B-138

STATE OF NEW JERSEY

In the Matter of
Jimmie Borges, *et al.*,
Fire Captain, Second Level
Various Jurisdictions

CSC Docket Nos. 2015-1802
2015-1679
2015-1724
2015-1786
2015-1678

FINAL ADMINISTRATIVE
ACTION OF THE
CIVIL SERVICE COMMISSION

Examination Appeals

ISSUED: FEB -9 2015 (RE)

Jimmie Borges, Fire Captain (PM1124S), Irvington; Brendan Corcoran and George Davakos III, Fire Captain (PM1141S), Ridgewood; Marc Friddell Sr., Fire Captain (PM1149S), Willingboro Township; and Don Santangelo, Fire Captain (PM1133S), Nutley, appeal the correct responses to various questions on their respective promotional examinations. These appeals have been consolidated due to common issues presented by the appellants.

It is noted for the record that this two-part examination consists of a written multiple-choice portion and an oral portion. The written portion of the examination included seven scenarios, each with a description and various accompanying diagrams, and candidates were required to answer questions pertaining to each scenario. The appellants challenge the correct responses to questions 1, 5, 7, 8, 12, 19, 22, 23, 24, 26, 31, 32, 35, 38, 41, 61, 64 and 72.

Questions 1, 5, 7 and 8 pertain to the first scenario involving smoke coming from a 2-story, single family, Colonial-style home.

Question 1 asked for the command type to be used for this incident, and the keyed response was option b, single. Mr. Corcoran argues that the correct response should be option d, unified. In support, Mr. Corcoran argues that a single command is not a definition in the Incident Command System (ICS). He states that, while a single commander may be in charge of an incident it must always be structured to expand to unified command when necessary. The definition for a single person in

charge of a scene is incident command, and when expanded to multiple jurisdictions or agencies, it is unified command. Single command is not the terminology used in the ICS and therefore cannot be an answer. Although a single commander would likely be used in this scenario, the only viable answer of the options provided is unified command. He provides quotes from the OSHA.gov website, "The Incident Commander (IC) or the Unified Command (UC) is responsible for all aspects of the response, including developing incident objectives and managing all incident operations," and "Although a single Incident Commander normally handles the command function, an Incident Command System (ICS) organization may be expanded into a Unified Command (UC)."

In reply, although the appellant argues that an incident must always be structured to expand to a UC when necessary, the resources arriving on scene with the initial IC and the conditions presented in the scenario do not require a UC at this point. A UC is used for large-scale incidents or incidents that have evolved significantly, requiring multiple agencies. It is not for initial alarm responses at single family homes. Additionally, as indicated in the final quote above, a UC is expanded from a single IC. Subject Matter Experts were consulted in the development of items for this examination and they agreed that the keyed response is the best response.

Question 5 asked for the MOST LIKELY path(s) of fire spread in this building, based upon the narrative description of this building and the diagrams. The keyed response was option d, both a and c. Option a was pipe chases and option c was soffit spaces. Mr. Corcoran argues that the correct response should be option b, open stairway. He states that while fire spread is likely to occur in pipe chases and soffit spaces in a kitchen fire, there are inherent barriers in place. Thus, the open interior stairway is the most likely cause of fire travel. He states that, while Francis L. Brannigan's *Building Construction for the Fire Service*, 5th edition discusses both means of fire spread and their likelihood, page 199 supports the appellant's response with, "In single-family homes, this (open interior stairway) is the quickest way for smoke and heat to rise to the top of the home." The appellant states that *Brannigan* discusses how the open interior stairway is a vertical chimney and it is paramount to place a line here to halt fire spread. He states that a line protecting fire spread up the stairs is always prioritized over searching for fire extension in pipe chases and the like, because it is the most likely path for fire travel.

