B-47

STATE OF NEW JERSEY

In the Matter of Gennaro Basso, *et al.*, First Level Fire Supervisor Various Jurisdictions

CSC Docket No. 2015-1982

FINAL ADMINISTRATIVE ACTION OF THE CIVIL SERVICE COMMISSION

Examination Appeals

ISSUED: APR 2 0 2015 (RE)

Gennaro Basso, Fire Captain (PM1100SR), Atlantic City; Brian Kaczka, David Korzun Alfred Liana, Vincent Parlavechio, Edward Ratyniak, and Michael Smith, Fire Captain (PM1101S), Bayonne; Wojciech Masiak and Adam Miick, Fire Captain (PM1104S), Bloomfield; Ahmal Bunche, Cesar Gutierrez and Octavius Knight, Fire Captain (PM1110S), East Orange; Luis Atienza, Scott Clarke, Thomas Kelly, and Kevin Mulroy, Fire Captain (PM1111S), Elizabeth; Fabio Cologna and Anthony Diaz, Fire Captain (PM1123S), Hoboken; Kenneth Bulger, Joseph Ferraro, represented by Timothy Alexander, Esq., and Matthew Mitchell, Fire Captain (PM1126S), Kearny; Duane Crawford-Cobbs and Thomas Jenkins, Fire Captain (PM1131S), Newark; Nelson Rivera, Fire Captain (PM1135S), Orange; Sean Duffy, Thomas Dyk Sr. and Ryan Shouldis, Fire Captain (PM1136S), Paterson; Kenneth Febles, Fire Captain (PM1138S), Perth Amboy; Kenneth Stout Jr., Fire Captain (PM1143S), Trenton; Steven Ameli, Fire Captain (PM1147S), West Orange; Brian Salmon, Fire Captain (PM1154S), Belleville; Jeffrey Bracken, Fire Captain (PM1161S), Clifton; Patrick Hagan and Christopher Oliver, Fire Lieutenant (PM1163S), Gloucester City; Brian Majewski, Carl Tattoli Jr. and Grzegorz Wronski, Fire Lieutenant (PM1172S), Linden; David Funk and John Sher, Fire Lieutenant (PM1174S), Margate; Ryan Mauriber, Fire Lieutenant (PM1179S), Passaic; John Coppola, Fire Lieutenant (PM1182S), Plainfield; William Brower, Michael Davitt, Helmut Krauth and Brian Rocklein, Fire Lieutenant (PM1186S), Union Township; Patrick Lento Jr., Fire Lieutenant (PM1187S), Ventnor City; Michael Feeney Jr., Maureen Nally, Cormac Quinn and Billy Stanton, Fire Officer 1 (PM1194S), Jersey City; and Joseph Caruso, Charles Snyder, Jose Vargas Jr. and Stefan Vassallo, Fire Officer 1 (PM1195S), North Hudson Fire and Rescue Service,

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 through 4, 6, 7, 9, 11 through 20, 22, 24, 26 through 30, 32, 35, 38, 41, 44, 47 through 51, 53, 54, 56, 63 through 65, 67, 68, 70, 71, 73 and 74. For question 45, Mr. Davitt selected option b, which was the keyed response. As such, his appeal of this question is moot. Also, it is noted that question 25 was doublekeyed to options b and c prior to scoring.

Additionally, some appellants appeal the calculation of their scores. Mr. Bunche appeals the Notice of Ineligibility which he received. He did not provide any specific arguments except to say that he had sent in an appeal regarding several questions. In reply, the passing point for this examination was 46. All candidates who scored below the passing point received a Notice of Ineligibility. *N.J.A.C.* 4A:4-2.15(b)2, Rating of examinations, states that, "examinations consisting of more than one part may be rated independently, and candidates who do not receive a passing score on one part of an examination shall be deemed to have failed the entire examination." Thus, it was necessary to pass both portions of the examination, the oral and the written, in order to pass the exam. As he scored below the passing point in the written portion of the exam, he failed the exam. His issues regarding specific questions are addressed herein.

