



Career Firefighter Candidate Dies from Heat Stroke while Performing Firefighter Essential Function Course—Alabama

Executive Summary

On June 17, 2019, at 0800, a career firefighter candidate (Candidate) reported for duty to begin the second week of recruit training school. The first task of the day was to complete the consumption course which consisted of 10 firefighting tasks completed in full gear and breathing from self contained breathing apparatus (SCBA). Each task is done twice and two SCBA bottles are used. If the second SCBA bottle is exhausted before completing the course, then a recruit is to remove the mask mounted regulator (MMR) and complete the course. The consumption course started at approximately 0840. The Candidate reached the 10th task, the dummy drag, just before 0900. During that task, the Candidate exhausted the SCBA bottle, removed the MMR, and stated they were unable to continue. Fellow recruits assisted with taking off his gear down to the bunker pants and assisted the Candidate to seating in the rehab area. Within minutes the Candidate went into cardiac arrest, cardiopulmonary resuscitation (CPR) was started, and the candidate was transported to the local emergency department (ED). Despite resuscitative efforts, the Candidate did not survive the incident and was pronounced dead at 1002.

The autopsy report lists the cause of death as “probable heat stroke.” The Candidate’s core temperature on arrival to the ED was 103.8°F. The ambient temperature on June 17, 2019 between 0830 and 0900 was 81°F with a relative humidity of 65% resulting in a heat index of 84°F [weather underground]. ED notes indicate the candidate experienced a heat related illness during training the previous week but recovered with rest and intravenous (IV) fluids. National Institute for Occupational Safety and Health (NIOSH) investigators concluded that the Candidate’s physical exertion associated with the consumption course produced heat stress that could not be managed by the body’s normal regulatory mechanisms.

Key Recommendations

To prevent injury and death resulting from heat stress associated with emergency operations and training, NIOSH investigators offer the following recommendations.

- *Provide preplacement and annual medical evaluations consistent with National Fire Protection Association (NFPA) 1582.*
 - *Medical evaluations should be performed by a provider familiar with the physical and psychological demands of firefighting.*
 - *Fire Department/Training Center policy and procedure should address heat exposure topics related to unacclimatized firefighters, and medical monitoring during training and emergency operations.*
 - *Review policy on return-to-work medical evaluations as the candidate had a heat-related illness the previous week during training that required medical attention.*
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The National Institute for Occupational Safety and Health (NIOSH), an institute within the Centers for Disease Control and Prevention (CDC), is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In 1998, Congress appropriated funds to NIOSH to conduct a firefighter initiative that resulted in the NIOSH Fire Fighter Fatality Investigation and Prevention Program, which examines line-of-duty deaths or on-duty deaths of firefighters to assist fire departments, firefighters, the fire service, and others to prevent similar firefighter deaths in the future. The agency does not enforce compliance with state or federal occupational safety and health standards and does not determine fault or assign blame. Participation of fire departments and individuals in NIOSH investigations is voluntary. Under its program, NIOSH investigators interview persons with knowledge of the incident who agree to be interviewed and review available records to develop a description of the conditions and circumstances leading to the death(s). Interviewees are not asked to sign sworn statements and interviews are not recorded. The agency's reports do not name the victim, the fire department or those interviewed. The NIOSH report's summary of the conditions and circumstances surrounding the fatality is intended to provide context to the agency's recommendations and is not intended to be definitive for purposes of determining any claim or benefit.

For further information, visit the program website at www.cdc.gov/niosh/fire or call toll free 1-800-CDC-INFO (1-800-232-4636).

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Introduction

On June 17, 2019, a 35 year-old career firefighter candidate (Candidate) suffered probable fatal heat stroke while participating in a consumption course training exercise. The U.S. Fire Administration notified NIOSH of this fatality on June 18, 2019. On February 10, 2020, an investigator from the National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program conducted an on-site investigation of the incident.

During the investigation, the NIOSH investigator interviewed the following people:

- *Fire Chief of Candidate's home department*
- *Company Officer of Candidate at home department*
- *Recruit school classmates*
- *Fire Chief of department responsible for staff and facilities at this state regional training center*
- *Training Chief responsible for recruit training school*
- *Training school instructors*
- *State certifying officials*
- *State fire marshal office investigators*
- *Healthcare provider who did pre-employment examination/screening*

The NIOSH investigator reviewed the following documents:

- *Training center operations manual*
- *Fire marshal office investigative report of the incident*
- *Hospital emergency department (ED) record*
- *Emergency Medical Service (EMS) record*
- *Pre-employment record, including medical examination/screening*
- *Autopsy report*
- *Consumption course layout and task justification*

Investigation

On June 10, 2019, the Candidate reported to the first day of recruit training school at a regional training center. This incident occurred at 1 of Alabama's 10 regional training centers. The 15-member class was made up of recruits from multiple agencies. The Candidate was 1 of 3 members from his home department in this class.

