High Hazard Plan
November 18, 2021
101 Champ Blvd., Manheim PA 17545
Lead Instructor – Kenneth Weber

Authorization

Only persons who have an official relationship with the [Department Name] and the training event are authorized in the training area. This will include students, contracted instructors, rehab area personnel, burn technicians, pump operators, LCPSTC staff, and/or visitors (with pre-approval from the lead instructor, and are limited to only the cold zone). Those listed previously shall constitute as the definition of “participant”.

Pre-requisites

All participants functioning within the hot zone shall meet the minimum training as defined by NFPA 1403 Chapter 4.3. Participants must be able to provide documented proof of pre-requisite training to the Authority Having Jurisdiction (AHJ).

Minimum training topics must include components defined by NFPA 1001:

- Safety
- Fire behavior
- Portable extinguishers
- Personal Protective Equipment (PPE)
- Ladders
- Fire hose, appliances, and streams
- Overhaul
- Water supply
- Ventilation
- Forcible entry
- Building construction

Some courses that meet the pre-requisite criteria include Interior Firefighter, Basic Fire Academy, Firefighter 1 certification, or Structural Burn Session.

All participants must complete an inspection on their PPE and SCBA using the supplied form from Pennsylvania State Fire Academy, or AHJ and return completed forms to lead instructor. Lead instructor and Safety Officer will review forms for completeness and address any concerns prior to any evolutions. The AHJ, Lead Instructor and Safety Officer will have the final determination to approve or deny the use of inspected PPE based on the associated standards, or policies.

All participants must complete a supplied medical form and have their base line vitals recorded on said forms which will be collected and maintained by the Rehab Group Supervisor (RGS). Baseline vitals must be recorded prior to any physical activities occurring. Upon final termination RGS will submit all rehab/medical forms to lead instructor.

Safety

A hot zone is established around the burn building to include the burn building, the concrete pad around the burn building and the streets to the far curb-line on the Charlie and Delta sides of the building.

Only authorized participants involved in an evolution may be in the hot zone during the evolution.

Participants entering the hot zone, at any time, for any reason, must have a minimum of head, hand, foot, and eye protection, as well as any Center for Disease Control (CDC) or local AHJ recommended personal protective equipment (PPE) for any current health and well-being protection against communicable diseases, or any other established safety precaution. Participants entering the burn building, while operating as an area immediately dangerous to life and health (IDLH), must have minimum personal protective clothing (PPC) and self-contained breathing apparatus (SCBA) designed, engineered, inspected, and approved for structural firefighting activities.

The warm zone is the area outside of the hot zone (red area) and not identified as the cold zone. The minimum PPC for participants in the warm zone shall be at a minimum head and foot protection (steel toe, or equivalent), as well as any

CDC or local AHJ recommended PPE for any current health and well-being protection against communicable diseases.

The cold zone is defined as the area under the rehab pavilion, the parking lot, vehicle rescue pads, and other outside, or inside areas not defined as the hot or warm zones. PPC for the cold zone is clothing appropriate for the weather and conditions present, as well as any CDC or local AHJ recommended PPE for any current health and well-being protection against communicable diseases.

Red Safety/Stop switches are located throughout the building and on every wireless control pendent. All participants are authorized to operate these switches when any unsafe condition or action is identified and could result in severe injury or death and cannot immediately be resolved.

Upon the activation of a PASS alarm in the full alarm mode, participants are directed to operate the closest Safety/Stop switch, provided the alarm is not immediately reset, or has been identified as an accidental activation and the process to reset PASS is underway.

There is no evolution that will utilize “MAYDAY” or the full alert activation of pass as part of the training. If a “MAYDAY” is transmitted or full alert pass is activated without reset, or acknowledgement, it is to be treated as a true emergency. The radio signal for an emergency will be the word “MAYDAY” repeated 3 times. Anyone using this emergency transmission will wait to be acknowledged and then give a Location. Unit. Name. Assignment. Resource (LUNAR) report. If not immediately acknowledged, the person will repeat the “MAYDAY” and LUNAR. Upon the transmission of a “MAYDAY”, the burn technicians/instructor or student will operate the closest Safety/Stop switch and Command will deploy the RIT to the known or last known location.