Mr. Brower asserts that he correctly answered 59 questions, but scored a 58. A review of his answer sheet shows that he did not receive credit for his response to question 27 due to incomplete erasures on the bubbled answer sheet. He should be credited with one point for this question.

Ms. Nally states that she counted 20 incorrect answers, for a score of 55, but was credited for only 50 correct responses. A review of her answer sheet shows that it was correctly scored. The appellant did not provide responses to questions 37 and 38, and she incorrectly responded to 23 other questions. Her score of 50 is correct.

Questions 1 through 4, 6, 7, 9, 11 and 12 pertain to the first scenario involving smoke coming from a side A window of a second floor bedroom of a single family home.

Question 1 asked for the type of construction of this house based on the description and the diagrams on Pages 1 to 4 in Booklet B, and the keyed response was option b, platform. Mr. Bunche argues for option c, post and frame, stating

that the options mean the same. In reply, platform frame and post and frame construction are not the same. Post and frame has an identifiable frame of timber fitted together. Posts are embedded in the soil and supported on isolated footings, or are attached to the top of piers, concrete or masonry walls, slabs-on-grade, or other suitable foundations. Secondary framing members are attached to the primary framing members to provide lateral support and to transfer sheathing loads, both in-plane and out-of-plane, to the posts and roof framing. In platform frame construction, the floors are platforms, placed on joists. Based on the description and the diagrams, the keyed response is correct.

Question 2 indicated that the windows in the second floor bedroom, where smoke is showing, do not have a fixed sash. It asked what type of windows are present based on this information and the diagram on page 1 of booklet B. The keyed response was option c, double-hung. The appellants selected option b, single-hung. They argue that it is impossible to ascertain the window type from the diagram; the bottom sash of the window in the picture is open, meaning it did not have a fixed sash; and page 334 of *Fundamentals of Fire Fighter Skills*, 3rd Edition, published by Jones & Barlett Learning and the National Fire Protection Association, indicates that it may be difficult to distinguish between single-hung and double-hung windows from the exterior.

In reply, according to page 333 of *Fundamentals*, double-hung windows contain two movable sashes, usually made of wood or vinyl, that move up and down. These kinds of windows are frequently found in residences and have wood, plastic or metal runners. In single-hung windows, the top window has a fixed sash. In the diagram on page 1 of booklet B, the second floor windows are open at the bottom. As the windows do not have a fixed sash, they cannot be single-hung windows, and therefore, they are double-hung windows. The keyed response is correct.

Question 3 stated that the ladder company has not arrived on scene yet and you are forced to attempt a rescue of the victim in the bedroom with your available ladders on the engine. It asked for the **MINIMUM** complement of ladders recommended by NFPA that should be available on the engine, and the keyed response was option a, one extension ladder, one roof ladder and one folding ladder. Mr. Knight selected option b, two extension ladders, one roof ladder and one folding ladder. In support, he argues that he did research, and four ladders is a correct response. In reply, page 360 of *Fundamentals* supports the keyed response. It states, "Fire department engines are required to carry at least one roof ladder, one extension ladder, and one folding ladder." Mr. Knight provides no evidence to support his option. The keyed response is correct.

Question 4 indicated that you transmit an order via radio to your ladder company to raise the aerial to the second floor bedroom on side A for extrication of a confirmed victim. It asked for the **MOST APPROPRIATE** response you should receive from the ladder company over the radio, and the keyed response was option

d, "IC from ladder company, ladder company confirms. We are going to raise the aerial to the second floor bedroom window and remove the victim on side A." Mr. Smith selected option b, "IC from ladder company, confirmed, we are proceeding with assigned task. We will respond when task is complete." In support, he provides the definition of "appropriate" and argues that the situation calls for urgency, and the speed and judgment of the Captain of the ladder company should be relied on. He states that option b takes less time to transmit, allowing the company extra seconds to save the victims. He states that it transmits the objective and the IC will know how they are doing their job. He argues that the keyed response indicates removal of the victim prior to rescue of the victim, and dismisses possible problems in removal of the victim and possible other courses of action, such as rescuing the victim through the interior of the house. He states that option b exemplifies trust and confidence, and is appropriate.