In reply, the appellant relies on page 199 of *Brannigan* which states that the open stairwell is a common vertical means of fire spread in balloon-frame and platform-frame buildings, and that in single-family homes, this is the quickest way for smoke and heat to rise to the top of the home. *Brannigan* goes on to state that it is essential that this vertical chimney be protected by a hoseline to prevent extension and provide a means of egress. But, *Brannigan* also states on that page

that, "Another common construction feature provides a bypass to fire, and from a fire protection point of view, converts a platform-frame building into a balloon frame building. Soffits (false spaces above built-in cabinets, usually in a kitchen or in the undersides of stairways and projecting eaves) provide a connection, generally without a fire stop, between the wall and joist spaces...A kitchen fire that extends into such a cabinet will enter the soffit space quickly." In addition, on pages 363 and 364, *Brannigan* states, "In garden apartments, plumbing fixtures are vertically aligned, one above the other, for economy and speed of construction. The necessary piping is run through vertical voids. Plumbers often weaken structural members during installation by cutting into them. The result is that a fire that starts in or penetrates this void could extend rapidly, both vertically and horizontally, as well as to the attic above." While the scenario is not a garden apartment, the narrative and diagrams clearly present built-in cabinets, and indicate the kitchen and second floor bathroom's vertical stacking. Upon arrival, smoke is seen venting from side C, the same side where the home's kitchen is located on the first floor. The diagram shows most of the kitchen involved in fire, but not the staircase, which is located in the middle of the house directly across from the front door. The MOST LIKELY path(s) of fire spread in this building, based upon the narrative description of this building and the diagrams are the pipe chases and soffit spaces. Given this information, the keyed response is correct.

Question 7 indicated that your engine company is preparing to stretch a 1¾ inch hose line. It asked candidates to complete the sentence, "You should ensure that they are using a nozzle with an opening no larger than..." and the keyed response was option b, ⅞ of an inch. Mr. Friddell argues that the correct response should be option d, 1¼ inches. He argues that none of the answers are correct based on the wording of the question. He states that, if worded differently, the answers ¾ or 7/8 could be accepted as a correct, but it asked to "ensure that it is not greater than." The firefighter could grab a 15/16 inch tip per the maximum size tip or face according to John Norman's *Fire Officer's Handbook of Tactics*, page 80, wherein it is stated, "For 1¾ inch line, the 15/16 inch tip is about the maximum. This rule applies to fog nozzles as well as solid tips."

In reply, first, it is noted that a 15/16 inch tip was not an option and the appellant selected a 1¼ inch tip. Next, a 15/16 inch tip is 5/16 of an inch smaller than 1¼ inches, and only 1/16 of an inch larger than the keyed response. Page 80 of *Norman* states, "As a rule of thumb, no nozzle should have an opening greater than half the diameter of its supply." Half the diameter of 1¾ inches is ⅞ of an inch. *Norman* allows for an extra 1/16 of an inch of leeway. No other choice than the key is a better choice. The keyed response is the best response.

Question 8 asked where should you position your first hoseline at this incident, and the keyed response was option c, in the main hallway towards the kitchen. Mr. Santangelo argues that the best response is option a, right inside the

front door to protect the stairway. In support, the appellant claims that *Norman* states on page 73, "In deciding where to position the hoseline remember the following priorities: protect human life, confine the fire and then extinguish it." Having the hoseline right by the stairs protects the firefighter and occupants above the fire so that a primary search of the bedrooms, the area of highest life hazard, can be performed, regardless of the time of day.

In reply, page 73 of *Norman* states, "In deciding where to position the hoseline remember the following priorities: protect human life, confine the fire and then extinguish it. This usually involves placing a hoseline between the fire and the victims." In this scenario, the fire is in the kitchen, and a portion of the den and a long hallway separates in the kitchen from the entrance to the stairs. Placing the hoseline in the hallway towards the kitchen both protects life and confines the fire. Fire would have to over-take the hose team to extend to the stairway. Placing the hoseline at the stairs is a significant distance from the flames, and allows the fire in the kitchen to continue unabated. The keyed response is the best response and will not be changed.

Questions 12, 19, 22 and 23 pertain to the second scenario involving an activated fire alarm at a lounge in a three-story building, which has apartments on the upper floors.

Question 12 asked how you should speak when announcing your arrival using the mobile microphone. The keyed response was option c, across the microphone at a 45-degree angle and hold the microphone 1 to 2 inches from your mouth. Mr. Devakos argues that the correct response is option a, into the microphone and hold it directly in front of and facing your mouth. In support, he states that page 66 of Michael Ward's *Fire Officer Principles and Practices,* refers to key points to communications, and number 4 is "If you are using a radio hold the microphone about 2 inches (5cm) from your mouth." He states that this reference does not state if you should hold it from the side or from the front, and holding from the front has always been taught in training classes.