Engine XXX will be the designated RIT/Safety engine and at a minimum will have a charged handline of an appropriate length to reach all areas of the structure that will have live fire, or the use of multiple lines to accomplish this task, 1 set of irons (flathead axe and Halligan bar), 1 bag of rope, 1 stokes basket, 1 20’ length of webbing. The RIT engine have its own separate water supply separate from

that of the attack engine. Positive water supply may be established from side D of the drill tower, at the discretion of the lead instructor and as depicted:

Engine XXXX will be used as the primary attack engine and shall have a positive water supply established utilizing at a minimum 5” LDH from the hydrant located on C/D corner. Engine XXXX will at a minimum have one (1) 200’ 1.75” attack line with nozzles to support the training evolutions as described herein but may have multiple lines.

The water supply as described in this plan will meet or exceed the minimum requirements set forth in NFPA 1142 and is calculated as such:

Building is approximately 150’ x 200’ x 40 = 1,2000,000 square feet
The building construction classification is type II = .75
The occupancy code is Light = 7

As such the water supply is calculated as (1,200,000/7) * .75 = 128,571 gallons

To meet this demand the water tank is designed to hold 40,000 gallons and the retention pond holds 140,000 gallons. For a total of 180,000 gallons on site. As an engineered safety feature the retention pond can be filled by the municipal water supply system creating an almost limitless supply as needed.

Safety Officer is appointed by the IC or as assigned on a predesignated basis with an instructor matrix. Safety Officer is responsible to oversee the entire training evolution and ensure the safety of all present. Safety Officer may monitor exterior or interior events at their discretion, provided appropriate PPE and SCBA are worn for interior operations. Safety Officer reports to IC but has the authority to immediately correct any unsafe act as needed. Safety Officer shall visually inspect students entering the IDLH for proper PPE and SCBA donning, prior to entry, confirm that RIT is appropriately staffed (defined in the RIT section) and confirm that accountability is established for all those entering the hot zone.

Safety Officer, in unison with the Incident Command and with input from the Rehab Group Supervisor will monitor all participants for signs of fatigue and determine if any participant needs further medical evaluation before continuing with an assignment.

No participants will be used as live or simulated victims. Specifically designated manikins with uniquely colored or identified PPE may be used for the training event. Participants will be notified of the number of manikins in the training building, but not the specific location of the manikins.

All participants will be briefed before any evolutions begin. Topics to discuss during the briefing are identified in the briefing section of this plan.

Should adverse weather impact the ability to safely conduct training, as determined by the Safety Officer and/or Incident Command, communications to halt the training exercises will be transmitted over the radio. Should such transmission occur, all participants will report to the rehab area for accountability and a briefing. Safety Officer/Incident Commander will make the determination when it is safe to continue with the training event, cancel the event completely, or move all participants to a safe area of refuge to wait until safer conditions are present.

All building safety features to include the temperature monitoring and air monitoring equipment must be functioning, as designed, installed, and specified by the manufacturer and without alterations. Should the buildings safety features be activated to include the extinguishment of fire through fuel control and ventilation with the building's emergency ventilation system during an evolution the evolution will be stopped, communication made via the radio by incident commander, all participants will report to rehab area for accountability and briefing. After a safety feature activation and prior to an evolution beginning the Safety Officer and Incident Commander will investigate and identify the root

cause for the activation and establish that the unsafe condition is no longer present, nor will it immediately reoccur.

All fire rooms will have a minimum of 2 entrance/exit points.

No fires will occur in a room with less than 2 exits.

No one is permitted in the burn room independently.

No fires will occur in a subfloor or basement area. The first floor maybe used to simulate a below grade fire with participants descending the stairs from the second floor to the first.