In reply, option d is not significantly longer to transmit than option b and, if urgency is an issue, the transmission can be given while the aerial is being raised by the company. The time of transmission between the two options is insignificant. The question indicated that orders were to raise the aerial to the second floor bedroom on side A for extrication of a confirmed victim. Option b is non-specific and does not indicate that the ladder company Captain understands the orders. It does not confirm that the orders were received and understood. The very fact that the appellant raises the possibility of removing the victim through the interior of the house confirms the validity of the keyed response, as the IC did not give the ladder company Captain leeway to find another course of action to rescue the victim. He gave a specific instruction, and the ladder company Captain's response should reflect those instructions if the Incident Command structure is followed. The keyed response is correct.

Question 6 asked for the BEST explanation of the fire spread based on the description of this house and compared to a solid wood beam constructed floor. The keyed response was the chance of fire spread in this house is, option a, greater than a solid beam floor because the floor trusses do not allow for any fire containment between the trusses. Mr. Bunche argues for option c, the chance of fire spread in this house is greater than a solid beam floor because the gusset plates are highly flammable and will spread the fire to adjacent trusses. He does not provide any reasoning except to say that gusset plates could explain why fire could spread faster. In reply, option c is clearly incorrect. Gusset plates are not highly flammable: rather, destruction of the fibers holding the gusset plates releases the plate and causes the lightweight wood truss to fail. Page 159 of *Collapse of Burning Buildings, A Guide to Fireground Safety*, 2nd Edition, Vincent Dunn states that, "unlike the new lightweight wood truss, a solid wood beam has some minor fire containment value. For example, when a fire travels up into a concealed ceiling space, flames may travel in the space between the solid beams, but fire spread in a direction perpendicular to the solid beam will be blocked. There is no such temporary perpendicular fire blocking with an open-web light truss. When fire

enters the concealed space of a parallel chord lightweight truss, it spreads simultaneously, quickly between the length of the truss and perpendicularly through the web members." The keyed response is clearly correct.

Question 7 asked for the **BEST** course of action for ventilation based on the weather conditions. The keyed response was option d, delay venting Side D window on 2nd floor until fire is controlled. The appellants opted for the other three responses. Option a was to use Positive Pressure Ventilation (PPV) at the front door, option b was cut the roof on the side B/C corner, and option c was ventilate all 1st floor windows on division 1 in coordination with the hoseline. In support of option a, the appellants argue that this option allowed for directing fire and other products of combustion out of the side A window of the fire room and minimizes contamination of other areas of the second floor; can be used with the initial fire attack; prevents fire from traveling in the direction of the bedroom door, assists in maintaining a level of visibility, confines the fire while the hoseline is being operated in the area; the PPV fan lends more control over the amount of air being delivered into the building, and that only one door needs to be controlled rather than multiple windows; and that PPV is useful. The appellants argue that option d is not the best response as it will push smoke and hot gasses through the building, leave residual smoke, heat and gases, and introduce wind and the risk of a contaminated atmosphere spread throughout the less affected areas of the second floor. In support of option b, Mr. Bunche argues that this option makes sense, and the keyed response does not make sense. Mr. Oliver argues that option c is the best response, as products of combustion are hazardous, and it was the only option that used ventilation in coordination with a handline.

In reply, in this scenario, the fire is on the second floor in the bedroom on side A/D, and the wind is coming from the east, side D. A victim lays under the side A windows. In this case, option b is clearly incorrect, as the side B/C corner is not above the fire. Option c is clearly incorrect, as the fire is not on the first floor. Page 396 of John Norman's *Fire Officer's Handbook of Tactics*, 4th Edition, states that ventilation should be delayed if any wind is blowing toward the affected windows until the fire area is well under control. Option a is incorrect as it would fill the structure with pressurized air, and concentrate contaminants on the second floor of the fire building. There is also the possibility of the fan intensifying the fire on the second floor and pushing the fire, heat, smoke and contaminants toward the side A second floor victim. Page 252 of *Norman* states that, "the effect of blowing fresh air from a fan onto a fire is the same as when it is directed out of a bellows onto a blacksmith's hearth-the fire intensifies. The fan mustn't be allowed to blow the fire toward any victims or firefighters on the opposite side." As such, the keyed response is the correct response.