In reply, speaking across the microphone at a 45-degree angle while holding the microphone 1-2 inches from your mouth is the appropriate use of the mobile microphone. One reason for communication confusion on the fire ground is firefighters yelling into the radio when trying to speak. When an IC yells into the radio, the message being transmitted can be distorted, leaving the listener wondering what was said. This can be due to improper positioning of the radio to the mouth when transmitting. Holding the radio directly in front of the mouth when speaking can make speech sound muffled, while holding it on an angle makes speech clearer for the listener. Also, this is cited in the 3rd edition of *Fundamentals of Firefighting* on page 108. The keyed response will not be changed.

Question 19 indicated that your search team radios you from the 3rd floor; they are at the door of apartment 3C without the protection of a hoseline. The door is closed and they are experiencing smoke pulsating out from underneath the door and then being drawn back in. Candidates were to complete the sentence that started with, "You instruct your search team to..." The keyed response was option d, standby and await the arrival of the hoseline. Mr. Santangelo argues that having the aerial vent the C side windows would allow the search team to remove and rescue the occupants. He quotes page 243 of *Norman*: "Generally, horizontal ventilation for life must be coupled with an immediate rescue effort. Either a member must enter the area and remove the victim, or a hoseline must be brought in to protect the victim where he or she is trapped." Based on this, the appellant maintains that venting the windows must be done.

In reply, the appellant's reliance on *Norman* is misplaced, as it refers to a general situation. In this case, smoke pulsating out from underneath the door and then being drawn back in, which is not a general situation, but an indication of an extremely unusual and dangerous situation, with a high potential for a backdraft explosion. The only ingredient necessary to ignite the explosive mixture is oxygen, which can be added when firefighters enter the room to begin the attack, or if ventilation is performed in the wrong location. On pages 46 and 47, *Norman* states that a number of firefighters have been seriously burned or killed by this occurrence. The question indicates that the search team is at the door of apartment 3C without the protection of a hoseline. Even if the aerial vented the window, the team should not proceed without protection of a hoseline. The keyed response is the best response.

Question 22 stated that your hose-team has reached the standpipe cabinet, and it asked what they MUST do prior to operating the standpipe. The keyed response was option c, bypass the pressure-reducing valve. Messers. Devakos and Friddell argue that the correct response is option b, open the hose outlet valve at the riser closet. Mr. Devakos concedes that page 152 of *Norman* states that the "pressure reducing valve must be bypassed for fire department use," but argues that the answer to the best and first practice which is always instilled in any firefighter is to open the valve and look to see if there is a constant stream of water and nothing obstructing the opening. He states that this is supported by *Norman* on page 154 with, "Before the member connects the hoseline to any standpipe system, the valve discharge opening should be inspected visually or inspected by cracking the valve open to clear the outlets of any items that are stashed inside." Mr. Friddell states that, prior to 1993, the code on sprinkler systems and standpipe systems did not require a pressure relief valve. He states that the scenario did not indicate that one was present, and not all systems installed prior to 1993 had such a valve to be bypassed. He states that a precise answer could not be selected.

In reply, the narrative for this scenario states, "The building has class three, automatic wet standpipe cabinets in the stairway located on Side C near the Side B/C corner. The cabinets contain combination outlet control and pressure-reducing valves. The standpipe system is fed by a 250-gallon pressure tank, as well as the fire department connection. The fire department connection is on Side C. The standpipe system was installed in the late 1980s." As such, Mr. Friddell is simply mistaken in his assertion that the scenario did not indicate that a pressure-reducing valve was present.