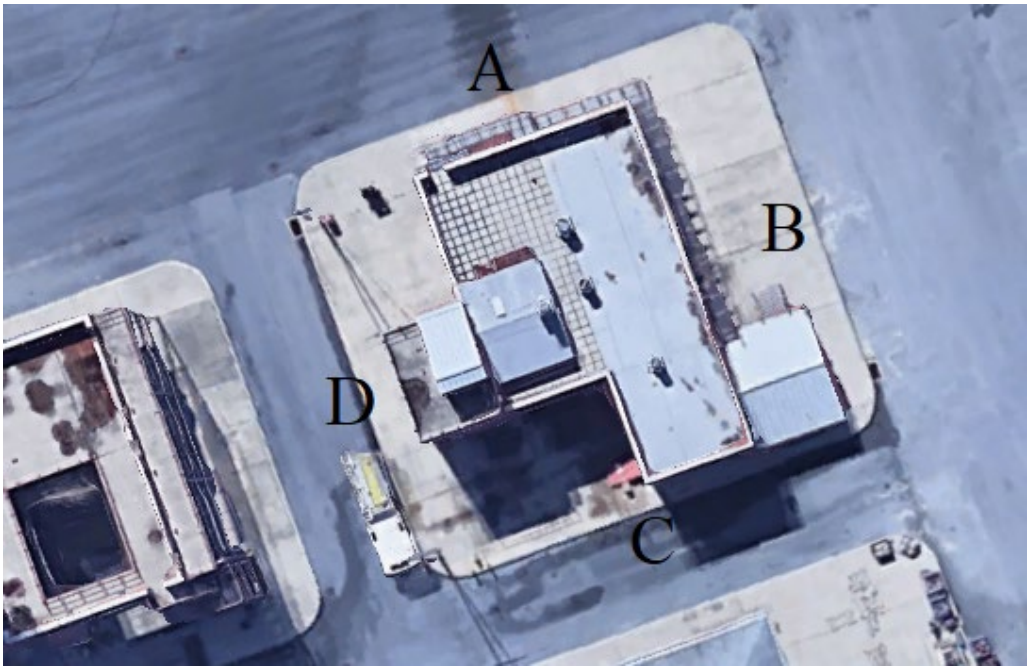
An appropriate incident command system defined within this plan. Instructors assigned to a task as indicated on the instructor matrix will assume to role of group leader for that assignment, except in the case of rehab where the assigned EMS staff will assume the role as RGS. All student participants will report to their assigned instructor, all instructors will report to Incident Command. All facilities and other LCPSTC staff will report to Incident Command.

The incident command structure in combination with the rotation matrixes will serve as the accountability system.

Operations

There will be two scenarios utilized during the day. The rotation for the students and the instructors is attached and will be followed for the scheduled event. The description of the two scenarios is as follows:

All sides of the building are labeled, and the sides shall be identified as labeled. Side A shall be the side of building facing Rt. 283 as labeled on the building:



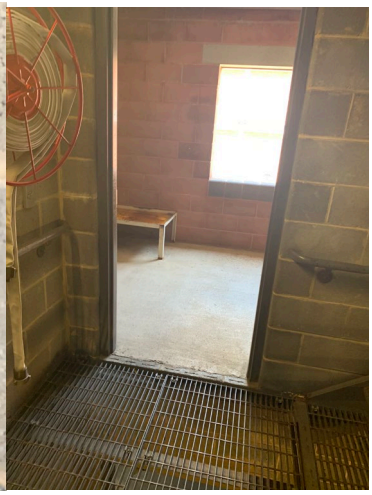
Scenario 1:
Learning Objectives:

- Understanding of fire dynamics, the growth of fire as it progresses through the stages within a compartment, however with the safety controls of the building flashover cannot be demonstrated.
- Understanding the flow paths. What are the openings created going to do in terms of ventilation and fire behavior?
- Understanding good hose line management, nozzle control, pattern selection and door control as a team
- Understanding the dynamics of working together through communication and the command structure.
- Demonstrate proper search techniques given the hazards present
- Communicate pertinent information as it is discovered
- Understanding controlled coordinated ventilation

Engine team will deploy one 1 ¾" handline, with a nozzle capable of flowing no less than 95 GPM and the ability to adjust the stream to fog pattern for hydraulic ventilation as needed, to the door located on the Charlie/Delta corner (line must be charged prior to entry),

up the stair tower to the second floor,





down the hallway, to the bedroom

Nozzle operator will extinguish the fire, backup will open the window or door, nozzle operator will hydraulically ventilate out the opening. Company will back out of the room to the hallway, rotate and proceed from the extinguishment step. Rotation will continue until all members of the company perform the task of nozzle operator.