The training center was operated by the local career department in a cooperative agreement with the state's firefighter certifying agency. The training center was located on property owned by the local

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career department. The Candidate carpooled each day to the center with one of the members of his home department. The home department and training center were approximately 30 minutes apart.

This recruit class was comprised of firefighters that hold the state's volunteer firefighter certification. The purpose of this class is to bridge from the state's volunteer certification to the state's career firefighter certification. The volunteer certification is made up of 160 hours of training, while the career firefighter training is comprised of 360 hours of training. This bridge program is a 200 hour course that is completed in 5 weeks of training; approximately 8–10 hours a day, 5 days a week.

The first day of the recruit class, Monday, June 10, consisted of administrative housekeeping and ensuring each recruit had the necessary equipment to complete the 5 week course. Daily physically intensive training started on the second day of class. On day 2 of week 1, the recruits had their first attempt of the consumption course, a series of 10 firefighter tasks meant to challenge the firefighter's physical work capacity while wearing full firefighting gear and self-contained breathing apparatus (SCBA), and ensure competency in basic firefighting tasks outlined in National Fire Protection Association (NFPA) 1001: Standard for Fire Fighter Professional Qualifications (Appendix A) [NFPA 2019]. The course stations progress in a loop-like fashion. When performed for recruit training, the course loop is accomplished twice and 2 SCBA bottles can be used to complete the course. When the second bottle is depleted, the recruit is to disengage the MMR and continue the course until finished. The tasks are done consecutively without stopping.

The first attempt at the consumption course began around 1400. The temperature on June 11 at 1400 was 79°F with a relative humidity of 52% resulting in a heat index of 80°F [weather underground]. The 15 recruits finished the course on this first attempt, although most recruits, including the Candidate, had to disengage their mask mounted regulator (MMR) prior to the end of the course. All recruits entered the rehabilitation area (rehab) upon completion of the course to physically recover and rehydrate. The Candidate was described by those interviewed as unable to fully recover; complaining of an inability to catch his breath and slight dizziness. The on-site paramedic assessed the Candidate and reported that he was suffering from heat exhaustion associated with exertion and dehydration. An intravenous (IV) line was initiated and 1 liter of fluid was given to the Candidate over approximately 30 minutes. Although the Candidate stated he was feeling better after the infusion was finished, he was encouraged to seek medical attention through transport to a hospital ED but he declined and was released to go home and return to class the next day.

On the 3rd day of class, the recruits performed the consumption course for the second time. The performance results of the class were similar to the day before, including the Candidate. However, this time the Candidate was able to physically recover without intervention.

The consumption course was not performed on the fourth or fifth day of the class. These days consisted of physically strenuous drills, including a search and rescue drill. All recruits, including the Candidate, finished this first week of the class without requiring any additional evaluation by the on-site paramedic.

During the carpool ride home on that Friday, the Candidate stated that he did not feel well. The Candidate went to see a healthcare provider at a local urgent care clinic on Saturday. He reported chest

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congestion, fatigue, and a productive cough but no fever for the past 4 days. He was afebrile and had a normal respiratory rate. His physical exam was notable for “mild rhonchi over bilateral upper lung fields.” He was diagnosed with acute bronchitis and treated in office with injections of an antibiotic and a corticosteroid. He was also prescribed an oral antibiotic and cough suppressant to take over the next week. He was advised to return to the clinic immediately if symptoms worsened and within 3 days if symptoms had not improved. He saw his Fire Chief at a local gathering on Sunday and mentioned his visit to the urgent care clinic the previous day. The Chief expressed his concern about returning to training while ill, but the Candidate stated he was feeling better and felt able to return to work the next day. The Chief encouraged the Candidate to report his urgent care visit and medication change to the appropriate training academy staff. There is no indication the Candidate reported his visit nor medication change to academy staff.