In addition, the question specifically and intentionally does not ask what should be done first, but asks what MUST be done before operating their hose line connected to the standpipe for professional firefighter fire suppression. Page 154 of *Norman* does not say the valve MUST be cracked open. Instead, it states, "Before a member connects a hoseline to any standpipe system, the valve discharge opening should be inspected visually or inspected by cracking the valve open to clear the outlets of any items that are stashed inside." *Norman* then relates experiences in high drug trafficking areas where drug dealers have been known to hide their dope inside these valves. The scenario makes no references to drug deals, nor does it mention that this building is in a known high drug trafficking area. It is also noteworthy that *Norman's* primary and first-listed remedy is to visually inspect the valve, and that his secondary option is to crack the valve open. Nevertheless, it does not use the word "must" in relation to these actions. In contrast, page 152 of *Norman* uses the word "must" in reference to bypassing the pressure reducing valve because, and if they fail to do so, firefighters could die. The keyed response will not be changed.

Question 23 stated that during firefighting operations on the 3rd floor a small explosion occurs, and it asked what action should you take FIRST. The keyed response was option a, conduct a PAR (Personnel Accountability Report). Mr. Santangelo argues that the best response is option d, evacuate the building. He states that page 38 of *The New Jersey Firefighter Skills Addendum* states, "Order an immediate personnel accountability roll call of all members operating at the incident to be conducted as soon as they EXIT the hazardous area." He argues that the question states there was a small explosion, but stability of the building is unknown and therefore evacuation of all fire personnel is the safest action.

In reply, the question asked for the FIRST action to take after a small explosion on the third floor. Conducting a PAR can be done quickly by radio and does not involve removing all personnel from the building, which delays operations and rescue. The SMEs determined that a small explosion, such as from an exploding hair spray or deodorant canister does not warrant an evacuation. They agreed that a PAR was most appropriate to see if their crews were okay and could identify and elaborate on the small explosion. The *Addendum* refers to conducting a PAR after evacuating the building *if the need arises*: however, the SMEs

determined that this situation did not warrant an evacuation. The keyed response will not be changed.

Questions 24, 26, 31 and 32 pertain to the third scenario. This scene involves a report of smoke coming from an auto repair shop.

Question 24 stated that you are heading east on Franklin Street approaching the scene from the west, and it asked for the BEST location for your command post at this incident. The keyed response was option c, at the Side A/D corner. Mr. Friddell argues that the best response is option a, at the Side A/B corner. In support of this option, he states that smoke is blowing across the street and could hinder the IC from properly operating at the scene of the fire. He agrees that the side A/D corner will allow the IC to observe two sides of the structure and on both streets, but the smoke blowing at the rate of speed quoted could block this field of vision down the division A of the structure. Furthermore, the IC may have to put on an SCBA to stop the ill effects from the smoke and products of combustion of petroleum products. The A/B corner of the property keeps your two sides of the building in view, and the IC will have a visual on the two unburned apartments attached to the garage, and may be able at least to save those properties. He adds that trees on that corner obstruct aerial placement so the A/D corner is not the best answer.

In reply, the scenario indicated that the wind is blowing from the north to the south at 19 MPH, that is, from the back of the structure to the front. Both the keyed response and Mr. Friddell's response include side A, and therefore the issues regarding smoke would be the same for both. The SMEs indicated that the IC would be traveling eastbound on the street, and pulling past the scene would place them on the Side A/D corner which provides a three-sided view for size-up. Further, the scenario included the following note: "Since it is meant to be November, disregard the presence of foliage in the overhead diagram on page #11 of Booklet B." That issue aside, there are trees in the lawn closer to the A/ B corner of the building and over the street, than to the A/D corner, where the trees are on properties across the street. Thus, the question is correct as keyed.

Question 26 asked which option would contain the MOST helpful information at this incident, and the keyed response was option b, Safety Data Sheets (SDS). Mr. Devakos selected option a, Emergency Response Handbook (ERH), and argues that data sheets, if available, can provide information, but they are not readily available, they are not always up to date. He states that page 206 of *Hazardous Materials: Managing the Incident,* Noll and Hildebrand, 4th edition, states, "...However until the system is fully implemented in 2015 responders should recognize that:

- Current SDS have no information or consistent format or layout. The only regulatory requirements are that the specific data is provided

- Computer generated SDSs may be difficult to initially use and interpret because of their layout.
- There are no regulatory requirements concerning the language and terminology used. SDSs for the same chemical that are produced by different manufacturer may appear different and, in some instances, may use different terminology.