Scenario 2:

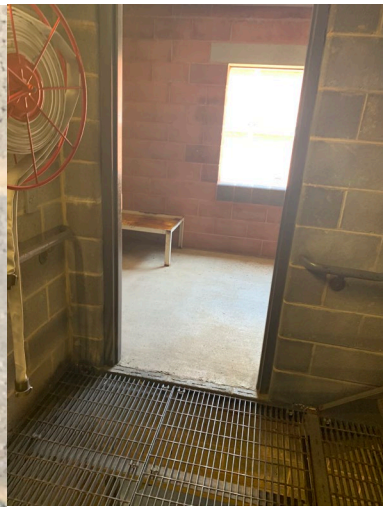
Learning Objectives:

- Understanding of fire dynamics, the growth of fire as it progresses through the stages within a compartment, however with the safety controls of the building flashover cannot be demonstrated.
- Understanding the flow paths. What are the openings created going to do in terms of ventilation and fire behavior?
- Understanding good hose line management (in protected stairwell), nozzle control, pattern selection and door control as a team
- Understanding the dynamics of working together through communication and the command structure.
- Demonstrate proper search techniques given the hazards present
- Communicate pertinent information as it is discovered
- Understanding controlled coordinated ventilation

- Understanding below grade fires and the dangers associated with them

Engine team will deploy one 1 ¾" handline, with a nozzle capable of flowing no less than 95 GPM and the ability to adjust the stream to fog pattern for hydraulic ventilation as needed, to the door located at the Charlie/Delta corner.

Company can deploy handline dry up the stair tower to the protected second floor landing. Line must be charged on the landing, in the stair tower, and/or in the second-floor room with closed hallway door.



Company will appropriately manage the hose line down the second-floor hallway to the top of the interior stair tower,

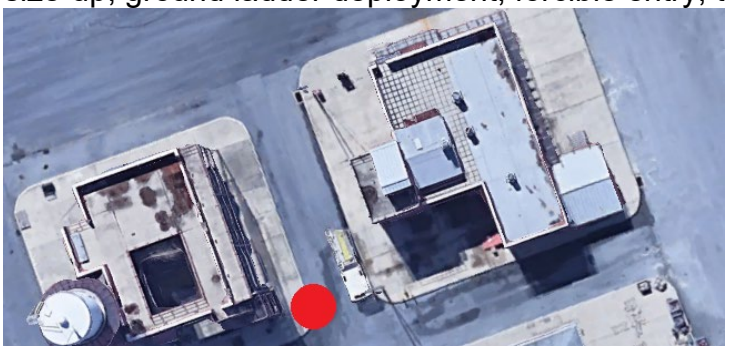
and then down the interior stairs to the first floor, simulating a basement in this evolution.

Once nozzle operator reaches bottom of stairs, the rest of the company will join him/her, and the nozzle operator will extinguish the fire. Company will back up to bottom of stairs, rotate and begin the process of extinguishment again. Rotation will continue until all member of the company operate as nozzle person. After the last member of the crew has extinguished the fire the back up person will locate the door on side C and then once back to safety the nozzle person will hydraulically ventilate out the door at the discretion of the instructor.

RIT: RIT will stage just outside the hot zone on the C/B corner of the D exposure (drill tower, corner near exterior stair tower, as pictured and indicated by red circle). All RIT members will be in full PPE with SCBA in place. Two of the members of the RIT will be in PPE, SCBA with face pieces in place ready for immediate deployment.

RIT will be equipped with a minimum of a charged 1 ¾" hose line with nozzle capable of flows greater than or equal to 95 GPM, irons (flat head axe and Halligan bar), bag or rope no less than 100', stokes basket, and 20' piece of webbing.

The RIT Instructor may assign the RIT team members not wearing facepieces to perform "normal" fireground RIT operations, to include but not limited to, scene size-up, ground ladder deployment, forcible entry, tool staging, etc.

