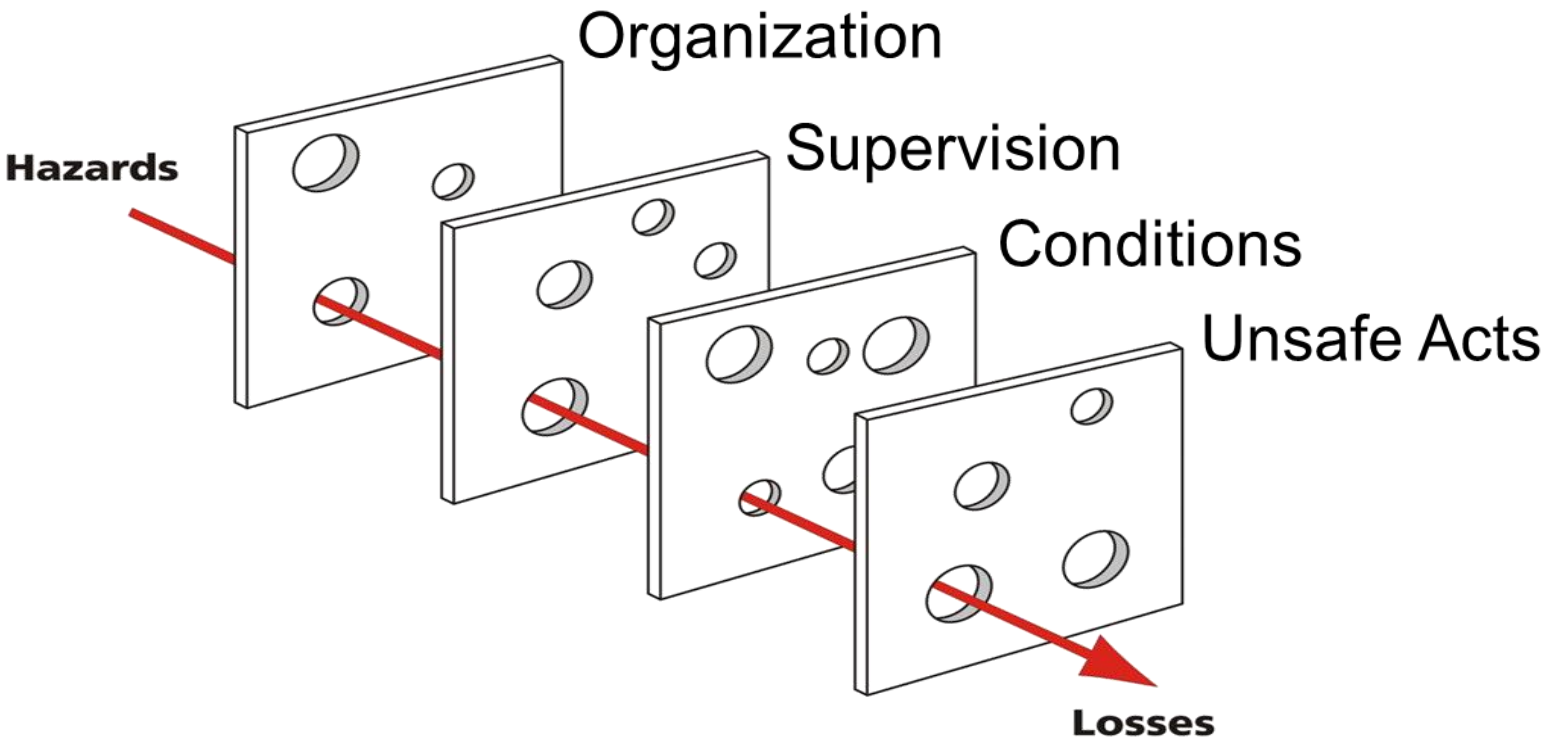
"STANDARD OF CARE"

PROJECT MAYDAY

PROJECT MAYDAY

Concepts
“Cumulative Act Effect” (1990)

University of Manchester



PROJECT MAYDAY

Fire Department "MAYDAY" Profiles

PROJECT MAYDAY

“MAYDAY” Information Data

PROJECT MAYDAY

DEPLOYMENT

PROJECT MAYDAY

"MAYDAY" Information Data

TIME OF DAY "MAYDAY"

CAREER 2015-2021

0001 – 0300	3,891	29.5%
0301 – 0600	2,884	23.5%
0601 – 0900	1,558	12.7%
0901 – 1200	606	4.9%
1201 – 1500	417	3.4%
1501 – 1800	463	3.2%
1801 – 2100	825	6.7%
2101 - 2400	1,579	13%

PROJECT MAYDAY

"MAYDAY" Information Data Units Involved in Mayday

Units Involved in *Maydays*

1st Unit 57%
2nd Unit 26%
3rdUnit 14%
4thUnit 2%
5thUnit 1%
6thUnit 1%
7thUnit 0%

Units Involved in *Maydays*

Engines 54%
Ladders 44.5%
Rescues 1%
EMS Unit 5%

TRUCK COMPANY OPERATIONS
10% of the Fire Service
40% of the MAYDAYS

PROJECT MAYDAY

Component 2: On-Scene Information

Number of Apparatus on the Scene at the time of the Mayday

Engines:	*Ladders:*	*Rescues:*	*Batt.Chiefs:*
2 … 39%	1 … 79%	1 … 77%	1 … 86%
3 … 33%	2… 19%	2 … 33%	2 … 12%
4 … 24%	3 … 2%		3 … 2%
5 … 7%			
6 … 1%			

PROJECT MAYDAY

Component 2: On-Scene Information

Number of FF on the scene at the time of the Mayday

9 – 15 ….. **24%**
16 – 22 … **33%**
23 – 29 … **26%**
30 – 36 … **11%**
37 – 42 … **3%**
43 > … **2%**

PROJECT MAYDAY

SHIFT OPERATION

Work Shift FD - Career:

24hr/48hr+ Shift …….. 81%
48hr/+ Shift …….. 17%
Misc. Shift …… 2%

PM Career FD Shift Schedule MD:

25hr Shift (6.514) …..... 53.2%
48hrShift + (3,895) ….. 30%
Other (277) …….. 2.2%
Overtime (1,591) …… 12.9%

Work Shift – Overtime:

24 / 48hr Shift (6,847) …. 55.7%
48hrs + Shift (5,430) …... 54.3%

24hr Shift Schedule-MD

1st 12hrs (941) …… 14.4%
2nd 12hrs 5,573() … 77%

48hrs / + Shift Schedule-MD

1st 12hrs (384 …… 9.8 %
2nd 12hrs (803) …… 20.6%
3rd 12hrs (227) …….. 5.3%
4th 12hrs (2,502) …….. 64.2 %

Crew Size:

- 2 persons 29%
- 3 persons 41%
- 4 persons 30%

12,277

PROJECT MAYDAY

"MAYDAY" Elapsed Time When Maydays Occur

After marking on the scene …. 4min 45sec…

< 10 mins	71	.5%
10 – 15 mins	743	6%
15 - 20 mins	1,606	13.1%
20 – 25 mins	2,337	19.1%
25 - 30 mins	2,125	17.3%
30 - 35 mins	1,890	15.4%
35 – 40 mins	1,349	11%
40 - 45 mins	1,192	9/7%
45 - 55 mins	623	5%
> 55 mins	261	2.1%

12,227

PROJECT MAYDAY

ASSUMPTION, CONFIRMATION, and POSITIONING of COMMAND

PROJECT MAYDAY

Its not a matter of if a fire fighter has a MAYDAY...

ITS WHEN

PROJECT MAYDAY

Component 2: Size-Up / Initial Radio Report

CAREER DEPARTMENTS

Size Up / Initial Radio Report: (12,277)

360: **NO 360: 49%**
Incomplete: 21%
Completed: 30%+

When 360 completed:

- **Confirm size ….. 94%**
- **Life Safety issues ….. 87%**
- **Significant Hazards ….. 82%**
- **Smoke and Fire from New Location ….. 43%**
- **Changes in original Strategy ….. 22%**

2015-2021 **12,277**

PROJECT MAYDAY

Component 2: Size-Up / Initial Radio Report

CAREER DEPARTMENTS

Problem Description: **Benchmarks**

- **Smoke / Fire Conditions** **80.6*%**
- **Actual Location of F & S** **66%**

"WATER ON FIRE"

RIT Operations:

- **Established ….. 67%**
- **Exception ….. 30%**

- **2nd RIT established ….. 27.2%**

PROJECT MAYDAY

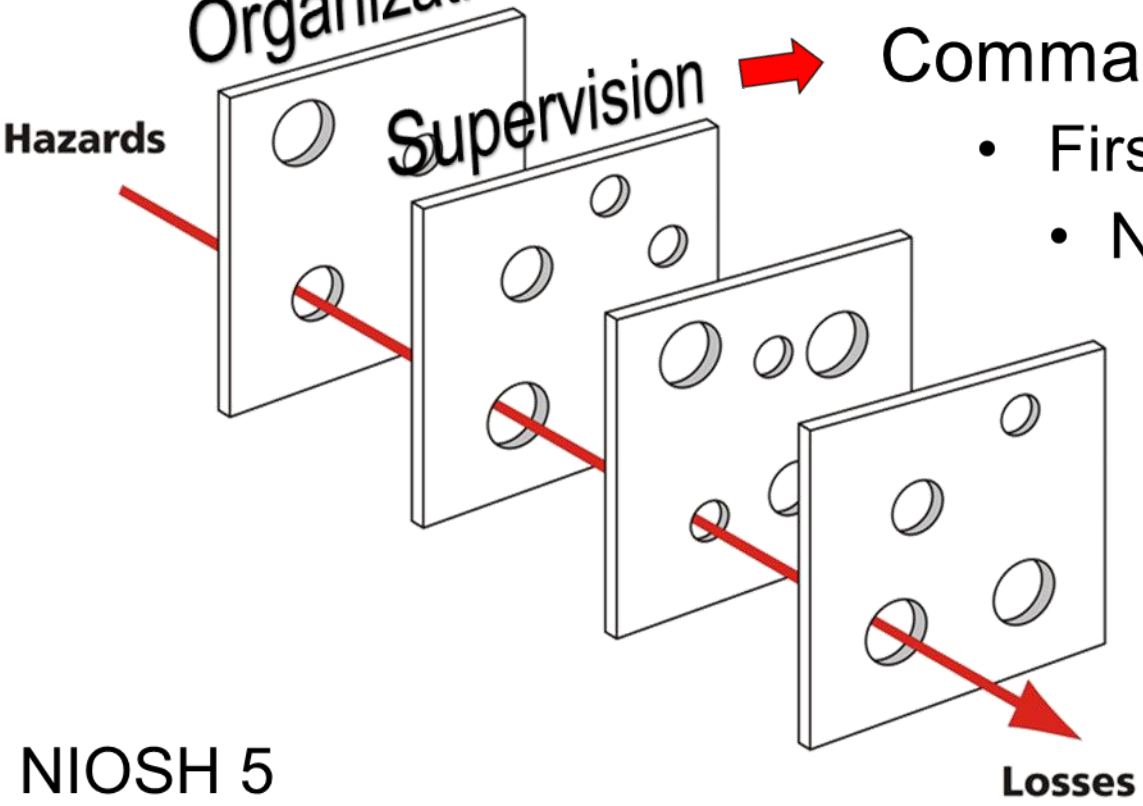
MAYDAY PROBLEMS

Time of Day **70.2% Night**

- Size Up - Reading Smoke

Command

- First 20-min
- No RIC



NIOSH 5

1. Improper Risk Assessment.
2. Lack of Incident Command.

PROJECT MAYDAY

RESCUE TEAM BY ANY NAME

IRIC	**Initial Rapid Intervention Crew**
RIC	**Rapid Intervention Crew**
RIT	**Rapid Intervention Team**
FAST	**Firefighter Assist and Search Team**
IRT	**Immediate Response Team**
RDU	**Rapid Deployment Team**
RICO	**Rapid Intervention Company Team**
RRT	**Rapid Response Team**

TERMINOLOGY

PROJECT MAYDAY

Component 2: Size-Up / Initial Radio Report

Declare Strategy:

- Offensive 93%
- Defensive 6%
- NO strategy declared 1%

Additional Resource:

- 1st Alarm 26%
- 2nd Alarm 13%
- Additional equipment 35%

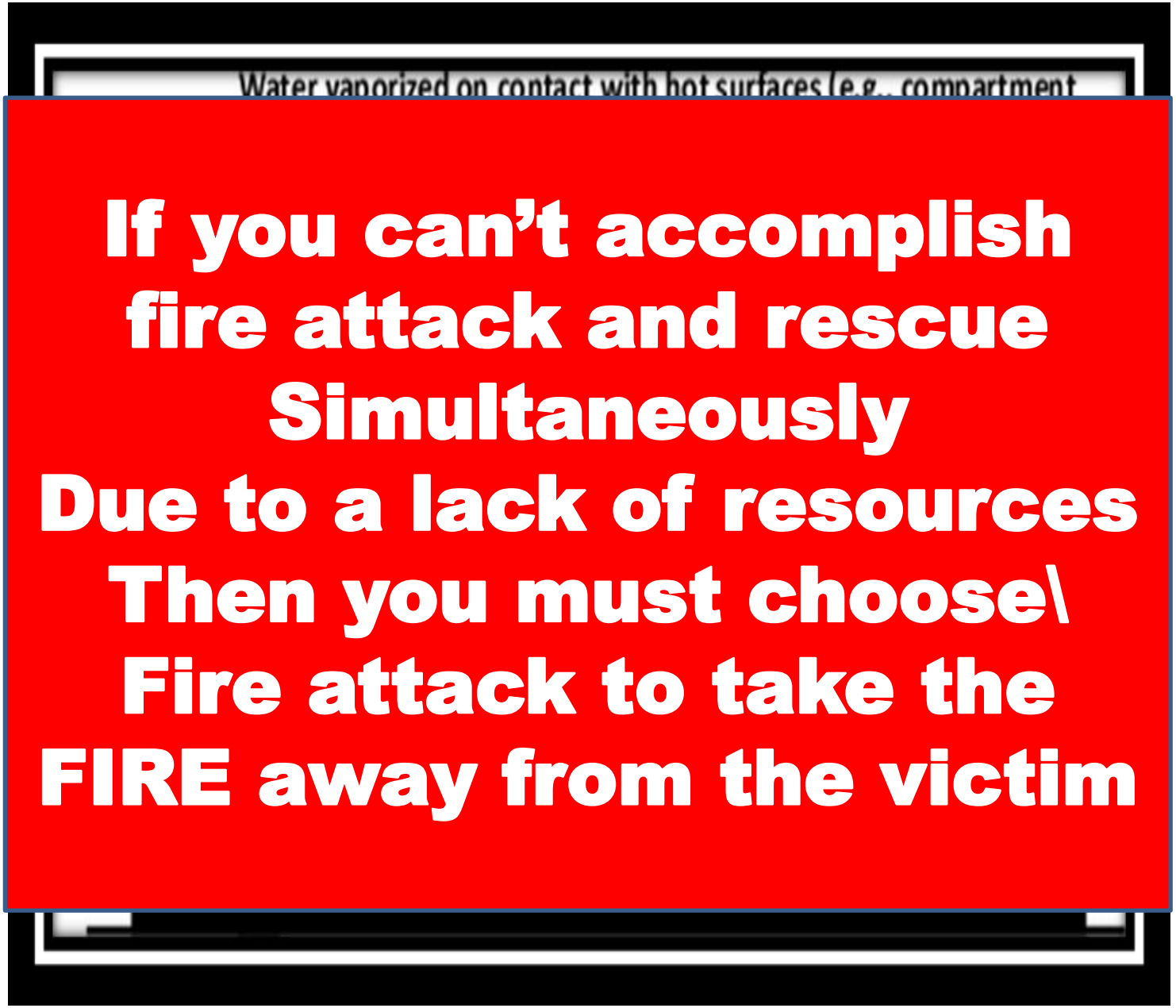
PROJECT MAYDAY

SITUATION EVALATION

PROJECT MAYDAY

- Determine the occupant survival profile
- Go in TOGETHER, stay TOGETHER, and leave TOGETHER
- Abandon and retreat before deteriorating conditions trap YOU

PROJECT MAYDAY



If you can't accomplish fire attack and rescue Simultaneously Due to a lack of resources Then you must choose\ Fire attack to take the FIRE away from the victim

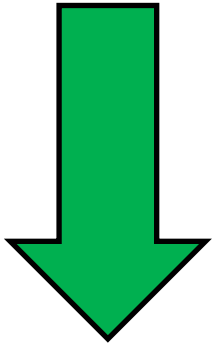
PROJECT MAYDAY

MAYDAY PROBLEMS

PROJECT MAYDAY

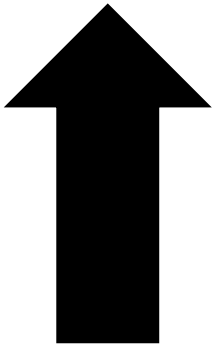
2016 NFPA Fireground Fatalities and Injuries Data

Fireground Firefighter Fatalities



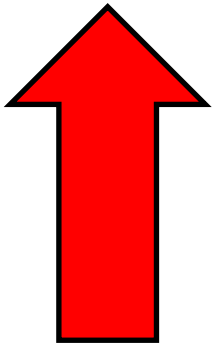
2.6%

Fireground Injuries



120%

Fireground Permanent Disability



184%

PROJECT MAYDAY

MINUTES
makes the difference
Between
RESCUE
& RECOVERY

PROJECT MAYDAY

In the Fire Service, we get *lucky* every day. Sometimes, even in the worst of conditions, things turn out all right. But, at *Project Mayday* our phone rings every day. Every day we hear about a firefighter somewhere who wasn't so lucky.

What would it look like to actually manage risk? How much better could we be in our decision-making? What actions can we perform to identify threats, assess vulnerabilities, and predict consequences? What if we didn't leave everything to luck?

Better risk management begins with a *Change in culture.*

PROJECT MAYDAY

RDPM

High Risk **Low Frequency** Calling a MAYDAY Wire Entrapment SCBA Emergencies	**High Risk** **High Frequency** Emergency Response Traffic Accidents
Low Risk **Low Frequency** Fire Station Tour	**Low Risk** **High Frequency** Blood Pressure

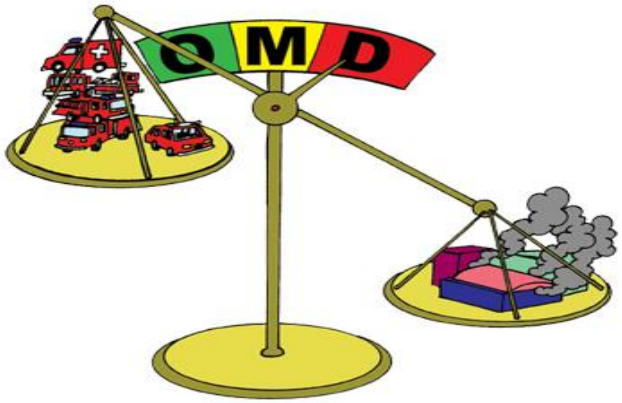
75%

RISK/FREQUENCY MATRIX

RISK MANAGEMENT PLAN

WE'LL RISK OUR LIVES A LOT, if neccessary, TO PROTECT SAVABLE LIVES

WE'LL RISK OUR LIVES A LITTLE, in a HIGHLY calculated manner, TO PROTECT SAVABLE PROPERTY



We will NOT RISK OUR LIVES AT ALL, for what is already LOST (people or property)

PROJECT MAYDAY

Making effective risk decisions means looking at the situation for what it *IS !*

But there's a psychological component to these decisions that can cloud what is actually happening, beneath the surface.

Don't get so comfortable in your assumptions that you're not going through the risk management process to keep *yourself and your crew SAFE.*

Have you evaluated the situation? How is it changing or developing? Can you identify any watch out situations that should prompt you to take a closer look before committing your self or your crew. Are there physical, mental, or emotional conditions in yourself or your crew that increases or makes it difficult to recognize the *LEVEL OF RISK ?*

PROJECT MAYDAY

CAUSE

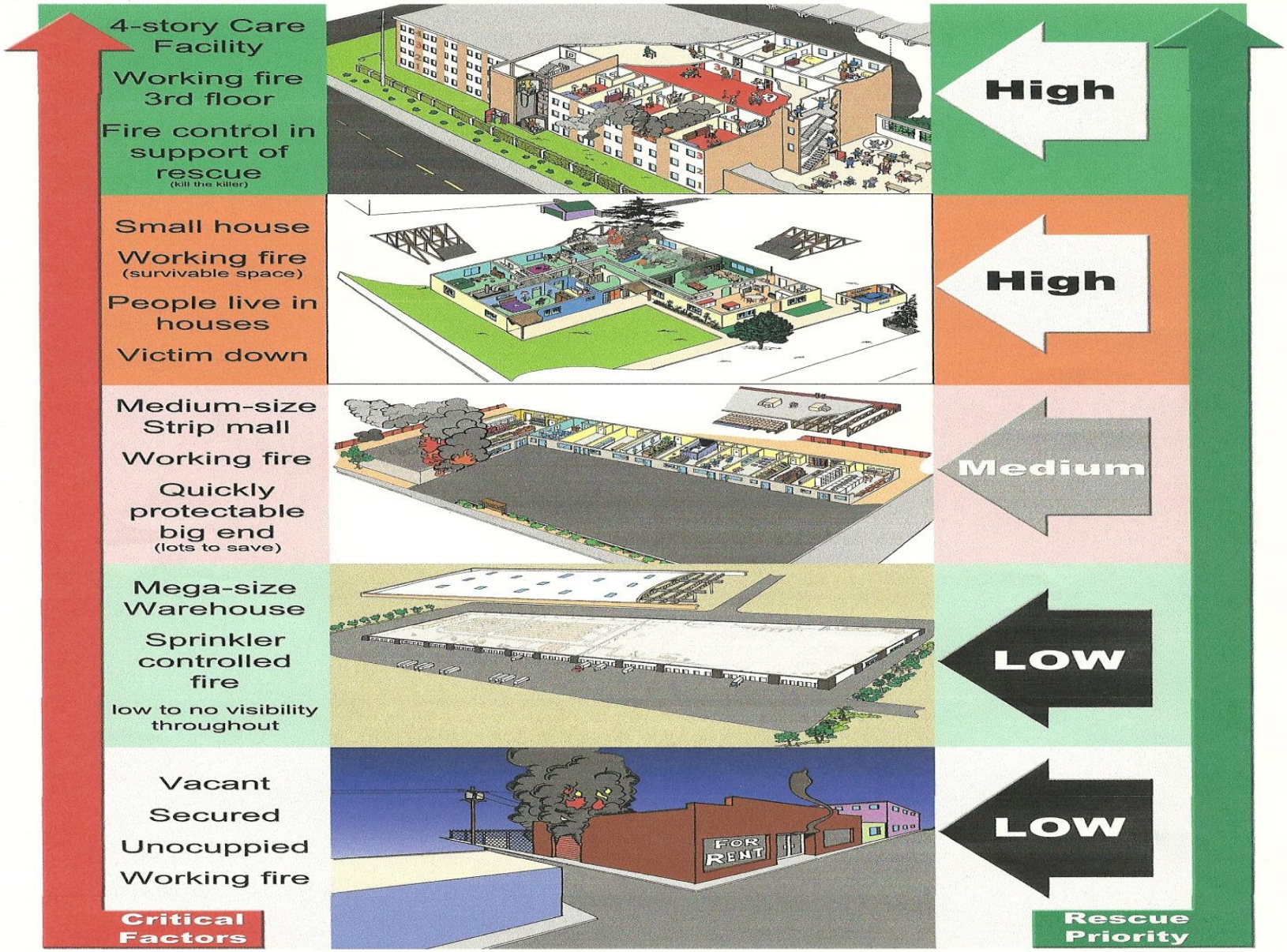
HIGH RISK HIGH Frequency	Low Frequency HIGH Risk
• OFF Hose Line • Collapse without Entrapment	• Floor • Lost in large area • Low AIR
SELF-RESCUE • Small area • ID outside wall • Locate Hose Line (use coupling)	**RIC Operations** • Large area no land-marks • AIR at 25% after attempted self-rescue • Entrapment

NON DISCRETIONARY TIME

COUNTERMEASURES

PROJECT MAYDAY

Component 2: Size-Up / Initial Radio Report



PROJECT MAYDAY

TYPES OF MAYDAYS 12,227

- ***Lost/Separated from hose line*** ***18.3% (2,247)***
- ***Air Problems*** ***16.1% (1,982)***
- ***Floor Collapse/Hole*** ***15.9% (1,956)***
- ***Falls through/off Roof*** ***14.1% (1,643)***
- ***Entanglement*** ***12.9% (1,584)***
- ***Explosions (Gas) Collapses*** ***9.4% (1,147)***
- ***Medical*** ***5.8% (713)***
- ***Other **** ***6.1%**** ***(750)***
- ***NO Communications*** ***1.6% (205)***

PROJECT MAYDAY



WHERE DO MAYDAYS TAKE PLACE?

Residential 42.6%

Multi-Occupancy 15.4%

Commercial 41%

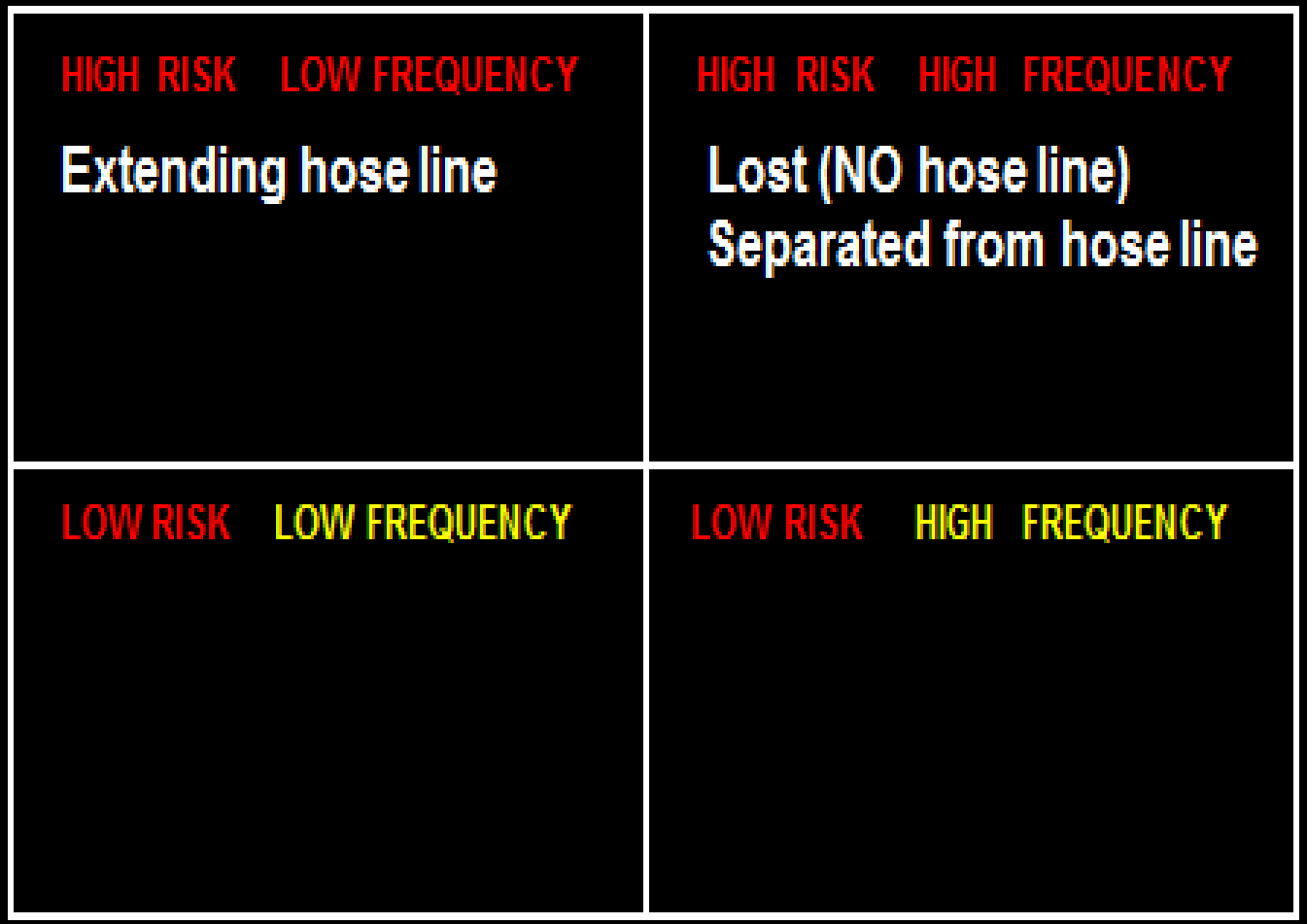
2015-2021 12,277

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

PROJECT MAYDAY

Lost / Separated from Hose Line



PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

Lost, Separated from Hose Line 2,247 **18.3%**

- **Lost (NO HOSE LINE) ……1,161 ….. (60%)**

- **Separated from Hose Line ...1,086….. (40%)**
  - **150ft…(1 ½-1 ¾) ……131 …. (18.4%)**
  - **200ft…(1 ½-1 ¾) …… 385…. (32.1%)**
  - **250ft…(1 ½-1 ¾) …….. 318… (27.3%)**
  - **300ft…(2 ½-3) …….... 252 … (22.0%)**

Residential ……	**862 ….**	**(38.3%)**
Multi-Occupancy ……	**318 ….**	**(14.1%)**
Commercial ……	**1,067**	**(47.4%)**

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

COMPANY LEVEL TRAINING

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

Hose training is critical to crew performance. each member has a role/ position that allows for a more effective use in advancing the hose line and providing potential safer and more efficient fire attack

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

LOST: 63%

- **Why enter a building without a hose line?**
  - **SOP/SOG allows entry … YES ….. 86%**
  - **CO has the authority to make the call … YES ….. 61%**
- **Were tag lines used instead of hose? YES ….. 16%**

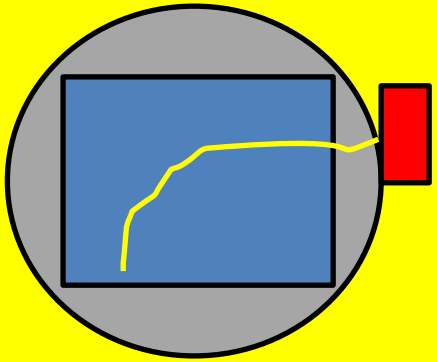
General Comments:

- Easier to make a quick search
- Faster crew deployment
- Allows for multi-task actions

PROJECT MAYDAY

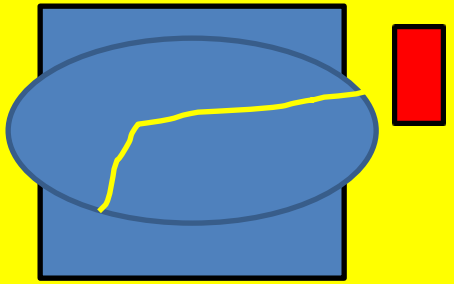
COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

SMALL - <1,200sqft



Covers 100%

MEDIUM – 1,201 - 2,400sqft

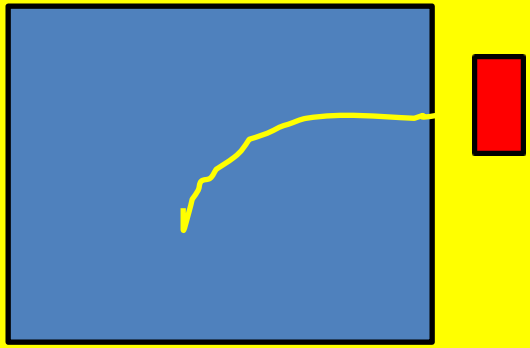


Covers 75%

30ft From structure

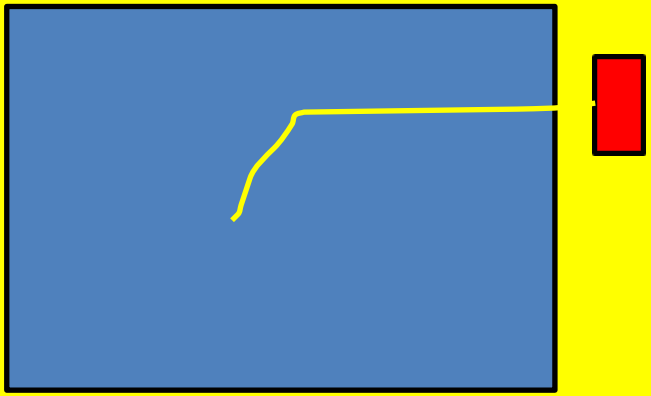
200ft Handline

LARGE – 2,4001 – 5,600sqft



Covers 50-35%

MEGA - > 5,601



Covers – 25 – 10%

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

Separated from Hose Line: 40%

- Why did you leave the hose line?
  - To search a larger area (rooms/floors) ….. 88%
  - Faster completion of search area ….. 86%
  - Split into two (one/two person) teams …. 71%
  - Given a specific assignment by the CO ….34%

- How often have you left a hose line?
  - 99% of the time
- Was tag lines used during separation … YES ….. 3.5%

- What do you think the average amount of time during your hose separation? ….. 5-7 mins

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

A REAL ATTACK LINE!

PROJECT MAYDAY

Preventing MAYDAYS ....
BEST Practices

Lost, Separated from Hose Line

- CONDUCT 360
- Prior to entry check nozzle setting
- Crews entering a working structure fire SHALL have a CHARGED fire attack hand line.
- Hoseline is a lifeline to the outside
- Hose size depends on the size of the fire, structure, and potential fire behavior.
- Avoid kinks and loops (NO dry line)
- In commercial structures, pick the right size hose for the job, NO gated wye passed the door.

PROJECT MAYDAY

Preventing MAYDAYS ....
BEST Practices

Why do we take a hose line to the Interior?

- *First line is our basic priorities, LIFE and property*
- That means the first line is stretched to protect our egress
- In commercial structures, find the door closet to the fire, the main entrance still needs to be protected this is where most customers will want to exit.
- REMEMBER: Estimate hose distances…
  - distance from apparatus to entrance
  - distance from the entrance to fire area
  - *amount of hose needed to cover entire area*

PROJECT MAYDAY

Preventing MAYDAYS ....
BEST Practices

- In commercial structures, have adequate crew size and placement to advance the line and a FF at the door counting couplings and reporting (100ft , 150ft, 200ft….at the door).
- Choice closest entry point to the fire.
- DO NOT extend lines inside working structure fires.
- When making search, have FF come up on the hose line to take your place, maintain voice contact or tag line, distances NO more than 15-20ft.

PROJECT MAYDAY

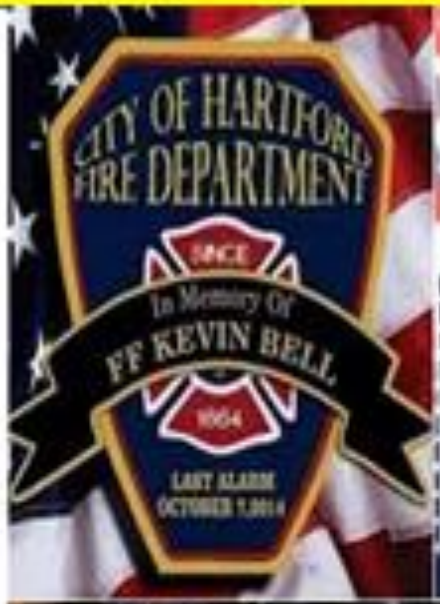
COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

TRAINING for MAYDAYS
Lost or Separated from Hose Line

- Hose training should be a monthly in-station training
- Checking nozzle for water/pressure should be
- routine procedure.
- Hose training should be done with 2,3,4 FF on a line, understanding how to make it.
- Practice loss of water operations

PROJECT MAYDAY

Component 2: Types of Maydays – Air Problem



PROJECT MAYDAY

SCBA Problems

RISK

HIGH RISK LOW FREQUENCY *Out of Air* *Facepiece Issues* *Regulator Problem* *Low Air Alarm*	HIGH RISK HIGH FREQUENCY *Low on Air (<500psi)*
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY

FREQUENCY

PROJECT MAYDAY

COMPONENT 2: Type of Mayday - Air Problem

Types of Air Problems (1,982)

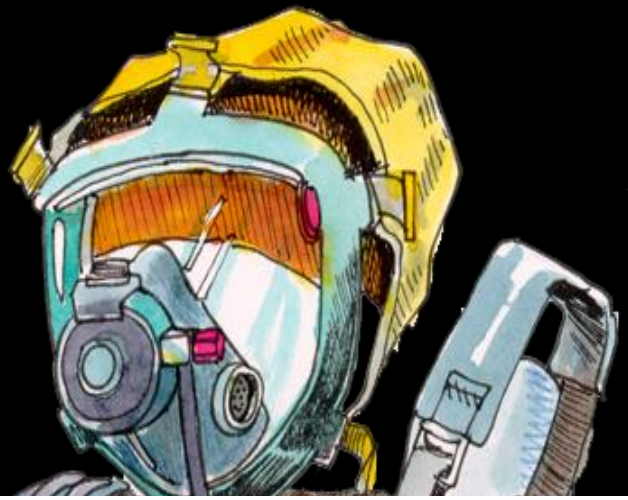
15.9%

• Low Air *	47.4%	(1,015)*
• Out of Air *	37.6%	(691)*
• Facepiece problem	5.8%	(181)
• Regulator	3.4%	(95)

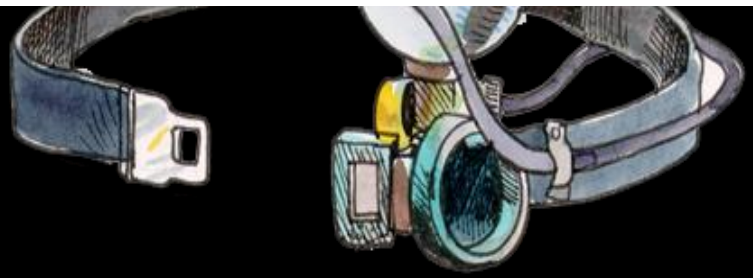
We note that low air is when you exit the structure with 500or less

- Commercial structures

TIME vs AIR = Survival



LOW AIR ALARM
PSI vs Time
Wet Gear vs Dry Gear
Time = Options
Options = Survival



PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

- Was cylinder full at time of entry? … 71%

Average Air Usage: 80L/min to 100L/min, when involved in a MAYDAY, usage increases 110L/min to 140L/min

- Do you know which way to turn your by-pass purge?
- Which way does your cylinder valve open/close?
- How many turns to turn air completely ON?