Question 9 asked for the true statement based on the vinyl siding used on this house. The keyed response was option b, it will deform, droop, burn and drip under attack from a fire. Mr. Funk argues that option a, it is known as gasoline

siding and will create dense black smoke, is correct. In support, he states that page 367 of *Norman* refers to vinyl and asphalt siding "as two of the same." In reply, diagram 1 for this scenario shows a residence with vinyl siding. Page 212 of *Brannigan's Building Construction for the Fire Service*, 5th Edition, by Corbett and Brannigan, refers to vinyl siding, and states that it is a "thermoplastic that will deform (droop), burn and drip under attack from a fire. It is often used to cover up old wood siding." *Norman* refers to asphalt siding as gasoline siding, which burns rapidly once ignited, and produces tremendous radiant heat and great volumes of black smoke. Nevertheless, the question indicated that this was vinyl siding, not asphalt siding. *Norman* states that vinyl siding often covers asphalt siding, and is just as flammable, but the text does not state that they are two of the same. The keyed response is correct.

Question 11 indicated that it begins to snow and accumulates on the roof. It asked what type a load was the snow on the roof an example of, and the keyed response was option b, live load. Mr. Korzun argues for option d, static load, while Mr. Febles argues for option c, impact load. In support of option c, Mr. Febles states that the scenario indicates falling snow, but does not give the volume or the delivery method. He argues that the snow could be coming from a nearby structure. He states that page 20 of *Corbett & Brannigan* indicates that there is no such thing as a "no impact" load. In support of option d, the appellants argue that static load is equally correct based on the definition of dead load. As that snow is not attached to the building, it must be a live load, as well as a static load, since the snow is added slowly and remains constant. Also, they state that falling snow is applied slowly and once it stops, the final accumulation of snow is a live load or snow load. Mr. Korzun also maintains that an SME, Mr. Glenn P. Corbett, the coauthor of *Corbett & Brannigan*, agreed with his position when posed with the question at a building construction seminar. He also states that on page 27 of *Collapse of Burning Buildings, A Guide to Fireground Safety*, 2nd Edition, Vincent Dunn indicates that snow is both live and static, with his example of a firefighter slowing applying his weight along a roof deck over a fire.

In reply, page 15 of *Corbett & Brannigan* indicates that live loads are indeterminate and must be estimated based on the projected use of the building and such variables as snow, wind, or rain. The snow is clearly not an impact load, which is a load delivered in a short time. No matter how fast snow falls on the roof of a residence it cannot be thought of as an impact load, as its time of application on the roof is less than one-third of the natural period of vibration of the roof. In addition, the diagrams and scenario describe the houses 15 feet from this one as being the same height. Snow will not suddenly land on the roof of a house from another house the same height and 15 feet away. Clearly option c is incorrect. As to option d, static loads are applied slowly and remain constant. A heavy safe, the contents of a floor used for storage, and a firefighter slowly and softly applying his weight along a roof deck or fire escape are examples of static loads. Live loads are usually unstable or moving loads. They are not a permanent part of the structure

but are expected to superimpose on the structure during a part or all of its useful life. Snow is considered to be an environmental load, and structures are designed to withstand a certain amount of pressure per square foot of snow load. As such, it is a static load. Page 13 of *Corbett & Brannigan* indicates that load definition terms are not mutually exclusive, and an example is given that a load can be both a live load and impact load at the same time. Based on this information, this question should be doublekeyed to options b and d.

Question 12 stated that you order a crew to begin overhaul operations. It asked what size hose line should the overhaul crew use based on this scenario and task. The keyed response was option b, 1 ¾ inch. The appellants argue for option c, 2 ½ inch. They state that this option is correct "according to firefighter literature," and "it shows whatever line your [sic] using is also a good source." In reply, according to *Fundamentals*, overhaul situations usually do not require high pressure or large volumes of water. There was no reason for the use of a 2 ½ inch line in this residence, and no indication in the scenario that this was the line being used. Hence, this was not the line being used, and therefore, is not a valid argument for its use in overhaul. Given the task, a 1 ¾ inch line is sufficient. The keyed response is the best response.