On Monday, June 17 at 0800, the Candidate reported for his second week of recruit training class. The first activity of the day was the consumption course at which time the outdoor temperature was 81°F with a relative humidity of 65% resulting in a heat index of 84°F [weather underground]. He began the consumption course at approximately 0840. The Candidate reached the 10th task, the dummy drag, just before 0900. This was during the second loop, therefore it was the second time doing the dummy drag. He was on his second SCBA bottle. During that task, the Candidate exhausted the SCBA bottle and removed the regulator. At this time the Candidate was physically exhausted and was unable to finish the task. The Candidate stated he could not continue and fellow recruits assisted with taking off his gear, down to the bunker pants. The Candidate was assisted to the rehab area where the on-site paramedic evaluated the Candidate. The Candidate had a diminished level of consciousness and staff were unable to obtain a blood pressure reading. The Candidate then went into cardiac arrest.

Cardiopulmonary resuscitation (CPR) was initiated immediately. Ambulance dispatch occurred at 0912. An automatic external defibrillator (AED) was placed on the Candidate and revealed “no shock advised.” Resuscitative efforts were continued during ambulance transport which was initiated at 0920. Arrival at the hospital ED occurred at 0930. Resuscitative efforts were unsuccessful and his time of death was noted as 1002.

Preplacement Medical Evaluation

The home fire department had developed a preplacement medical evaluation based on the NFPA 1582 14 essential firefighting job tasks (Chapter 5) [NFPA 2022]. The state certifying agency had a medical evaluation form that required a physician signature based off the NFPA 1582 same 14 essential job tasks (Chapter 5). The Candidate’s preplacement medical examination was done on January 11, 2019 by a physician assistant (PA) at the local urgent care clinic. There was no physician co-signature on the Alabama Fire College (AFC) and Personnel Standards Commission Physical Statement, or the home fire department firefighter medical exam forms that the PA completed as part of this pre-placement evaluation. These records note his body mass index (BMI) was 30.5 (the Centers for Disease Control and Prevention [CDC] defines a BMI > 30.0 as obese [CDC 2021]). He denied any cardiac or respirator medical issues and was not taking any prescribed medications. The PA certified that the Candidate did not have any disqualifying medical conditions for service.

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Records from the Candidate's primary care provider showed his last routine annual exam was July 16, 2018. Results of a pre-visit blood sample drawn July 8, 2018 revealed elevated triglycerides at 199 milligrams per deciliter (mg/dL) (reference range < 150 mg/dl) and low-density lipoprotein (LDL) (low density lipoprotein or "bad") cholesterol at 140 mg/dl (reference range < 130 mg/dl). His physical exam indicated he was obese with a BMI of 31.5. He was not on any medications and reported as never being a smoker. The records do not indicate that either medical issue (obesity and high cholesterol) was addressed in the treatment plan.

The Candidate was diagnosed with hyperlipidemia in 2015. His triglyceride levels appear to have been in high range of normal from 2015 to 2017 (normal range for triglycerides was < 150 mg/dL). In 2018, his triglycerides significantly increased from 116 mg/dL in 2017, to 199 mg/dL in 2018. The candidate was never prescribed medication for hyperlipidemia control.

Medical Findings

The autopsy showed a slightly heavier than normal heart (cardiomegaly). Cardiomegaly, without the presence of hypertrophy (thickening of the heart chamber walls), is neither a category A or B medical condition that would affect a candidate's ability to safely perform essential job tasks according to NFPA 1582. All other anatomical and physiological findings were within normal limits. The hospital ED recorded a core temperature of 103.8°F upon the Candidate's arrival.

The Candidate exhibited symptoms of heat-related illness (HRI) and dehydration during training the week before his death which was treated with a liter of IV fluid by on-site EMS and immediately returned to the class. There was no mention of previous episodes of HRI and/or dehydration in the Candidate's medical records.

Autopsy Findings

The medical examiner's report listed the cause of death as "probable heat stroke" due to the clinical findings of a rectal temperature of 103.8°F on arrival to the ED. Additionally, the Candidate had a history of becoming overheated during training just prior to collapse and had warm and dry skin reported by those performing CPR immediately after collapse. The report also noted there was no urine in the bladder during the autopsy which can be a sign of dehydration. The coronary arteries were clear of atherosclerotic plaques and there were no focal areas of damage in the heart indicative of a recent or prior heart attack. Toxicological analysis and carboxyhemoglobin levels conducted on post-mortem blood samples were also negative.