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

Facepiece Problem:

- facepiece deformed .23%
- facepiece damaged .12%

Regulator Problem:

- regulator malfunctions 1%
- regulator damaged .7%

Distress Signal Unit:

- DSU (PASS) unit malfunction 5%

Average Age of SCBA: 12.8 yrs

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

- Residential ……. 779….. 39.3%
- Apartments ……. 312….. 15.7%
- Commercial ……. 891 ….. 44.9%

NFPA reported in 2019, commercial structures fires increased 4.7%

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

There are many factors that contribute to the length of time a firefighter takes to expend a full cylinder:

- Age
- Weight
- General health
- Size of person
- Fitness level
- Stress level
- Work intensity

We tell firefighters best way to save air is to:

- Sit down - Don't move - Breath slowly

NOT REAL !

PROJECT MAYDAY

AIR CONSUMPTION ASSESSMENT

NAME	First Green Light Out	Second Green Light Out	Orange Light Out Low Air Warning	Alarm Stops	OOA
FF 1					
FF 2					
FF 3					

NAME	1,500psi	1,000psi	Low Air Warning	Alarm Stops	OOA
FF 1					
FF 2					
FF 3					

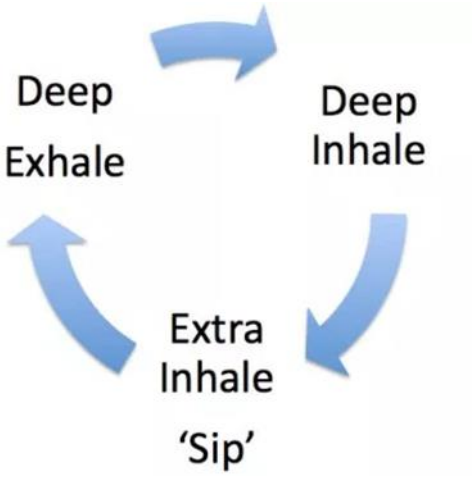
PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

- **Control**
  No specific technique, breathe slowly, conserve air
  OOA: Deep breath facepiece in place, two normal w/out facepiece
- **Skip breathing**
  A normal inhalation held for several seconds, followed by an additional inhalation before exhalation
- **Box breathing**
  A slow inhalation over 3-4 seconds, held for 3-4 seconds, exhaled over 3-4 seconds, and then held for 3-4 seconds before the next inhalation
- **Reilly Emergency Breathing Technique**
  A slow inhalation followed by an exhalation that was controlled by making a humming sound as the breath was released
- **Straw breathing**
  A slow inhalation followed by an exhalation that was controlled by pursing the lips to mimic breathing through a straw

PROJECT MAYDAY

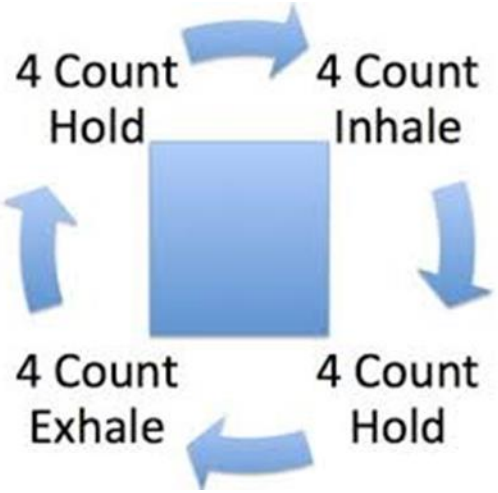
Component 2: Types of Mayday - Air Problems

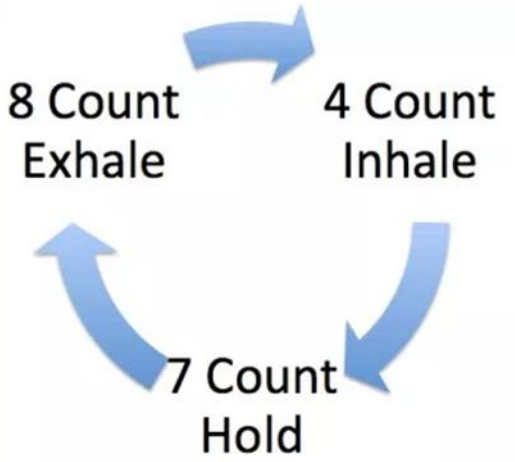


MAYDAY VICTIM'S BREATHING TECHNIQUES FOR SAVING AIR:

- Skip breathing 24%
- Box breathing 13%
- Reilly EBT 4%
- Straw breathing 6%
- Normal breathing ... 41%
- Unknown 12%

* Error rate of + / - 5%





PROJECT MAYDAY

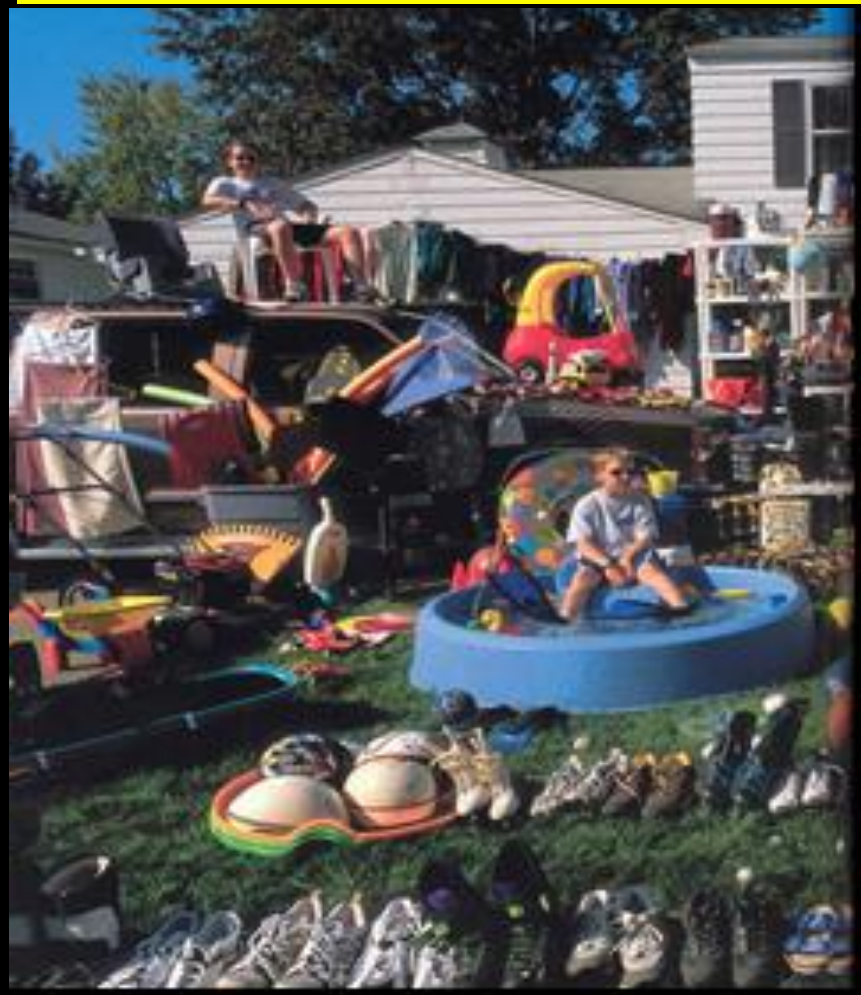
Component 2: Types of Mayday - Air Problems

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

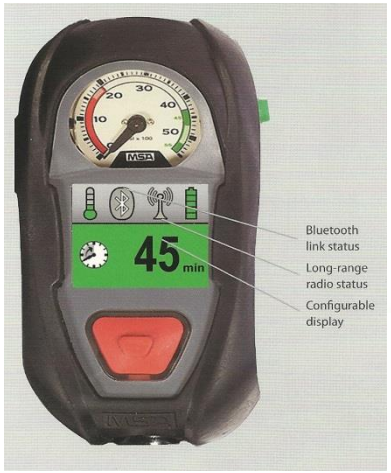
PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems



The first 1/3 of the air supply is to carry out assignment.

2018 Audio tapes we noticed a higher number of Firefighters speaking on the radio with low air alarms going off in the background that ever before.



The final 1/3 of the air supply is the safety margin.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

We found several problems that FDs have with SCBA:

Annual Testing:

- **Facepiece bench tested … 34%**
- **Regulator bench tested … 41%**

Auxiliary IDs		
-		
Regulator	115S1611021870	
Reducer	115S1611005426	
-		
-		
Project Number	430178	
-		
Visual Inspection		
Facepiece		Pass
Backframe/Harness		Pass
Cylinder		
Low Pressure Warning		Pass
Hoses		Pass
Manifold Volume: 0.115		

Functional Tests			
Exhalation Pressure	Pass	1.9	"H2O
Facepiece Leakage	Pass	0.1	"H2O
Positive Pressure	Pass	0.9	"H2O
Primary Lockup	Pass	94.1	PSI
Primary Creep	Pass	-0.3	PSI
Air Saver Switch Activation	Pass	-4.8	"H2O
Transfer	Pass	1587	PSI
Secondary Lockup	Pass	158.6	PSI
Secondary Creep	Pass	-2.8	PSI
High Pressure Leakage	Pass	17	PSI
Secondary Pr. at High Cylinder	Pass		
Purge	Pass	203	L/min
Alarm Activation Pressure			
4500 Vibralert (35%)	Pass	1587	PSI
Gauge Accuracy			
HP Numbers	Pass		

1000 PSI		2000 PSI		3000 PSI	
Pass	1198	Pass	2203	Pass	3183

Minimum		Maximum			Breathing Results	Minimum		Maximum		
0.8	"H2O	2.1	"H2O	Pass	Facepiece Pressure	0.9	"H2O	2.4	"H2O	Pass

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

Also, the revised NFPA 1981 comes with four pretty heady changes that will affect not only purchasing decisions, but also tactical fireground considerations for fire service leaders.

1. Low-air alarm

The NFPA 1981-2007 required the alarm to sound when 25 percent of the cylinder's available air was left. The 2013 edition ups that requirement to 33 percent of the cylinder's available air.

The 2013 edition is the first that specifies an EOSTI level for fire service SCBA. The 25 percent threshold commonly accepted for years by the fire service actually came from NIOSH.

And even NIOSH never had a hard and fast 25 percent; the NIOSH standard had always been a window of 20 percent to 25 percent of available air.

NFPA 1404: Standard for Fire Service Respiratory Protection Training, 2013 edition, contains several requirements for individual air management when using SCBA:

The individual shall exit from an IDLH atmosphere before consumption of reserve air supply begins.
The individual shall recognize that the low air alarm notification indicates that the member is consuming the reserve air supply.
The committee added the higher 33 percent threshold to NFPA 1981 to increase the reserve air supply available and be in line with the specifications of NFPA 1404. The major manufacturers of SCBA are saying that they can accomplish compliance for existing SCBA through firmware upgrades for electronic EOSTI and changing spring tension on audible alarms, or the low-air bell.

With all the discussions regarding air management in recent years, including whether or not 25 percent was enough of a reserve air supply, this is a step in the right direction

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

WHY DOES THE LOW AIR ALARM STOP?

The low- air alarm is activated when the cylinder reaches 33% of its capacity. At this point, the secondary pressure regulator is activated and the facepiece mounted regulator is supplied with air at 1,000psi. When the cylinder drops below 145-165psi, the low air alarm will stop and user knows that their cylinder pressure is now at about 3%.

SO WHY STOP WORKING WHEN THAT HAPPENS?

No long after the low air alarm stops, the user's breathing becomes restricted by the low air pressure. It feels as though each breath is being drawn out of the regulator. This is very much a tolerance situation based on the individual.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

PASS ALARM USE:

We can make a case for the constant activation of the PASS alarm Vs using the alarm intermittently. The constant alert of the PASS Device as in a "Mayday", will add sensory overload, to which the Firefighter will respond physiologically with increases in anxiety, Heart rate, and respiratory rate, which ALL demands more air. Although the brain may represent only 2% of body weight (?), it Uses about 20% of the body's metabolic energy.

Breathing techniques are only one technique used in classes in which we teach resiliency. We recommend a simple model: mindset controls, emotion, emotion will alter biology, and biology will effect performance. These establish mental toughness and acuity resiliency, helps establish the right frame of mind to achieve results because luck is not a sound fireground tactic.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

New Universal PASS Tone

Incorporate a new universal PASS tone to improve audible detection by the human ear

In December 2016, a Tentative Interim Amendment (TIA) was issued requiring all manufacturers of PASS devices to change the alarm tone as required in the NFPA 1982, 2013 Edition standard for PASS devices manufactured on December 21, 2016

The new universal PASS alarm tone will be incorporated into the NFPA 1982, 2018 Edition standard

Transmitting RF PASS

Incorporate two new tests to the RF PASS section to improve reliability

PROJECT MAYDAY

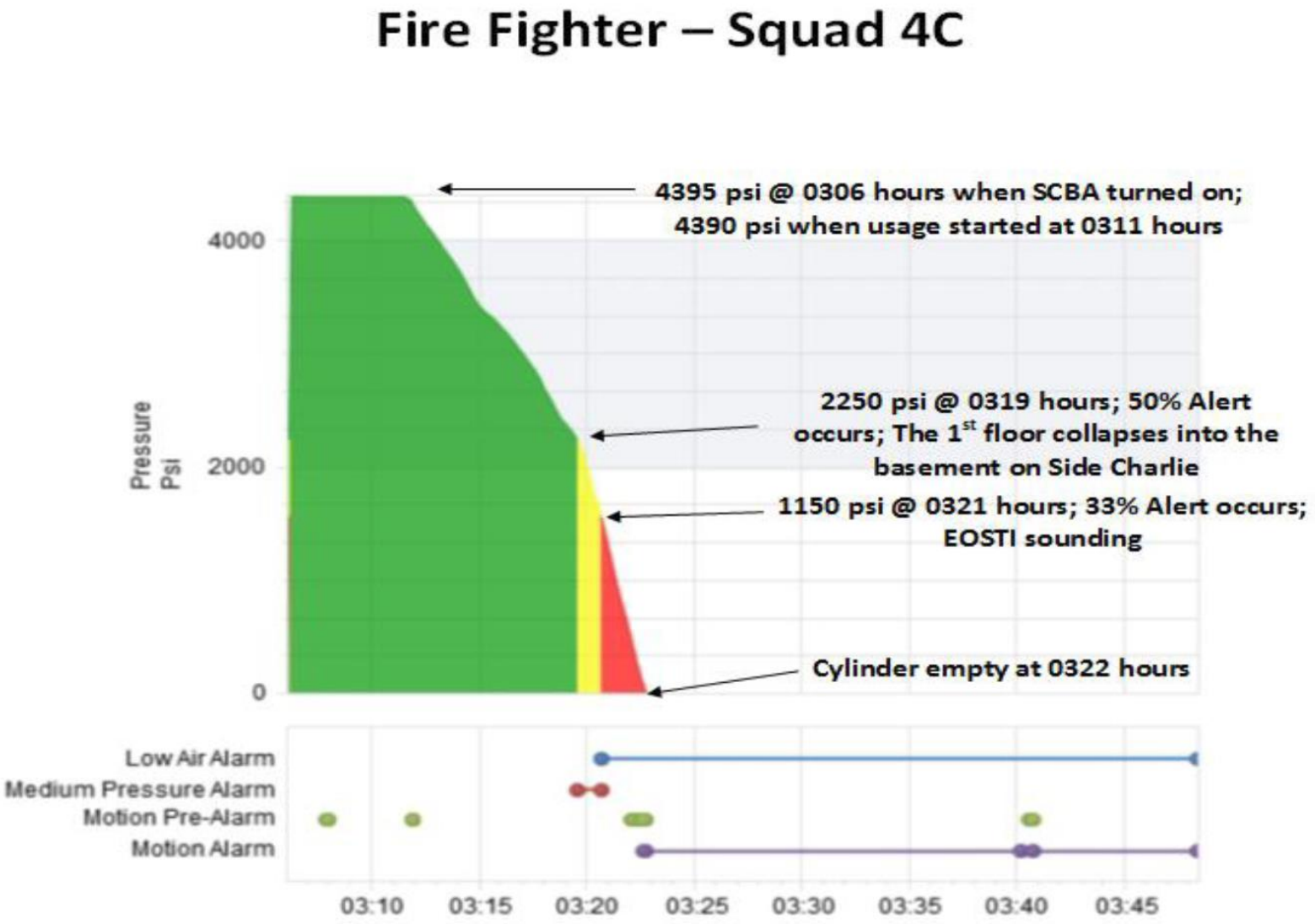
Component 2: Types of Mayday - Air Problems

NFPA 1981, 2018 Edition
Pneumatic Data-logging

- Minimum Requirements
- Initial Air Activation (pressure, date and time stamp)
- Data Logging @ 30 second intervals (pressure, date and time stamp)
- Data Logging of Pressure Milestones
- 100%, 75%, 50%, and 35% (EOSTI)
- Breathing Rate @ 30 second intervals (minimum 5 LPM resolution)
- HUD Deactivation (pressure, date and time stamp)
- Retain 36 hours of data
- Does not replace the PASS data-logging requirement for 2000 minimum events
- Output data to CSV file
- No requirement for temperature data log

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems



PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

3,448

SCBA Data Logging Results

General Maydays

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

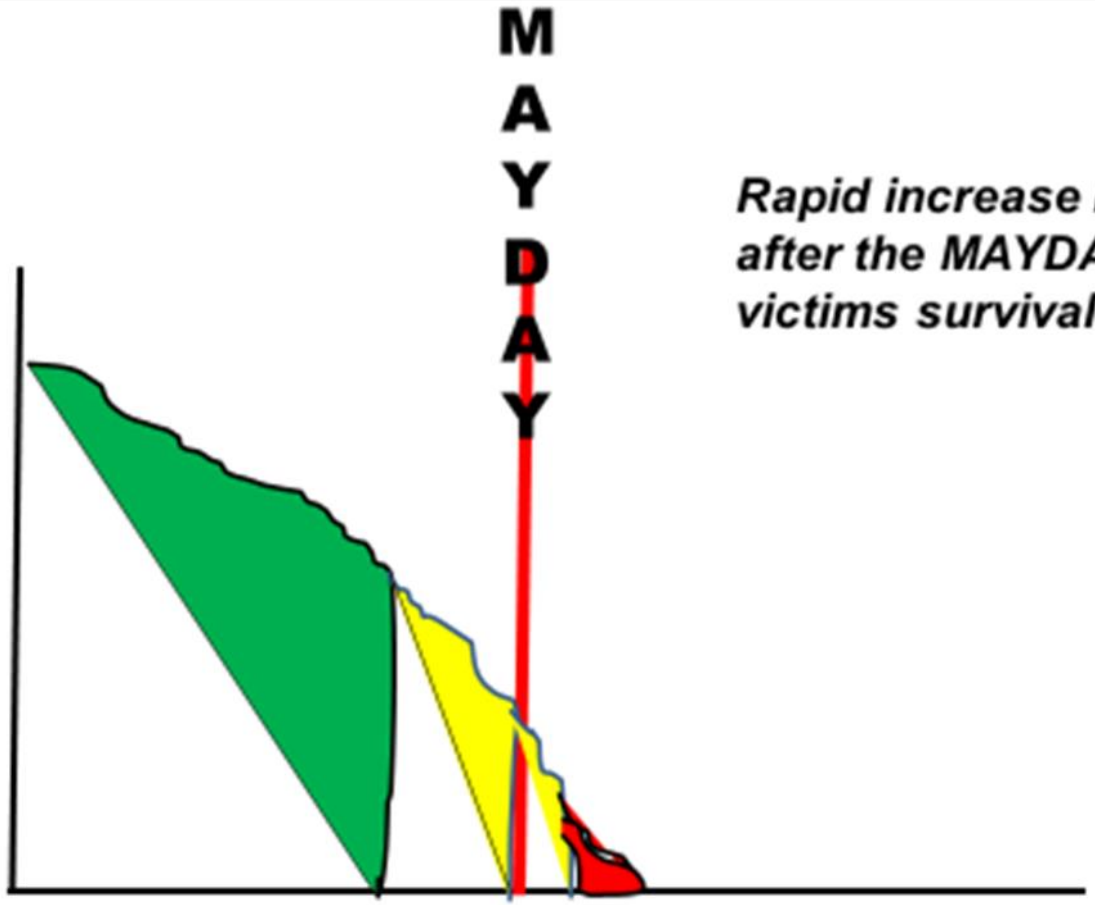
1,571

SCBA Data Logging Results

Air Issues

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

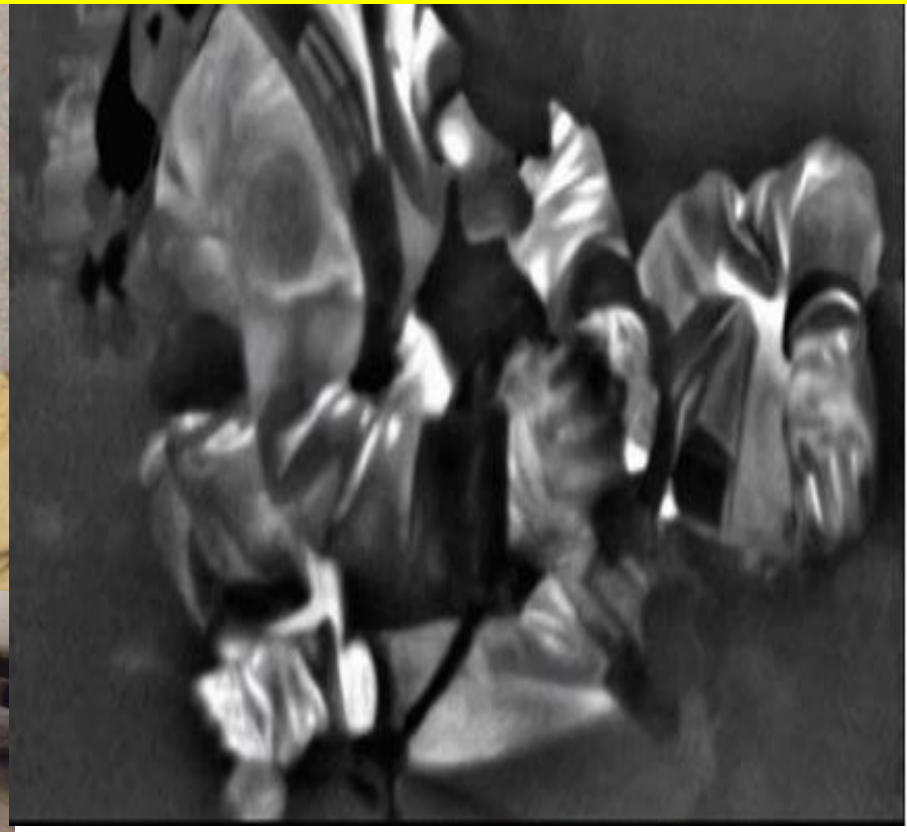


Rapid increase in breathing, after the MAYDAY, reduced victims survival times

- 30 minute cylinder ….. **9%**
- 45 minute cylinder ….. **66%**
- 60 minute cylinder ….. **25%**

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems



Transfills were used 21 “mayday” situations

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

- Three factors influence every breath…
  - how fast or slow
  - deep or shallow
  - abrupt or smooth
- During high work rate, the muscles need up to 100 times more oxygen than at rest, the heart must work 8 to 10 times harder.
- Physical work brings on many changes in the body:
  - increased pulse
  - faster breathing
  - more blood per heart beat
  - perspiration
  - high blood pressure
  - higher body temperature
  - more blood to the muscles
  - greater lung absorption to maximize use of of red blood cells

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

Regardless of what type of respirator is used, a vicious circle can occur:

- **Increased dead-space + greater workload = more CO_2 in the blood**
- **More CO_2 in the blood = quicker breathing**
- **Quicker breathing = shallow breathing**
- **Quick and shallow breathing = even more CO_2**
- **More CO_2 = psychological stress**
- **Psychological stress = even quicker breathing**

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

Low on Air:

- Why did you run low on air (low air alarm)?
  - CO did not conduct air checks during incident? 52%
  - Went farther into the structure than realized, did not estimate exit time/air? 78%
  - Physically fatigued, tired, used more air than normal? 58%
  - Ill at the time of entry? 6%

Trying to find a FF down with an activated PASS device, can be difficult. Sounds bounce off everything. Plus other sounds, smoke detectors, alarms and sounds.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

Out of Air:

- **Why did you run out of air?**
  - **Thought I had enough air to exit? 91%**
  - **Other members had air, I thought I was okay? 84%**
  - **Assigned a task that had to be completed….. 6%**

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

30 minute	45cu.ft.	21lbs
45 minute	66cu.ft.	27lbs
60minute	87cu.ft.	32lbs

- 30 minute cylinder ….. 6%
- 45 minute cylinder ….. 64%
- 60 minute cylinder ….. 30%

Average Air Usage: 80L/min to 100L/min, when involved in a MAYDAY, usage increases 110L/min to 140L/min

100 psi … 8 – 12 breathes …… Pressure /Volume ?

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

WORK TIME PRIOR TO LOW AIR EMERGENCY 1/3 EOST

SCBA 4500PSI / ACR in PSI

forecast work times

30 ….. 12:31

45 ….. 17:21

60 ….. 24:27

SCBA 5500PSI/ ACR in PSI

forecast work times

30 …… 12:58

45 …… 18:22

60 …… 25:31

75 …… 31:33

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

??????????????????????????????????

- Does the SCBA have features that allow you to see, hear, and react quickly to changing situations?
- How well does it ingrate with other systems, such as communications?
- Does the SCBA provide you, your team and the IC with critical information to make effective, life-saving decisions?
- Can the SCBA be programed to meet your SOPs such as audible/visible alarms, and settings?
- How easily can the SCBA be updated to meet changing standards?
- Can SCBA integrated accessories?

??????????????????????????????????

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

PREVENTING MAYDAYS
Low Air – OUT of Air Emergencies

- ALWAYS start work with a FULL cylinder
- Listen/Monitor for time
- Monitor heads-up display (air reports by light status/ RED report actual PSI
- CO should monitor crews air status
- If a crew members has a air emergency, DO NOT send them out alone, another crew member/or the crew should leave with the member.
- In a MAYDAY situation where YOU lose your mask seal… STOP… RESEAL, if resealing fails to fix the problem, let the IC know IMMEDIATELY.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

- As soon as you reach LOW AIR ALERT ALARM, begin using LOW AIR BREATHING TECHNIQUE EXIT the structure.
- Buddy breathing/trans fill are last resorts
- Face piece replacement is a difficult procedure, make sure everything is ready, strap loose, face wipe, regulator attached – operating, tighten straps create a seal.
  If unconscious, crack by-pass valve, and remove consider, waist strap being place between the legs if NO webbing/rope is used as rescue harness.
- Attach air supply (RIT Bag) to the victim)
- Make sure during removal, cylinder does become closed.

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

In general, the most common communication problem encountered by firefighters is the ability to effectively communicate while wear SCBA.

It is essential to speak in a calm voice, at moderate volume, and with clear word enunciation.

These habits are developed everyday, depending on our training and experience by practicing these skills everyday day.

MAYDAY - MONDAYS

MAYDAY - MAY

PROJECT MAYDAY

Component 2: Types of Mayday - Air Problems

TRAINING FOR MAYDAYS

- Air Consumption Course should be conducted annual (determine air usage/with physical activity)
- Mayday drills should be conducted at night, with variety of problems for each group/NOT the same problems
- Create monthly station training

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

MEDICAL
(713)

5.3%

Heart Attacks must occur in the IDLH or victim had worked in the IDLH

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

(428) Heart Attacks

(277) Advancing attack lines into commercial structure (2 ½ & 3")

(56) Hand laying supply lines (4 / 5")

(127) Know heart condition

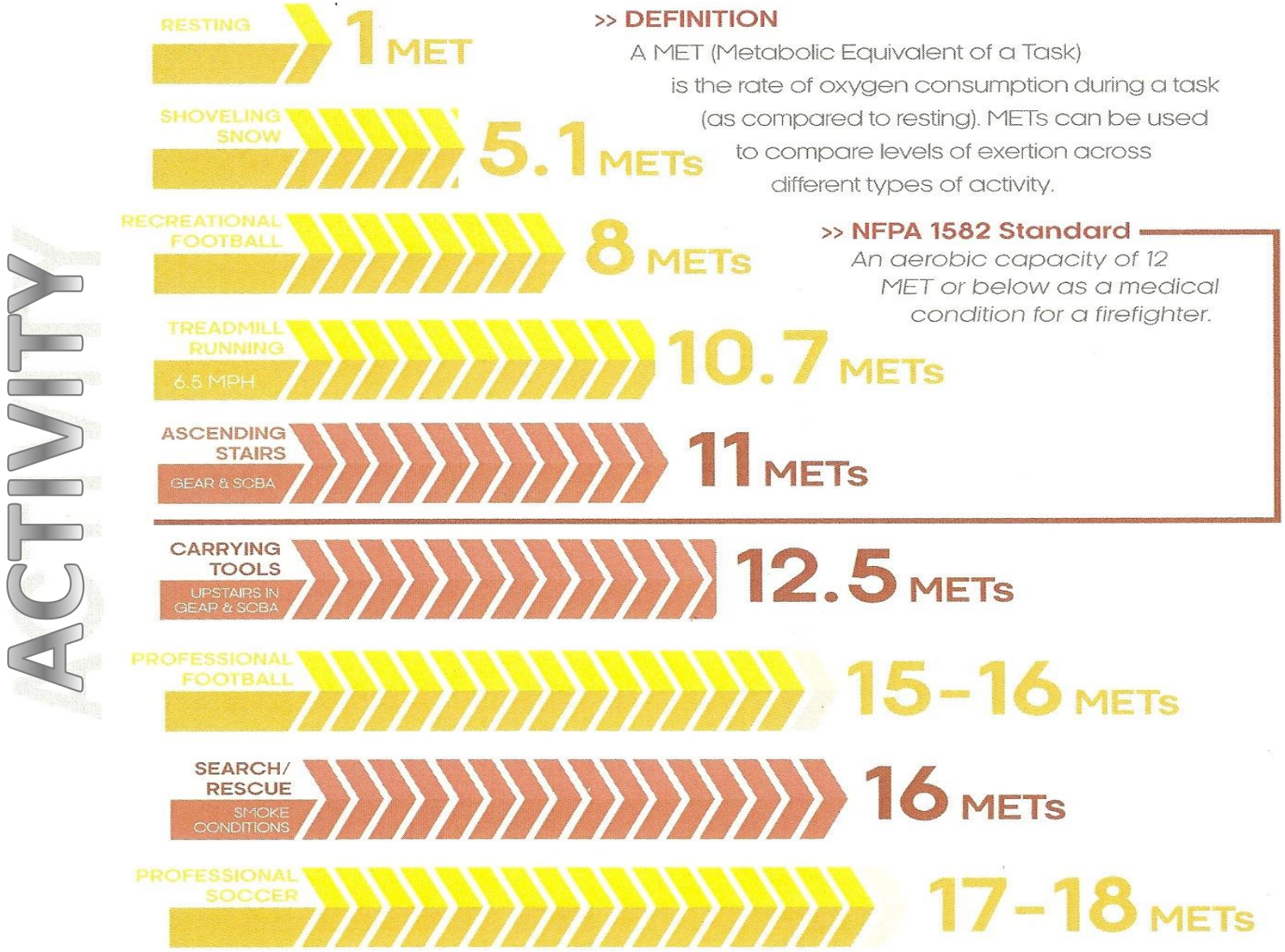
(44) FD required physical/medical assessment

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

PROJECT MAYDAY

Component 2: Types of Maydays - Medical



PROJECT MAYDAY

Component 2: Types of Maydays - Medical

PHYSICAL EXAI

RECOMMENDED YEARLY SCREENINC

- ☐ Vitals: BP, HR, RR, Wt, Body Fat Per
- ☐ Multi-System PE: skin, mouth, thyr
- ☐ Labs: CMP, CBC, Lipid Panel, TSH, U
- ☐ Testing: 12-lead EKG, eye exam, he
- ☐ Family History: CVD, sudden cardia
- ☐ Personal Health Behaviors: tobacc

CARDIOVASCULAR HEALTH AND FITNESS

Significant cardiovascular demands of firefighting lead to acu firefighters, in contrast to 15% of all deaths occurring on c firefighters, and these events occur almost exclusively in su therefore prudent to thoroughly screen for, and aggressively of patients.

- ☐ Ischemia is best evaluated by an imaging exercise st for clinical suspicion. Exercise stress testing without those who may need cardiac intervention (angiopla
- ☐ Consider Coronary Artery Calcium CT scan to evalua
- ☐ Echocardiography is recommended once as a baseli and HCM.

CANCER

Chronic exposures to heat, smoke, and toxic flame retardant for many cancers. The National Institute for Occupational Sa firefighters to better understand the potential link between f certain types of cancer than the general U.S. population in d especially vigilant to conduct cancer screening efforts in the firefighters do exceed those of the USPSTF guidelines for th dealing with firefighter health issues that we are strongly ad medical judgment to prescribe the most appropriate screeni

- ☐ Colonoscopy or other appropriate colon cancer scre
- ☐ Annual PSA with digital rectal exam between 40-45 treatment should be discussed.
- ☐ Annual pap smear.
- ☐ Annual mammograms beginning at age 40. Discuss s
- ☐ Annual testicular exam and instruction about self-e
- ☐ Annual head to toe skin examination and appropria
- ☐ Urinalysis annually for microscopic hematuria.

MUSCULOSKELETAL INJURIES

The high intensity and dynamic work environment of firef injuries represent approximately 50% of all job related mu and intervertebral disc injuries, often leading to significa deconditioning are strong predictors of musculoskeletal inj

- ☐ Address underlying musculoskeletal issues. Assess muscle strength.
- ☐ Refer as necessary for treatment.
- ☐ Encourage flexibility and core strengthening exerc

BEHAVIORAL HEALTH

The mental and physical stress of firefighting and repeated exposure to trauma can lead to depression, anxiety, acute stress reactions, post-traumatic stress, and suicidal ideation. Self-medication with alcohol and drugs can result in substance abuse disorders.

- ☐ Behavior health screening.
  1. Prime MD: http://www.psy-world.com/prime-md_print1.htm
  2. AUDIT & CAGE for Alcohol Screening: http://pubs.niaaa.nih.gov/publications/arh28-2/78-79.htm

LUNG DISEASE

In the line of duty, firefighters are often exposed to carbon monoxide and other inhaled toxins, or irritants that may lead to acute respiratory issues such as hypoxemia or bronchoconstriction. Repeated exposure may cause chronic pulmonary disease and abnormal lung function. Changes in lung function and the development of lung disease may be detected with baseline and periodic assessment and should include the following tests.

- ☐ Spirometry: Baseline and annual pulmonary function testing in those with a history of respiratory health problems and in healthy individuals; to include FEV1, FVC, and the absolute FEV1/FVC ratio.
- ☐ Chest x-ray: Baseline chest x-ray in those with any respiratory symptoms or disease and in healthy individuals. Repeat chest x-rays every 5 years or sooner if medically indicated.
- ☐ Consider low dose CT for screening for lung cancer in high risk individuals.

SLEEP DISORDERS

Sleep disorders are highly prevalent in firefighters and include sleep apnea, insomnia, shift-work disorder, and restless leg syndromes. It is imperative to screen firefighters for these disorders since they substantially increase the risks for motor vehicle accidents, cardiovascular disease, diabetes, depression, and anxiety in firefighters.

- ☐ Assess sleep and use of sleep medications.
- ☐ Screen for sleep apnea and consider sleep study as indicated.
- ☐ Helpful screening tools include:
  1. Epworth Sleepiness Scale: http://bami.us/Sleep/SleepScale.html / yoursleep.aasmnet.org/pdf/Epworth.pdf
  2. STOP-Bang questionnaire: http://www.stopbang.ca/osa/screening.php
  3. Berlin questionnaire: https://www.fairview.org/fv/groups/internet/documents/web_content/s_062202.pdf
  4. Diagnosis of obstructive sleep apnea (OSA) algorithm: guideline.gov/algorithm/6582/NGC-6582_1.pdf

INFECTIOUS DISEASES

Firefighters are often first on the scene of an emergency and may be exposed to HIV, hepatitis (A, B and C), TB and other infectious diseases.

- ☐ Establish immunity by vaccination record review and/or titers and update vaccines including Tdap, MMR, HBV, and Varicella. Consider hepatitis A vaccine.
- ☐ Baseline and periodic screening for HIV, HBV, HCV and other communicable diseases.
- ☐ Provide annual influenza vaccine.

SUPPORTING DOCUMENTS

Standard on Comprehensive Occupational Medical Program for Fire Departments NFPA 1582, http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1582

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

- **Apparatus accidents (w/entrapment) 22% 93**
- **Struck by vehicle 27% (9)**

  - apparatus blocking scene ….. 57%
  - wearing PPC only (NO vest) .. 68%

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

Concussions:

941

38% concussion discovered 24 hours after the incident

41% off work for 72hrs of longer

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

PREVENTING MAYDAYS
Medical

- All FF should have annual medicals
- FF who have had a major medical procedure or illness longer than six months, should be required to have annual medical exam performed and perform air consumption course
- On-scene / rehab should be conducted by para-medics or trained Safety Officers

PROJECT MAYDAY

Component 2: Types of Maydays - Medical

TRAINING
Medical

- Consider environment and training requirements when conducting training (always have water present)

PROJECT MAYDAY

Component 2: Fall through Roof - Maydays

PROJECT MAYDAY

Component 2: Fall through Roof - Maydays

PROJECT MAYDAY

Falls through / Off Roof

RISK

HIGH RISK LOW FREQUENCY Falls off the Roof Vent Cut (unknown fire location) Falls through Roof/Ceiling	HIGH RISK HIGH FREQUENCY Falls through the Roof Roof Travel (garages, structure, porch) Trapped in Attic
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY Vent Cut (know fire location)

FREQUENCY

PROJECT MAYDAY

Component 2: Falls through/OFF the Roof

FALLS THROUGH THE ROOF (1,643)

14.1%

Decrease of 3.6% between 2020 and 2021

- Roof Travel (1,177) 67.9%
- Inspection Hole (187) 28.3
  - Vent Hole Cut (279) 24.7%
- Fell off the Roof/Ladd (186)* 11.3%

NUMBER OF FF ON THE ROOF:

1 FF…..1,227	2 FF….284	3 FF…..97	4 FF…. 35
(74.6%)	(17.2%)	(5.9%)	(2.1%)

PROJECT MAYDAY

Component 2: Falls through the Roof

TYPES OF ROOFS

- **Peaked…..958….58.3%**

-Asphalt	**289**	**30.1%**
-Wood	**188**	**19.6%**
-Tile	**297**	**31%**
-Metal	**184**	**19.2%**

-Flat Roofs …..685 ….41.6%

- Rubber coated	**221**	**36.2%**
- Membrane	**172**	**25.1%**
- Asp/Gravel	**292**	**42.6%**

PROJECT MAYDAY

Component 2: Fall Through the Roof - MAYDAYS

LADDERS: (1,643)

- **Ground Ladder 871 53%**
- **Aerial 772 46.9%**
  - **Stick 441 57.1%**
  - **Tower 321* 41.5%**

STRUCTURES:

Residential ……. (751)…..45.7%
Multi-Occupancy ……. (310)…. 18.8%
Commercial …….. (572)…. 34.8%

PROJECT MAYDAY

Component 2: Fall Through the Roof - MAYDAYS

Material	Protection	Collapse Time (min)
2x10 Solid Wood	None	18:35
2x10 Solid Wood	Lath & Plaster	>79:00
2x10 Solid Wood	Gypsum Wallboard	44:40
OSB I-Joist	None	6:00
OSB I-Joist	Gypsum Wallboard	26:23
Hybrid Truss	None	5:30

PROJECT MAYDAY

Component 2: **Falls through the Roof**

VVDC

Smoke has four visible attributes:

- **Volume:** Sets the stage for relativity to the building involved
- **Velocity** (speed and flow energy): Tells of the heat energy. Turbulent smoke that fills a box means Flashover!
- **Density:** The fuel saturation of smoke that is telling you the future potential for severity
- **Color:** Also indicates HEAT. Remember that smoke color can be stripped (filtered) over distance and through resistance

Velocity trumps color!