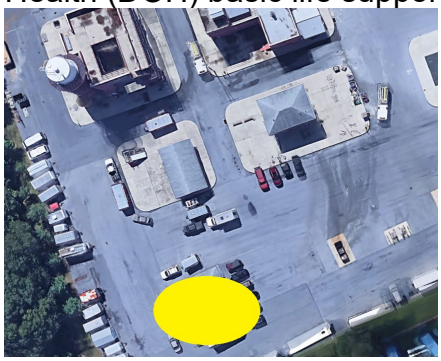


Students assigned to “re-pack” will stage out of the way until the evolution has begun, once the handline has been deployed the crew will begin to repack the handline from the previous evolution. All tasks associated with the current evolution will take priority over the repack, and in the case of conflict the re-pack team should retreat to the cold zone and wait until their task will not cause a conflict with the operations to resume.

Students assigned Truck will be responsible for deployment of appropriate ground ladders and searching the fire building both for fire and victims, or any other task as assigned by the designated instructor.

Rehabilitation

A Rehabilitation Area is established under the pavilion (depicted as yellow circle). It is under the direction of the RGS who reports to the IC (or assigned designee). The Rehab Area will be staffed by certified EMTs, as well as other personnel with requisite medical knowledge to take vital signs and make field assessments in compliance with NFPA 1584, PSFA policy 2006-02, and PA Department of Health (DOH) basic life support (BLS) protocols.



The Rehabilitation Area will be established, equipped, and operated in accordance with Pennsylvania State Fire Academy Policy 2006-02 (Structural Burn/Live Fire Policy), NFPA 1584 and PA DOH State BLS protocols.

All participants that entered the simulated, or real IDLH atmosphere, must report to rehab at the conclusion of an evolution and after completing field reduction of contaminates.

Field Reduction of Contaminates:

- Participants leaving the IDLH area must complete a dry decon which includes standing in front of a fan for a minimum of 30 seconds rotating from front to back (15 seconds each), while wearing SCBA and breathing air from the cylinder (if possible)
- Participants must doff their PPE prior to entering the rehab area
- Participants should use provided wipes to clean the “high-risk areas” (face, head, neck, arms, wrists, and hands)
    - Prior to eating or drinking

The RGS is authorized by IC to make final determination regarding any attendee's participation in the training event based on the medical conditions presented and evaluated by the rehab staff. There is no appeal to the determination of the RGS.

Should the RGS determine that a participant needs further medical care or evaluation that exceeds available on site care the RGS will notify Incident Command and request a transport unit. Incident Command will utilize the issued radio and communicate with Lancaster County Dispatch on channel A to request additional EMS resources as needed. An injury report must be completed and submitted to the State Fire Academy, ETA, County Facilitator and any other AHJ for anyone that is transported.

Communication

Incident Command, Instructors, Burn Technicians, Pump Operators, and RGS shall all be issued radios to utilize for the evolutions. LCPSTC private channel (channel 16), or another pre-determined training frequency, should be utilized for the training evolution. Should another channel need to be used to mitigate a "MAYDAY" situation or any other reason, Incident Command will notify everyone on what channel they should utilize.

Communications should be limited to the training event. Radio identification should be the task assigned to an individual and the use of names should be limited.

Use of the radio communications shall follow the "hey you, it's me" standard. Furthermore, if you wish to communicate with someone, you are to call their identifier, state who you are and then in plain terminology send your message. This should be followed with an acknowledgement by the position you called. An example of this is:

> "Truck Instructor, from Command?"
> "Command from Truck, go ahead."
> "Truck from Command can you give me a C.A.N. report"
> "Command from Truck, we have searched the second floor, no victims found, smoke condition present, we are moving to first floor, no additional needs at this time."
> "Truck from Command, I copy you have completed primary on division 2, moving to division 1, no needs at this time."

Students needing to communicate a message via the radio should notify the instructor in charge of their assignment of the message and that instructor will relay the message to the appropriate position.

Termination:

Termination of each evolution will be given via radio communication from Incident Command at the conclusion of each evolution. Incident Command shall determine that everyone is out of the building and safely accounted for prior to termination of the evolution. RIT shall remain in place until termination of the evolution is given by Command.