Fire Department

The Candidate's home fire department is a combination department. The department has 11 full-time, 6 regular part-time, and 8 volunteer firefighters. There are 2 stations, each with minimum staffing of 2 full-time firefighters per station. Apparatus include 4 engines, a service truck, a mobile command vehicle, a HAZMAT truck, and a chief's car. The department ran over 800 emergency calls in 2019, with 80% being for EMS. The department covers approximately 9 square miles with a population of over 4,000 residents.

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Employment and Training

The Candidate had been a volunteer firefighter with the department since October of 2018. Between October 2018–March 2019 the Candidate completed his 160 hour volunteer firefighter training certification. This certification course was administered by his home department. An offer for a career position was made in January 2019.

Periodic Medical Evaluations/Return to Work Medical Evaluations

The home fire department does not have a policy for periodic medical evaluations for their firefighters. Return to work medical evaluations are similar to the preplacement medical examination policy in that a physician is required to perform an examination to verify a firefighter’s ability to perform NFPA 1582 essential job tasks. In this incident, the Candidate was not directly working or training within the jurisdiction of his home department, nor was he under the direct supervision of home department personnel. Also, home department administration were not aware of the medical interventions that occurred on June 11 at the training center. The regional training center had policy addressing medical evaluations following an injury. The complaint and HRI assessment should have triggered this policy.

Wellness/Fitness Programs

The home department of the Candidate does not have a formal wellness/fitness program in policy. There are wellness evaluation benefits associated with employee insurance benefits. Employee insurance participation is voluntary with nearly 100% of firefighters at this department enrolled. Although evaluation results associated with insurance wellness benefits are not typically made available to fire department administrators, firefighters should be taking advantage of these wellness opportunities when possible. Physicals, immunizations, and age appropriate screening and exams such as colonoscopy and mammography, are examples of potential wellness features of an insurance plan.

Discussion

The training programs associated with the state of Alabama place qualified individuals into frontline positions to protect and serve communities throughout the state. The contributing factors associated with this case are related to policy and procedure application, and recognizing indicators of heat stress injury.

Pre-placement Medical Evaluation

The home department has a basic physical evaluation form. It is not as comprehensive as NFPA 1582 recommends, but includes a non-invasive physical evaluation of general systems and organs (e.g., skin, head, neck, neurological, cardiovascular, etc.). Each system or organ is designated as normal or abnormal. Abnormal findings can be described further. The state certifying agency and regional recruit academy have a “Physical Statement” form that is to be signed by a state licensed physician within the 12 months prior to the school start date. This form is meant to aid the physician with their assessment of a recruit candidate’s physical ability to perform firefighting tasks. The form clearly asks for a physician evaluation and signature regarding the evaluation of physical ability to do firefighting tasks.

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NIOSH investigators reviewed two other policy documents that outlined the signing of this form. One document, AFC and Personnel Standards Commission: Firefighter I/II Recruit Academy Handbook, states that it requires an “ALABAMA-LICENSED PHYSICIAN” to conduct the evaluation while the AFC Fire Fighter I/II Recruit School Admission Criteria summarizes the Physical Statement requiring the signature of a “medical doctor, or such physician’s designee.” Although this contradiction may not have contributed to the Candidate’s ability to start the class and participate in firefighter training, it is an inconsistent detail. This discrepancy should be clearly resolved in all documents so that a consistent level of provider is required to assess the incoming cadets throughout the intake process.

The Candidate’s “Physical Statement” was signed by a physician’s assistant in January 2018, approximately 5 months prior to the start of the school and it was also incomplete. The Candidate was informed at the January evaluation that two required elements of the “Physical Statement” exam, spirometry (also known as pulmonary function testing or PFTs) and a chest x-ray, could not be completed at that particular health care provider’s office location and was advised to seek the tests elsewhere. We could not find evidence that these components were done. Therefore, this candidate did not have a valid preplacement medical evaluation as it was missing required components.

Heat Stress Management

At the beginning of a basic firefighting course all firefighter candidates are considered as unacclimatized to the work environment of a firefighter. There may be some varying factors, such as some cadets having experience with certain jobs that have a high level of heat exposure and candidates with actual firefighting experience. Cadets may also be living in a different geographic region with a vastly cooler climate. Aside from the varying backgrounds and home locations of the incoming cadets, viewing the cadet class as unacclimatized provides a layer of safety needed when wearing full firefighter gear with SCBA during training. The weight of the gear adds to the physical exertion and the very properties that provide protection from heat, fire, and smoke also reduces the dissipation of metabolic heat generated by exertion. The pre-placement medical examination should also identify medical conditions the applicant has and/or medications (prescription, over-the-counter, or supplements) they are taking that could affect their ability to dissipate heat and place them at increased risk of HRI or heat stroke.