PROJECT MAYDAY

Component 2: **Falls through the Roof**

PROJECT MAYDAY

COMPONENT 2: Lost, Separated from Hose Line – MAYDAY

PROJECT MAYDAY

Component 2: **Falls through the Roof**

OVERLOADING ROOFS UNDER HEAVY FIRE CONDITIONS

PROJECT MAYDAY

Component 2: **Falls through the Roof**

PROJECT MAYDAY

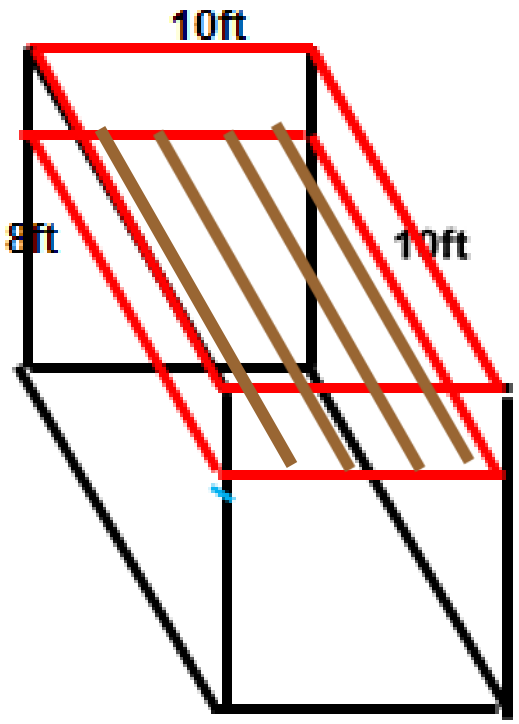
Component 2: Falls through the Roof

PROJECT MAYDAY

Component 2: Falls through the Roof

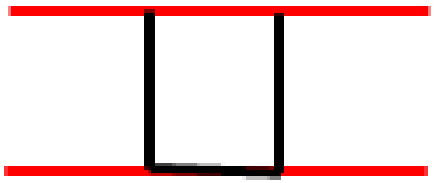
The frame is a metal frame
10ft x 10ft
8ft height

Use blocks or sand bags to
hold base in place



U channels are welded in place
on top and bottom side of frame
The U channels holds 2 x 4 or
2 x 6 in place

Smaller channels are placed on
bottom cord to slide dry wall
Or nail along bottom of 2 x4 or
2 x 6



You then can run wiring, insulation
duct work etc.

PROJECT MAYDAY

Component 2: Falls through the Roof

PROJECT MAYDAY

Component 2: Falls through the Roof

PROJECT MAYDAY

Component 2: Falls through the Roof

Roof Travel: 611

- Did the roof crew know the location of the fire prior to roof operations? 36.5%
- Was the roof sounded by all members on the roof? YES 20% NO 80%
- Operations Daytime 12% Nighttime 88%
- Had the vent hole already been cut, prior to "Mayday"? YES 35%
- Had multi-vent holes been cut, prior to the "Mayday" YES 11%

PROJECT MAYDAY

Component 2: Falls through the Roof

Roof Travel:

- Had water been applied to the fire, prior to roof operations? 32.8%

Fell through the Roof:

How far did you fall?

- Half-way through the hole? 56%
- To the rafters? 37%
- To the floor? 7%

Half-way through hole:

- did you self-rescue? 19%
- did you need assistance? 81%
- did you drop your tools? 34.6%
- were you injured? 31%

PROJECT MAYDAY

Component 2: Falls through the Roof

To the Rafters:

- **Did you breakthrough the ceiling?**
  YES 41%
- **What happen to your facepiece?**
  Dislodged 77%
  ***were you able to rescue and donn facepiece, in less than a minute 11%**

- **Were you injured? 64%**
- **Were you burned? 37%**
  (pants moved up, exposed legs)
- **Could you get to your flashlight? 32%**
- **Was there entanglement? 44%**

PROJECT MAYDAY

Component 2: Falls through the Roof

To the Rafters:

- Did you lose your helmet/dislodged? 66%
- Could you self- rescue? 16%
- Did you have flame or heat impingement?
  Flame 23% Heat 77%

What area of the structure were you on during collapse:

Residential:

- Main structure 45%
- Garage 41%
- Porch 14 %

PROJECT MAYDAY

Component 2: Falls through the Roof

Comments:

- Difficult to get to radio
- Get to a position, where you can punch a hole in the ceiling
- Had difficulty repositioning facepiece and tightening straps
- Make sure you report possible injuries
- RIT had difficulty get victim out of area if they were unable to help

PROJECT MAYDAY

PREVENTION

PREVENTING MAYDAYS
Roof Operations

- Conduct quality training for roof operation personnel
- Establish SOP's / with training that aligns with SOP's
- Make sure that roof operation has a plan and proper tools
- COORDINATE fire attack and ventilation operations
- NO ROOF TRAVEL, unless required (stay OFF garages and porches)
- Cut the hole, GET OFF THE ROOF

PROJECT MAYDAY

TRAINING

TRAINING FOR MAYDAYS
Roof Operations

- Conduct quality training for roof operation personnel
- Establish SOP's / with training that aligns with SOP's
- Practice setting & climbing ladders, roof travel, cutting holes and getting OFF roofs
- Never OVERLOAD the roof
- Trench Cut – Make sure you have the time, tools, personnel, and building construction knowledge to do it right and safely.

PROJECT MAYDAY

Component 2: - Trapped / Unable to Move - Maydays

COLLAPSE
ENTRAPMENT
ENTANGLEMENT

PROJECT MAYDAY

Entanglement/Trapped (Collapse)

RISK

HIGH RISK LOW FREQUENCY Entangled in Attic Roof Collapse Structure Collapse Explosion (gas)	HIGH RISK HIGH FREQUENCY Entangled in Structure Ceiling Collapse
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY

FREQUENCY

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

TRAPPED/UNABLE TO MOVE: ENTANGLEMENT **12.9%**

Increase of 3.2% between 2020 and 2021

- **Wires, duck work, etc. (783) 49.4 %**
- **Ceiling/floor collapse (403) 25.4 %**
- **Structure shift/collapse (398) 25.1 %**

- **Occurred during salvage/overhaul ….. 34%**

1,584

PROJECT MAYDAY

Component 2: **Falls through the Roof**

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

From Schupbach:

On April 14 between the time of 4am and 5am, a partial collapse accident occurred on the fire scene at 3008 W Euless Blvd. At the time of incident, I was on search team with Capt. Judd, FF Alvarado, and FF Sanders. We completed a search of the front of the restaurant and were unable to access the back of the restaurant (kitchen) from initial search entry point (side D). After everyone was pulled from front, we enter through the back door side C to search for occupant. Upon entering FF Sanders was first, initially I was second until I was entangled in wires hanging from ceiling. I told FF Alvarado to go in front while I tried to keep wires high. After FF Alvarado passed I moved behind him trying to advance while untangling wires. At that time, an unknown object came from above me, unsure where it hit me. Object forced me to the ground in a prone position and laid on the back of me. I did not feel injured at any time but I was not able to get up. FF Alvarado lifted object off me and I was then ordered to leave the building from Capt. Judd. Capt. Judd was behind me close to entrance. I was able to stand and head out of building at this time. Note incident occurred about 6 foot inside exterior doorway. Soon after exiting, I could feel stiffness in my neck, reported after being asked if I was okay.

From Alvarado:

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

- Did you carry personal tools?
  - wire cutters ….. 81%,
    could you reach them ….. YES ….. 45%
  - rescue rope ….. 11%
  - extra flashlight ….. 19%
  - gloves ….. 47.2%

PROJECT MAYDAY

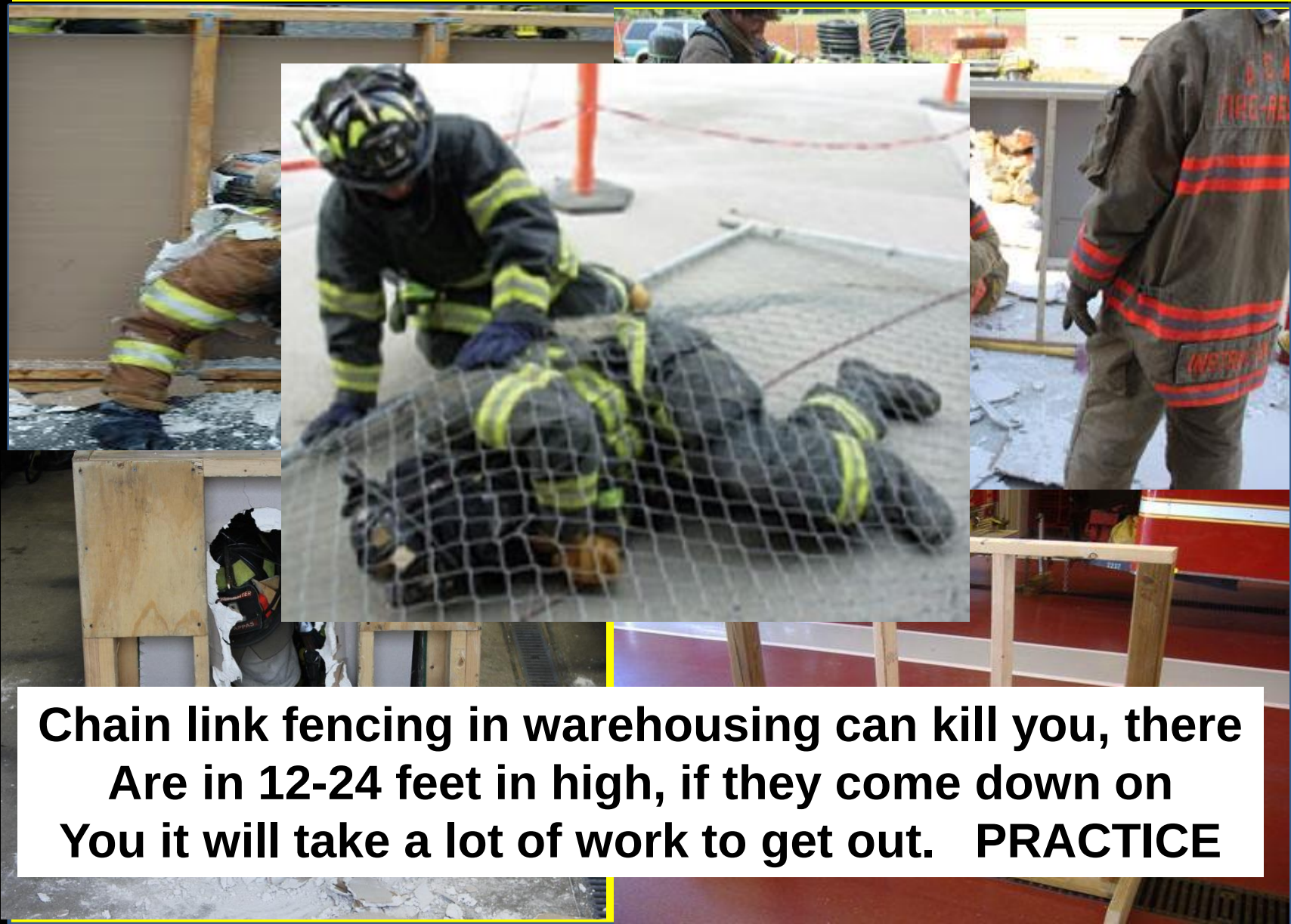
COMPONENT 2: Trapped/Unable to Move - MAYDAY

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY



Chain link fencing in warehousing can kill you, there Are in 12-24 feet in high, if they come down on You it will take a lot of work to get out. PRACTICE

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

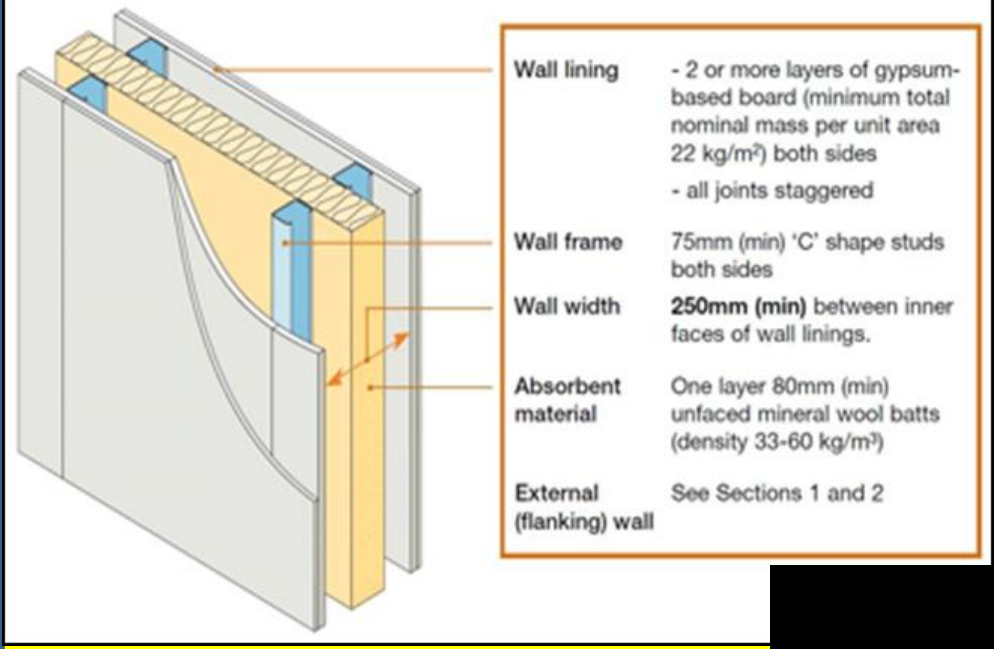
WALLshield

HIGH IMPACT

wallBarrier

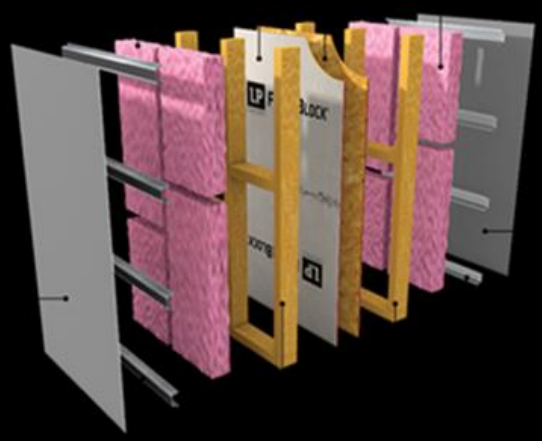
PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY



Wall lining	- 2 or more layers of gypsum-based board (minimum total nominal mass per unit area 22 kg/m²) both sides - all joints staggered
Wall frame	75mm (min) 'C' shape studs both sides
Wall width	**250mm (min)** between inner faces of wall linings.
Absorbent material	One layer 80mm (min) unfaced mineral wool batts (density 33-60 kg/m³)
External (flanking) wall	See Sections 1 and 2

Sound proofing In upper value construction

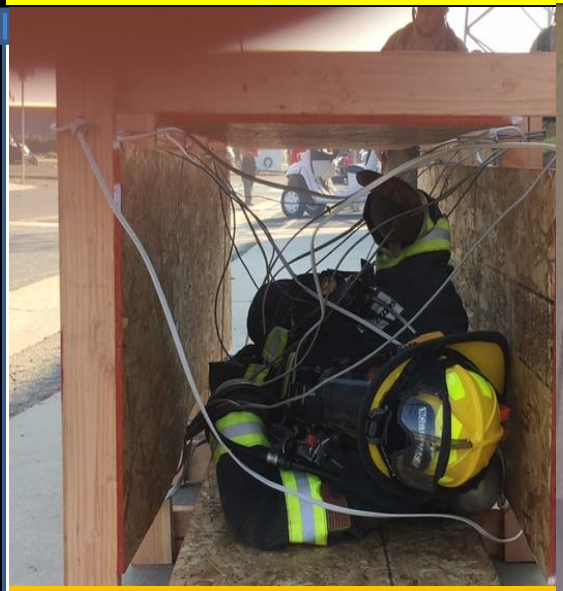


PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

PROJECT MAYDAY

Rescue Team, RIT, Mayday Officer Training



In the last six years !!!!!!
We have killed 6 FF, disabled 31 FF, and injured 157 or more….
PERFORMING THIS DRILL

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Remove drapes and blinds before bailing

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

- Residential ….. 514 ….. 42.6%
- Apartments …. 249….. 20.6%
- Commercial … 442….. 36.6%

* false ceiling grid work, shelves, products on shelves

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

PREVENTING MAYDAYS
Trapped Firefighters

- In collapse or trapped firefighter situations, starts with self-rescue (if possible)
  RIT, team should know as much information as possible about the situation (tools/equipment required) HAVE A PLAN
- During rescue operations, maintain contact with victim (if possible)
- Make sure utilities have been controlled

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

- Make sure all personal tools are in pockets above the waist. (i.e.. extra flashlight, cutters, etc.)
- Make sure your radio in workable space
- Cut wires or whatever on the same side as you move.
- Move duct work and flatten it, rather than cutting it.
- Before breaching a wall, evaluate what you know (where you may have been) and think about what you don't know (location, type wall, also watch for electrical wiring

PROJECT MAYDAY

COMPONENT 2: Trapped/Unable to Move - MAYDAY

TRAINING MAYDAYS
Trapped Firefighters

- Wire entanglement, breaching walls, working through floors and roofs/attic/ceilings is important training
- Have and use the proper tools for the required situation/ problem – selection.
- Make these training situations difficult (smoke, sound, heat, dark …)

PROJECT MAYDAY

Component 2: - NO Communications - Maydays

PROJECT MAYDAY

Communications

RISK

HIGH RISK LOW FREQUENCY Lost radio	HIGH RISK HIGH FREQUENCY Weak/Dead battery
LOW RISK LOW FREQUENCY Radio NOT on	LOW RISK HIGH FREQUENCY Off channel

FREQUENCY

MAYDAY PROJECT

COMPONENT 2: NO Communications

NO Communications ….. 205 ….. 1.6%

- **Radio OFF…… 51 ….. (19.7%)**
- **Off Channel …… 67….. (25.1%)**
- **Lost Radio …… 33…. (14.2%)**
- **Dead Battery …… 46….. (15.1%)**
- **Wet Radio …….. 17* ….. (25.1%)**

- **Simplex …… 93 ….. (45.3%)**
- **800 …… 112 ….. (54.6%)**

PROJECT MAYDAY

COMPONENT 2: NO Communications

PROJECT MAYDAY

San Francisco Fire Department
2 FF Killed
Lt. Vincent Perez, FF/PM Anthony Valerio
1333 Berkeley Way
June 2, 2011

Victim 1's radio

1. *Radio 185°F
2. *RSM 293°F for How long?
3. *Cord 300°F

NFPA = 500°F for 5 min.

NFPA 1802:

STANDARD ON TWO-WAY, PORTABLE RF VOICE COMMUNICATION DEVICES FOR USE BY EMERGENCY SERVICES PERSONNEL IN THE HAZARD ZONE

PROJECT MAYDAY

Today's LMR
Protect your RSM Cord!!

1. *Radio 185°F
2. *RSM 293°F for How long?
3. *Cord 300°F

(*Temps may vary depending on make & model)

NFPA = 500°F for 5 min.

PROJECT MAYDAY

COMPONENT 2: NO Communications

- **Make sure all wires leading from radio to lapel microphone are under the coat, NOT exposed to heat.**

PROJECT MAYDAY

COMPONENT 2: Communication

PREVENTING MAYDAYS
Communications

- Maintain control of communication equipment
- Always check comms before entering hazard zone
- Know comm / set-up for best communications

PROJECT MAYDAY

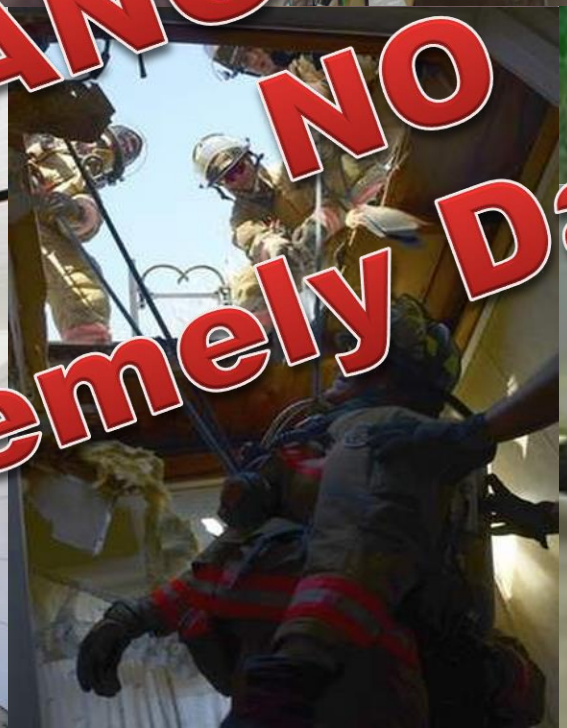
COMPONENT 2: Communication

TRAINING MAYDAYS
Communications

- Train on Mayday communications (station)
- Know proper placement of comms equipment for best commination's
- Practice Mayday (victim) without a radio

PROJECT MAYDAY

Component 2: - FALL INTO BASEMENT/TRAPPED - MAYDAY



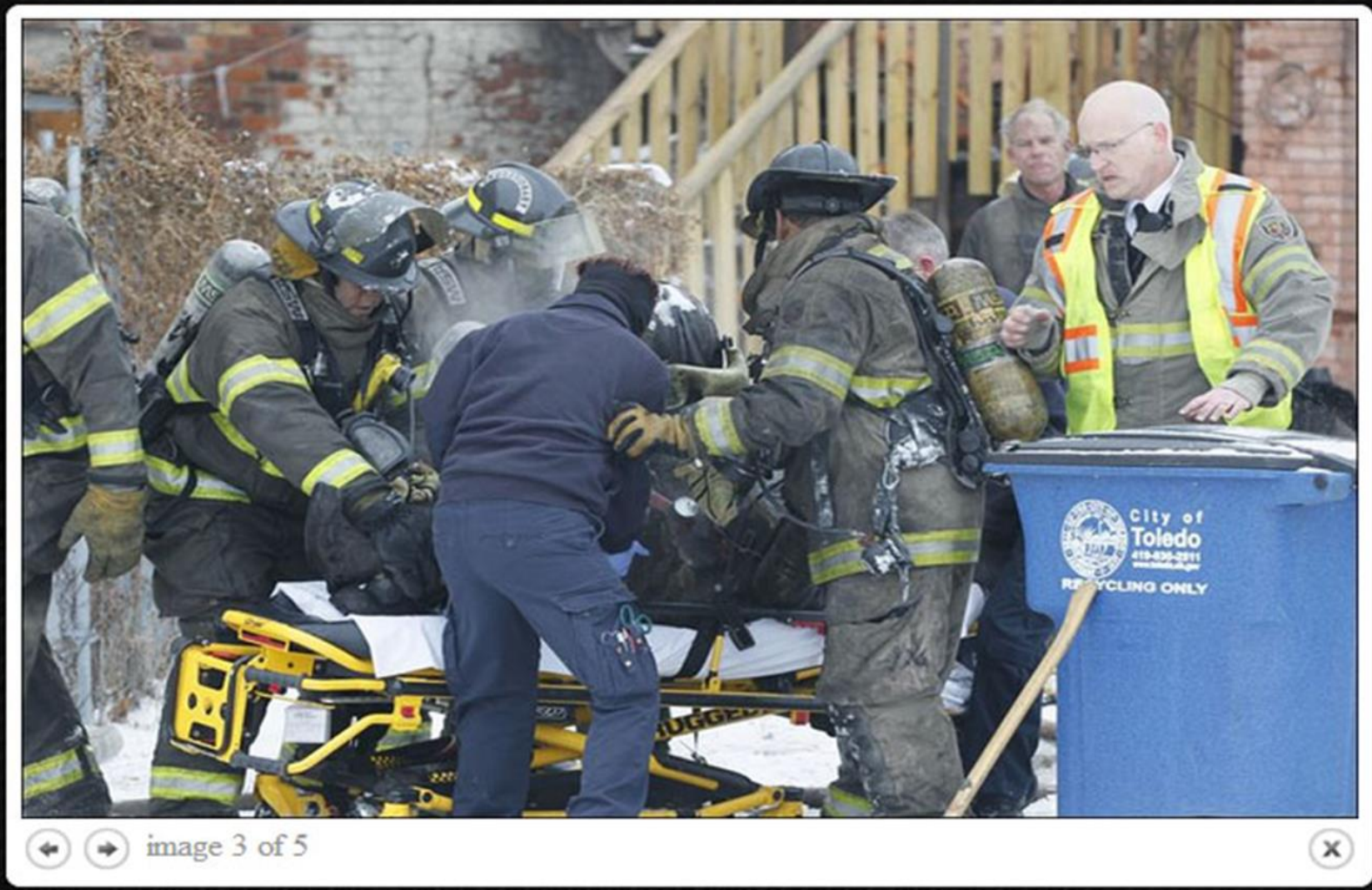
DANGEROUS

NO

Extremely Dangerous

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY



Firefighters and other emergency personnel try to resuscitate a firefighter as he is being taken to get help at the rear of the building at 528 Magnolia. The two firefighters went missing inside during the blaze. THE BLADE/JETTA FRASER

PROJECT MAYDAY

Falls into Hole/ Floor Collapse:`
(structure/basement)

RISK

HIGH RISK LOW FREQUENCY Floor collapse Stairway collapse	HIGH RISK HIGH FREQUENCY Falls through Hole
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY

FREQUENCY

PROJECT MAYDAY

COMPONENT 2: Hole in Floor/Floor Collapse Trapped MAYDAY

15.9%

Increase of 7% between 2019 and 2021

Fall into Basement/Trapped ….. 1,956 ….

- **Floor (Collapsed) .. 848.. (48.4%)**
- **Floor (Hole) …. 691… (40.4%)**
- **Stairway Collapse ….. 432 …. (23.6%)**
- **Underfloor/ceiling Collapse …..284+ …. (14%)**

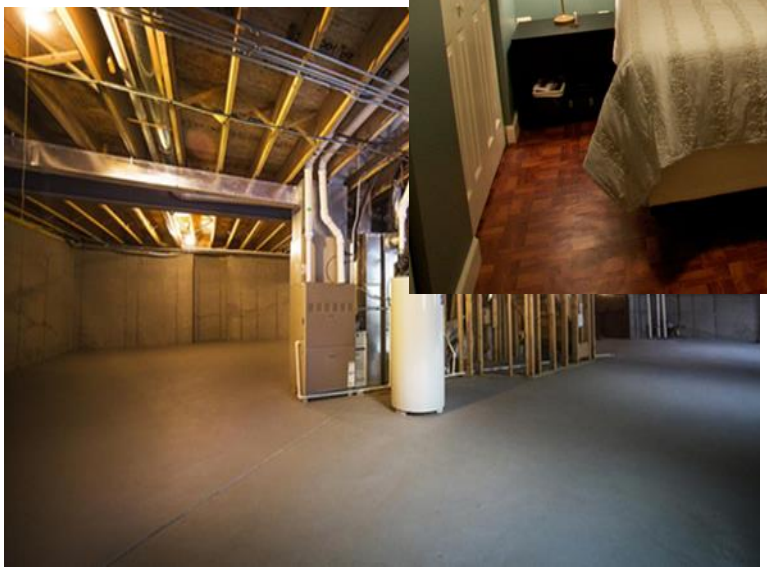
1,649

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY



PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

6

minutes
amount of time to collapse for lightweight-construction floor assembles

19

minutes
amount of time to collapse for floor assemblies built with “legacy” building materials

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

YOU never know what you are going to find in a basement

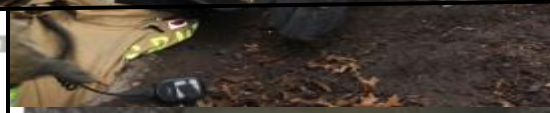
PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- Fire flows from basement fires developed in location other than the stairs, as the floor assembly often failed close to the location where the fire started.
- Flowing water at the top of the stairs had limited impact on basement fires. In cases it may spread the fire into hidden spaces and into the upper house or take out windows.
- Whatever hose line you take to a basement, needs of the length to cover the entire basement (apparatus to entrance, entrance to basement stairs, and cover the basement area

PROJECT MAYDAY

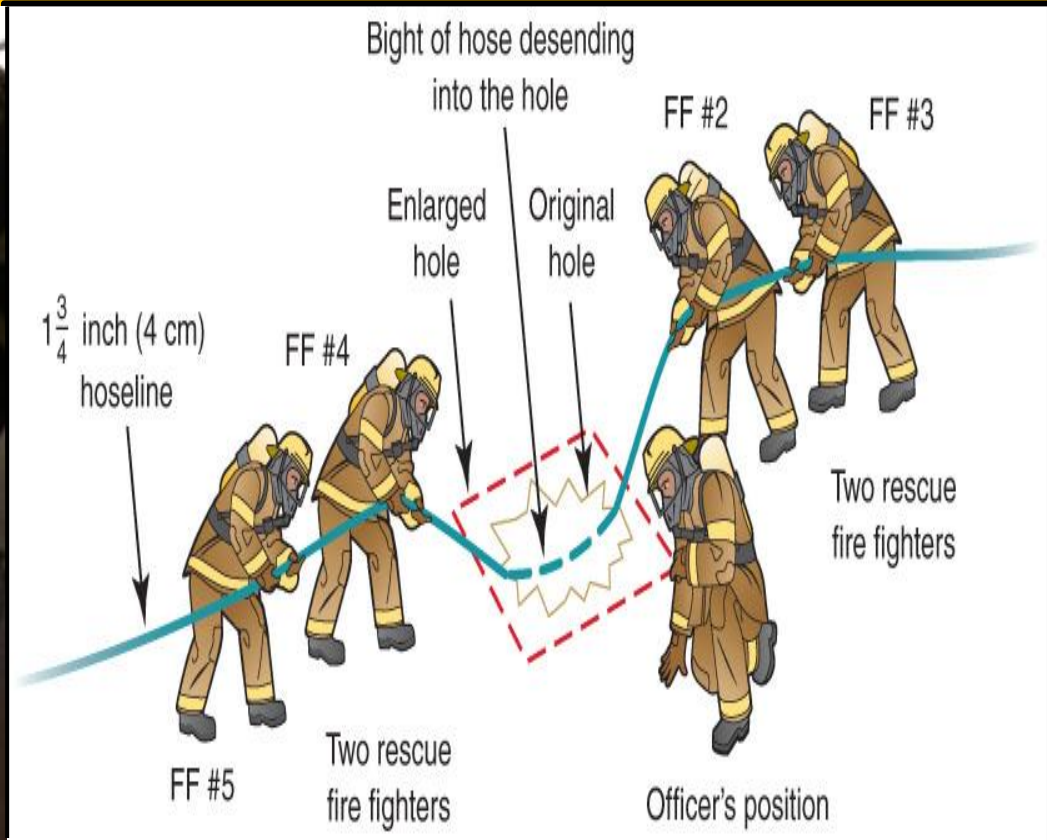
COMPONENT 2: Fall into Basement/Trapped – MAYDAY



PROJECT MAYDAY

Rescue Team, RIT, Mayday Officer Training

Was basement drills conducted as part of RIT training
28%



PROJECT MAYDAY

Rescue Team, RIT, Mayday Officer Training

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- Basement
  - NO exterior windows …. 36%
  - Had a second exit …….. 3%
  - Finished interior……... 62%
    w/ multi-compartments 81%
  - Bedroom (s) ……. 44%

  - Basement Stairway
    - exposed steps ……. 56%
    - enclosed stairway ….. 38%
    - stairway had landing.. 21%

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- **Was a basement identified prior to your entry?**
  YES …. 42%
- **Was floor sounded/tapped during entry?**
  YES …. 22%
- **Were you standing up at the time of the floor collapse? YES …. 78%**
- **How many FF were on the floor at the time of the collapse? (1) …. 67% (2) …. 29% (3) …. 4%**
  (4) …. 1%
- **Was a TIC used to identify fire in the basement?**
  YES …. 42%

  facepiece dislodged .. YES …. 87%
  - lost helmet .. YES …. 41%

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- Basement collapse conditions:
  - When you fell into the basement, how did you land …. - face down …. 34%
    - face up …. 42%
    - on side …. 24%
  - Was there fire in the basement? YES …. 95%
  - could it be controlled by a single handline YES …. 56%
  - debris (furniture, etc.) came on top of us after we fell in the basement … YES …. 61%
  - were you able to self-rescue? YES …. 31%
  - was stairway in tack? YES …. 34%

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- Was victim packaging required? YES …. 33%
- Concerns while trapped in basement?
  - power was still on …. YES …. 41%
  - potential further collapse …. YES …. 88%
  - fire control …. YES …. 65%
  - being able to move to a safe position … YES …. 56%
  - identified possible injuries, reported them to the IC …. YES ….93%
  - able to give instructions to rescuers .. YES… 54%
  - lost radio/would not work .. YES …. 42%
  - facepiece dislodged .. YES …. 85%
  - lost helmet .. YES …. 46%

PROJECT MAYDAY

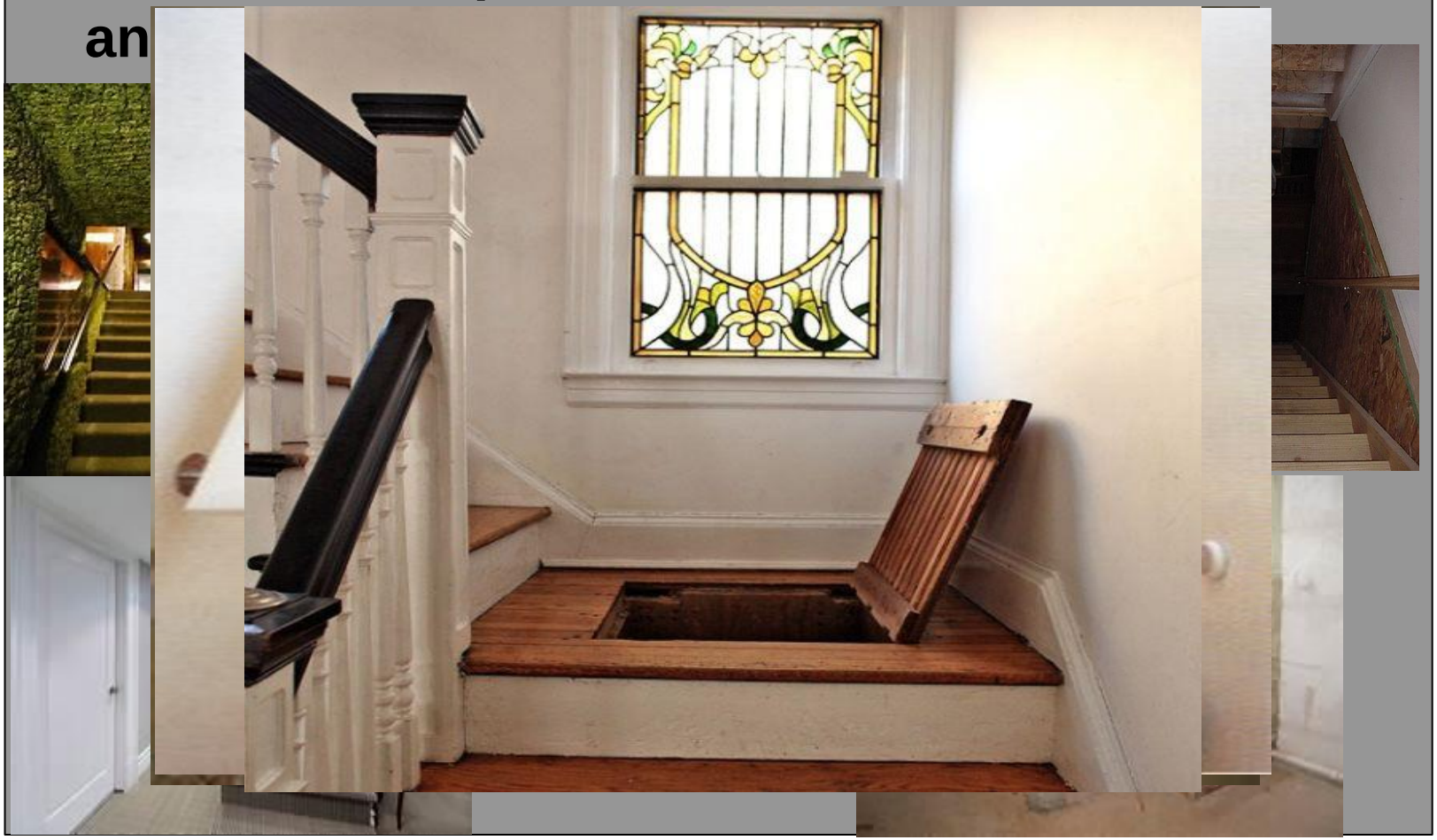
COMPONENT 2: Fall into Basement/Trapped – MAYDAY

360

PROJECT MAYDAY

COMPONENT 2: Fall into Basement/Trapped – MAYDAY

- DO NOT attempt to attack the basement fire from an



PROJECT MAYDAY

COMPONENT 2: Basements

PREVENTING MAYDAYS
Basements

- Conduct 360's
- Identify basement / potential area
- Identify initial conditions (walk-crawl / note floor conditions ((rug- discolored, hard))((tile - cracking/soft)) ((hard floor – separation, blug- ing, discolored))
- Probe floor (standing or crawling)
- Check stairway condition (identify landing at the bottom of the stairs) (maintain door control)
- Attack Line (NO kinks/loops) Back-Up at the top
- Basement compartment

PROJECT MAYDAY

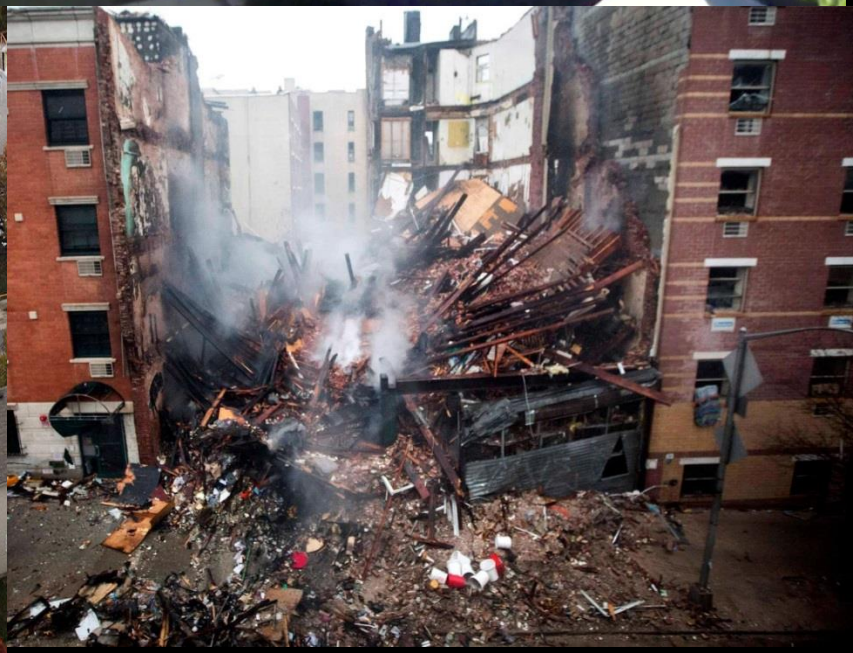
COMPONENT 2: Basement

TRAINING FOR MAYDAYS
Basement

- Tour new home construction / basement layouts and design (building construction)
- Identify best removal techniques
- Practices those techniques
- Conduct basement training (real / hard) and removal techniques

PROJECT MAYDAY

COMPONENT 2: Explosions



PROJECT MAYDAY

COMPONENT 2: Explosions

GAS EXPLOSION 9.4%

(LODD 2021 …. 2)

Increase of 4% between 2020 and 2021

- Firefighters notified of gas leak by dispatch … 73%
- Firefighter informed of gas smell on arrival … 65%
- Firefighter enters structure with above information … 54%
- Firefighters air monitored prior to entry … 47%

1,147

PROJECT MAYDAY

COMPONENT 2: Explosions

PREVENTING MAYDAYS
Explosions

- Listen to dispatch information
- Monitor situation (situational awareness)
- Establish a Hazard Zone Evacuation have conducted
- Make sure proper utilities have been alerted
- HazMat has been dispatched
- Air monitoring has been conducted with the correct instrument
- Followed established SOP's

PROJECT MAYDAY

COMPONENT 2: Explosions

TRAINING FOR MAYDAYS
Explosions

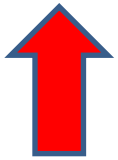
- Conduct training with local utilities at least every three years
- Conduct training simulations (natural gas, sewer, etc.)
- Conduct air monitoring training with instruments used by the AHJ
- Conduct training with HazMat Team

PROJECT MAYDAY

COMPONENT 2: **Other**

PROJECT MAYDAY

COMPONENT 2: Other



Increase of 2.3% between 2020 and 2021

Other: 750 **6.1%**

- Holdup (drugs) ..... 87 ..... (11.6%)
- Assaults ..... 236 ..... (31.4%)

- Gunshots/Shootings ... 281..... (47.4%)
- Drug Lab ..... 72 ..... (9.6 %)

PROJECT MAYDAY

COMPONENT 2: Other

PREVENTING MAYDAYS
Others

- Listen to dispatch information
- Monitor situation (situational awareness)
- Coordinate with Law Enforcement
- Followed established SOP's

PROJECT MAYDAY

COMPONENT 2: Other

TRAINING FOR MAYDAYS
Others

- Conduct training with law enforcement
- Conduct training simulations (natural gas, sewer, etc.)
- Conduct air monitoring training with instruments used by the AHJ
- Conduct training with HazMat Team

PROJECT MAYDAY

"The capability of our protective gear can now consistently out perform the natural limits of our anatomy and physiology…just because you can go someplace on the fire ground doesn't mean you should go there … simply our modern turnouts can live a lot longer than our old fashioned bodies."