He states that page 121 of *Noll and Hildebrand* states "The ERG is a good resource document to guide the IC in making quick initial judgment calls on which PPA option to implement. The guidebook also provides some basic guidelines concerning the size of the initial isolation zone based on the type of hazardous material and the size of the container. The IC should be familiar with how to use the Emergency Response Guidebook. The instructions to the ERG provide some useful background information on PPA making." He argues that the ERG is widely and always available to every first responder. The orange book is concise and can be searched by number, name, chemical, picture of placard and then gives a guide which is utilized for the initial incident plan. It is the best and quickest form of information used by the IC.

In reply, the question did not ask for the most widely available option, but the most helpful. Page 10 of *Noll and Hildebrand* states that, "HazCom is a federal regulation that requires hazardous material manufacturers and handlers to develop written Material Safety Data Sheets (MSDS) on specific types of hazardous chemicals. These MSDSs must be made available to employees who request information about a chemical in the workplace. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), the MSDS term is changing to the term Safety Data Sheets (SDS) as the impacts of the global harmonization becomes more integrated into the regulatory and environmental health and safety communities." This question asked which would contain the MOST helpful information *at this incident*." Thus, the response should be specific to the information provided for the candidate in both the narrative and diagrams, rather than be a general application. The narrative stated, "The auto shop contains various types of automobile service machinery. There are various types of gas cylinders that are used in welding, as well as large 50-gallon drums of both fresh and used motor oil, transmission oil, and anti-freeze. The building is heated by an old waste oil furnace. The structure has no auxiliary appliances." The diagram showed the location of those products listed in the narrative, and some were on fire. The ERH is not going to tell the IC what he is dealing with in this building, and the fire impedes access to the labels on the products. The SMEs agreed that the correct answer is the keyed response, which will not be changed.

Question 31 asked how this fire should be vented, and the keyed response was option a, open the garage doors on side A. Mr. Borges argues for option c, cut a vent hole directly above the seat of the fire. In support, he states that breaking the windows on side C is not logical, the keyed response would draw fire through the

garage possible igniting compressed gas cylinders or gas cans, products of combustion should be flushed up and out to allow the nozzle team to enter and extinguish the fire, and there is a backdraft concern due to the large distance between the bay doors and the location of the fire.

In reply, in this scenario, heavy black smoke is venting out from above and below both Side A garage doors and being whipped by the heavy wind. The wind is blowing from the north to the south at 19 MPH, and the bay doors on the south side. The fire is on the north side of the first floor, and no fire is showing on the second floor. Cutting a hole in the roof will vent the smoke that has risen to the second floor, but takes time and is much smaller than the opening of two bay doors. Opening the bay doors takes only seconds to do, and the smoke will be drawn away from the building as the doors are on the leeward side. In addition, the scenario indicates that the roof is constructed of corrugated metal decking laid over unprotected open-web steel-bar joists. Putting people up on the roof is not recommended due to potentially sudden steel bar joist failure. Venting natural openings is the best bet. However, due to strong north wind the best answer is to open garage doors ONLY. The SMEs recommend NOT venting north side widows due to strength of wind, and venting both sides A and C would cause these strong winds to blow through the building making the fire conditions much worse. Thus, the keyed response is the best response.

Question 32 stated that your crew encounters a gas cylinder tank inside the fire building with a yellow DOT placard, and it asked what the yellow indicated. The keyed response was option a, the presence of oxygen. Mr. Friddell argues that the correct response is option b, a flammable gas. In support of option b, the appellant states that placard 122 #1072 is yellow for flammable gases, placard 121 #1980 is green for nonflammable gases. Thus, he believes there are two possible correct answers using the DOT-2012 ERG guide.

In reply, the U.S. Department of Transportation Chart 15, Hazardous Materials Markings, Labeling and Placarding Guide, and the New Jersey Motor Vehicle Commission Commercial Driver's License Manual, show yellow placards indicating oxygen. Flammable gases and liquids have red placards. The keyed response is the best response and will not be changed.

Questions 35, 38 and 41 pertained to the fourth scenario, where smoke is venting out of open windows on side A of an historic home converted from a grist mill built in 1759.