The Candidate had been doing training drills with his home department for several months preparing for this class, but it would be difficult to gauge the intensity of that physical fitness preparation with the intensity of the consumption course delivered by this program. The consumption course may be a reasonable firefighting skills evaluation that measured task completion and acclimatization to task performance in full personal protective equipment (PPE), but unacclimatization of individuals must be considered in the first week of such a training course.

The first incident that occurred on the Tuesday, June 11 could be interpreted as a sentinel event as there is no documentation of a prior HRI illness in this candidate’s history. It is possible that rhabdomyolysis, the breakdown of injured muscles, may have also played a role in this fatality. Rhabdomyolysis can be caused by many things, but heat and exertion are well recognized risk factors. More information on rhabdomyolysis can be found on the [NIOSH Rhabdomyolysis Topic Page](#). Since hospital records do not include the blood test (creatinine kinase) used to check for this condition, we

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cannot make any determination regarding the extent that rhabdomyolysis may have placed in this event. However, the fact that intervention by EMS was needed to assist in his recovery of HRI and dehydration with IV fluids prior to the date of his final collapse, must be considered a significant event that may have benefited from a physician follow-up and evaluation prior to resuming participation in the recruit class.

The Candidate continued to not feel well after the first event, as he sought medical attention during the weekend; even though he was able to finish the first week of recruit school. The healthcare provider prescribed medication to the Candidate. Individuals should bring all new diagnoses and medication use to the attention of the responsible agency, be it the home department or a regional training center. Direct and side effects of any medication must be evaluated by a healthcare provider familiar with the job tasks of firefighting.

Recommendations

Recommendation #1: Provide preplacement and annual medical evaluations consistent with NFPA 1582.

Discussion: The content of the preplacement physical in this case did not meet the fire service consensus standard found in the NFPA guidance. This guidance regarding the content and frequency of these medical evaluations can be found in NFPA 1582 [NFPA 2022]. These evaluations are performed to determine a firefighter's medical ability to perform duties without presenting a significant risk to the safety and health of themselves or others.

Recommendation #2: Medical evaluations should be performed by a provider familiar with the physical and psychological demands of firefighting.

Discussion: According to NFPA 1582, fire departments, or responsible agencies, should require that physicians be familiar with the physical demands of firefighting and the risks that firefighters encounter and should guide, direct, and advise members regarding their health, fitness, and suitability for duty [NFPA 2022]. The physician should review job descriptions and essential job tasks required for all fire department positions to understand the physiological and psychological demands of firefighting and the environmental conditions under which firefighters perform, as well as the personal protective equipment they must wear during various types of emergency operations and training. A focused medical assessment of HRI risk factors may also have been helpful.

Recommendation #3: Fire Department/Training Center policy and procedure should address heat exposure topics, HRI (signs and symptoms), and medical monitoring during training or emergency operations. Considerations for unacclimatized firefighters should be accounted in the initial 1–2 weeks of training.

Discussion: The training center had written policy and formal training recognizing the signs and symptoms of HRI. The training occurred in the initial days of the recruit school, and all members of the recruit school received the training, including the Candidate. Ongoing reminders were noted to be in use such as urine color charts in the restrooms depicting signs of rhabdomyolysis. Symptomatic rhabdomyolysis is often a late finding in HRI.

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All recruit firefighters entering full-time intensive firefighting training should be considered unacclimatized. This is of greater importance if medical pre-screening does not accurately assess the recruit firefighter's physical fitness, and specifically cardiovascular health. Though many occupations require heat acclimatization, full firefighting PPE provides a unique factor that calls for labelling all recruits as unacclimatized, regardless of other work history.

Acclimatization is the physiological changes that occur in response to a succession of days of exposure to environmental heat stress and reduce the strain caused by the heat stress of the environment; and enable a person to work with greater effectiveness and with less chance of heat injury. After daily heat exposure for 7–14 days, most individuals perform work with a much lower core temperature and heart rate and a higher sweat rate [NIOSH 2016]. Recruit firefighter programming should always purposefully account for acclimatization of the group in the first two weeks of training.