Chief Alan Brunacini

PROJECT MAYDAY

BE PREPARED

PROJECT MAYDAY

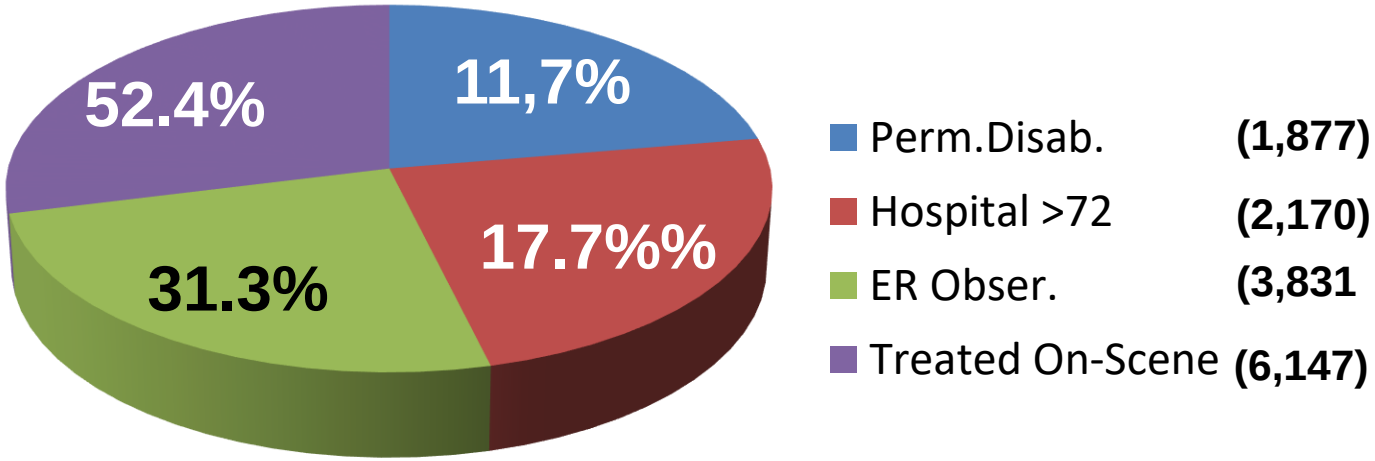
PROJECT MAYDAY

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

CAREER

Injuries from Maydays



12,277

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

PERMANENT DISABILITY **CAREER**

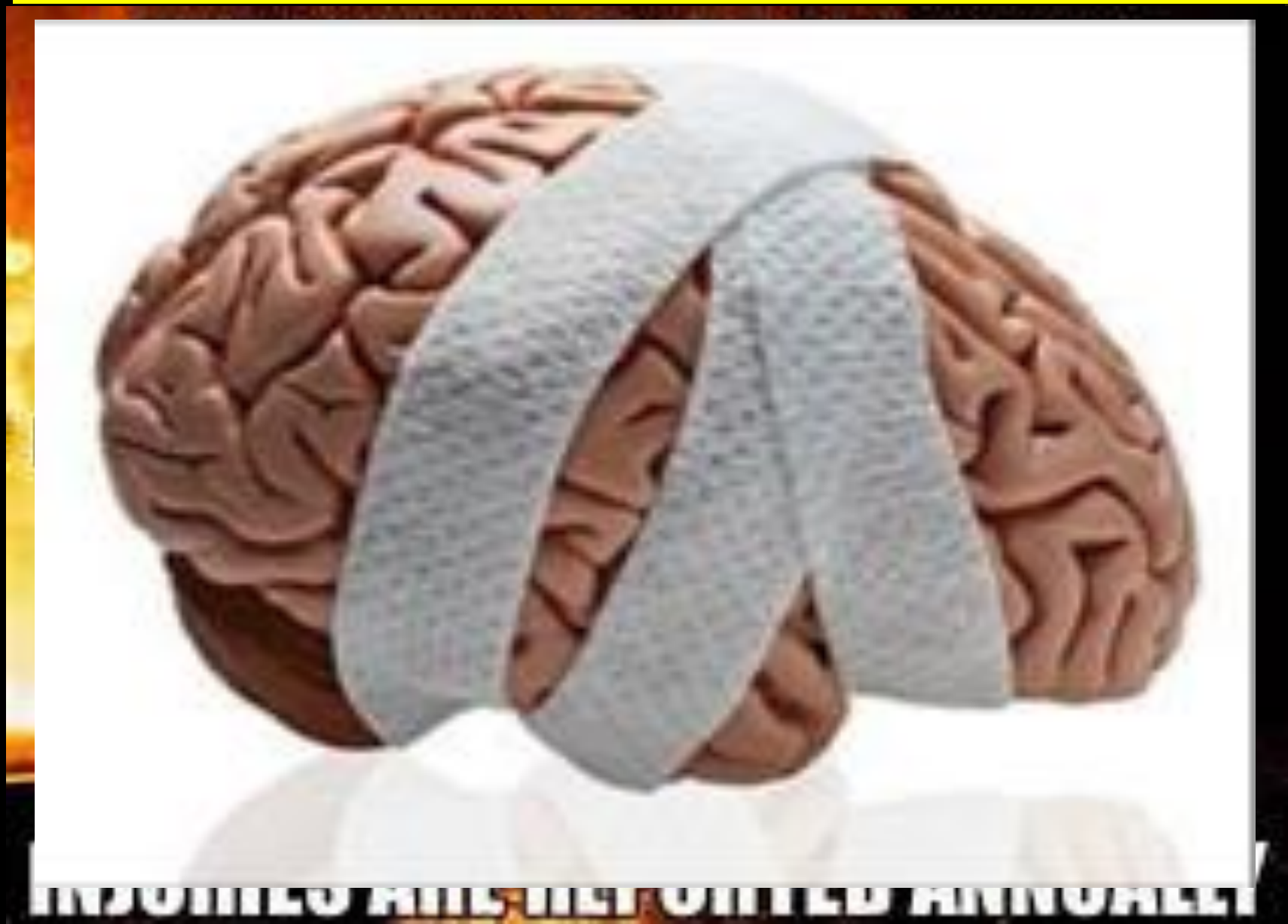
- Quadriplegic …. 41
- Paraplegic …… 496
- Spinal injuries ….. 482
- Head Injury ….. 519
- PTSD ….. 846
- Impact trauma …. 207

- 3rd degree burns… 30 to 50% of the body ….. 352
- 3rd degree burns…50 to 70% of the body ….. 219
- 3rd degree burns…> 70% of the body ….. 217
- 2nd degree burns...> 30% of the body ….. 413

- multi-fractures lower body ….. 338

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS



PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

Every department should have a field policy in dealing with concussions (ceiling collapse, floor collapse, stairways, and falls.

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

Signs and Symptoms

Signs and symptoms of MTBI generally fall into four categories: physical, cognitive, emotional, and sleep, and may include:

Physical	Cognitive	Emotional	Sleep
• Headache • Nausea • Vomiting • Balance problems • Dizziness • Visual problems • Fatigue • Sensitivity to light • Sensitivity to noise • Numbness/ Tingling • Dazed or stunned	• Feeling mentally "foggy" • Feeling slowed down • Difficulty concentrating • Difficulty remembering • Forgetful of recent information or conversations • Confused about recent events • Answers questions slowly • Repeats questions	• Irritability • Sadness • More emotional • Nervousness	• Drowsiness • Sleeping less than usual • Sleeping more than usual • Trouble falling asleep

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

Sample questions from ImPact test

The ImPact test is administered at the start of a sports season to determine an athlete's baseline results, and again following a concussion to determine if his or her brain has recovered from the trauma. The memory and recognition tests, samples shown below, are conducted in conjunction with a general healthy history questionnaire and a survey of recent symptoms.

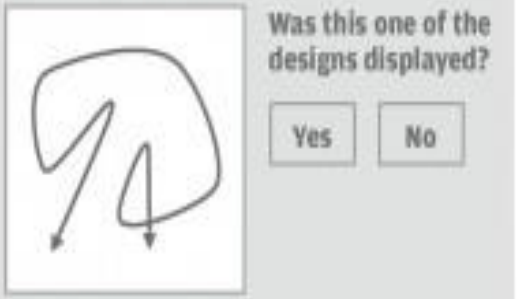
SYMBOL MATCHING

Evaluates visual processing speed, learning and memory

Symbols are shown with corresponding numbers. As a symbol is displayed below, the subject must click on the matching number above. After 27 matches, the subject must remember the correct symbol-number pairing.

DESIGN MEMORY

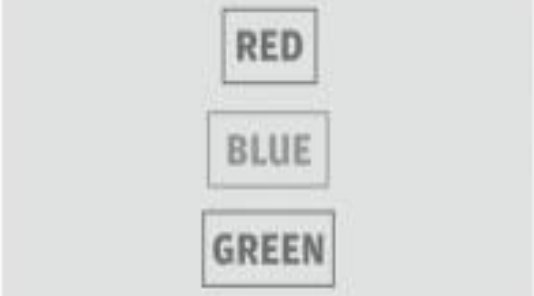
Evaluates attentional processes and visual recognition memory



Twelve designs are presented for 750 milliseconds, twice to facilitate learning. The subject is then shown a series of correct and incorrect designs and asked if each was displayed previously.

COLOR MATCH

Evaluates reaction time, impulse control/response inhibition



Some words are displayed in their matching color (e.g. RED appears in a red color) and some do not (e.g. BLUE appears in a green color). The subject is instructed to quickly click on the word box only if the word and color match.

SOURCE: ImPact

LAURA SPARKS · State Journal

PROJECT MAYDAY

COMPONENT 2: Injuries from MAYDAYS

CAREER

DISABILITIES: 2,261

Estimated Cost: $ 39,350,000.00

(pension payments, medical care, insurance transportation, salary, replacement cost)

Pending Lawsuits: 219

Estimated Cost: $ 37,500,000.00

Fifty-nine Settlements …. $ 177,000,000

PROJECT MAYDAY

PPC Worn During Mayday

PROJECT MAYDAY

PPE

WHAT IS TPP?

Thermal Protective Performance
In the 1986 revision of NFPA 1971, Protective Clothing for Structural Fire Fighting, a new test method for measuring thermal protection was introduced and a minimum thermal protective performance (TPP) rating was established. Its purpose is to measure the rate at which convective and radiant heat penetrate through the composite system–outer shell, thermal liner and moisture barrier–to cause second-degree burns to the human skin.
The NFPA minimum requirement of a TPP rating of 35 equates to 17½ seconds until second-degree burns occur in a flashover situation.*

FDNY GEAR TPP -42.7

WHAT IS THL?

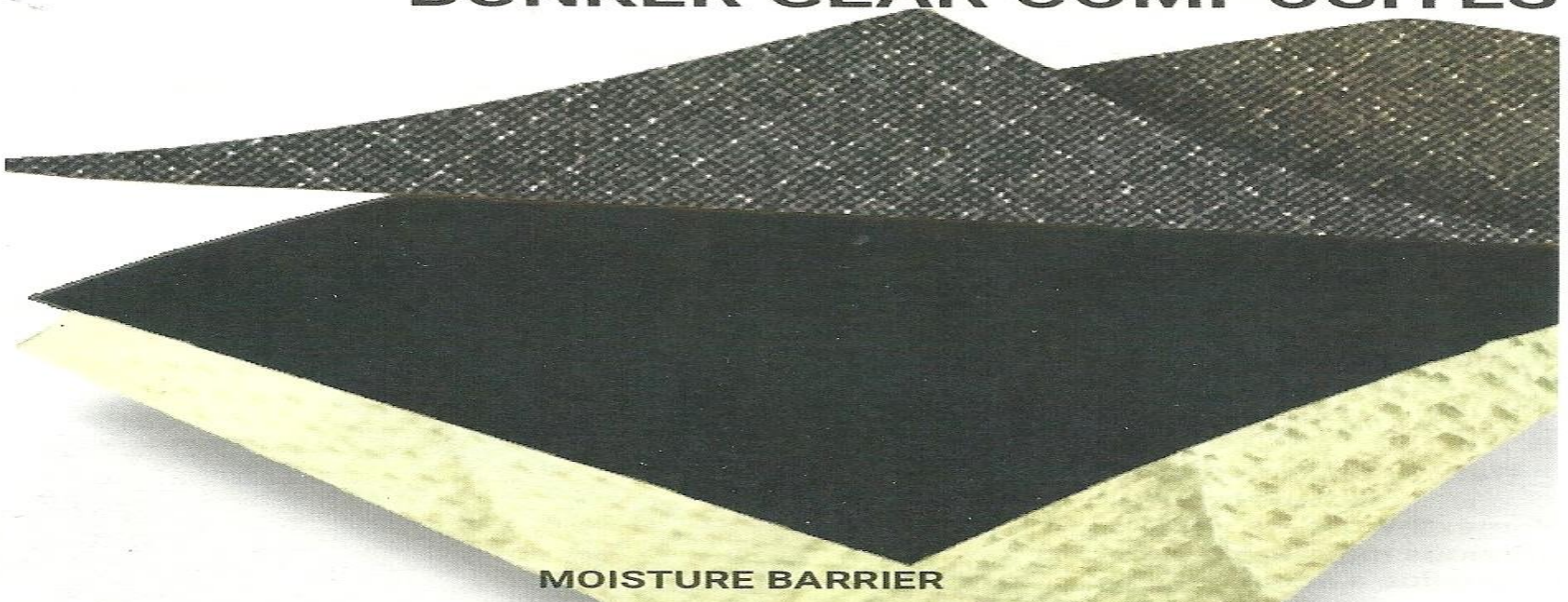
Total Heat Loss
The total heat loss is a combination of the dry heat loss and the wet heat loss that occurs through the three-layer ensemble. The NFPA 1971 minimum requirement is 205 W/m2.

* TPP measurements do not imply a certain protection time. Tests are done under perfect laboratory conditions and DO NOT take into consideration that every fire incident results in different exposures, most likely bringing about lower escape time.

PROJECT MAYDAY

PPE

BUNKER GEAR COMPOSITES



MOISTURE BARRIER

The Gore "Crosstech® Black" moisture barrier is a key component that principally prevents the transfer of liquids. It contributes to the overall thermal protection, while also being the primary defense against chemical and viral agents. This is accomplished by laminating a revolutionary, permeable film barrier to a flame-resistant substrate material, which is designed specifically, in combination with the other layers, to allow breathability (the ability to evaporate sweat off skin and out of the gear—the body's primary cooling mechanism) to reduce physiological stress and overheating.

THERMAL LINER

The Tencate "Defender M SL2" thermal liner is a critical component in bunker gear because, in conjunction with the moisture barrier, the two account for the majority of the thermal protective performance. This is accomplished by air trapped between the layers of the quilted material. The facecloth material is the innermost part of the bunker gear, which has wicking properties (absorbs moisture and remains dryer) and smoothness, which improves comfort and mobility and assists in moisture management.

PROJECT MAYDAY

PPE

OUTER SHELL
PBI® XT

MOISTURE BARRIER
CROSSTECH® BLACK

THERMAL LINER
DEFENDER M SL2

OUTER SHELL

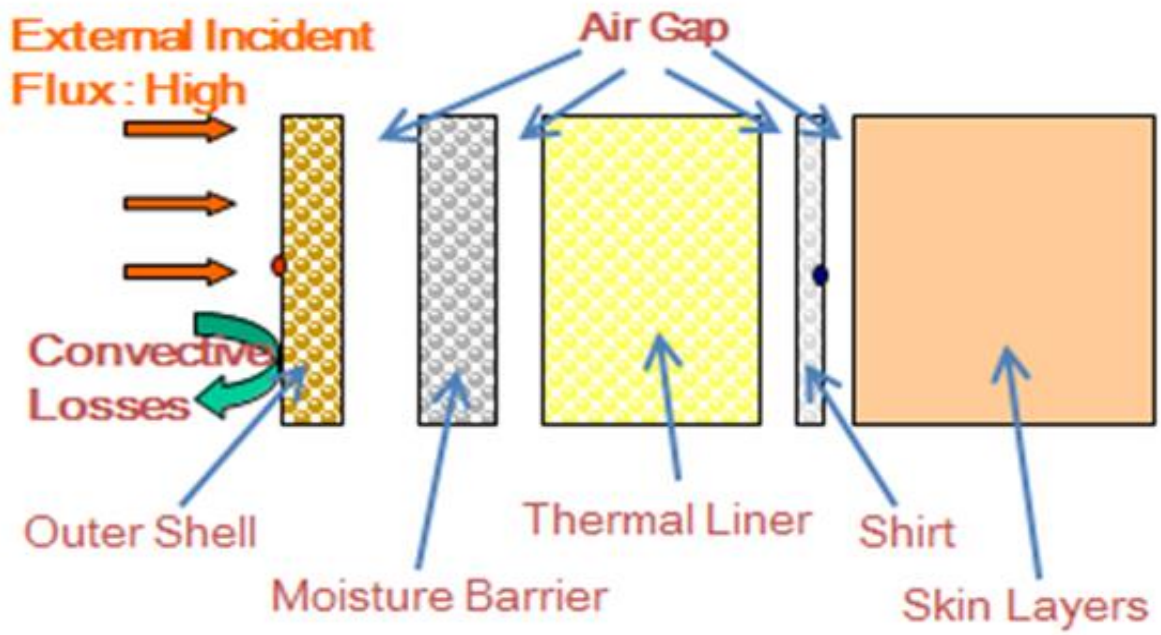
"PBI® XT" outer shell manufactured by Tencate is the outermost layer and is the first line of defense.

The optimal mix of ~40% PBI® and
~ 60% Kevlar® offers increased thermal and flame protection and the best resistance to break-open in the industry.

In addition to the high flame resistance, it also provides protection from abrasion, cutting and tearing.

PROJECT MAYDAY

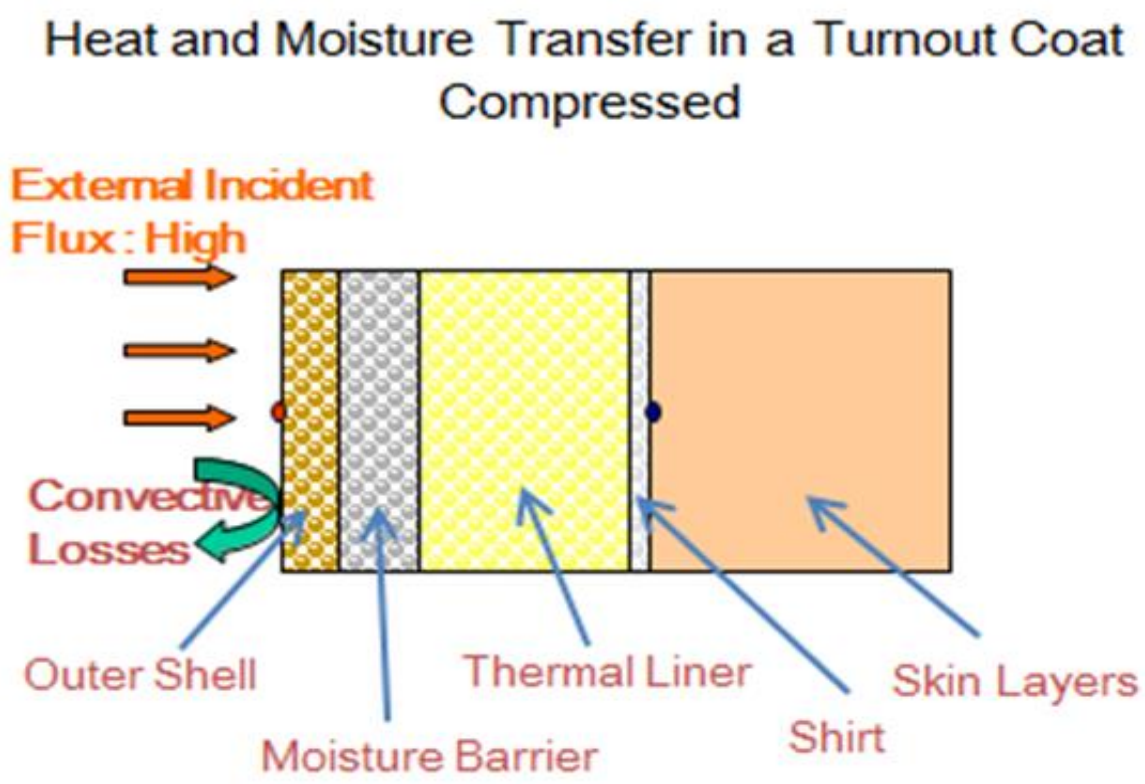
PPE



F.I.R.E.

PROJECT MAYDAY

PPE



F.I.R.E.

PROJECT MAYDAY

PPC Worn During Mayday

PPC Worn During Mayday:

- Nomex 45% *(Wet – 56.7%)*
- PBI 46% (Wet – 58.4%)
- Other 9% (Wet – 13.7%)

- Hood
  - Nomex 42% (Wet- 8.2%)
  - PBI 56% (Wet- 9.3%)
  - None 2%

Only 24% of the Project Mayday reporting FDs, had a second set of PPC.

PROJECT MAYDAY

PPC Worn During Mayday

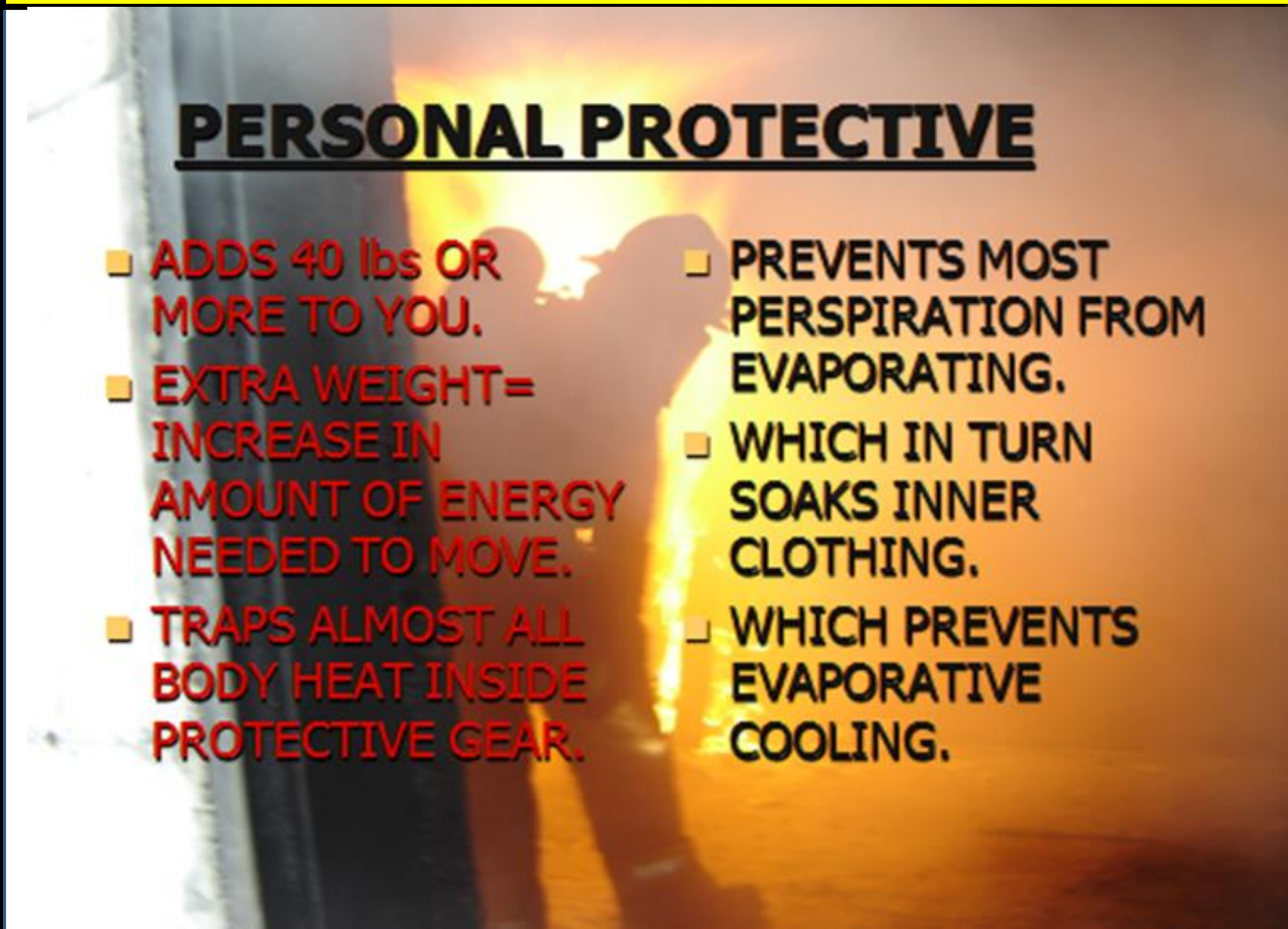
PPC Worn During Mayday:

- **Gloves**
  - **FF 96.3%** ***(Wet 67.2%)***
  - **Non 2.4%**
- **Helmet**
  - **Leather 44.7%**
  - **Syn/Pol 55.3%**

- **Rubber Boots 20%**
- **Leather Shoes 80%**

PROJECT MAYDAY

PPC Worn During Mayday



PROJECT MAYDAY

PPC Worn During Mayday

Under Garments:

Shirt:

- Uniform Non-FR (SS) 16.2%
- Uniform Non-FR (LS) 9.1%
- Uniform FR (SS) 11.6%
- Uniform FR (LS) 4%
- Polo Non FR (SS) 15.8%
- Polo Non FR (LS) 3.4%
- Polo FR (SS) 7.3%
- Polo FR (LS) 4.1%
- T-Shirt Non FR (SS) 26.7%
- T-Shirt Non FR (LS) 8.9%
- T-Shirt FR (SS) 11.3%
- T-Shirt FR (LS) 3.5%
- Synthetic 12.4%
- None 7%
- Sweatshirt Non FR 9.1%

* Wet 16.3%

Pants:

Long:

- Uniform Non-FR 32.5%
- Uniform FR 24.7%

Shorts:

- Uniform Non-FR 37.4%
- Uniform FR 17.8%
- Synthetic 22.6%

PROJECT MAYDAY

MAYDAY - Garments

The fourth perception associated with FR station wear is also a fact. The two standards that refer to station wear both permit the use of non-FR garments.

NFPA® 1975: *Standard on Emergency Services Work Clothing Elements* makes flame resistance optional for station wear. NFPA® 1500: *Standard on Fire Department Occupational Safety, Health and Wellness Program* supports NFPA® 1975 in the body of the standard, although appendix section A.7.1.5 clarifies:

> *Clothing made from 100 percent natural fibers or blends that are principally natural fibers should be selected over other fabrics that have poor thermal stability or that ignite easily.*
>
> *The very fact that members are fire fighters indicates that all clothing that they wear should be inherently flame resistant to give a degree of safety if unanticipated happenings occur that expose the clothing to flame, flash, sparks, or hot substances.*

PROJECT MAYDAY

MAYDAY - Garments

COTTON:

Cotton affords better protection that other fabrics, except FR, remember cotton is a fuel and can ignite if exposed to an ignition source.

SYNTHETICS:

Although NO standard today allows synthetic or synthetic blend fabrics to be worn, for many fire departments they are the station wear fabrics of choice. Unlike FR fabrics, synthetics easily melt, drip, run and add to firefighter injuries.

Non FR (polyester blend) garments, when worn under turnouts with minimum acceptable TPP rating, begins to melt in just 28 seconds, at 350 degrees.

PROJECT MAYDAY

Underwear Worn During Mayday

Wearing of underwear was an across the board issue.

- Polyes
  - briefs
  - boxe
- Cottor
  - briefs
  - boxe
- Polyes
  - briefs

- .3.1 NC underwear worn

Five reported underwear Emergencies
9 - Critical
37 - Serious
54 - steam burns

PROJECT MAYDAY

MAYDAY - Garments

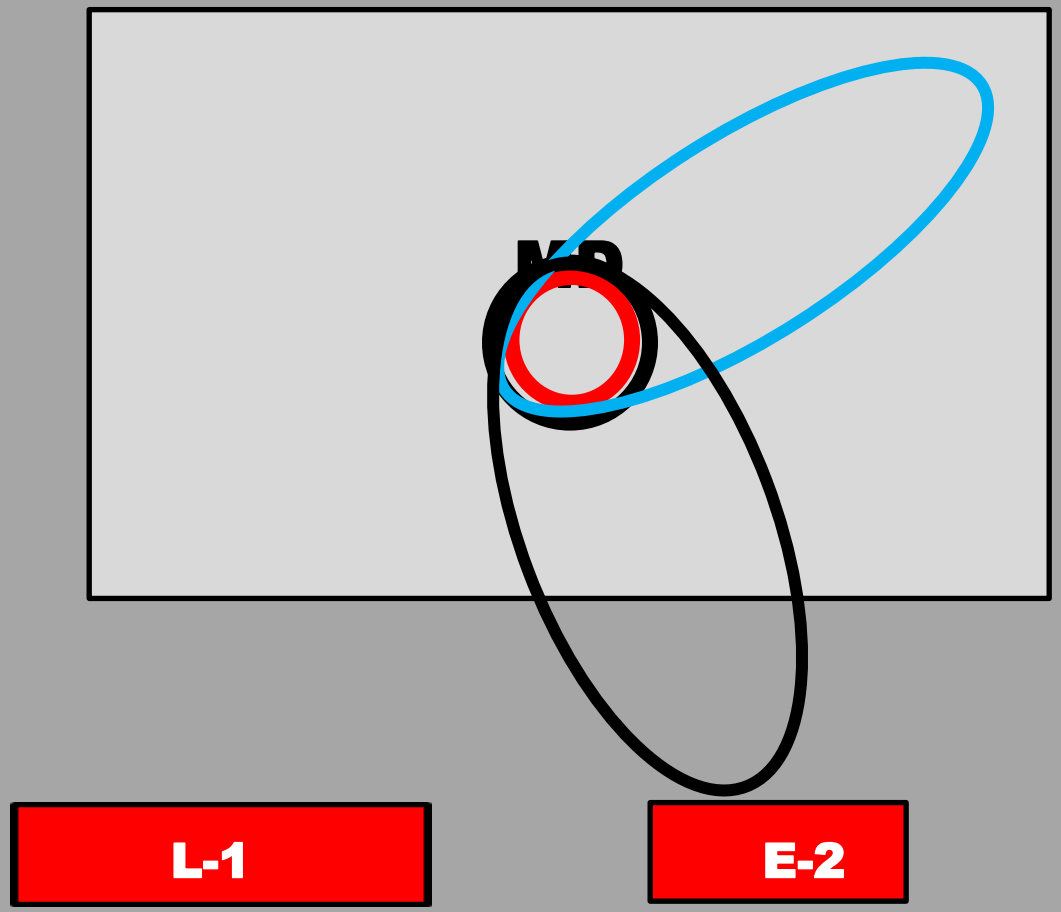
PROJECT MAYDAY

12,277

MAYDAY RESCUES

- Self-rescue 5,891 (47.9%)
- Victim's Crew 2,947 (24%)
- Interior Crew 1,948 (15.8%)
- RIT 971 (7.9%)
- Other 520 (4.2%)

PROJECT MAYDAY



PROJECT MAYDAY

COMPONENT 2: Mayday Rescues

SELF-RESCUES:

- Relocate hose …….. 307
- Low reduce profile ... …. 134
- Wall breach …….. 88
- Wire cutting ……..... 91
- Found stairway intact … 52
- Unknown …… 322

Average Time for Self-Rescue:

Average time for Self- Rescue 4 ½ to 7 minutes
(this result is difficult to be exact, because of a lack of actual time stamping from Radio traffic to IC Tactical worksheets, to victims mental time stamping)

PROJECT MAYDAY

COMPONENT 2: Mayday Rescues

TOOLS USED IN SELF-RESCUE:

- Hand wire cutters 10%
- Halligan tool 18%
- Axe 12%
- Combination tool 15%
- NO hand tools 36%
- NO personal tools 23%
- Unknown 7%

MAYDAY VICTIM"S REMOVED BY INTERIOR CREWS, TECHNIQUE USED:

- Standing assist 23%
- Walking assist 34%
- Carried 6%
- Dragged 17%
- Stokes, sked, mega mover ..... 14% (outside/in)
- Unknown..... 6%

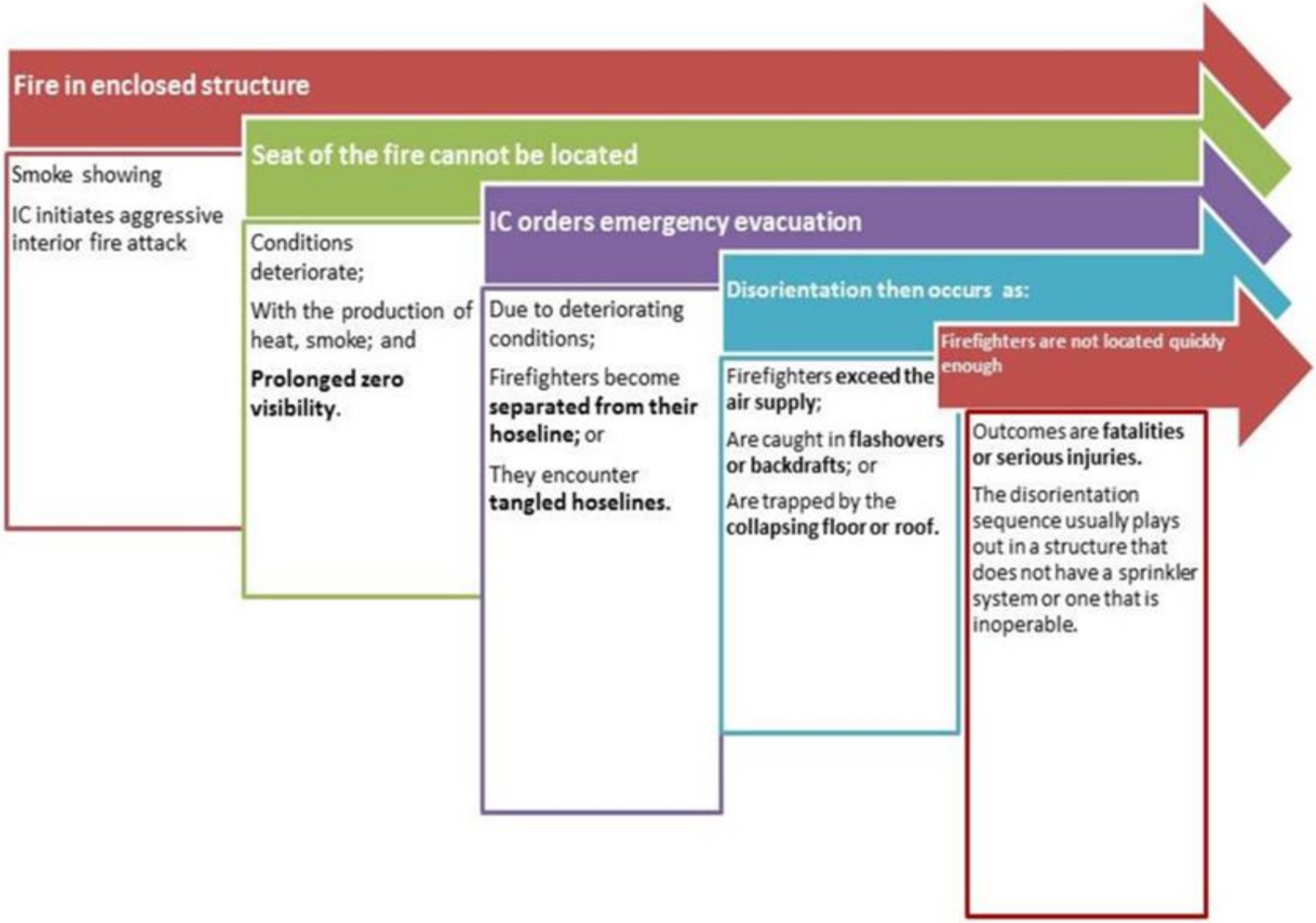
PROJECT MAYDAY

10 SURVIVAL STEPS for Lost/Trapped Firefighters

1. Declare “MAYDAY”
2. “EA” button activation
3. Stay calm, preserve your air
4. Activate your PASS Turn PASS / OFF ….. radio
5. PCAN report (situation/problem reporting)
6. Stay together – if lost with your crew
7. Follow hose line
8. Retreat to an area of safety
9. Horizontal positioning
10. Flashlight and tool tapping

PROJECT MAYDAY

COMPONENT 2: Mayday Rescues



PROJECT MAYDAY

COMPONENT 2: Mayday Rescues

1. Call for a mayday as soon as you realize you cannot safely exit the hazard zone
2. Declare a mayday (x's 3) to ensure priority radio traffic, DO NOT un-key the microphone - give a report that includes:
   - Who - your identity – Unit, Unit riding position, or entire name
   - What – caused the condition(s) of the mayday
   - Where - identify your current location/surroundings or your last know location
   - NEEDS – the needs that will help resolve the mayday (critical) AIR!