Question 35 asked what is MOST IMPORTANT initially at this incident. The keyed response was option d, requesting an additional alarm. Mr. Devakos argues that the correct response is option b, establishing unified command. In support of this response, Mr. Devakos argues that in every book including the New

Jersey State Police ICS, FF1, and Fire Officer training, the first thing to do when on the scene of an emergency is to establish command. Then all other aspects can be done. He states that page 589 of *Norman* instructs, "Establish the fire department CP [command post]. Designate a staging area and assign a company officer to command the staging area until the arrival of the staging chief. Notify the dispatcher of the nature of the incident and the need for additional fire units or other agencies' resources." He argues that the IC has to be set up first and acknowledged, and this lets all responders to the scene know who is in charge of the incident. This is done before the calling for subsequent needed resources such as second alarms.

In reply, the option chosen by Mr. Devakos was not to establish command, but to establish unified command, which is not the same. Without the presence of multiple agencies, unified command cannot be established. Of the options provided, the keyed response is correct.

Question 38 asked which factor is MOST SIGNIFICANT regarding this structure's stability when exposed to fire. The keyed response was option a, the way the wood members are connected. Mr. Corcoran argues that the correct response should be option b, the high surface to mass ratio of structural members. He argues that "connections are not an issue in heavy timber buildings; their most significant factor is actually their stability, not instability, due to their massive masonry walls and large timber girders and columns. He argues that chapter 3 of *Collapse of Burning Buildings, A Guide to Fireground Safety,* 2nd edition, by Vincent Dunn, includes a section on Heavy Timber construction which indicates that a heavy timber building does not collapse while interior firefighting takes place. Only after heavy fire for several hours leads to eventual floor collapse does a collapsing masonry wall pose a threat to firefighters outside the structure.

In reply, the section of Chapter 3 in *Dunn* noted by the appellant does not indicate that a heavy timber building does not collapse while interior firefighting takes place. Rather, it discusses why a fire in a heavy timber building is not "slow-burning," and that it can experience a large fire and ignite adjoining structures. In addition, it explains that the surface to mass ratio is *small* in timber construction, not high. However, page 235 of *Brannigan* states "It is important to notes that the fact that a particular material may burn slowly is much less important than how the structure is connected. All loads must be delivered to the ground; the entire path must be examined. Study the connections." The keyed response is correct.

Question 41 asked candidates to finish the sentence, "You should order your 1st engine company to stretch a ...," and the keyed response is option c, 2½ inch hoseline. Messrs. Corcoran and Devakos argue that the correct response should be option b, 1¾ inch hoseline. In support, Mr. Corcoran argues that a 1¾ inch hoseline is more appropriate than a 2 ½ inch in this situation. While a 2½ inch hoseline

would be appropriate in mill construction while still in commercial use, its conversion to single family home changes the deciding factors. He states that pages 60-61 of *Norman* outline the factors for hose line selection and their relevance:

- 75% of fire deaths occur in residential structures
- Fire load in a residential structure is relatively low compared to commercial occupancies,
- The conversion to a single family also added partition walls and the creation of rooms in a previously open floor plan, and the walls and doors slow the spread of fire growth.

He states that these factors emphasize the need for speed and the use of a 1¾ inch hoseline that can be stretched with the minimum number of personnel; the conversion to a single family home eliminates the storage of materials, stock, etc., and a 1¾ inch hoseline is more than adequate to extinguish the room and contents fire shown in the diagram; GPM from a 1¾ inch hoseline is adequate, and the movement of the hose line around the obstacles of doors and walls make the 2½ inch hoseline slow and unwieldy.