Recommendation #4: Review policy on return-to-work medical evaluations as the candidate had a heat-related illness the previous week during training that required medical attention.

Discussion: The recruit policy manual at the time of the class, July 2019, contained language specific to injury and requisite actions for return to the academy. Reflected in the manual reference was any incident requiring medical care necessitated a physician's medical release to return to training.

In the recount of the first day of class on July 10, the Candidate required a medical assessment by on-scene paramedics. That assessment resulted in the administration of IV fluids, an invasive medical procedure which should have triggered the policy benchmark of "medical care." A physician evaluation and release to return to training would have been reasonably expected per policy at the time of the incident. Although the candidate did not enter the training program with any known history of severe HRI, the fact that he required medical intervention to treat an episode of HRI was not recognized as a potential sentinel event and he did not receive a medical assessment prior to returning to training in the conditions that prompted his first known episode of HRI. It is possible that a HRI risk factor focused assessment may have identified additional risks other than the heat and exertion from the training itself that resulted in the first HRI event before his subsequent fatal one. On-site EMS assessment of return to normal vital signs following intravenous fluid administration after initiation of cooling methods is not the same as medical evaluation for new medical condition or medication interactions that could have been prompted by the first event and could have been addressed prior to the second.

The policy manual may serve to be updated with more a specific definition of "medical care." Invasive procedures, such as IV fluid administration, would require physician review and release, while minor wound cleansing and bandaging would not.

References

Alabama Fire College and Personnel Standards Commission: Firefighter I/II Recruit Academy Handbook

Alabama Fire College and Personnel Standards & Education Commission: Fire Fighter I/II Recruit School Application Packet

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Investigator Information

This incident was investigated by the NIOSH Fire Fighter Fatality Investigation and Prevention Program, Cardiac/Medical Team, in Cincinnati, Ohio. Rob Saunders, a Technical Information Specialist with NIOSH, conducted the field investigation and co-authored the report. He has been in the fire service for over 31 years with the Pike Township Fire Department, Indianapolis, Indiana. In addition to having served as a company officer, firefighter, paramedic, heavy rescue technician, and rescue diver, he has held Division Chief of Emergency Medical Services, Deputy Chief of Operations, and Fire Chief. Judith Eisenberg MD, MS (NIOSH) provided medical consultation.

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Appendix A

Alabama Fire College Consumption Course

The training center has a 4-story training tower with interior and exterior stairwells. The consumption course consists of 10 skill stations. The stations are set up around the tower in a loop pattern. The stair climb uses the exterior stairwell, and the tire pull apparatus is attached to an exterior wall of the tower. The student is to complete 2 loops, doing each station twice. The student has 2 bottles of air to use and once both bottles are exhausted, the student will disengage the MMR and complete the evolution. The stations are as follows:

Station 1: Rafter Crawl

The student will crawl across a set of rafters placed on the ground. The rafter prop will consist of 10 rafters placed on 2' centers.

Station 2: Wood Chop

Using an 8-pound sledgehammer, the student will strike a 6 x 6-inch piece of wood for 2 minutes using a stopwatch to keep time.

Station 3: 2½ inch Hose Roll

The student will unroll then roll a 2½ inch hose straight roll.

Station 4: Tire Pull

Using ½ inch static kernmantle rope attached to a 4-inch pulley, the student will hoist a tire 22 feet into the air then control the decent back to the ground. The student will complete 1 set of 3 pulls. The tire will weigh 50 pounds.

Station 5: Stair Climb

With a 2½ inch section of hose draped over the student's shoulder, the student will ascend and descend stairs until the student has met the required 71 steps ascending and 71 steps descending.

Station 6: Tire Drag

Using an 18-wheeler tire and an 8 ft 1¾ inch piece of hose attached for dragging the tire, the student will drag the tire a distance of 100 ft.

Station 7: SCBA Bottle Carry

The student will carry 2 SCBA bottles 50 ft, around a cone, then back 50 ft. The SCBA bottles will be filled with sand to weigh 40 lbs. each.

Station 8: Pipe Crawl (Dummy Drag on Day of Investigation)

The student will crawl through a 36-inch diameter pipe for a length of 20 ft.

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Station 9: Ladder Shift

Using a 14 ft roof ladder set at the proper angle for climbing, the student will shift the ladder a distance of 30 feet and reset the ladder at the proper climbing angle.

Station 10: Dummy Drag

The student will drag a 115-pound dummy a total of 100 ft.