Termination of the entire training evolution will be given from lead instructor after all students, staff, instructors, and all other official participants of the training event have been safely accounted for, all equipment, buildings and apparatus are cleaned up and put back into service to the expectation of the lead instructor and/or AHJ. After all training objectives and cleanup is concluded lead instructor will terminate the training, via direct communication with all students, instructors, staff, and any other authorized participants. Prior to dismissal all participants that have entered the IDLH must complete post incident field reduction of contaminates.

Field Reduction of Contaminates:

- Participants will complete dry decon as previously described in the rehab section
- Participants will then complete a wet decon:
    - Low pressure/low gallonage water spray and scrub brush to reduce the contaminates on the PPE
    - Participant should continue to wear full PPE and SCBA during wet decon, including breathing air from SCBA (if possible)
    - Participants should doff PPE in a systematic manner and doff medical gloves, when possible, to do so to reduce exposure risks
    - Participants should use appropriate wipes to reduce contaminates from high-risk areas prior to eating or drinking
    - Doffed PPE should be placed in a trash bag for transport, until appropriate decon for the PPE can be completed
- Participants are encouraged to change out of contaminated clothing as soon as possible and shower as soon as possible

Debrief

Prior to participant dismissal a formal debrief will be conducted, typically referred to as a “hot wash”. Lead instructor will conduct a debrief of the training event in the rehab area after accountability of all participants is determined. Lead instructor will discuss the learning objectives and the participants ability to meet those objectives. Lead instructor will discuss the proper decon procedure for field reduction of contaminates as describe within this plan verbally to all participants.

Lead instructor will discuss any group improvement, or corrective actions that are not participant specific, or in detail that would specify a particular participant, or group of participants. Individual corrective action plans should be discussed on an individual basis.

Alterations

Alterations to this plan are at the discretion of Lead Instructor and AHJ. If this action plan is altered in any way by Lead Instructor, notification of alternation must be made to all official participants of the training event. **NO Alteration to the Safety or Rehab section are permitted.**

Instructor Rotation:

Evolution	Engine/Attack	Rest	Truck	RIT	Safety	IC	Facilitator
1	Inst A	Inst B	Inst C	Inst D	Inst E	Inst F	FA
2	Inst E	Inst A	Inst B	Inst C	Inst D	Inst F	FB
3	Inst D	Inst E	Inst A	Inst B	Inst C	Inst F	FC
4	Inst C	Inst D	Inst E	Inst A	Inst B	Inst F	FA
5	Inst B	Inst C	Inst D	Inst E	Inst A	Inst F	FB
Break	Break	Break	Break	Break	Break	Break	Break
6	Inst A	Inst B	Inst C	Inst D	Inst E	Inst F	FC
7	Inst E	Inst A	Inst B	Inst C	Inst D	Inst F	FA
8	Inst D	Inst E	Inst A	Inst B	Inst C	Inst F	FB
9	Inst C	Inst D	Inst E	Inst A	Inst B	Inst F	FC
10	Inst B	Inst C	Inst D	Inst E	Inst A	Inst F	FA

*Facilitators will take break and report to rehab when not assigned to an evolution

Student Rotation:

Date

Company A	Company B	Company C	Company D	Company E	Company F
Student A	Student E	Student I	Student M	Student Q	Student U
Student B	Student F	Student J	Student N	Student R	Student V
Student C	Student G	Student K	Student O	Student S	Student W
Student D	Student H	Student L	Student P	Student T	Student X

Evolution	Engine	Rehab	RIT	Truck	Rehab	Repack
1	Company A	Company B	Company C	Company D	Company E	Company F
2	Company F	Company A	Company B	Company C	Company D	Company E
3	Company E	Company F	Company A	Company B	Company C	Company D
4	Company C	Company E	Company F	Company A	Company B	Company C
5	Company B	Company C	Company E	Company F	Company A	Company B
Break	Break	Break	Break	Break	Break	Break
6	Company A	Company B	Company C	Company D	Company E	Company F
7	Company F	Company A	Company B	Company C	Company D	Company E
8	Company E	Company F	Company A	Company B	Company C	Company D
9	Company C	Company E	Company F	Company A	Company B	Company C
10	Company B	Company C	Company E	Company F	Company A	Company B