He then argues that page 61 of *Norman* states, "Past experience has shown that 2½ inch hoseline is impractical and unnecessary in all but the largest of residential fires." The fire in the diagram shows the fire to be isolated to a couple of rooms on the second floor of the residence. *Norman* selects a 2½ inch hoseline in commercial occupancies for these reasons:

- Fire loading is higher in commercial over residential
- Larger floor areas demand larger stream
- Often there are more flammable materials around that can accelerate a fire

Mr. Devakos states that the narrative called this a residential structure converted in 1972. He argues that it appeared from the pictures that this was a content fire, not a structure fire. Because it is a residence, the fuel load is low and not high as if it was an active grist mill. He contends that the 1¾ inch hoseline would be used based on its present use, not its past use. The initial use of the 1¾ inch hoseline would allow quicker access to the second floor bedrooms, the occupant life hazard would benefit and the speed and mobility will allow protection of the stairs from the second floor residence. He states that page 420 of *Norman* states, "In residential occupancies, speed is one of the highest priorities in engine company operations, due to the potential of high life hazard. A hose line must be immediately placed between the fire and anyone endangered by it. The smaller fire areas and the lighter fuel loads of homes permit the use of lighter, medium-sized lines, which are easier to stretch." Also on page 22 *Norman* refers to heavy timber stating, " ....The sheer bulk of the material makes them difficult to ignite, and once ignited the timbers stand up to flame better than exposed steel." Because this was a residence there would be no lag time in notification and so the use of the 1¾ inch hoseline line would be the best initial line.

In reply, the narrative indicated that this home used to be a grist mill. It is very old, built in 1759, and was converted to a single family home in 1972. The exterior walls are composed of solid stone masonry. Interior structural columns measure 10"x10" and the girders and beams are 8"x8". All columns, girders, and beams are made of wood. All that remains of the grain elevator is the facade on Side D. There is an attic that can be accessed by drop-down ladder that is outside the 2nd floor bathroom, but the only floor in the attic is in the immediate vicinity around the drop-down ladder. There is a cellar with earthen floor that is also unfinished. The roof is covered with slate. Contrary to the appellants' assertions, in such a building, there is a large fire load. Page 22 of *Norman* states that, once ignited, heavy timber buildings require large quantities of water to cool the large surfaces exposed to flame.

Next, page 420 of *Norman* states, "In residential occupancies, speed is one of the highest priorities in engine company operations, due to the potential of high life hazard. A hose line must be immediately placed between the fire and any one endangered by it. The smaller fire areas and the lighter fuel loads of homes permit the use of lighter, medium-sized lines, which are easier to stretch," as noted by the appellant. The text goes on to say, "This is *not* the case in commercial buildings. An advanced fire in a commercial building requires large (2 ½ in.) handlines or a master stream." Page 61 states, "Certain occupancies should dictate stretching a 2½-in. hose whenever any sizable body of fire is present, or if the true volume of fire cannot be readily determined. Most commercial and industrial properties fall into this category. The reasoning is rather simple:

- The fire loading in such buildings is usually heavier than in residential occupancies.
- The floor areas demand a longer reaching harder hitting stream.
- Often there are more flammable materials that can accelerate a minor fire."

The SMEs determined that this structure should be treated as a commercial building, rather than as a residence, as it was originally a grist mill. The mill's conversion to single family home does not change the initial construction and remove the heavy timbers. A 2½ inch hoseline is appropriate and the keyed response will not be changed.

Questions 61 and 64 pertain to the sixth scenario, which indicated smoke was venting from the chimney of a ranch house.

Question 61 asked candidates to finish the sentence, "Your crews searching for fire extension at this incident will MOST LIKELY...," and the keyed response was option a, have difficulty opening up the walls and ceilings. Mr. Santangelo argues that the correct response should be option d, need a TIC (thermal imaging camera) to find hidden fire in the numerous structural voids. In support, he argues that the residence is a 1950 ranch with plaster and wood lathe walls, with an HVAC

System in the attic which has duct work that creates hidden void spaces. He argues that page 194 of *Norman* states, "TICs are tremendous asset for search as well as overhauling". *Norman* also describes an experience when the TIC found a hot spot in 15 seconds then they broke the plaster and wood lathe to expose the fire. He argues that the TIC will reduce the amount of opening up of walls and ceilings.