PROJECT MAYDAY

COMPONENT 2: Mayday Rescues

3. Calm down and begin self-help/self-rescue techniques
   - Conserve your air.
4. Activate your PASS unit as appropriate.
5. Maintain radio contact with the IC or the Division boss as required.
6. Other Companies – Put the fire out! Stay OFF the radio
   - Mayday Priority and Status change traffic ONLY.
7. Be prepared to assist if you are in a position to do so

PROJECT MAYDAY

Visibility

ZVC

READ THE SMOKE (volume, velocity, density, color, location)

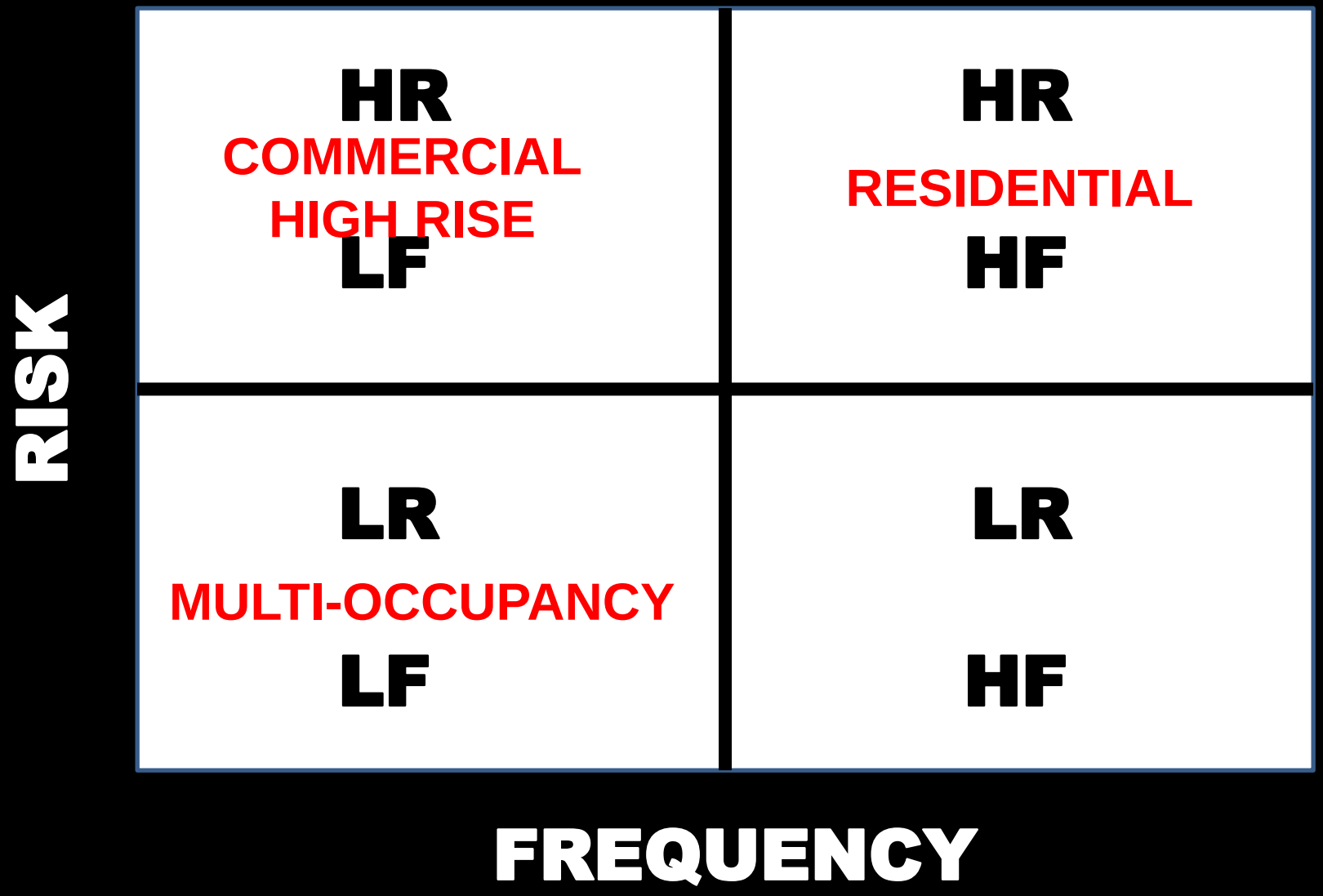
NOT (light, moderate, heavy, thick)

PZVC

PROJECT MAYDAY

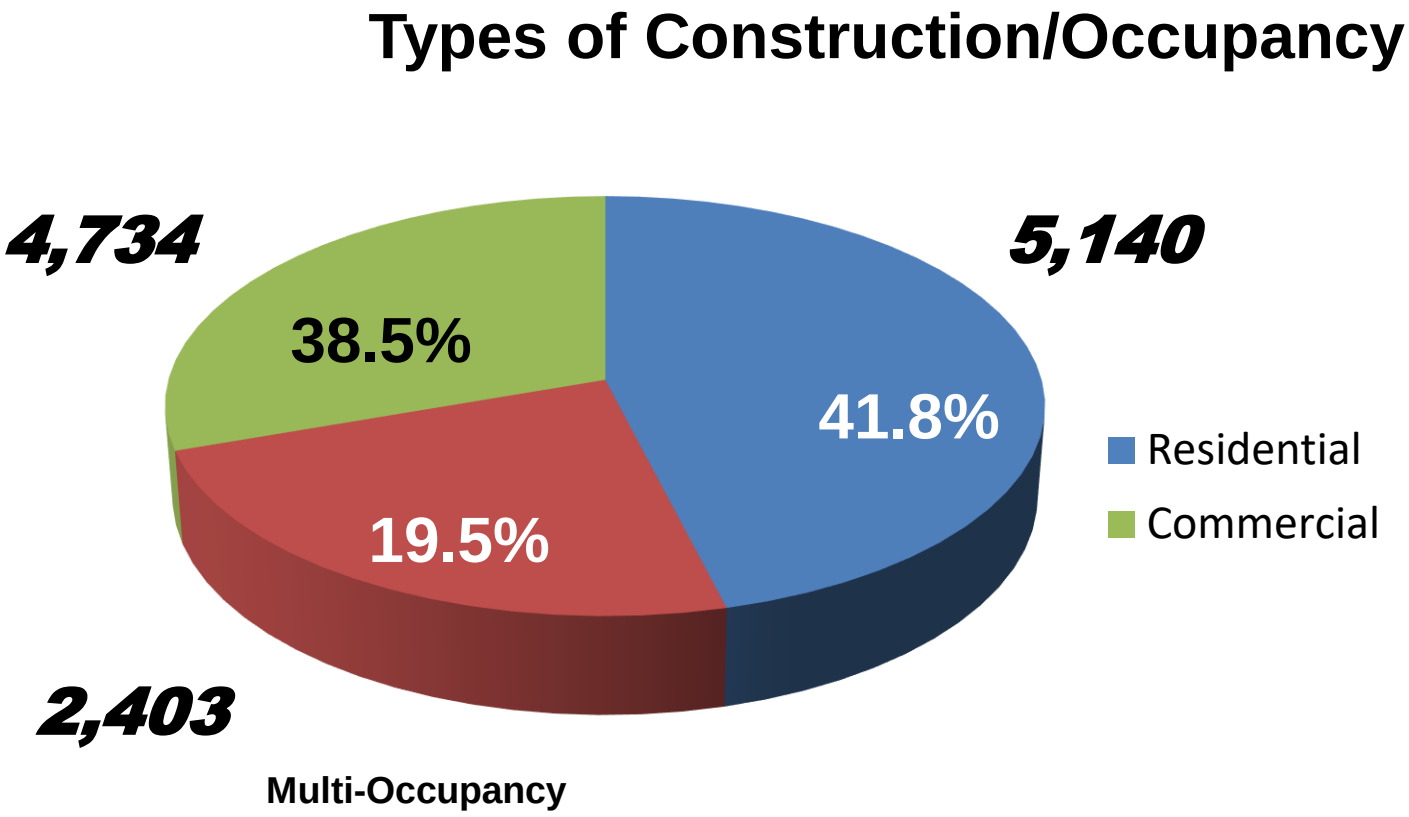
COMPONENT 2: Mayday Rescues

CHARLESTON NINE MEMORIAL PARK


HR
COMMERCIAL
HIGH RISE
LF
HR
RESIDENTIAL
HF
LR
MULTI-OCCUPANCY
LF
LR
HF
RISK
FREQUENCY

PROJECT MAYDAY

COMPONENT 2: TYPES OF CONSTRUCTION/ OCCUPANCY



12,277

PROJECT MAYDAY

COMPONENT 2: Residential Construction/ Occupancy

PROJECT MAYDAY

COMPONENT 2: Residential Construction/ Occupancy

RESDENTIAL MAYDAYS

PROJECT MAYDAY

RISK

HIGH RISK LOW FREQUENCY Entanglement	HIGH RISK HIGH FREQUENCY SCBA issues Lost/Separated from hose line - Falls through roof Fall into Holes/Floor Collapse Flashovers
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY

FREQUENCY

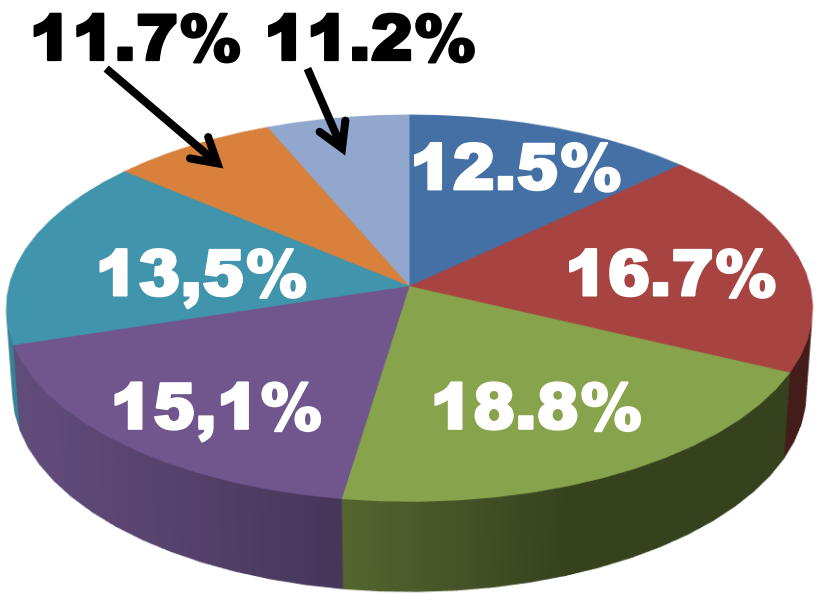
PROJECT MAYDAY

COMPONENT 2: Residential Construction/ Occupancy

Residential Construction/Occupancy

CAREER

41.8%



< 1,500sqft	(646)
1,501-2,400sqft	(861)
2,401-3,200sqft	(981)
3,200-4,500sqft	(779)
4,501-5,600sqft	(686)
5,601-7,200sqft	(608)
> 7,200sqft	(579)

VB/AB 18%

5,140

PROJECT MAYDAY

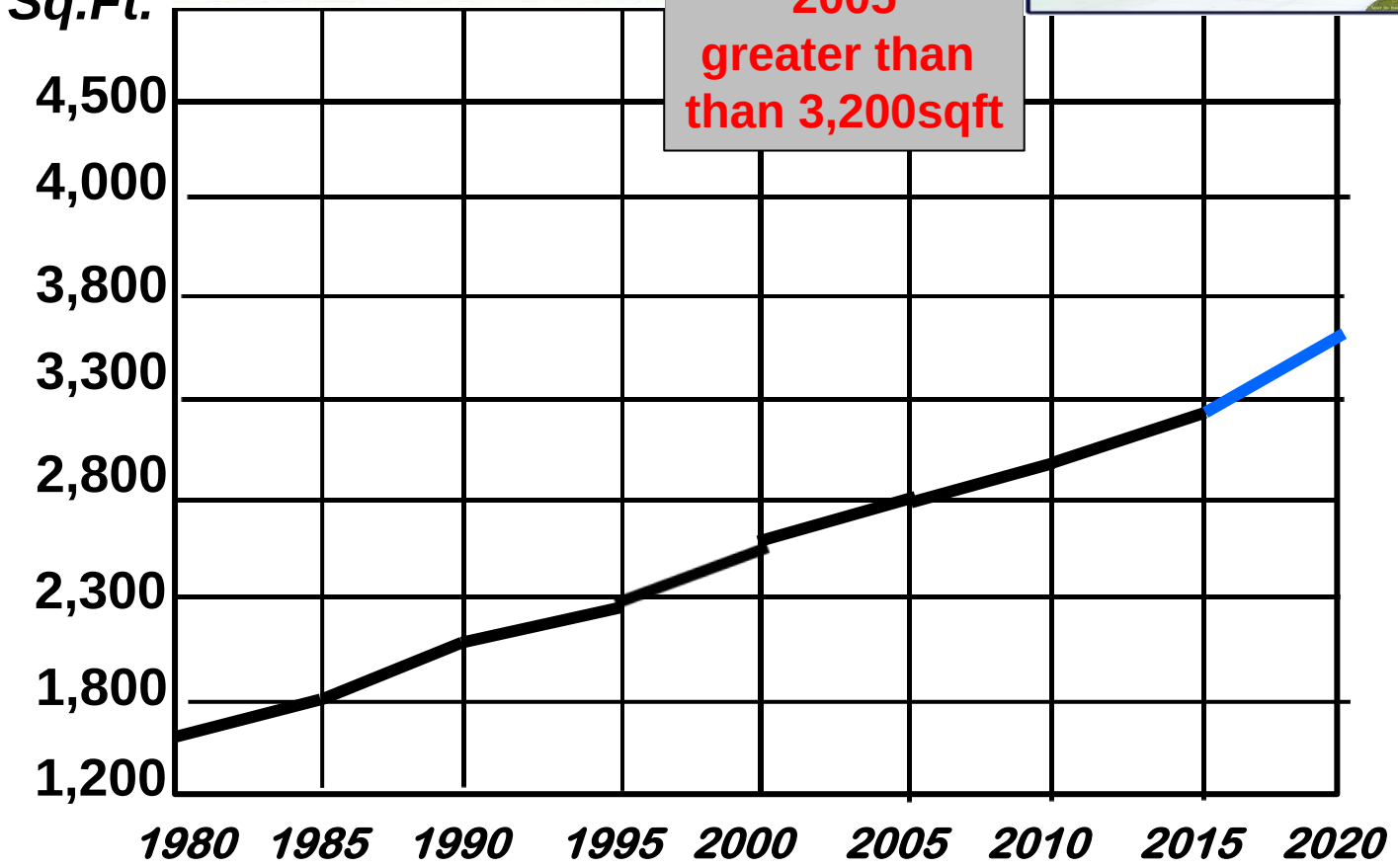
COMPONENT 2: Residential Construction/ Occupancy

Size	*Numbers*	*1 Story*	*2 Story*	*3 Story*	*Basement*
< 1,500sqft	(641)	559	82		239
1,501-2,400sqft	(861)	562	299		274
2,401-3,200sqft	(981)	216	62		309
3,201-4,500sqft	(677)	326	208	143	371
4,501-5,600sqft	(481)	104	172	196	288
5,601-7,200sqft	(369)	89	183	97	231
> 7,200sqft	(334)	77	133	124	215

PROJECT MAYDAY

COMPONENT 2: TYPES OF CONSTRUCTION/ OCCUPANCY

34% of residences built since 2005 greater than than 3,200sqft



PROJECT MAYDAY

COMPONENT 2: TYPES OF CONSTRUCTION/ OCCUPANCY

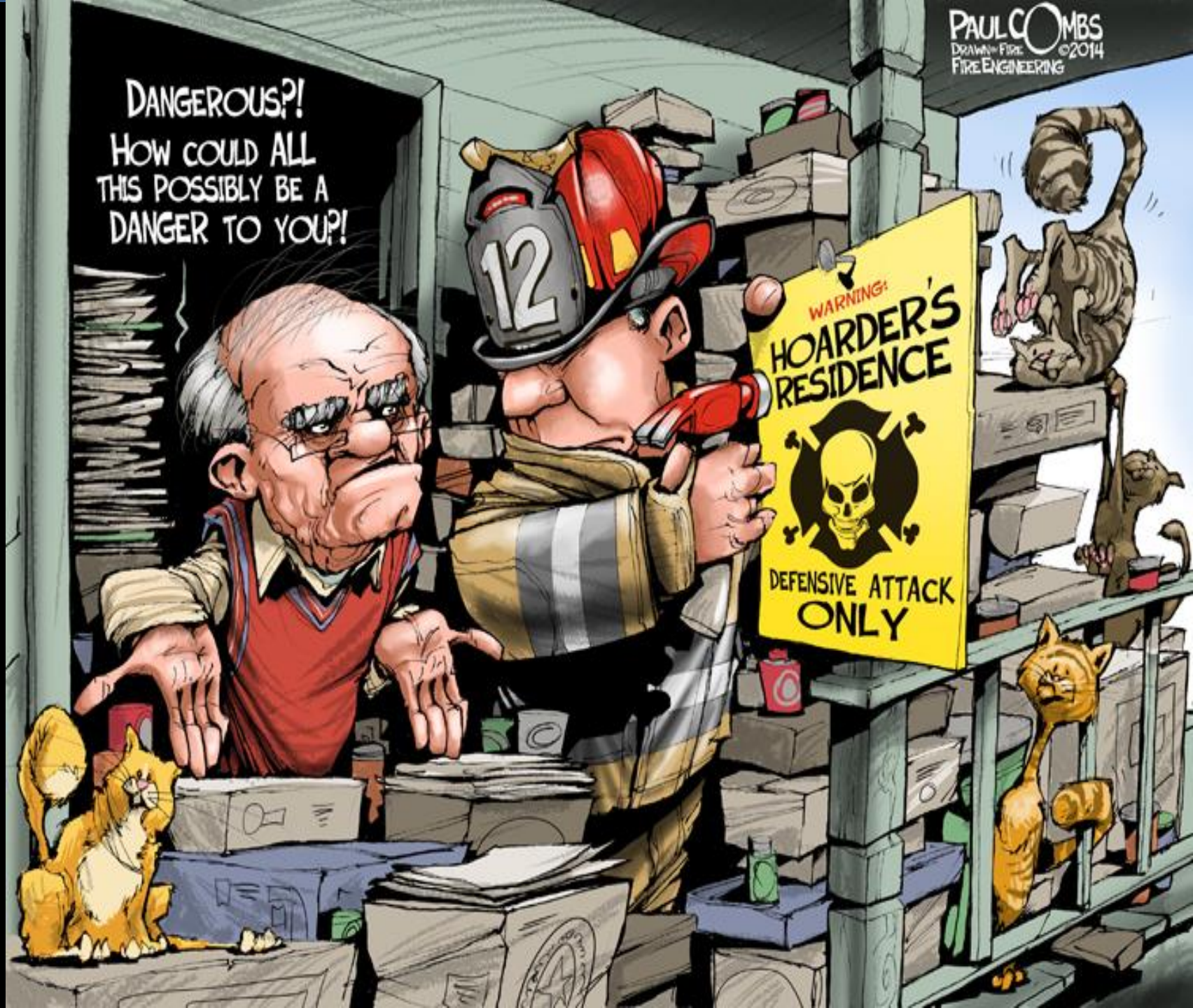
PROJECT MAYDAY

PROJECT MAYDAY

SEARCH

LARGE AREAS
MULTIPLE LEVELS
MULTIPLE VICTIMS
DOOR SWING
(Rule of Thumb)
TOWARD YOU
Closets / Level Changes (Basements/Attic)
AWAY FROM YOU
other rooms
Room Description

MAYDAY PROJECT



MAYDAY PROJECT

HOADER HOUSE

SLOW DOWN
ID 2nd Exit

Don't Over Crowd the Interior
ALL Crews should have a TIC

PROJECT MAYDAY

RESIDENTIAL:

PROJECT MAYDAY

COMPONENT 2: Multi-Occupancy Construction

PROJECT MAYDAY

COMPONENT 2: Multi-Occupancy Construction

PROJECT MAYDAY

Multi-Occupancy MAYDAYS

RISK

HIGH RISK LOW FREQUENCY Falls into holes or floor collapse Entanglement	HIGH RISK HIGH FREQUENCY SCBA problem Lost/Separated from hose line
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY

FREQUENCY

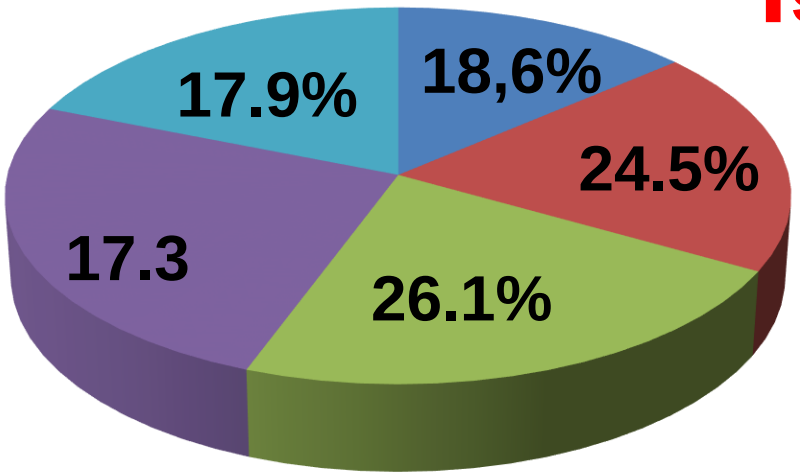
PROJECT MAYDAY

COMPONENT 2: Multi Occupancy Construction

CAREER

Muulti-Occupancy Construction

19.5%



< 800sqft	(449)
801 - 1,200sqft	(577)
1,201 - 2,000sqft	(629)
2,001 - 2,800sqft	(317)
> 2,800sqft	(432)

2,403

PROJECT MAYDAY

COMPONENT 2: Multi Occupancy Construction

Size	*Numbers*	*1 Story*	*2 Story*	*3 Story*	*4 Story*
< 800 sqft	(449)	289	106	54	
4units (72), 8units (219) 16units (158)					
801-1,200 sqft	(577)	198	232	147	
8units (242) (8) units () 24units (106)					
1,201-2,000sqft	(629)	233	209	187	
16units (288), 24 units (238) 32units (103)					
2,001-2,800sqft	(317)	116	123	79	31
16units (96), 24units (67) 32units + (154)					
> 2,800sqft	(43)	91	77	116	128+

PROJECT MAYDAY

COMPONENT 2: Apartment Construction/Occupancy

- When dealing with apartment fires we struggle with …..
  - getting crews in the apartment above the fire
  - working the side with the most exposure
  - working mirrored apartments backside
  - working center enclosed utility chases
  - apartments with center hallways, attempting to make one end with a stairway as smoke free as possible for occupants exit
  - advancing lines over balconies and pulled to the fire floor

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

PROJECT MAYDAY

Commercial MAYDAYS

RISK

HIGH RISK LOW FREQUENCY	HIGH RISK HIGH FREQUENCY
Fall into Hole/Floor collapse Entanglement Falls through roof	Lost/Separated from hose line SCBA issues
LOW RISK LOW FREQUENCY	**LOW RISK HIGH FREQUENCY**
Medical	Communications

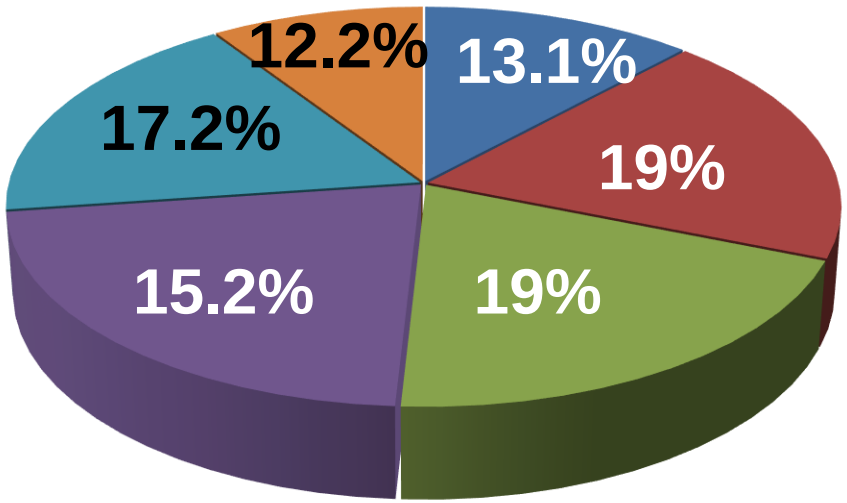
FREQUENCY

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

Commercial Construction / Occupancy

38.5 %



- < 35.000sqft **(769)**
- 35,000 - 50,000sqft **(761)**
- 50,000 - 100,000sqft **(871)**
- 100,000 - 200,00sqft **(788)**
- 200,000 - 350,000sqft **(814)**
- > 350,000sqft **(731)**

Below grade **(229)**

4,734

AB/VA 27.4%

1,782 Wal-Marts
819 SuperCenters

- **One to five stories**
- **Wal-Mart (156,000sqft-188,200sqft)**
- **SuperCenters (456,000sqft)**
- **MegaMart 2,400,600sqft)**

- **Concrete Block and Tilt Wall**
- **Stores built before 1992, may have partial basements**
- **Some vacant stores, are not vacant, but used display and other storage and from 11-15 to 12-29 are used for christmas stock**


Exit
Enter


Wal Marts burn too


N
T


per & Cleaning

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

Warehousing:	**851**	
Manufacturing:	**757**	
Churches:	**224**	
School:	**63**	
Storage:	**898**	
Retail:	**1,941**	**(1,172 - Strip Malls)**

4,734

PROJECT MAYDAY

COMMERICAL:

MESSAGE

If you find yourself in a BIG BOX or warehouse fire on your knees...

YOU SHOULD BE PRAYING

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

NEW VERSON OF TAXPAYERS
Second floor could be apartments, offices, or storage.
BE PREPARED

PROJECT MAYDAY

COMPONENT 2: Commercial Construction / Occupancy

PROJECT MAYDAY

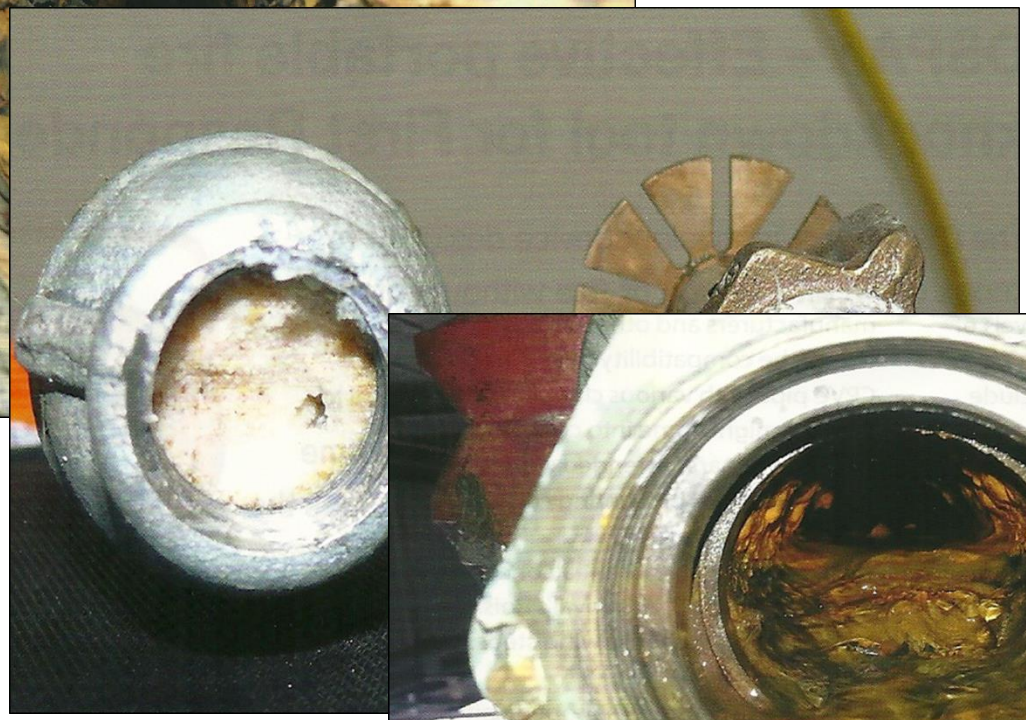
COMPONENT 2: Commercial Construction / Occupancy

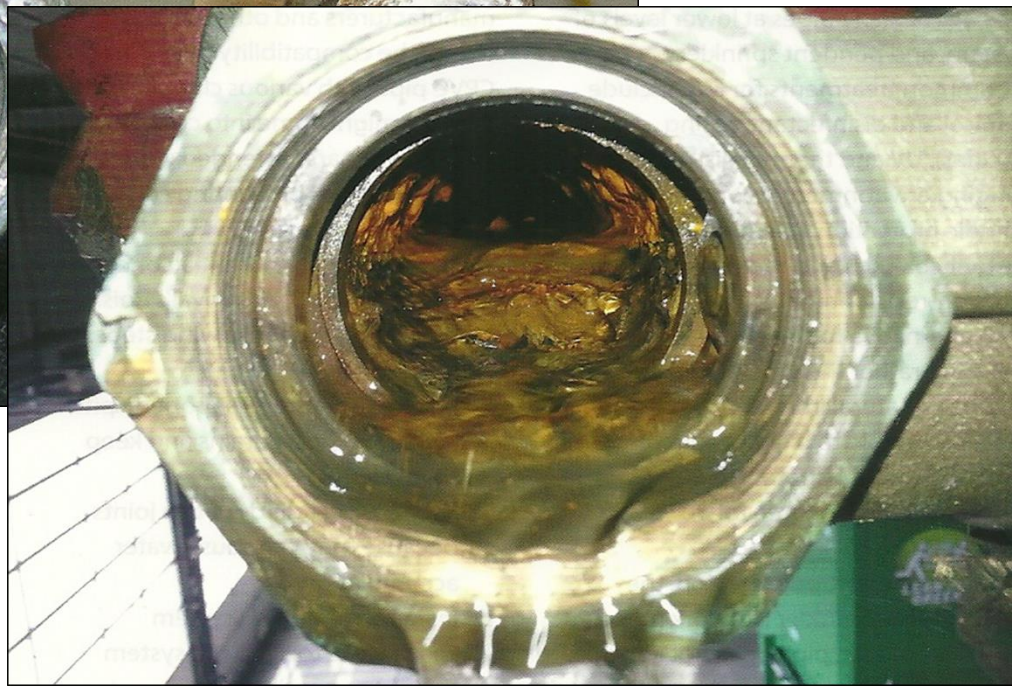
- Ceiling Collapse, 150ft hose line (3”)
- SCBA Regulator problem, 200ft hose line
- Separated from hose line, 250ft hose line
- Shelving collapse, (2), 200ft hose line
- Flashover, (4) 200ft hose line
- Fell through Roof (2)
- Lost off hose line, 200ft hose line
- Medical (diabetic)
- Separated from hose line, 250ft hose line
- Flashover
- Fell into Pit
- Out of Air, 250ft hose line
- Lost off hose line, 200ft hose line
- Ceiling collapse
- Loss communication
- Separated from hose line, 300ft hose line
- Overhead door came down
- Facepiece problem
- Low alarm, 250ft hose line
- Near electrocution
- Fell down elevator shaft

It’s all that stuff getting wet that may come and get YOU

PROJECT MAYDAY

COMMERICAL: Fire Protection





Why some sprinklers and standpipes FAIL

PROJECT MAYDAY

HIGH RISE MAYDAYS

RISK

HIGH RISK LOW FREQUENCY SCBA issue Communication issues	HIGH RISK HIGH FREQUENCY Fatigue / Stress (fitness) Cardiac Lost/Separated from hose line
LOW RISK LOW FREQUENCY	LOW RISK HIGH FREQUENCY Locked doors

FREQUENCY

PROJECT MAYDAY

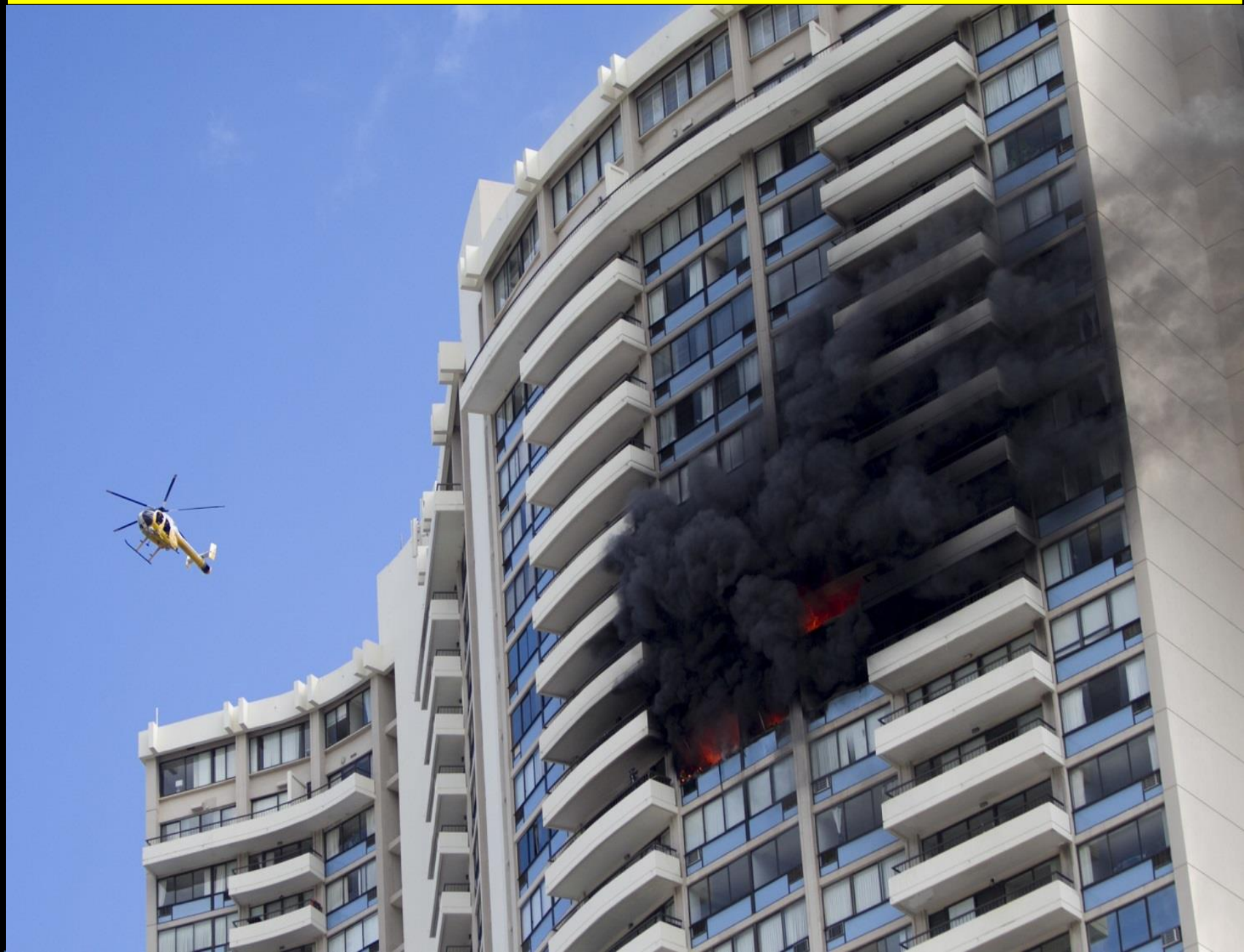
HI-RISE OPERATIONS:

- **Mid Rise (1-7 floors)**
  Maydays ….. 520
  - Medical - 171
  - Air Problem – 136
  - Lost/Separated from Hose Line – 194
  - Trapped, Unable to Move – 19

- **High Rise (8 – 32+)**
  Maydays ……. 386
  - Medical - 157 (1)
  - Air Problem – 92(2)
  - Lost/Separated from Hose Line – 79 ((1))
  - Communication – 58*

PROJECT MAYDAY

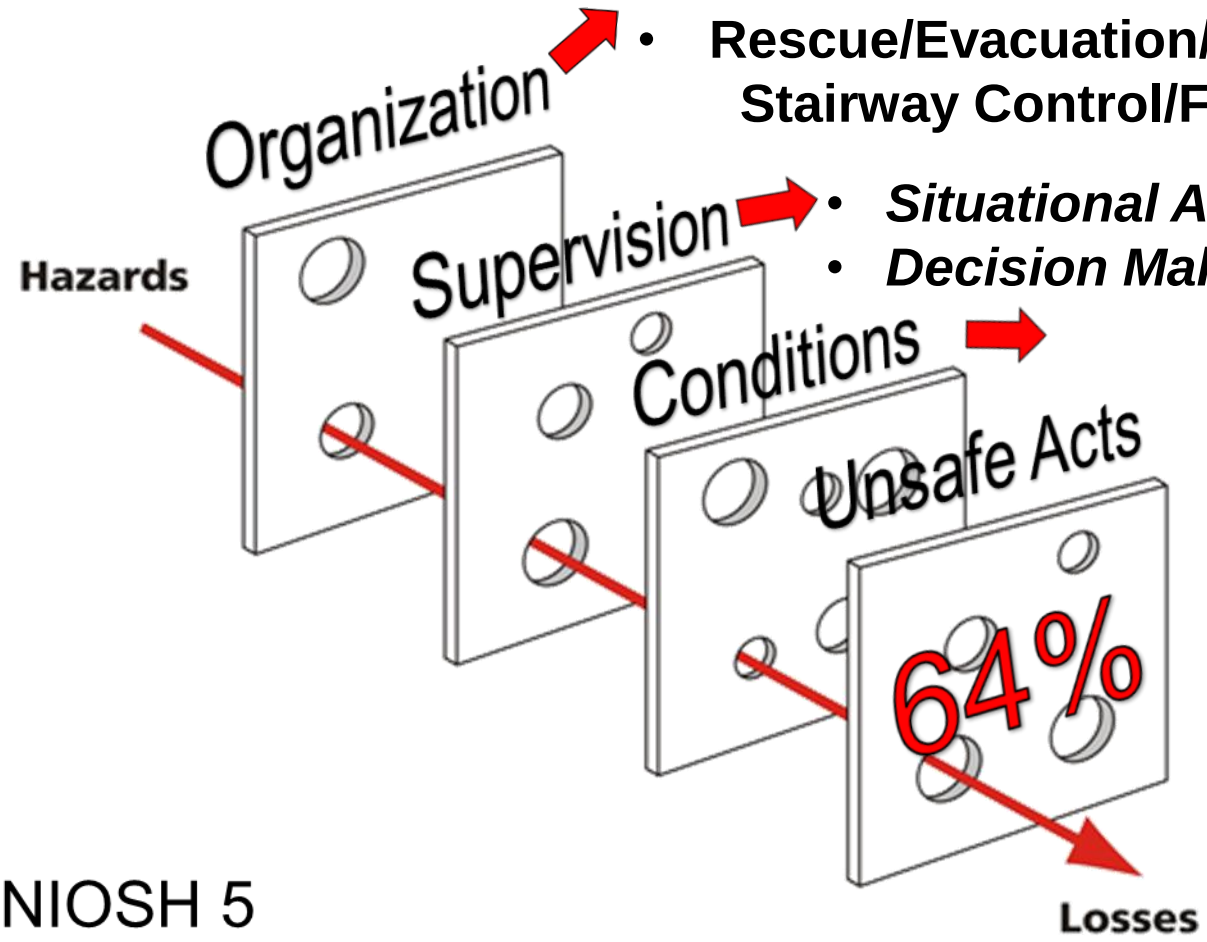
HI-RISE OPERATIONS:



PROJECT MAYDAY

HI-RISE OPERATIONS:

PROJECT MAYDAY



- **SOP's for Commercial & High Rise**
- **Rescue/Evacuation/Water Supply/ Stairway Control/Fire Attack**

- ***Situational Awareness (79%)***
- ***Decision Making (64%***

- **Commercial**
- **Mid-Rise**
- **High Rise**

NIOSH 5

1. Improper Risk Assessment.
2. Lack of Incident Command.
3. Lack of SOPs or failure to follow established SOPs.

PROJECT MAYDAY

The only way to guarantee a succeesful outcome of a “MAYDAY” is to PREVENT IT !