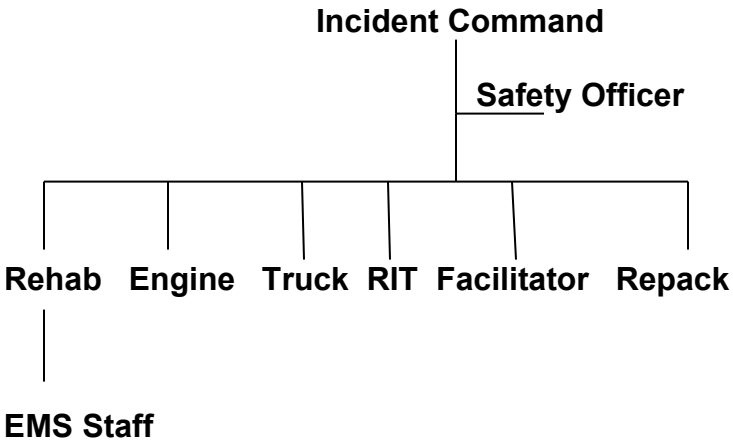
Instructor Briefing:

- Weather
- PPE/SCBA inspections
- Command Structure/Rotation matrix
- Tasks specific assignments:
    - What is engine doing
    - What is truck doing
    - What is RIT doing
    - Where are staging areas
- Rehab
    - Decon procedures
- Building walk-thru/familiarization
- Communication plan
- Manikin locations (if used)
- Safety switches
- MAYDAY/RIT deployment
- Safety line locations/operations
- Identification of hot, warm, cold zone
- Objectives/expectations of students
    - Debrief participants after each evolution and discuss their performance towards objectives
- Concerns (if any)
- Questions/comments/feedback

Student Briefing

- Weather
- PPE/SCBA inspections
- Command structure/rotation matrix
- Tasks specific assignments:
    - What is engine doing
    - What is truck doing
    - What is RIT doing
    - Where are staging areas
- Rehab
    - Decon procedures
- Building walk-thru/familiarization
    - Safety stops
    - Egress points
- Communication plan
- Number of manikins (if used)
- MAYDAY/RIT deployment
- Identification of hot, warm, and cold zones
- Objectives to be completed
- Questions/comments/feedback

Command Structure



Risk Mitigation:

Risk Analysis for Live Fire Training Event

Risk	Administrative Mitigation	Avoidance Mitigation	Transfer Mitigation
Slip, trip, fall, minor injuries	Briefing to instructors and students highlighting hazards to raise awareness. IAP identifies hot, warm and cold zones and proper ppe for each	Place cones or other control devices. Student/instructor briefing identifies control zones and ppe	N/A
Burns	PPE Inspection, SCBA Inspection	PPE/SCBA Inspections, Proper donning of PPE/SCBA, Temperature monitoring	N/A
Cardiac/Medical	Rehabilitation policy	Rotational matrix that requires rehab	Contracting EMS provider to run rehab
Lost/Disorientation		Pre-burn building walk-thru	N/A
Command Structure	ICS documented in IAP	Rotational matrix defines ICS positions	N/A
Accountability	ICS and Matrix to assign individuals to assignments	Rotational matrix that identifies every one assigned location/function	N/A
Communication	IAP identifies communication plan	Use of assigned identifiers and County owned radios	County owned and maintained radios, radios recorded and monitored by County dispatch
Water Supply	IAP identifies water supply calculations	Water requirement calculations already completed in IAP	Fixed facility has engineered water supply with municipal water supply
RIT	RITs location, expectations and minimum equipment outlined in IAP	Minimum equipment at staging. Rotational matrix ensures staffing. ICS/duties and assignments require Safety to confirm staffing of RIT and equipment.	N/A
Air monitoring/Temp monitoring	Building requires monthly calibration	Building control sensors will automatically shut down fire, fuel and vent as needed based on the sensors	Building is electronically monitored continuously. Sensors are calibrated monthly. Building is inspected at least twice per year by manufacture representitive.
Weather	IAP identifies meeting location for adverse weather and plan to postpone or continue training	N/A	N/A