In reply, this residence has wood lath, found in older types of construction. It is narrow rough strips of wood nailed to studs and covered with plaster. It can pose a problem for firefighters as they open up walls and ceilings when checking for fire extension. Any duct work in the attic of this home would come off of a trunk line that runs down the middle of the attic the length of the house, and the ducts would then go directly through the ceilings in this one story ranch. Contractors would not run ducts through the interior walls unless the HVAC unit was in the basement, then they would have to go through some walls where floor vents were not feasible. Further, option d is incorrect because it infers that the most likely way firefighters in this house would be able to find hidden fire is with the use of a TIC and because this option refers to numerous structural voids. This structure is a 60-foot by 30-foot ranch house that was built in the 1950s, utilizing wood frame construction with interior partitions composed of wood lath. So platform wood frame construction would be present which has few, if any, structural voids. Option d is applicable for ordinary construction, which is not present here. Page 199 of *Brannigan* states, "In contrast, in platform wood frame building, there is no continuity from top to bottom. If construction methods are as described, there are inherent barriers (the load bearing and non-loading bearing partition walls throughout the building) to limit the spread of fire through the walls. There is a good possibility of confining a fire to one portion of structure even if the fire gains access to a concealed space." Figure 13-6 on page 366 of *Norman* is captioned, "Platform framing has a solid 2x4 bottom plate at each level which acts as a fire-stop to reduce the extension within walls." In sum, the keyed response is correct.

Question 64 indicated that you have transferred command and returned to your crew. The IC is retaining the role of Personnel Accountability Officer. Candidates were to finish the sentence, "As the company officer, it's your responsibility to ..." and the keyed response was option b, remain in radio contact with the IC, updating the location and functions being performed by your company. Mr. Devakos argues that the correct response should be option c, relinquish the role of Personal Accountability Officer until the new IC assigns you that responsibility. He states that there is no correct answer, and that after the transfer of command has occurred, the new IC determines the most appropriate assignment for the previous IC, and that he should not continue with the role of Personnel Accountability Officer.

In reply, option c is clearly incorrect, as the stem of the question indicates that the new IC is retaining the role of Personnel Accountability Officer. As such,

the old IC no longer has that role to relinquish. On the other hand, every company officer should remain in radio contact with the IC, updating the location and functions being performed by his company. The appellant has misunderstood the options, and the keyed response is correct.

Question 72 concerns scenario seven, where heavy smoke is venting from the roof of a Chinese food restaurant.

Question 72 indicated that when investigating for the presence of natural gas inside China Moon, you utilize a multi-gas meter. The question asked candidates to complete the sentence "A multi-gas meter will determine the presence of natural gas by detecting...," and the keyed response was option d, ethane. Mr. Devakos argues that the correct response should be option a, methane. He argues that natural gas is primarily methane with small amounts of propane, ethane, and butane. He refers to page 64 of the *Addendum* which states, "The small portion of ethane is considered the identifier for natural gas. ... For this reason ethane detection equipment is utilized whenever an investigation needs to confirm the actual presence of natural gas." He contends that there are no commonly used ethane detectors in the form of a multi-gas unit, but there are many methane detectors. A multi-gas detector does not specifically check on any gas or flammability range, but its job is to notify the user that there is something, such as LEL (Lower Explosive Limit), 02 level, H2S and CO. He refers to a MultiRAE Plus device, and states that when this is "bump tested" it "uses 4 gas mix, CD, H2S, Methane, Oxygen." He states that there is no commonly used multi-gas meter 'bump gas' which uses ethane due to the low concentration of ethane.

In reply, the narrative indicated that all cooking equipment in the restaurant is fueled by natural gas. The appellant correctly quotes the *Addendum,* wherein it states that "ethane detection equipment is utilized whenever an investigation needs to confirm the actual presence of natural gas," and a multi-gas meter can detect ethane. Natural gas may primarily be methane, but so is sewer gas and swamp gas. Detecting for methane does not rule out other gases, but detecting for ethane identifies it as natural gas. If the appellant is looking only for methane, he is not necessarily identifying natural gas. The keyed response will not be changed.

CONCLUSION

A thorough review of appellants' submissions and the test materials reveals that the appellants' examination scores are amply supported by the record, and the appellants have failed to meet their burden of proof in this matter.

ORDER

Therefore, it is ordered that these appeals be denied.

This is the final administrative determination in this matter. Any further review should be pursued in a judicial forum.

DECISION RENDERED BY THE
CIVIL SERVICE COMMISION ON
THE 4th DAY OF FEBRUARY, 2015

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