PROJECT MAYDAY

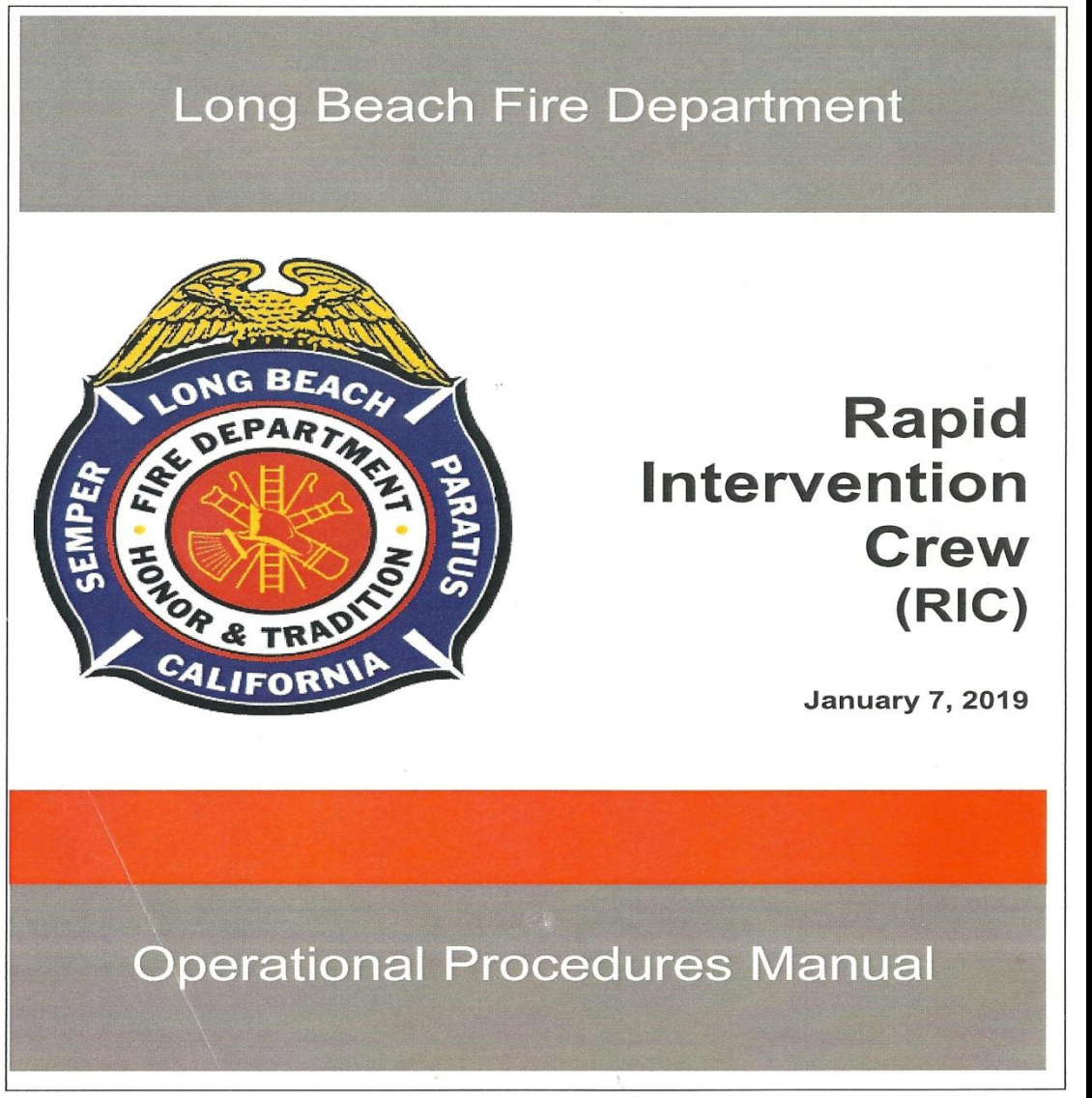
Everyday Operations:

SOPs:

Normalization of unsafe practices can occur as a result of the fact that other individuals take the fact that other individuals take the same (incorrect or unsafe) actions. If, in general, nothing bad happens as a result of unsafe practice, and if everyone else in the organization participates in the same practices, then these practices become part of the normal and accepted way of accomplishing tasks. As a result, fire organizations history and traditions, can create a culture that is difficult to change

PROJECT MAYDAY

SOP's (great example)



PROJECT MAYDAY

Establish the Common Terminology:

- **Priority Traffic**
- **Urgent**
- **Emergency**
- **Emergency Traffic**
- **MAYDAY**

TERMINOLOGY

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

If you fail to train… you train to fail

NFPA 1001 … does mention much about MAYDAYS, except they happen ….

FIRE DEPARTMENT

TRAINING

The trick is to embed firefighter's behavior in the subconscious, so that it becomes automatic this is only done by repeated and realistic training with measured competencies every six months.

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

PRE – MAYDAY ACTIVITIES

Training:

- Did you participate in Mayday training
  in the last 24 months… YES…21%
  in the last 12 months…YES…11%
  - multi-company: ….. 7%
  - night Mayday exercise: ….. 6%
  - rescue/recovery/packaging/removal: ….. 26%
  - sound effects/obstacle: ….. 57%
  - training/Mayday run by BC: ….. 28%
  - accountability tags/PARs: ….. 23%
  - package handoff to EMS (involvement): ….. 9%
  - does your FD conduct air consummation assessment annually? YES ….. 17%

PROJECT MAYDAY

HOW OFTEN DOES YOUR FD, DO LADDER TRAINING and RESCUES with LADDERS

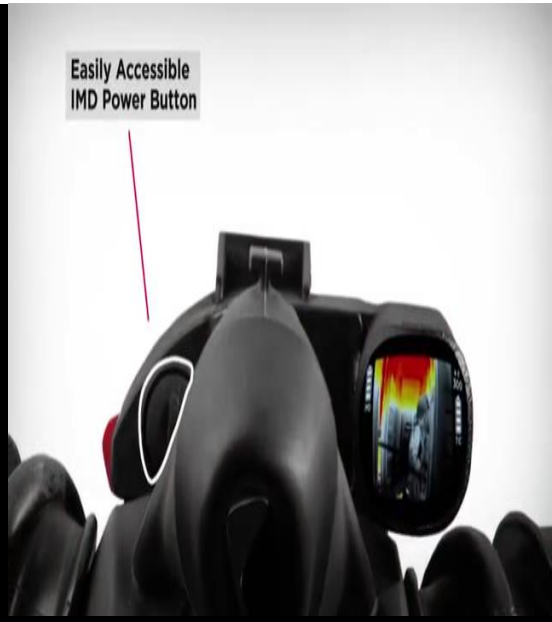
PROJECT MAYDAY

Positive Pressure Ventilation

- Things get better. Keep Going
- Things stay the same. Make adjustments
- Things get worst. Make sure PPV is OFF

PROJECT MAYDAY

MAYDAY TRAINING – TIC's



PROJECT MAYDAY

- **Wind-Winds as low as 3 MPH can cut temperatures measurements by as much as 50%**
- **Moisture: Long wave infrared energy can be blocked or dissipated as it moves through steam Environments with sprinkler heads flowing or high moisture content may limit or block the TIC's ability to measure or see. The lens of the TIC may become obscured with moisture preventing it from working properly.**
- **Optical density of the smoke, thicker smoke, type materials burning can absorb more energy between the target and the fire. The TIC reduces contrast transfer, which is the ability to discern details between different temperatures of objects at a distance.**

PROJECT MAYDAY

MAYDAY TRAINING: TIC's

The five "deadly sins" in TIC's

- **Standing or walking in dangerous environments**
- **Forgetting traditional safety considerations and search techniques**
- **Advancing at an inappropriate speed**
- **Misinterpreting the thermal image**
- **Having unrealistic expectations when using the image**

WHAT YOU SHOULD KNOW ABOUT TIC's before YOU BUY? (*techno-mumbo-jumbo (DECODE)*

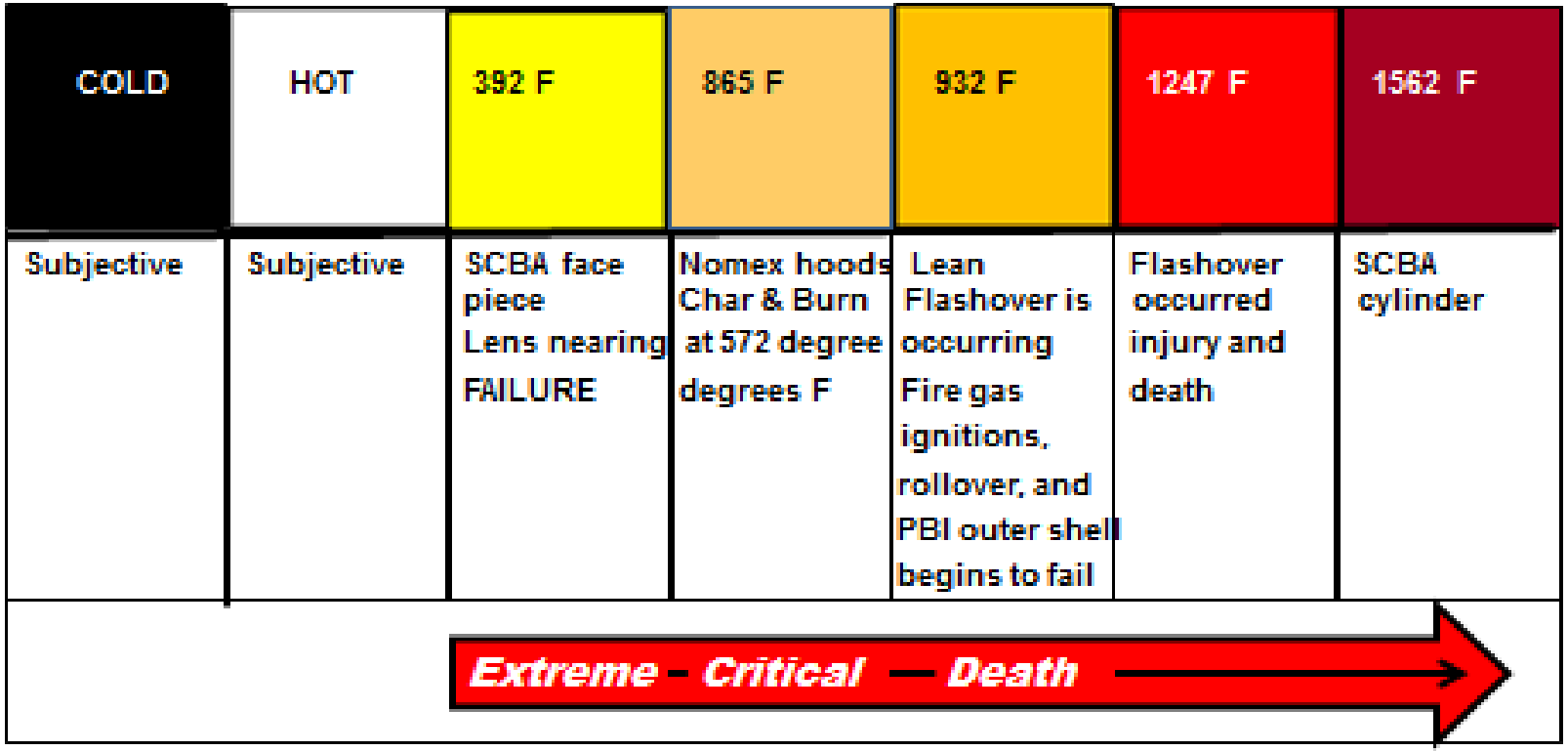
- **Dynamic Range - Field of View - Resolution**
- **Focal Plane Array - NETD/MRTD - Update Speed**
- **Spectral Response**

TICs DO NOT read air temperature, they READ SURFACE temperature

PROJECT MAYDAY

MAYDAY TRAINING

7 Color/Temperature Associations In *Firefighting Mode*

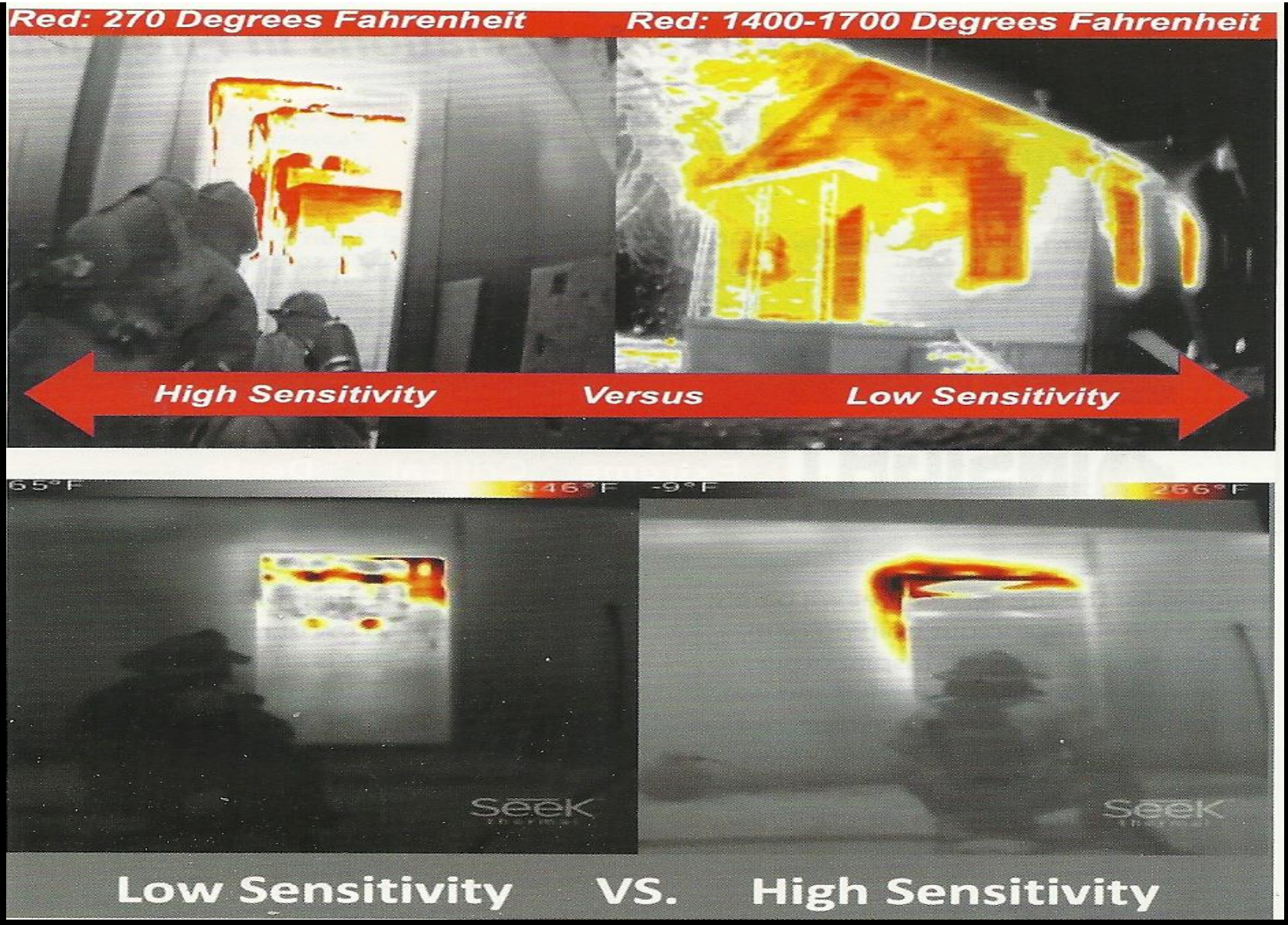


- *Low sensitivity Mode indicates high heat conditions and should NOT be ignored*
- *High sensitivity Mode equates to 300F and lower, allows for more details in image, better decision making.*

* Distance to Spot Ratio: TIC's ability to see, longer distances allows for increased thermal situational awareness This often leads to FAILURE to detect dangerous levels of heat until they are to close for comfort (safety)

PROJECT MAYDAY

MAYDAY TRAINING



PROJECT MAYDAY

MAYDAY TRAINING

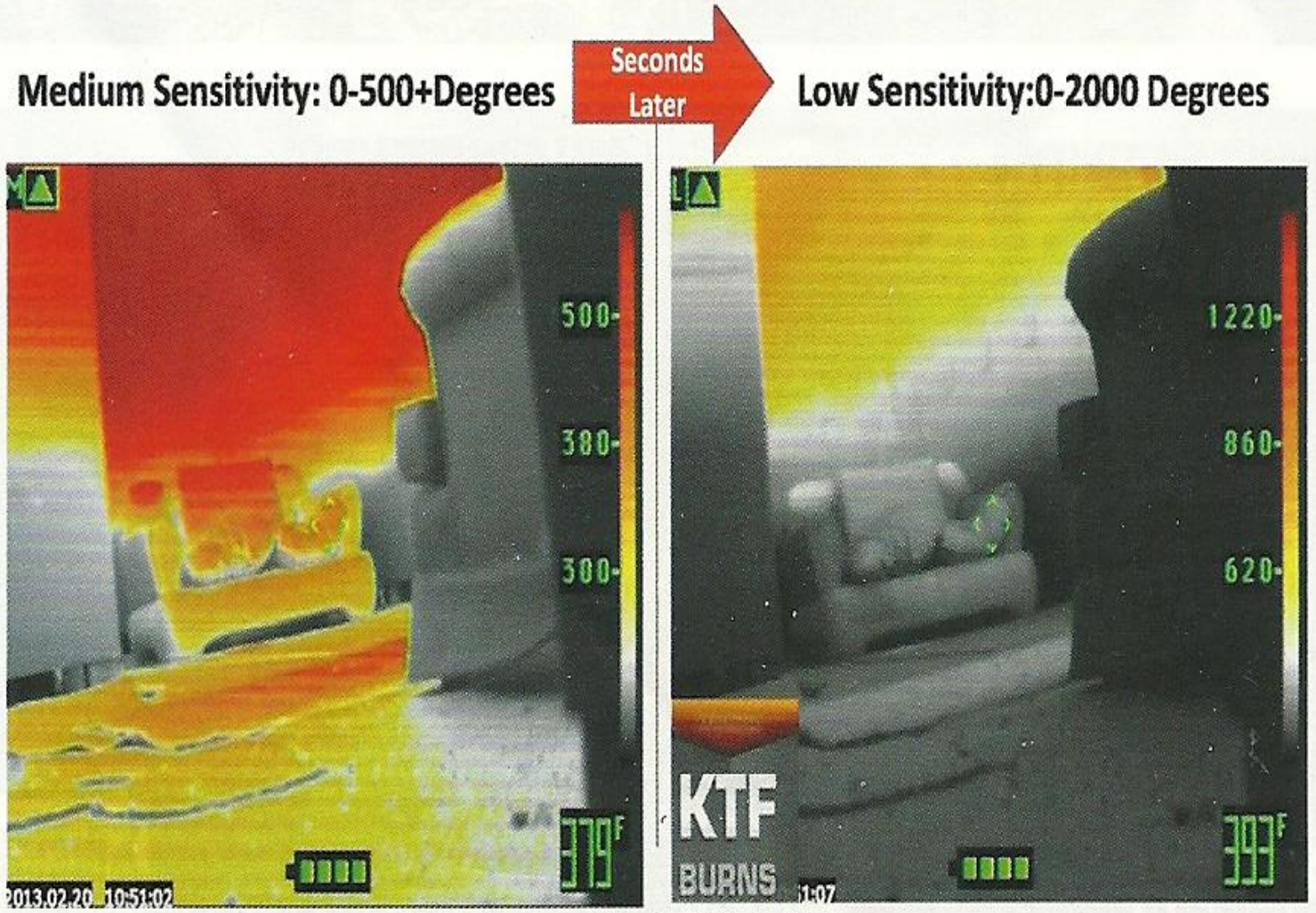


Photo Courtesy of Project Kill the Flashover

PROJECT MAYDAY

MAYDAY Operations / RIT

RIT Operation / RIT:

- **Who in the crew carries the TIC?**
  - **1st FF/CO (Advantage: moves quickly through structure)**
    (Disadvantage: becomes complacent, can lose situational awareness quickly, when MD FF is found, often (86%) the TIC is put down and no longer used, it may be needed for extraction lead the team out of the structure)
  - **2ndFF/CO (view may be blocked by the first FF or reflective stripe may cause slow TIC picture recovery)**

Are FF/CO trained with TIC during rescue operations, are they trained and practice image interpretation.

- **FF Protective clothing can absorb significantly more heat than civilian clothing. A FF could appear as white / gray on the TIC display**

PROJECT MAYDAY

MAYDAY Operations / RIT

RIT Operation / RIT:

- Checking to see if FF is still breathing, use your TIC to check the SCBA cylinder and regulator for color, if your TIC shows black or dark, there is still air flowing if opposite in color, this is not a good indicator.
- TIC can be used to determine MD FF is breathing/ or there is air flowing, by aiming the TIC at the facepiece and the regulator.
- Shapes FF, cylinder, facepiece, and helmet stand out.

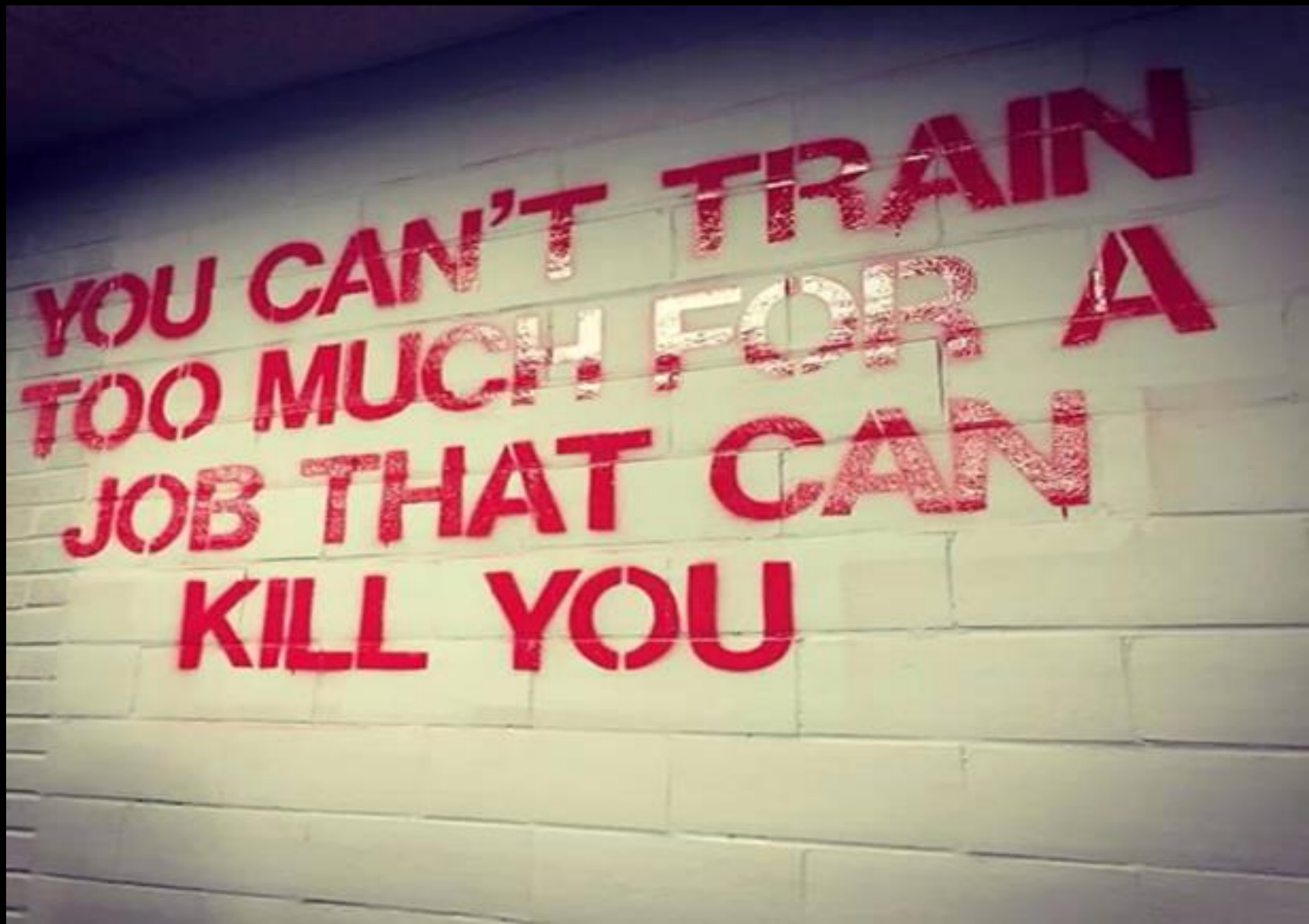
PROJECT MAYDAY

MAYDAY TRAINING

HEATED UP Electric Blanket

PROJECT MAYDAY

MAYDAY TRAINING



PROJECT MAYDAY

MAYDAY TRAINING

Residential Structure Fire
RIC Scenario #1
Self-Extrication by Unit Calling the MAYDAY

A first alarm assignment has been dispatched to a working structure fire. The first due Engine arrives, sizes up the fire, gives a report on conditions, establishes Incident Command and initiates their initial Incident Action Plan, engaging in interior fire attack operations with their crew.

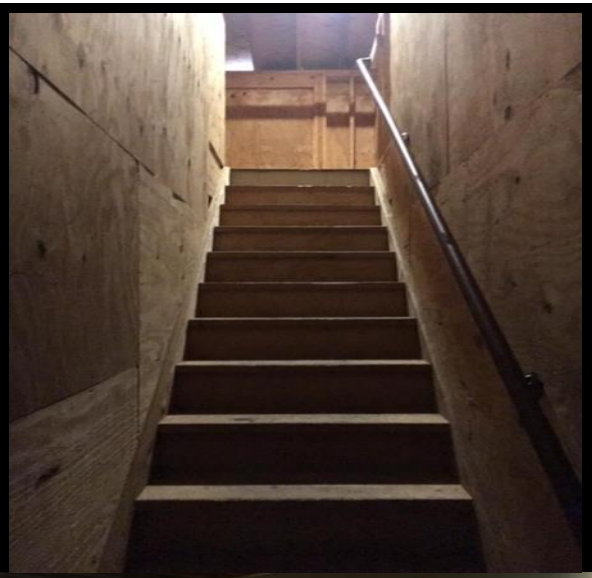
1st Arriving BC

- ❑ Arrive on scene
- ❑ Contact 1st Due Engine IC and obtain transfer of command

  Transfer of Command
  - ○ Situation Status
  - ○ Incident Objectives and Priorities
  - ○ Incident Action Plan (Actions taken)
  - ○ Current Organization
  - ○ Resource assignments
  - ○ Resource needs (en route or ordered)
  - ○ Communications Plan
  - ○ Incident Potential (prognosis, concerns, related issues)
- ❑ Announce the establishment of your command and identify CP location
- ❑ Confirm/Validate incident priorities
  - ○ Life Safety
  - ○ Incident Stabilization
  - ○ Property Conservation
  - ○ Environmental Protection

PROJECT MAYDAY

MAYDAY TRAINING City of Fairfax, VA RIT/RESCUE House



PROJECT MAYDAY

MAYDAY TRAINING

PROJECT MAYDAY

MAYDAY TRAINING

PROJECT MAYDAY

MAYDAY TRAINING Host Avon,IN FD Hendricks Co

PROJECT MAYDAY

MAYDAY TRAINING

PROJECT MAYDAY

MAYDAY TRAINING

PROJECT MAYDAY

MAYDAY Radio Call

LUNER

GRAB LIVES

NUCAN

PCA

UCAN

LIP

LAPN

TERMINOLOGY

PROJECT MAYDAY

TRAINING and DISPATCHERS

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

"GO, NO GO"

Recruit training, manageable fires in concrete structures, minimalize any potential of getting worst or a collapse, WHY would a crew ever make a "NO GO" decision. We create automatic habits, with "NO-GO" decisions. BAD SITUATION, They default to "GO" their training, NO thought required.

TRY putting a firefighter in reverse WHY?

We only teach them to go forward!

PROJECT MAYDAY

CHARLESTON FIRE

No one on the scene of the fire heard any of this radio traffic, which I would attribute to the ambient noise and confusion at the scene and the total lack of a command presence. In effect no one at the scene was listening to the radio. The Chief and the Assistant Chief were talking but not listening, which appeared to be a habitual situation in Charleston. In fact, the Chief told us that the firefighters had radios so that they could listen to orders; if they were talking they were not working. They were allowed to use the radio if they got into trouble, *but no one was listening!*

The Fire Chief claimed that he was in command of the incident at that time, but he was on side D toward the rear of the building directly supervising the crews in that area. He had left the Assistant Chief at the front of the building, but the AC became personally involved in the mission to rescue a civilian from the rear of the building right at the time things started going bad (19:27). He went around to the rear to lead that mission.

The dispatchers heard the radio traffic, but they thought it was related to the successful rescue of the civilian that was occurring at the same time at the rear of the building. A Battalion Chief who was in quarters on the opposite side of town also heard it and called the dispatchers on the phone. They told him it was related to the civilian rescue and that they had just received word that the civilian had been rescued.

An off-duty Battalion Chief (303) who was on route to the fire in his personal vehicle heard the radio traffic and interpreted it correctly. He tried to call the Fire Chief using his portable, but did not receive a response. He rushed to the scene and informed the Fire Chief face-to-face. The Chief then called the Assistant Chief who was returning to the front of the building at that moment and asked him if someone was still inside. They went through some additional confusion as both of them were headed toward the front of the building.

It was after arriving at the front of the building and seeing that the building was filled with smoke that the Fire Chief gave the order to take out the front windows, thinking that it would allow some of the smoke to escape and provide visibility. By that time a flashover was virtually inevitable and breaking the windows simply accelerated the pace by allowing fresh air to enter more quickly. At that time they thought that there was only one captain inside; they had no accountability system and therefore no idea that they had at least nine firefighters inside. Three others found their way out just before the windows were being broken. There were attempts to make entry to search for the missing firefighters after the windows were broken, but the searchers were getting burned within 20 feet of the front doors.

The elapsed time from the first indication of a Mayday situation to breaking the front windows was about eight minutes. The radio transmissions ended after seven minutes.

19:27 - First radio transmissions indicating firefighters in distress

19:30 - Battalion Chief 303 on route attempted to reach the Fire Chief

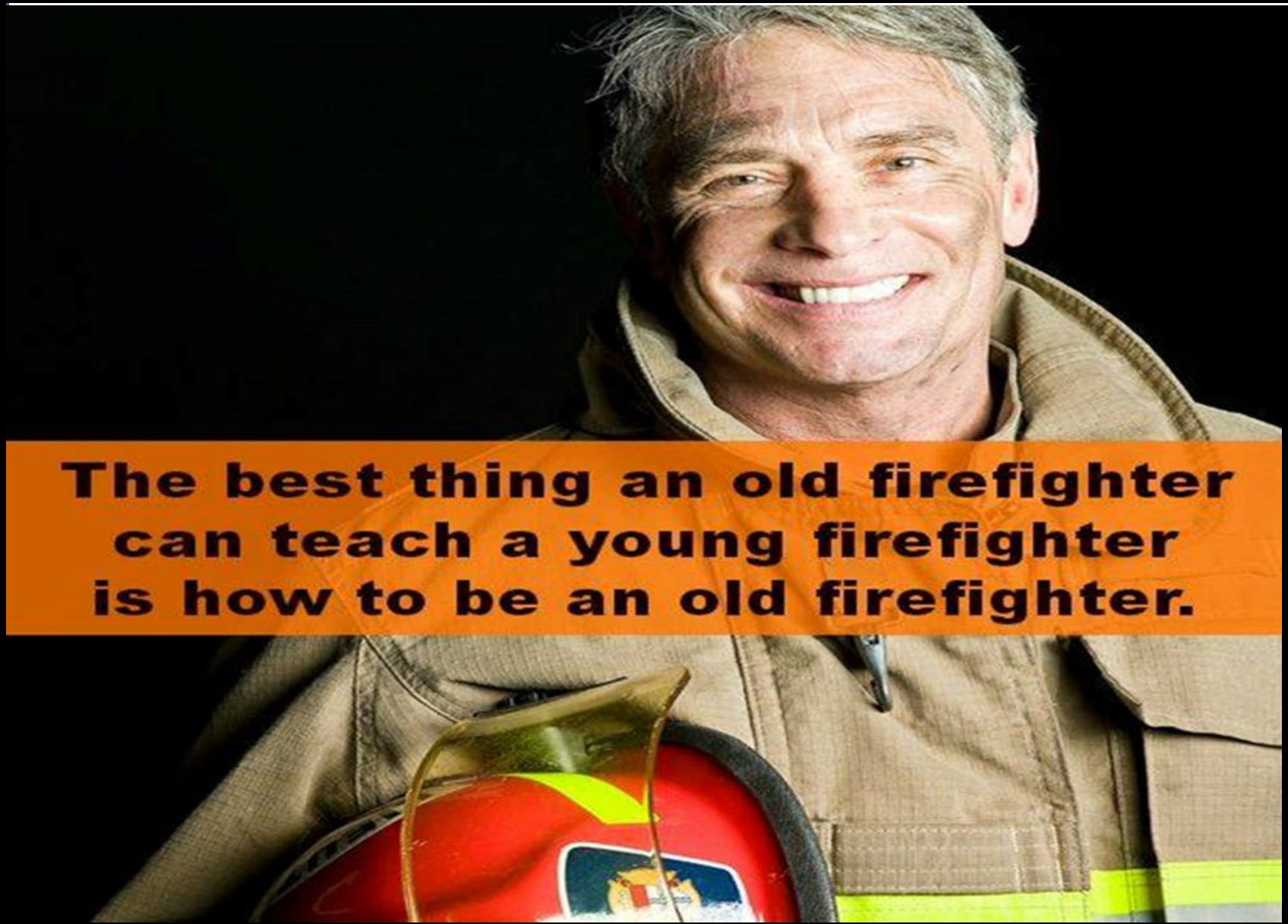
19:31 - Battalion Chief 5 in quarters calls dispatchers

PROJECT MAYDAY

260F

PROJECT MAYDAY

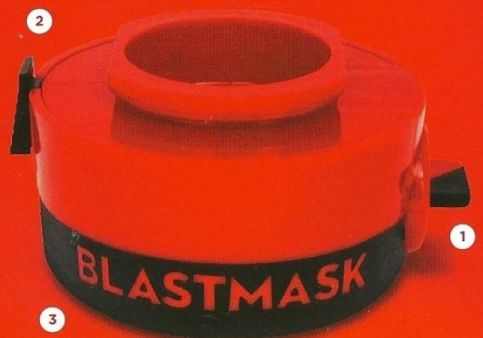
MESSAGE



PROJECT MAYDAY

TRAINING TIPS

MAKE EVERY SECOND COUNT.



THE SECOND GEN BLASTMASK
BlastMask is proud to introduce our second-generation Training Regulators with enhanced features designed specifically for firefighter training.

1. **EASY AIR BYPASS VALVE**
   Just like on your SCBA regulator, gain instant access to full air with the turn of a knob.
2. **SLIDE LATCH**
   Rugged, reengineered slide latch attaches BlastMask to facepiece just like an SCBA regulator.
3. **SUPERIOR CONSTRUCTION**
   New and improved polycarbonate resin for high-impact resistance and strength is the same material used in police riot gear and bulletproof glass.

MODELS ARE CURRENTLY AVAILABLE FOR THESE FACEPIECES

PHYSICAL AND MENTAL PREPAREDNESS

- Help prevent line-of-duty deaths; more than 50% can be attributed to stress and overexertion
- Help prevent firefighter injuries; nearly 30% are due to lack of fitness
- Conduct multiple training and fitness exercises with and without SCBA pack
- Confidence and performance from increased familiarity with equipment
- Effective tool for recruitment, physical ability testing, and orientation

BUDGET AND RESOURCE FRIENDLY

- Fire service fitness initiatives have shown a decrease in lost workdays of 28%
- Every dollar spent on uniformed personnel wellness returns over two dollars in occupational injury and illness costs
- Decrease wear and tear on expensive SCBA regulators
- Save manpower and time it takes to refill cylinders
- Keep resources ready to fight fires

TACTICAL TRAINING IS CRITICAL

In the line of duty, an SCBA regulator and pack weight reduce VO_2 max (maximal oxygen consumption) by 14.9% – primarily from the regulator. Additionally, peak power output and SPO_2 (oxyhemoglobin saturation) are decreased by the regulator alone. TRAINING IN A FACEPIECE AND PACK ALONE DOES NOT REDUCE VO_2 MAX, PEAK POWER OUTPUT AND SPO_2.

TRAINING WITH AND WITHOUT BLASTMASK:

	PEAK POWER & SPO_2 REDUCTION	VO_2 MAX REDUCTION
SCBA PACK ONLY	X	4.8%
BLASTMASK (W/O SCBA PACK)	✓	13.1%
BLASTMASK (WITH SCBA PACK)	✓	14.9%
SCBA ON AIR	✓	14.9%

"BEING FIT FOR DUTY IS THE MOST BASIC REQUIREMENT FOR EVERY FIREFIGHTER – BOTH CAREER AND VOLUNTEER."

FIRE ENGINEERING MAGAZINE

PROJECT MAYDAY

TRAINING TIPS

What are Eclipse Blackout Masks?

Eclipse Blackout Masks are the brainchild of four San Diego-area firefighters from the same crew, with more than 40 years of combined experience, that wanted to create a hassle-free mask to better replicate smoky conditions for more effective in-service training.

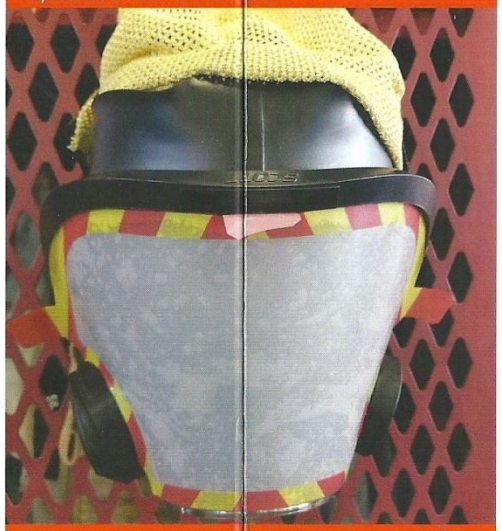
The easy to apply mask is fogged out to create realistic smoke conditions. The reusable, durable static-cling sticker affixes to the mask exterior without leaving any residue or damaging expensive equipment. The red and yellow outline ensures there is no risk of accidentally leaving it on when going to a call.

With the Eclipse Blackout Mask, there is no need for home-made solutions that risk leaving residue, costly smoke machines, or expensive commercial options that require extra parts or affix to the inside of your mask.

Join the countless fire agencies that have switched to using Eclipse Blackout Masks for the most efficient, cost-effective, high quality training mask on the market.

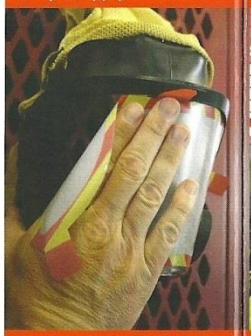
MADE IN USA

Patent Pending.

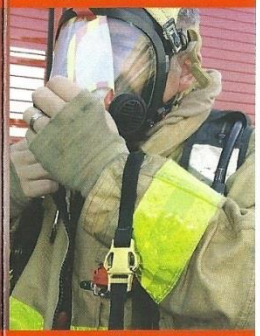


Replicates an IDLH environment

Easy to apply



Reusable



Thermal imaging camera viewed through Eclipse Mask

MSA Ultra Survivair 20/20 Drager Interspiro

Models currently available

(contact us if you are interested in other models)

- *AV3000 (Scott)*
- *G1 Facepiece (MSA)*

Replicates heavy smoke conditions

- *Replicates an IDLH environment*
- *Three fogged out levels*
- *Can see silhouettes*
- *Can use with flashlight*
- *Can use for Thermal Imaging Camera training*

Durable and reusable

- *Sticker affixes with static cling*
- *Use on mask exterior*
- *Easy to apply and remove with pull tabs*
- *Reusable – average of 20 times per mask*
- *Wipe with cloth if gets dirty*
- *Water resistant*
- *Safety border eliminates chance of leaving mask on for actual call*

Contact

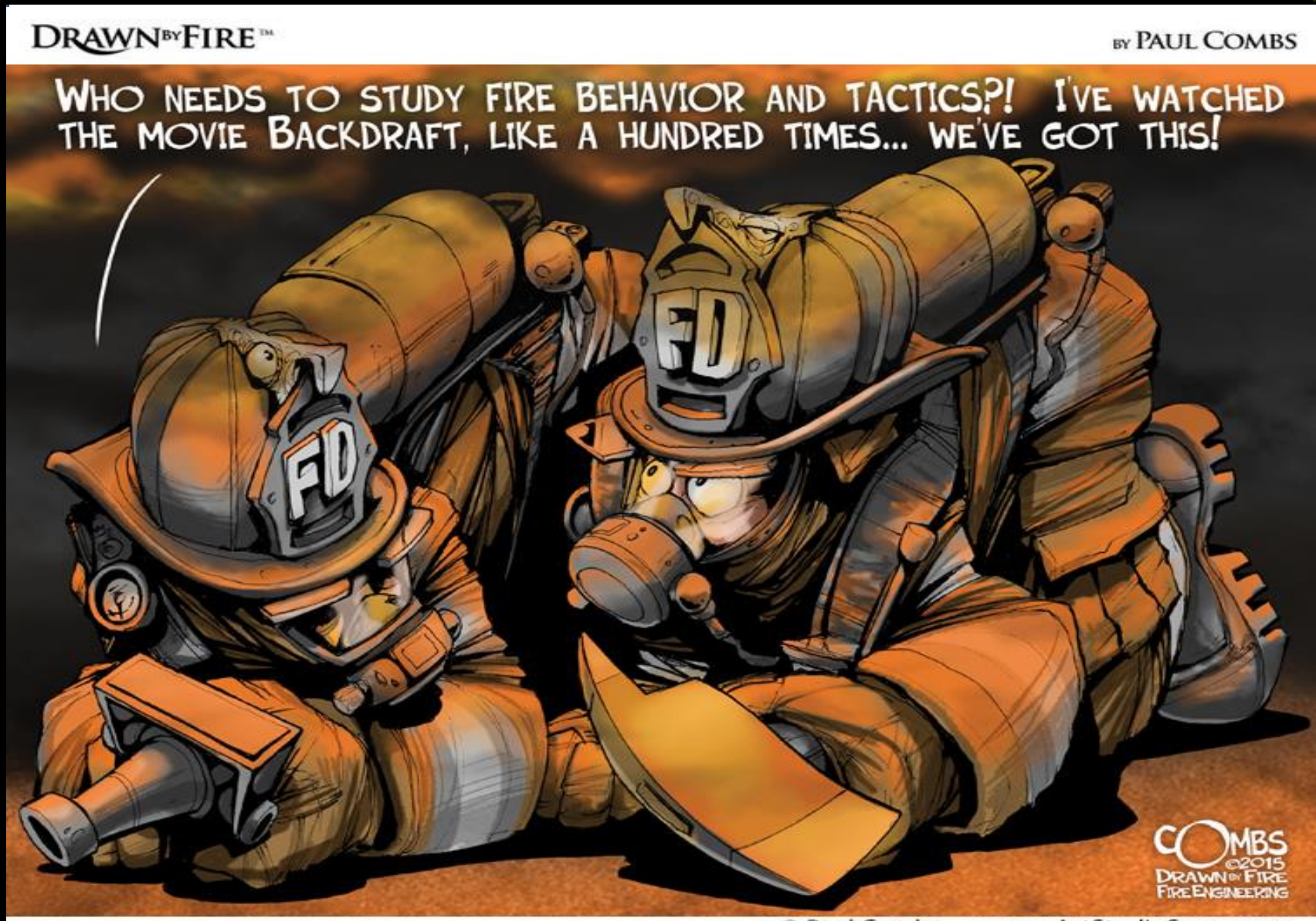
Contact us for a free sample.

PROJECT MAYDAY

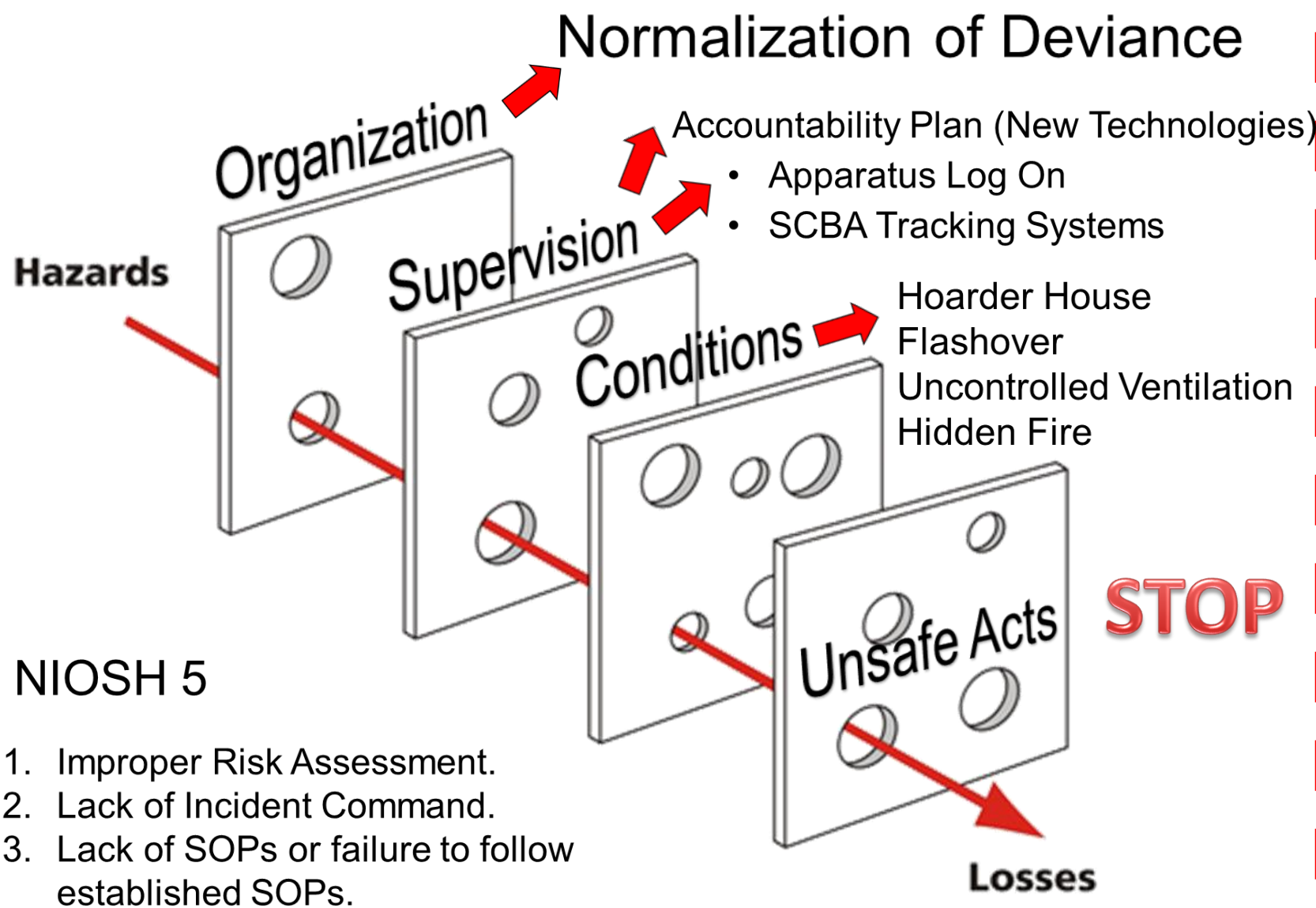
TRAINING TIPS

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM



PROJECT MAYDAY



NIOSH 5

1. Improper Risk Assessment.
2. Lack of Incident Command.
3. Lack of SOPs or failure to follow established SOPs.
4. Lack of Accountability.
5. Inadequate Communications.

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

In each individual personal survey – Mayday victim were instructed that the surveys were confidential, department name or victim's name would NOT be shared with anyone. It was requested that all information be factual and honest

A request was made to each fire department for permission, that each mayday-victim complete the *individual personal survey – mayday victim.*

12,183

Male: 11,952 Female: 231

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Psychology of a Mayday

Firefighter involved in the Mayday

- The firefighter in distress will usually revert to what was learned and is “routine”.
- The firefighter’s sole focus will to remove themselves from danger
- Don’t expect a firefighter to accomplish a manipulative skill learned in one hour, especially if the task was learned months ago
- Finally, firefighters in distress will over compensate – they
  will not be able to feel safe enough

PROJECT MAYDAY

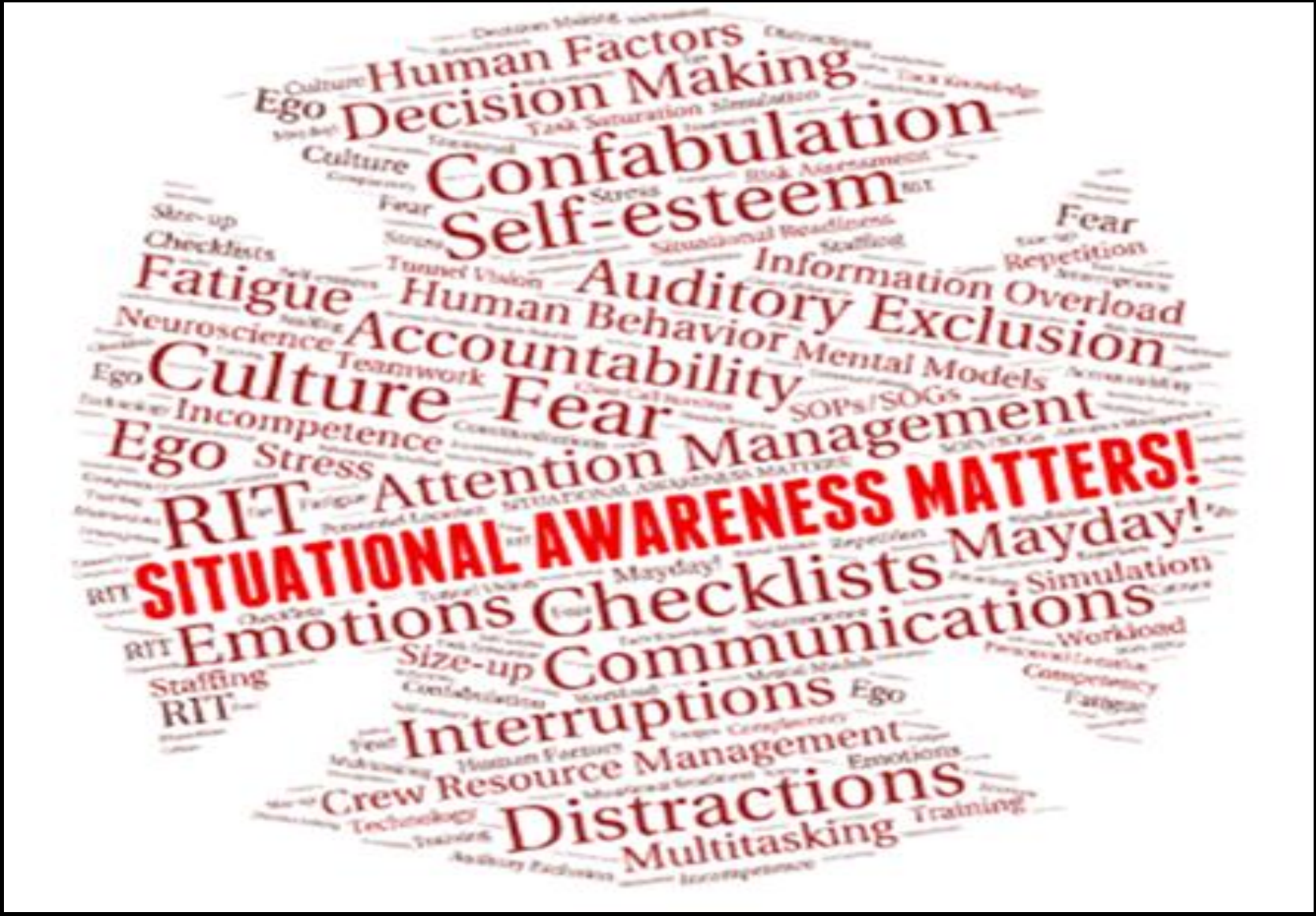
MAYDAY - Contributing Factors to Maydays

- Situation Awareness ….. 76%
- Disorientation ….. 71%
- Decision Making ….. 79%
- Human Error/Individual Actions ….. 68%
- Communication ….. 42%
- Not Enough Resources …. 47%
- Structural issues ….. 9%

- **Unsafe Act Performed ….. 76%**

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays



PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

SITUATIONAL AWARENESS

TASK FIXATION occurs when a firefighter fixates their attention on A task they are performing.
Usually involving physical activities, eye hand coordination. (DIFFICULT)
Its near impossible to multitask, in a dange
Visual contact task, crew, other crews, when not possible we relied on audio contact, but then again not paying attention to the radio.
<u>Best Practice</u>: STOP periodically and survey your environment.

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

SA is influenced by, and can be improved by addressing the following:

1. Mental state – be well hydrated, nourished, rested, and possess a "stay-calm" attitude
2. Training – it never ends, a career-long commitment
3. Experience – expand recognition-primed decision-making (RPD) through incidents, vicarious learning, shadowing (professional visitations), and drills.
4. Personal values – improved through education (vs. training) and a personal commitment to reduce LODDs and injuries (caring attitude)

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

MISSION MYOPIA is a fixation on the strategic objectives/mission, "Nothing is going to get in my way"

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

AUDITORY EXCLUSIONS:
The brain can only process so much sensory information (radio, fans, sirens, chain saws, etc.) this can overload the brain, then the brain begins to filter out parts of the input. The more radio traffic the FF processes the greater the chance that the brain "tones out." Nothing gets done until the brain processes the information.
The brain is like a switchboard, hardwired fixating on "training trip wires" with the greatest threat to survival.

FLAWED PERCEPTIONS OF REALTY:
FF under stress can say things they believe, but are simple untrue, and don't even know they are doing it. Many FF involved in "Project Mayday" have told us that their perception of reality was not accurate" after the fact.

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

 # 2 Disorientation **66%**

Disorientation is " the loss of direction due to the lack of vision in structure fire."

Types of Hazards that create disorientation:

- Zero visibility conditions - - - _ _ _ PROLONGED ZERO VISBILITY CONDITIONS
- Flashover sequence / Backdraft sequence
- Collapse sequence
- Wind driven fire sequence
- Conversion steam sequence
- SEPARATION OR ENTAGLEMENT of houseline encountered

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

 # 2 Disorientation

Firefighter disorientation:

- Enclosed structure with smoke showing
- Fast and aggressive interior attack
- Deteriorating conditions
- Handlin separation or entangled
- After falling through roof/floor/basement

- Mid-Rise/High Rise
- Commercial structure
- Hoarder structure
- Large residential structures (> 7,200sqft)
- Below grade

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

 # 3 Decision Making **64%**

The major problems in interior decision making:

- SLOW to respond to changing/deteriorating conditions
- SLOW to process the information (putting the pieces together)
- Slow in implementing the solution
- Not listening to the radio reports of other crews
- Inexperience (simulations)

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

MAYDAY VICTIMS

UNSAFE ACTS PERFORMED **65%**

- "have done it this way for years" (Training/SOP's)
- "have to get the job done"
- "short cuts, to get the task done quicker"
- miss a step in the procedure
- the demands of the task out weight the resources
- **breakdown in communications**

PROJECT MAYDAY

Dr. A. McCourtee

Sleep Deprivation and Rest

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

- Does the alarm sound for all units at your station?
  YES … 16%
- Do you snore ? YES … 54%
- Have you ever been tested for a sleep disorder?
  YES … 12%
- Are you using a CPAT machine: YES 38%
  At home: 44% While on duty: 20%

"The Journal for Clinical Sleep Medicine" 2016
"36% of firefighter screened had at least one sleep disorder, the most obstructive sleep apnea."

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

YOU

can schedule your departments next Mayday!

It relates to our ability to THINK and DECIDE,
Fatigue is a major factor in making poor decisions (Fact)
When you are tired you miss a lot of important information (Fact)

We wake up from a sound sleep(?) and place people in a life or death environment in five minutes …
it is a recipe for ***disaster.***
It should come as to no surprise when most Maydays occur.
There is NO easy answer for this dilemma.

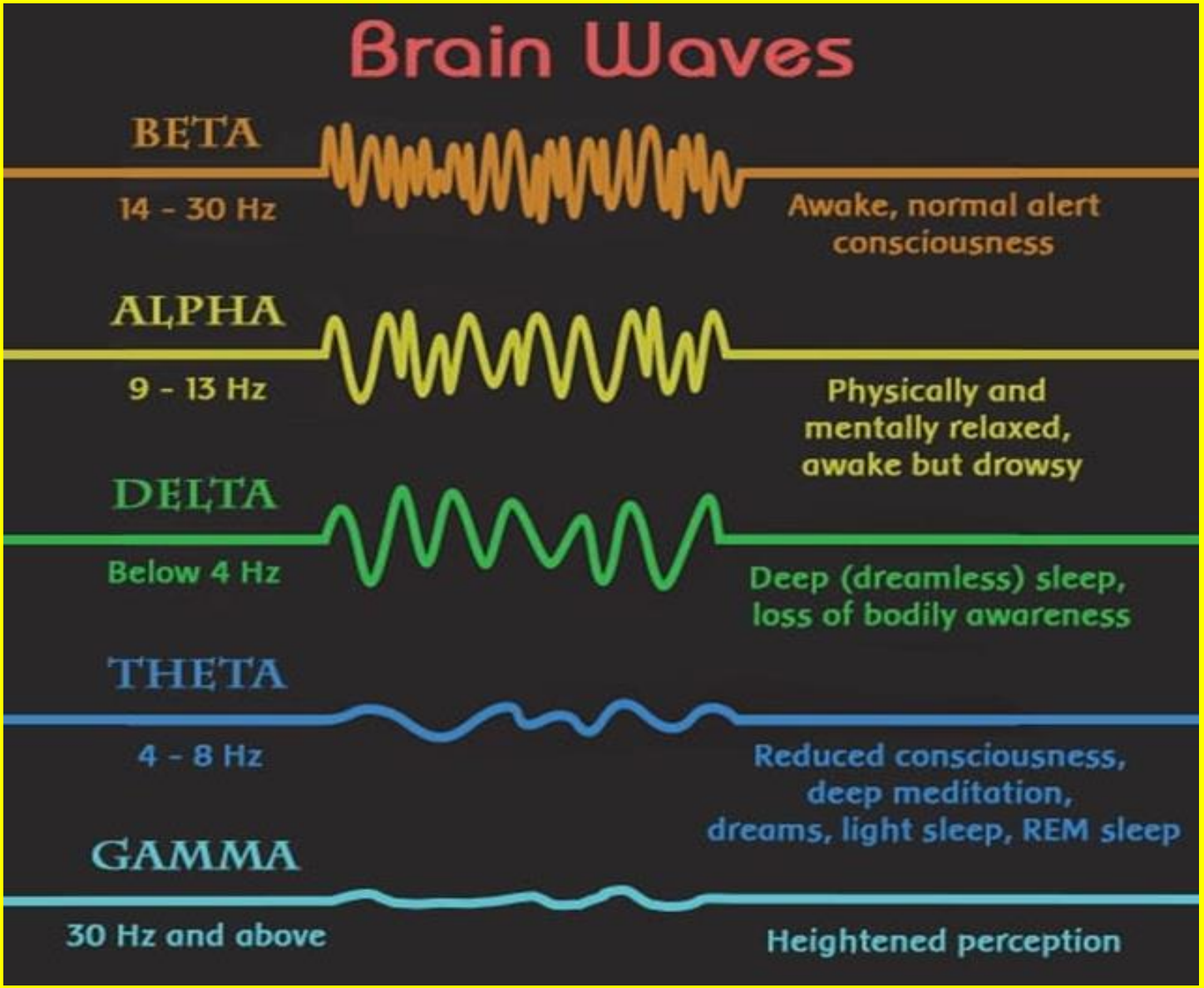
PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

- Did you nap or sleep 3 hours before Mayday:
  YES: … 26%
- Night Sleep, was your sleep interrupted once before your Mayday:
  YES: … 44%
  two times or more before your Mayday:
  YES: … 26%
- When returning from an after midnight run, did you go immediately to bed: YES … 57%
  ….. Did you have anything to drink (that was not water) after your midnight run … YES 46%
  ….. Did you have anything to eat, after your midnight run … YES 34%

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM



PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

1. First, most importantly, FD must recognize that adequate sleep is a wellness and performance issue equal to other priorities such as fitness, diet, and agility.
2. FD should evaluate current logistics for sleep and consider changes. (install fans, white noise) dorms to sleeping pods
3. Do an assessment of the current state of sleep fitness among members, honest data about sleep management, both on and off the job
4. Appropriate naps on duty (30minutes<) can make a positive difference in cognition and reflexes for someone who is exhausted

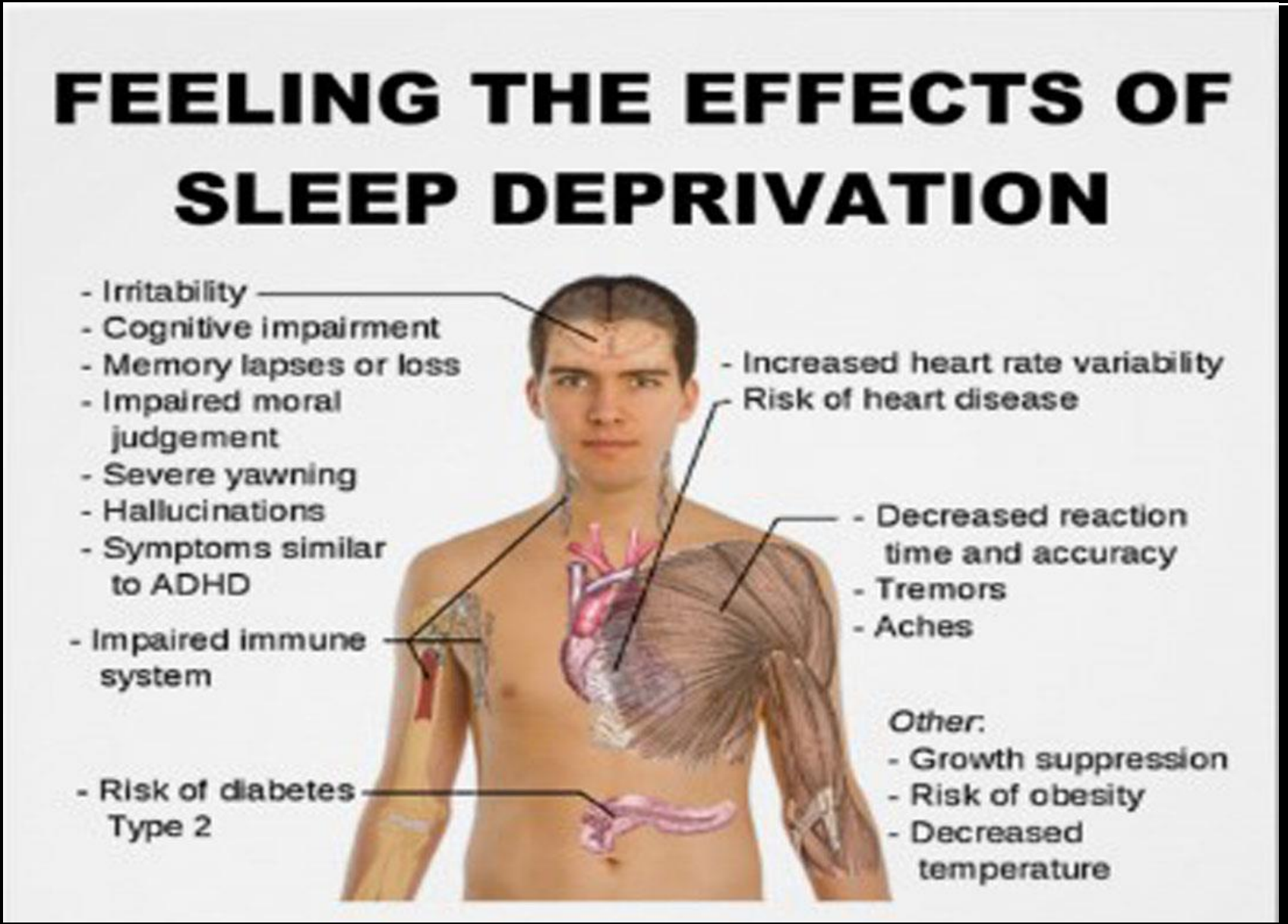
PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays

5. Make resources available for those who are suffering from sleep disorder. Don not stigmatize the use of these resources.
6. Reconsider shift scheduling and overtime rules diminish the effects of sleep deprivation on emergency response
7. Look at new technology to help manage sleep and performance

PROJECT MAYDAY

MAYDAY - Contributing Factors to Maydays



PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Sleep deprivation/restriction research is showing us that there is both a mental effect and physical effect.

The recent information about sleep duration influences firefighter's activity level, lower the body's ability to recovery from some activities by as much as 50%.

Some research shows during duty periods when sleep is disrupted, when a call occurs, also suggest that sleeping with "one ear open" may disrupt sleep even more if no call occurs, this leads to some of the same problems, performance impair-ment and adverse health outcomes.

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Firefighters being awake for prolonged periods, 12hrs + , then awaken during the night, impairs performance, in many cases impairment equal to a blood alcohol concentration 0.05. Repeated sleep interruption, creates chronic sleep lost, resulting in decreased ability to think clearly, handle complex mental tasks and solve problems.

PROJECT MAYDAY

Dr. S. Jahnke

Nutrition and Hydration

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Nutrition: (Dr. Sara Jahnke)

- Did you have more than 12oz of caffeine based drink, 3hrs before your Mayday:
  YES … (61%)
- Did you have a meal, 3hrs before your Mayday: 30%
- Did you have a snack w/sugar 3hrs before your Mayday: YES … 36%
  YES … a 7lb weight change + or – in the last six months:
  YES … (36%)
- Do you presently smoke or chew tobacco ?
  YES … (16%)

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

PROJECT MAYDAY

MAYDAY - Cardio / Physical Assessment

Dr. M. Walker

Cardio / Physical Assessment

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Cardiac Assessment: (Dr. Matt Walker)

- do you have a family history of cardiac disease:
  YES: … (36%)
- did you feel fatigued prior to your Mayday:
  YES: … (43%)
- are you on blood pressure or blood thinner medicine:
  YES: … (19%)
- are you a confirmed borderline diabetic:
  YES: … (17%)
- are you on any medicine for stress:
  YES: … (21%)
- are you on any sexual support medicine?
  YES … (11%)

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Cardiac Assessment:

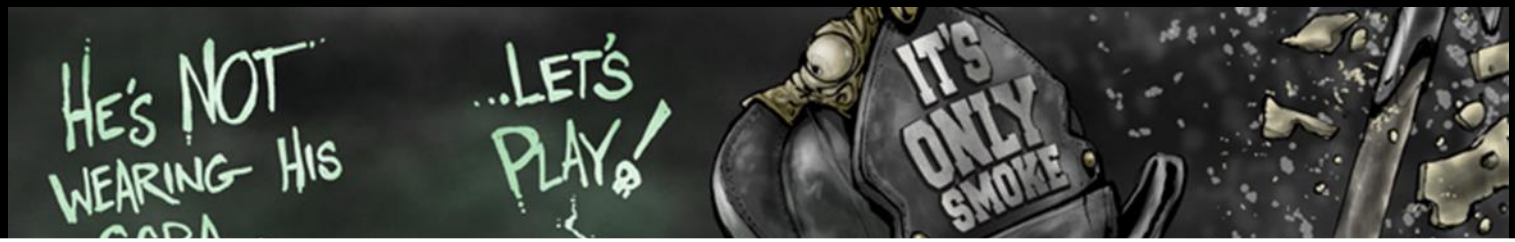
- On any run after midnight (sleeping) did you have hand or leg cramps: YES … 39%
- Has serious fatigue occurred after a run after midnight: YES … 44%
- Have you had any swelling of your legs or ankles after going to bed, after a midnight run? YES … 35%

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM



ANY FF INVOLVED IN A

M CE

IS OR

SHOULD BE DONE WITHIN THREE HOURS OF THE MAYDAY

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

Properties of Gases Typically Found in Smoke				
Gas	**Flashpoint**	**Self-Ignition Temp.**	**Flammable Range in Air**	**Notes**
Carbon Monoxide (CO)	See notes	1128ºF	12-74%	CO is considered a gas only–and, therefore, doesn't have flashpoint. The flammable range of CO is 12-74 only at the ignition temperature.
Hydrogen Cyanide (HCN)	0°F	1000°F	5-40%	HCN is produced when high temperatures break down nitrogen-containing products. HCN is quite flammable and is considered extremely toxic.
Benzene (C_6H_6)	12°F	928°F	1-8%	Most plastics release benzene while burning or pyrolyizing. Benzene is also a common product from the burning of fuel oils.
Acrolein (C_3H_4O)	-15°F	450°F	3-31%	Acrolein is a by-product from the incomplete combustion of wood, wood products, and other cellulosic materials. Poly-plastics can also render acrolein.

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

HYDROGEN CYANIDE IN FIRE OPERATIONS
ACUTE CYANIDE POISONING

- Hydrogen cyanide is a cellular asphyxiant
  - **Inhaled HCN inhibits enzyme system responsible for cell respiration (oxygen utilization by cell)**
  - **Cessation of cell respiration makes normal cell function impossible, leading to cell mortality**
- There is no quick test that allows on-site confirmation of HCN toxicity
- There are some signs that can lead to assumption of HCN exposure and administration of countermeasures
  - **Disorientation and weakness/Drowsiness**
  - **Shortness of breath and chest tightness(Tachypnea, Dyspnea Tachycardia)**
  - **Headache**
  - **Bright red discoloration in skin**
  - **Smell of almonds on breath**
  - **Soot around mouth and nose/burns**
  - **Carbonaceous sputum**

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

HYDROGEN CYANIDE IN FIRE OPERATIONS
ACUTE CYANIDE POISONING

- Recently there has been the first FDA approved cyanide treatment, Hydroxocobalamin, that can safely be administered at a fire scene
  - Detoxifies CN by binding it to form cyanocobalamin (B_{12})
  - Marketed as Cyanokit®
  - Used in France for 10 years
  - Previously, only supportive measures were available on site
    - 100% oxygen application
    - Sodium bicarbonate to counter metabolic acidosis
    - Cardiopulmonary support and anticonvulsants
  - Existing antidote involved nitrates that needed to be monitored under hospital care to avoid lethality when combined with CO

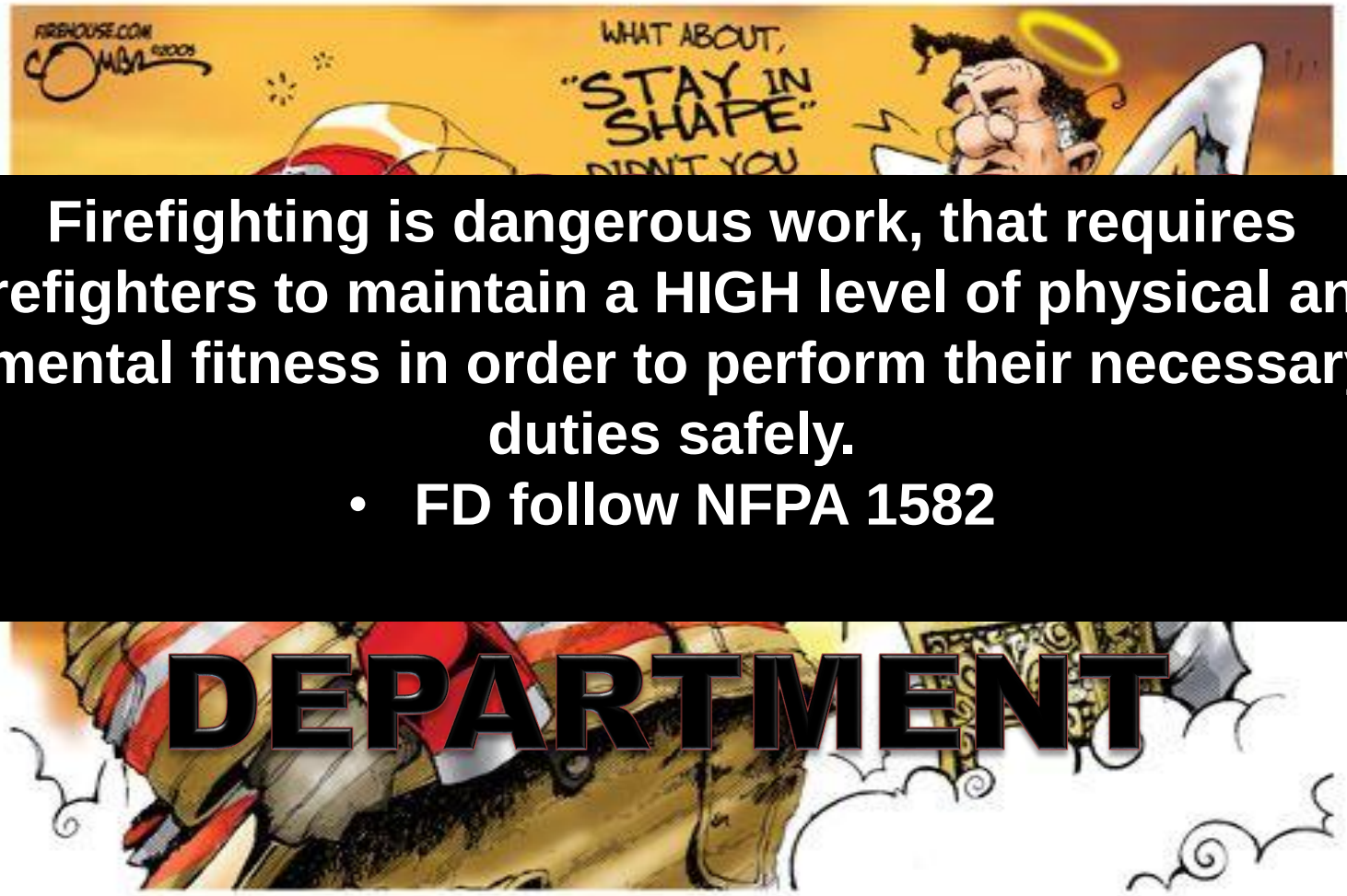
Taylor Kit Lilly Kit Pasadena Kit

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM



Firefighting is dangerous work, that requires firefighters to maintain a HIGH level of physical and mental fitness in order to perform their necessary duties safely.

- **FD follow NFPA 1582**

PROJECT MAYDAY

INDIVIDUAL PERSONAL SURVEY – MAYDAY VICTIM

PROJECT MAYDAY

COMPONENT 2: EN ROUTE

Enroute to Incident involved in the MAYDAY

- Did you wear your seatbelt? NO … 28% ? (working fire dispatch…42%)
- Did a discussion take place amongst the crew about the incident prior to arrival? YES … 23%
- Was specific orders given to crew members by the CO ?… 67%
- Was there a pre-plan for your "mayday" (commercial building) ? YES … 8%
- Did each member of the crew have a radio? YES … 73%

PROJECT MAYDAY

COMPONENT 2: **On Scene**

- **Did the CO stay outside, to serve as command?**
  35%

In My Defense,

I was left unsupervised

PROJECT MAYDAY

COMPONENT 2: On Scene

- Did you enter standing-up? … YES … 87%
- How long after your entry, did you go to your knees? … average 5/8 minutes …
- How often do you leave your hoseline by more than 10 feet, in near zero visibility? … Most of the time … 78%
- Was there an effort to control the entry door in regards to air flow? … YES … 19%

PROJECT MAYDAY

COMPONENT 2: The MAYDAY COMMUNICATION

L **ocation**
U **nit number**
N **ame**
A **ssignment**
R **esources needed**

What's missing?

PROJECT MAYDAY

COMPONENT 2: The MAYDAY COMMUNICATION

WHO
WHAT
WHERE

We make the VICTIM work too hard

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

- During your mayday, did you …
  … make noise … YES … 29%
  … wave/turn off/on your flashlight … YES … 30%
  … moved to an outside wall/door … YES … 35%
  … don't remember what I did … 24%
- How were you handle by your rescuers?
  Good … 33% Roughly … 52%
- Did rescuers have the proper equipment for your rescue? … YES … 55%
- If packaging was required, did they proper package you, before exiting? … YES … 31%
- Did you have on all your PPC on? … YES … 83%
  if NO: hood … 61% gloves …19%

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

Did you have confidence in your…

- Company Officer ….. 83%
- Incident Commander ….. 82%
- RIT ….. 16%

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event ALERT

- Be alert, when multi crews enter through one entry point
- Crews should be alert when air is being drawn in rapidly in ZVC and the heat is banking down
- Interior crews can hear the fire burning above them, but can't see it
- Crews feel "uncomfortable" with the situation they are in
- Crews "low air alarm" is going off, but they are still trying to find the seat of the fire
- Interior crews flow water for several minutes but make no progress
- Crews are unable to communicate with command

PROJECT MAYDAY

MAYDAY VICTIM – PERSONAL ACTIONS

- Collect your thoughts and control your breathing
- Call the MAYDAY
- Advise the IC of your intentions
- Make noise without wasting air
- It's difficult to hear and talk (PASS alarm / Low air alarm)
- Monitor distance into the structure
- Always be accountable to someone

AIR + TIME = SURVIVAL

MANY MAYDAYS (36%) OCCUR BEFORE A FORMAL RIT TO IS ESTABLISHED

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

Why do we wait?

PROJECT MAYDAY

Considerations / Recommendation

31%
of Mayday situations, were
NOT
reported as Maydays

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

Why do we wait?

Underestimation of conditions

Fear

Denial

Intimidation

Disorientation

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

multitasking and short term memory overload

PROJECT MAYDAY

COMPONENT 2: The MAYDAY Event

Don't think you are the "Exception" to the Rule

PROJECT MAYDAY

YOUR COMMENTS

- Deteriorating conditions;
  - came faster than expected
  - couldn't react fast enough
  - crew passing on situation awareness was slow or never came to all crew members
  - moved faster than we should have
  - got off hose line, farther than I should have
  - spacing off the hose line was too far
  - when we fell into the basement, someone should have passed us a line
  - TIC didn't work as expected on the first floor with fire in the basement
  - There should have been ladders at a third floor window for escape, instead of jumping

PROJECT MAYDAY

Considerations / Recommendation

YOU HAVE CALLED A MAYDAY …

you have done everything you have been trained to do.

NOW

develop a plan, as what are you going to do if you run OUT OF AIR

don’t want it will be to late

PROJECT MAYDAY

PRECEPTION

PREDICTABLE Is PREVENTABLE

Gordon Graham

PROJECT MAYDAY

FIREFIGHTERS ROLE IN REDUCING MAYDAYS

WHAT CAN FIREFIGHTERS DO TO REDUCE MAYDAYS

- SIZE-UP (all the time and everywhere)
- MENTAL MAPPING
  - Where are YOU
  - How did I get HERE
  - How do I get OUT
- CREW CONTINUITY
- CREW COORDINATION

PROJECT MAYDAY

FIREFIGHTERS ROLE IN REDUCING MAYDAYS

WHAT CAN FIREFIGHTERS DO TO REDUCE MAYDAYS

- EVACUATION
  - Quick
  - Orderly
- Worsening Condition / Lack of Visibility
  - Its going to take longer to GET OUT than getting in

PREDICTABLE ACTIONS = MANAGEABLE RESCUE

PROJECT MAYDAY

FIREFIGHTERS ROLE IN REDUCING MAYDAYS

- Suppress PANIC
  - breathe
  - organize
  - act (plan)

PROJECT MAYDAY

Your Comments

PROJECT MAYDAY

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer
Survey

CAPT. J.C. FORD
Charlotte County FD
RIT Team Leader of LODD

"Personally, perhaps the most important issue brought to light through this incident is the realization that my expectations and assumptions concerning the deployment of a RIT team were both inaccurate and unrealistic. While my previous assumptions were totally born out of a commonly held perspective from training, they were nonetheless ineffective and tragic."

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer Survey

Rescue Team Officer, RIC Officer, Mayday Officer Personal Survey

7,839

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer Survey

Psychology of a Mayday

Firefighter involved in the Mayday

- The firefighter in distress will usually revert to what was learned and is “routine”.
- The firefighter’s sole focus will to remove themselves from danger
- Don’t expect a firefighter to accomplish a manipulative skill learned in one hour, especially if the task was learned months ago
- Finally, firefighters in distress will over compensate – they will not be able to feel safe enough

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer Survey

The initial RIC/RIT shall be fast moving, lightly equipped recon team, it's objective is to locate the downed firefighter(s) and perform the rescue effort

A RIC/RIT shall consist of a minimum of three (3) personnel inclusive of a supervisor

The position of RIC/RIT Group Supervisor should be established anytime a RIC/RIT is deployed

PROJECT MAYDAY

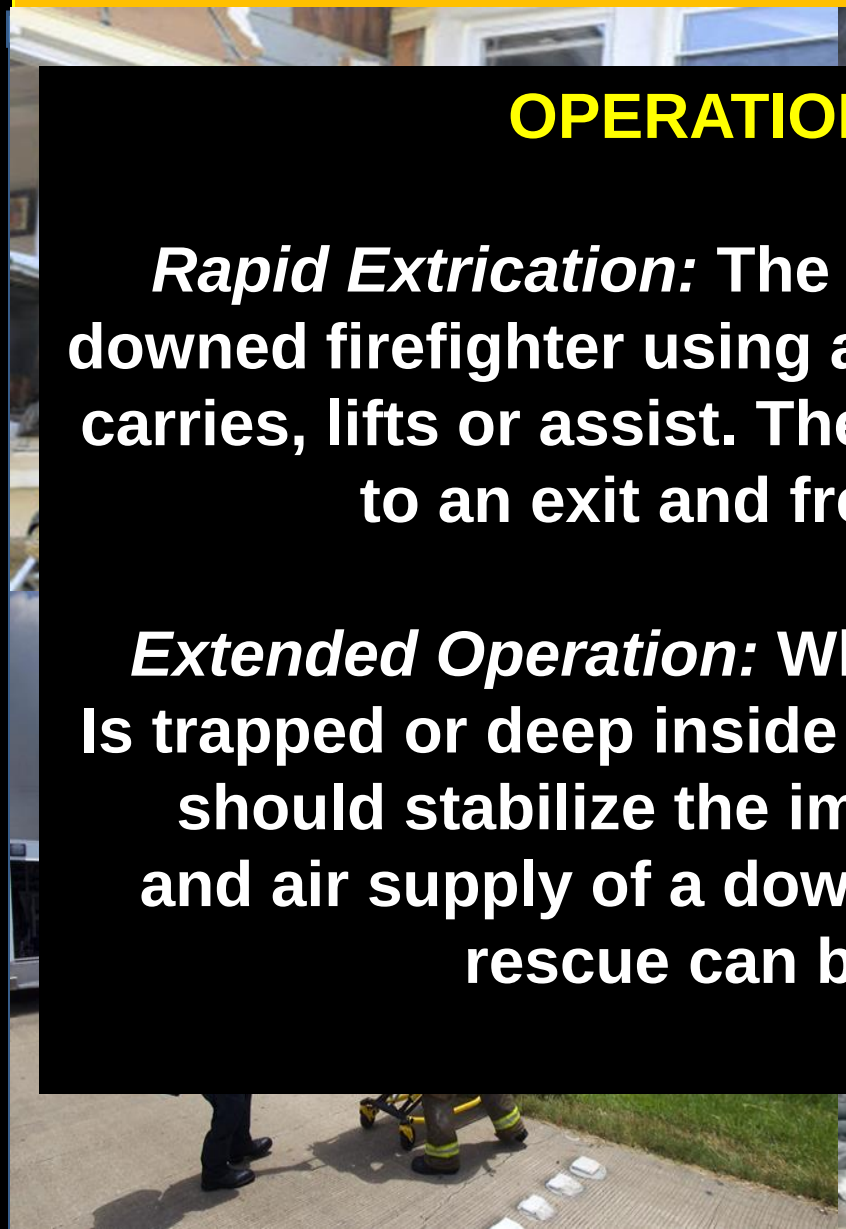
Rescue Team, RIC, Mayday Officer
Survey

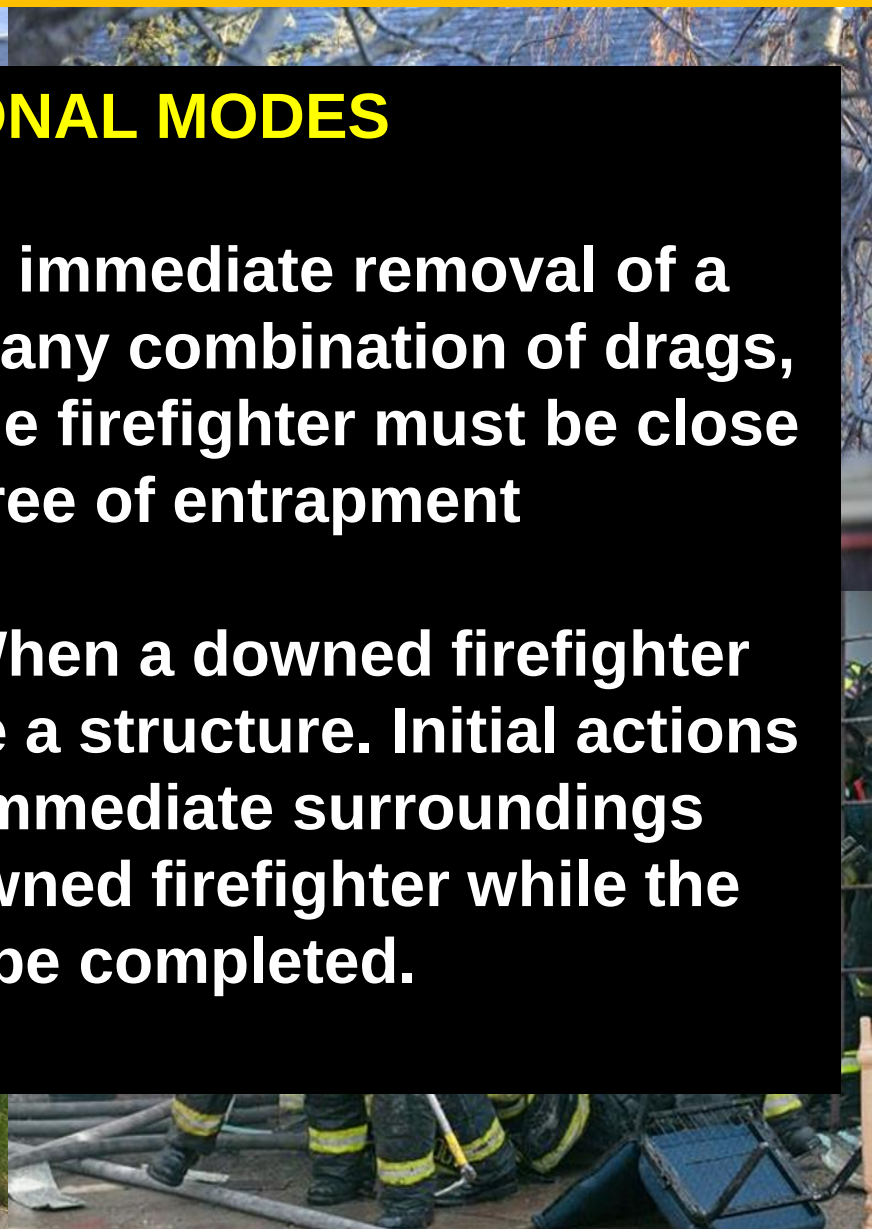
The essence of training is to allow *error* without *consequence*

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer

Survey





OPERATIONAL MODES

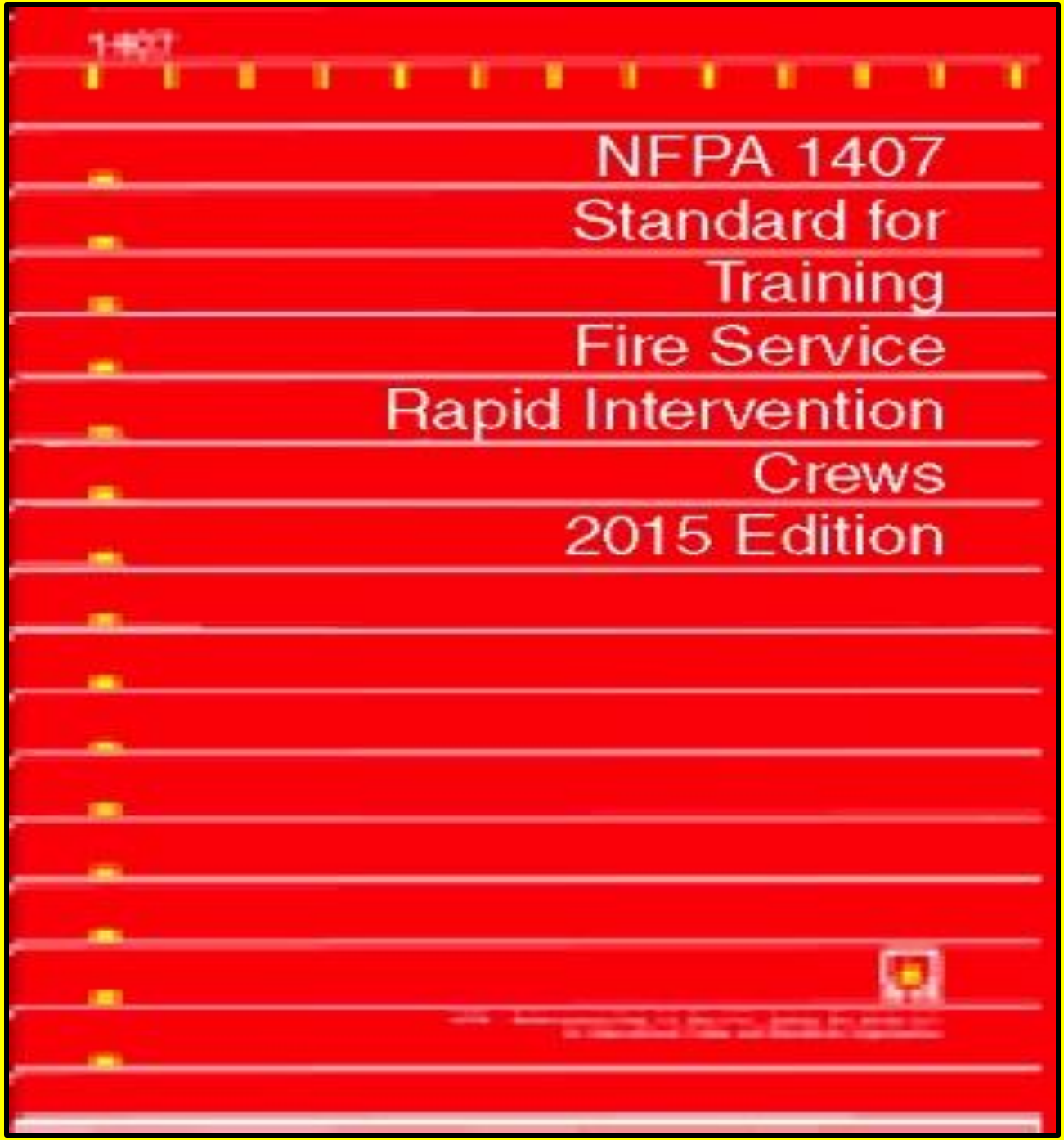
Rapid Extrication: **The immediate removal of a downed firefighter using any combination of drags, carries, lifts or assist. The firefighter must be close to an exit and free of entrapment**

Extended Operation: **When a downed firefighter Is trapped or deep inside a structure. Initial actions should stabilize the immediate surroundings and air supply of a downed firefighter while the rescue can be completed.**

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer Survey

PROJECT MAYDAY



PROJECT MAYDAY

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer

Survey

Rescue Incident Team

89%
of successful rescues come from within the structure

PROJECT MAYDAY

IRIC, RIC, RIT Operations

1 out of 12 IRIC/RIC/RIT has a MAYDAY

PROJECT MAYDAY

Component 2: Rescue Team, RIT, Mayday Officer

RIC used 27% more AIR than normal crews

PROJECT MAYDAY

IRIC, RIC, RIT Operations

2 in / 2 out

Our research, based on Victims, ICs, IRIC/RIC DOES NOT WORK ...

It has not produced any significant results ...

- **to few people**
- **not properly dressed**
- **NO RIC bag/or proper rescue equipment**
- **mentally unprepared**
- **NO plan**
- **NO back-up plan or team**

PROJECT MAYDAY

IRIC, RIC, RIT Operations

PROACTIVE RIT TASKS

- **Perform RIT Size-Up**
- **Monitor fireground, structure, companies and communication**
- **Preparing the fireground**
  - Provide secondary egress/access location
  - Remove any hazards and/or obstacles

MONITORING THE FIREGROUND:

- **Note building construction, size, number of floors, basement, type roof and fire behavior effect on construction.**
- **Crew location and assignment**
- **CONDITION OF CREWS as they EXIT the structure**
- **Things getting better of worst**
- **TIME / monitor radio channel(s)**

PROJECT MAYDAY

IRIC, RIC, RIT Operations

ID the RIC

E-6 RIC … E-11 RIC

PROJECT MAYDAY

Component 2: Rescue Team, RIC, Mayday Officer

- Packaging should not be time consuming process. In most cases one firefighter should do the packaging. Multiple firefighters in ZVC is problematic. The AIR firefighter should have the most immediate contact with the victim.
- There are two factors which affect compromised victims in regards to removal. The enemy of a victim is “TIME” and the limited viable removal because of conditions/egress. If there are serious injuries, its packaging, not treatment. Remove quickly so they can receive treatment

- Small staffed to work a mayday

PROJECT MAYDAY

Component 2: Rescue Team, RIC, Mayday Officer

REMEMBER THE BASICS:

- **HAVE A PLAN … fragmented RIC/RIT/IRIC don't work**
- **Monitor interior conditions**
- **Monitor air supply**
- **DON'T BECOME PART OF THE PROBLEM**

YOU FIND THE FIREFIGHTER (Mayday Victim)

- **Assess the victim, room conditions, RIT members**
- **Secure the FF air supply, turn off PASS unit**
- **Exercise rescue plan**
- **Determine best removal techniques**
- **Do FF know how to remove FF'ers PPC/PPE**

RIT COMMUNICATION BENCHMARKS:

- **RIT Enter**
- **Location changes, first floor, second floor**

FF located / Air Supply secured / EXITING w/victim

PROJECT MAYDAY

Component 2: Rescue Team, RIC, Mayday Officer

When the rescue is being done by the victims crew or another interior crew, they don't have a Rescue Plan, because of the timing of locating the victim.

The Company Officer needs to monitor their crews air during this operation. They have already been inside working and have used air. Don't let the crew be the next MAYDAY.

PROJECT MAYDAY

Component 2: Rescue Team, RIT, Mayday Officer

RIT Bag Useage:

- Air 3,781
  - low air 2,746
  - out of air 1,035
- Facepiece replacement..... 664 (236)
- Regular replacement 117
- Wire Cutters 2,549
- Bolt Cutters 478

- Stoke Basket/Mega Mover, etc 2,563
- Folding ladder 2,41

PROJECT MAYDAY

Component 2: Rescue Team, RIT, Mayday Officer

Wet down the victims head, then have a rescuer Fully geared up, turning their hood backwards So they cannot see. Have then find the face piece in the RIT bag and place it on the victim, then the regulator an go on air. TIME

PROJECT MAYDAY

Component 2: Rescue Team, RIC, Mayday Officer

- Report findings
- Ensure firefighter has air
- NO freelancing
- Everyone should monitor changing fireground conditions

PROJECT MAYDAY

Component 2: Rescue Team, RIC, Mayday Officer

DID YOUR RIC, RESCUE HAVE A "MAYDAY"

YES ….. 632 (5,781)

WHY ?

- **Had NO real plan before entering.**
- **Rush into things without thinking them out.**
- **Did not follow original hose line, took short cut.**
- **Used way to much air!**
- **Too much radio traffic and everybody making suggestions**
- **(CO) did not process incoming information well**
- **Took too long to package victim.**
- **Crew became physical exhausted quick.**

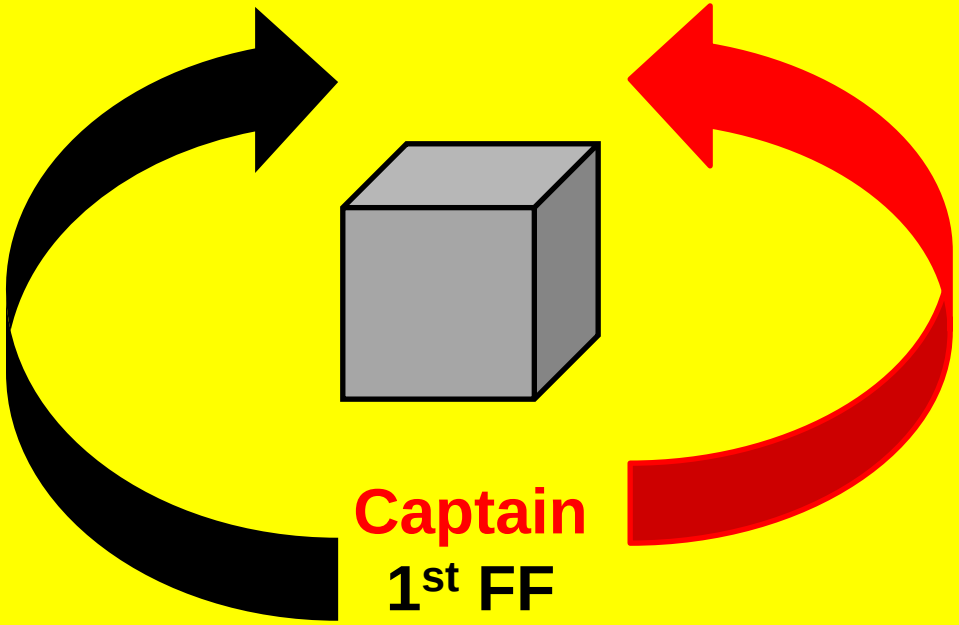
Did your RIT/Rescue have any injuries? YES … 9%

PROJECT MAYDAY

COMMENTS / RECOMMENDATION

PROJECT MAYDAY

COMMENTS / RECOMMENDATION



Captain

1st FF

2nd FF

Checks out RIT bag

3rd FF & 4th FF

Sets tarp, retrieves stokes, saw, folding ladder, etc.

PROJECT MAYDAY

RECOMMENDATIONS

RIT / RIT Officers:

- **RIT officers conducts a 360 of the structure (if possible) and develop a plan**
- **Check-out RIT bag and other equipment**
- **Maintain air / time / conditions and situational awareness**
- **HAVE A RESCUE PLAN**
- **Make sure each member of the RIT knows the plan and their piece of the plan.**
- **BE PREPARED for anything**
- **Be realistic with the problem and the rescue**

PROJECT MAYDAY

COMMENTS / RECOMMENDATION

- **Locating a firefighter in distress:**
  - **stop, listen, at times cease all activities**
  - **look for discarded tools and equipment, hose**
  - **check ceiling for beams of light**
  - **use a TIC**

Rapid Rescues are NOT rapid ….

slow down, do it RIGHT the first time, be aware of your environment, don't be surprised by anything. Be calm and reassuring, take the time to think through anything that you have never done before or hadn't been trained to do. There is a first time for everything.

PROJECT MAYDAY

COMMENTS / RECOMMENDATION

- **Equipment for a IRIC/RIT/FAST can be divided into two categories:**
  - **personal gear carried by a RIT member**
  - **team resources staged and ready**
- **Have a tarp, pre-marked with equipment location, everything that may be required for a RIT rescue (it will be noted what's needed, missing or being used for the next RIT.**

PROJECT MAYDAY

COMMENTS / RECOMMENDATION

- Listen to radio communication as what may be required for rescue, more air cylinders, special equipment.
- Don’t take short cuts and become another mayday
- RIT officer should know the strength and weakness of crew members, making sure each person has the right assignment.

PROJECT MAYDAY

FLYNN INCIDENT

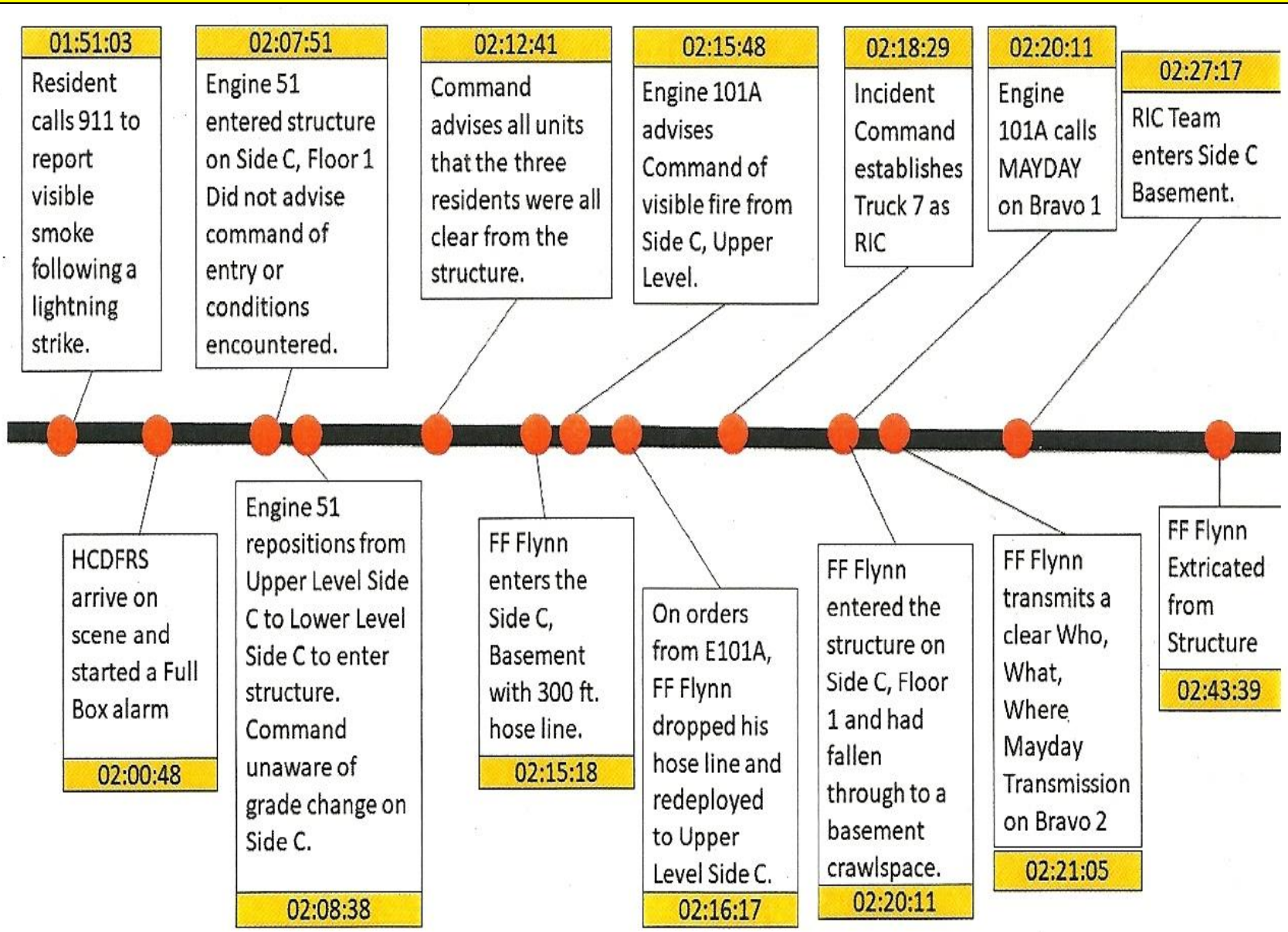
PROJECT MAYDAY

FLYNN INCIDENT

Larger residential structures, need to be treated as commercial structures.
Because of size, multi-levels, and construction, Along with the fact that a 250ft attack line may not reach where you need to go, Search time will be more difficult and take longer than normal, Especially if the report of a fire is delayed or this fires water supply is from tankers/water tenders.

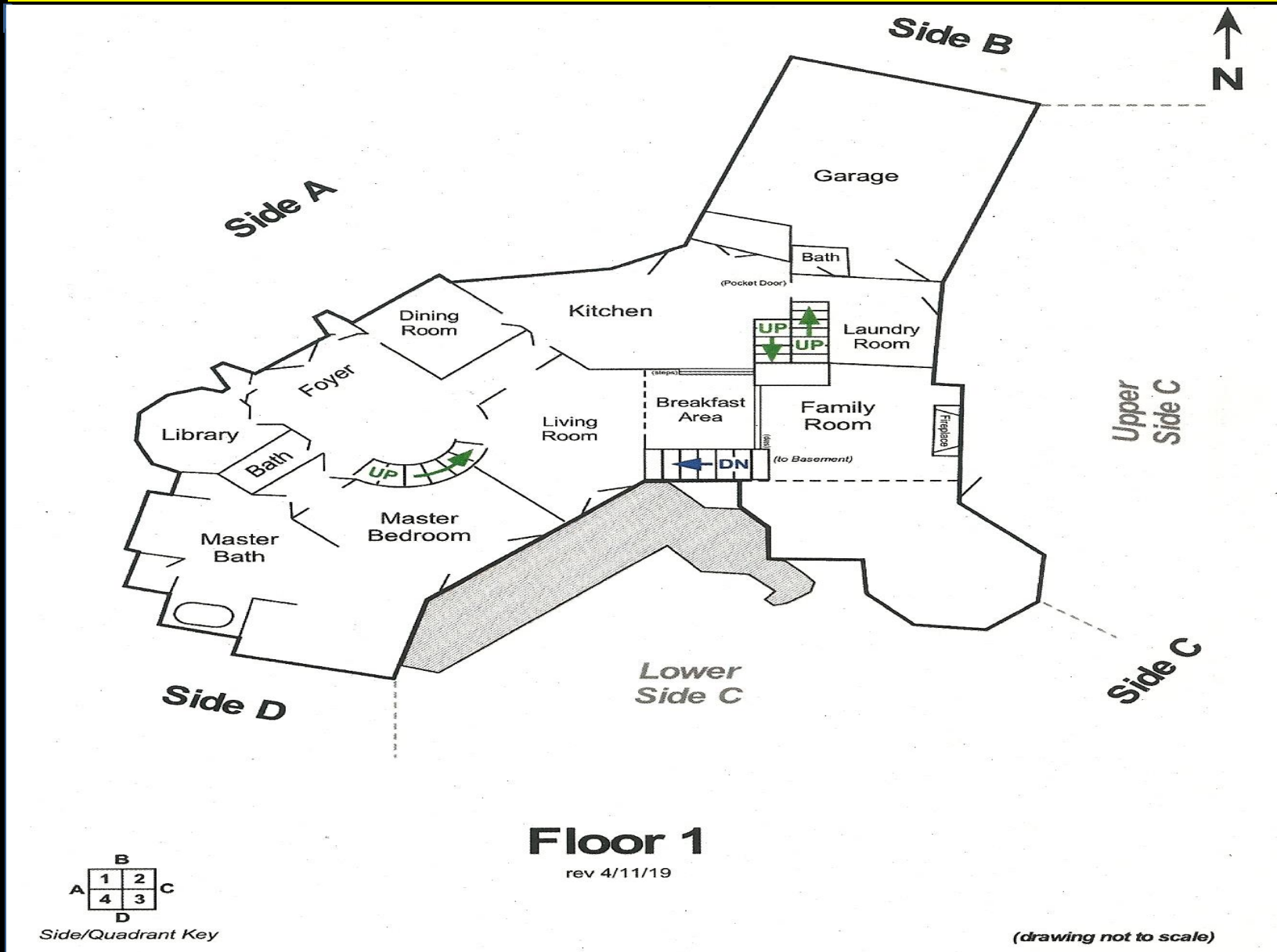
PROJECT MAYDAY

FLYNN INCIDENT



PROJECT MAYDAY

FLYNN INCIDENT



PROJECT MAYDAY

FLYNN INCIDENT

PHOTOS / SITE DIAGRAMS / MAPS

PROJECT MAYDAY

FLYNN INCIDENT

PROJECT MAYDAY

CARR INCIDENT

At 1528 hours, forty minutes from time of dispatch and thirty-eight minutes into the firefight the first floor gave way three to four steps in from the threshold, E23C fell through the floor and E23 FF2 immediately attempted to rescue E23C. E23 FF2 planned on falling to his stomach in order to see where the E23C was and attempt a rescue. This is when E23 FF2 falls through the floor from the first floor into the basement and both the Captain (E23C) and the E23 FF2 began to fight for their lives. E23 FF1 was still present at the threshold on Div. 1 and notified the Div.1 Supervisor (PR 2) and immediately put a hose line inside the hole to attempt to protect the E23C and FF2 from the fire in the involved basement. The Division 1 Supervisor immediately called a "MAYDAY", "Mayday, Mayday, Mayday, Firefighter...., through the floor on the first floor, RIC to the first floor." "Carr IC" immediately acknowledged the "Mayday," "All units on the Carr Incident hold all traffic, Emergency Traffic, Emergency Traffic, company with the Emergency Traffic go ahead with your emergency." Div. 1 says, "Firefighter through the floor, Firefighter.... Captain...., through the floor on the first floor interior, we need RIC and Medical to the front door." The Rapid Intervention Company (RIC) was already fully suited up with masks on and immediately moved in the direction of the front door and quickly realized the best place for them to enter would be the door on the basement level at the A/D corner in order to intersect with the downed Captain and downed Firefighter.

At 1529 based on the rapid deployment of the RIC Team and T21 members working in the vicinity, E23 FF2 was immediately found a few feet inside the 6-foot access door on the D-side, at the A/D corner of the structure. The downed firefighter (E23 FF2) was self-extricating and was crawling towards his egress when RIC and a member from T21 put hands on him and assisted him with exiting the structure; they handed E23 FF2 to the backup team and rescue ambulance for assessment and treatment. The members attempting rescue from the first floor above could still see E23C helmet (passport) through the smoke, but couldn't reach him. T32C placed a portable scene light near the door threshold and continued to flow a hose line in the hole while E29C (laying on his stomach) with a firefighter (E29 FF) holding his legs. Both Captains tried to reach E23C with their hands and various tools, while they waited on an attic ladder to put in the hole.

PROJECT MAYDAY

CARR INCIDENT

At approximately 1529 hours, "Carr IC" requests a 4th alarm. Div. Sub-level 1 (EMS 2) reports, "Priority traffic, we have the Firefighter out, he's on the A/D corner, we need a BLS unit and Medical." "Carr IC responds, "Medical from IC, can you handle the medical incident with the firefighter down?" Medical responds, "IC from Medical we have RA11 with the firefighter down." Right around this time, E29C is informed that they have the firefighter out of the basement. E29C thinks to himself and says, "No they don't, because I'm still looking at a helmet."

The initial thought was that only one firefighter had fallen through, but at approximately 1530 hours it was reconciled and communicated that there was a Captain that had fallen through also. "Carr IC" stated, "all units on the Carr incident we still have one firefighter trapped in Sub-level 1, the rescue is in process." The initial RIC re-deployed to look for the other member that had fallen through. The RIC Team entered in the configuration with the Captain being first in with the Thermal Imaging Camera (TIC), the two Firefighters and then the Engineer. There was heavy smoke and minimal visibility as the RIC Team crawled into the structure. A few feet inside the door the Captain was able to make out the layout of the basement using the TIC and move in the direction of where they thought the downed Captain might be. Approximately 20' to 25' inside the basement the RIC Captain was able to see the silhouette of the downed Captain (E23C) standing up and attempting to self-rescue while communicating with members above him on the first floor. Almost immediately, the RIC Captain was able to reach out and grab the downed Captains arm, E23C stated, "Get me out of here!" T29C then notified the members of the RIC Team that they had the downed Captain and to reverse out and assist the Captain with exiting the basement area.

At approximately 1531 hours (3 ½ minutes after falling in) E23C was extracted from the A/D corner for assessment, treatment and transportation. The radio report to the "Carr IC" that confirmed everyone that had fallen through was out of the building came at approximately 1533 hours. The TIC played a vital role and assisted the RIC Captain with finding the member and assisting him with exiting on the D-side of the structure through the door where the Rapid Intervention Companies staged and deployed from.

PROJECT MAYDAY

Rescue Team, RIC, Mayday Officer Survey

2019 – 3,267 **Lapse Times (Average)**

RIT/RIC Ready State …… 2:50min
MAYDAY to RIT/RIC Entry …… 3:10 - 3:18 - 3:27
RIT/RIC Contacted Down Firefighters …… 5:52 - 6:17 – 6:51
RIT/RIC Team Removal Time …… 16:44 - 19:07 - 23:39

TOTAL RESCUE TIME: …… 25:36 – 28:32 – 36:48

3,200sq.f.t

2 Firefighter (255/286lbs) entering basement, with stairway collapse, fire in the basement, (1) unconscious (1,100psi)(2) lower back injury (950psi) debris on firefighter, ZVC, stairway gone.

RIT/RIC 408

49 RIT/RIC - 12% had their own MAYDAY

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