Questions 13 through 20 pertain to the second scenario. In this scene, smoke is coming from the roof of a single-story commercial building with a steel-bar joist roof.

Question 13 asked for the class of construction of this building, and the keyed response was option a, class 2. Mr. Knight argues for option b, class 3. In support, he claims, "Noncombustible very misleading. I thought it wasn't class 2." In reply, class 2 is noncombustible while class 3 is ordinary construction. Page 22 of *Norman* indicates that "Noncombustible buildings are generally built with exposed metal floor and roof systems and metal or masonry walls. Any sizable fire in the contents of the building will rapidly destroy the structural integrity of the unprotected steel. These structures are the least stable in terms of collapse when exposed to fire. Hundreds of thousands of store, warehouses, and factories have been built with this type of metal deck on exposed steel-bar joists." The diagram shows the building is made of metal, and the description states that it is a single-story commercial building with a steel bar joist roof. This is a noncombustible building, clearly not in class 3, ordinary construction. The keyed response is correct.

Question 14 stated that the roof truss in this building appears to have a slight upward pitch to the center of the roof, and it asked what this indicated. The keyed response was option d, a designed element to facilitate water runoff. Mr. Feeney argues for option b, increased pressure inside the building causing the truss to bow upward. He contends that this question was not clear, as it used the phrase "the deformation in the roof." In reply, pages 34 and 35 of *Corbett & Brannigan* states that, "In a parallel-chord truss the bottom and top chords are parallel. The

steel bar joist (a parallel-chord truss) used for both roofs and floors has been around for some time. Very long-span parallel-chord roof trusses may have a slight upward pitch to the center to facilitate water runoff." The question did not use the phrase "the deformation in the roof." There is no clarity issue with this question, and the keyed response is correct.

Question 15 indicated that you have given your initial size-up to dispatch. It asked when your first progress report to dispatch should take place after your initial report. The keyed response was option b, between 10 to 20 minutes. The appellants argue for option a, between 1 to 5 minutes. In support, they state that page 31 of the *New Jersey Firefighter Skills Addendum* states that announcements should be in 10 to 15 minute intervals; page 18 of *Norman* indicates that for New York City, the Incident Commander (IC) is required to transmit periodic reports beginning 5 minutes after his arrival and continuing every 10 minutes for the first hour; no text recommends a progress report in 20 minutes; page 131 of *Fundamentals* provides information regarding the initial report and means that the IC gives his first progress report 1 to 5 minutes later.

In reply, page 18 of *Norman* discusses how losing track of time can be hazardous, and how some departments solve this by using a time mark system in which the dispatcher reminds the IC of elapsed time. He states that, in New York City, the IC is required to transmit periodic reports beginning 5 minutes after arrival and then every 10 minutes. However, this is a specific requirement for New York City, and not a general directive. Pages 108 and 109 of *Fundamentals* give more detail regarding arrival and progress reports. This text provides examples of how an IC should communicate his initial report, and then a more detailed second report. It then states that, "For the duration of an incident the IC should provide regular updates to the communication center. Information about certain events - such as command transfer, 'all-clear' and 'fire under control' - should be provided when they occur. Reports also should be made when the situation changes significantly and at least every 10 to 20 minutes during a working incident." Page 131 of *Fundamentals* does not indicate that the IC gives his first progress report 1 to 5 minutes later after his initial report. Based on this information, between 10 and 20 minutes is the correct response. The key to this question will not be changed.

Question 16 stated that your second engine company is incoming, and asked for the **MOST APPROPRIATE** placement of their apparatus. The keyed response was option a, park in front of the ladder company to leave access to the rear of the ladder company. The appellants selected options b, pull as close as possible to the rear of the ladder company, and c, park perpendicular to the rear of the ladder company. In support of option b, Mr. Crawford-Cobbs states that if the second due engine parks behind the first due engine, which pulled past the fire structure, optimum placement of the aerial ladder may not be possible. Other appellants argue that option c is correct, as the first due engine should have pulled past the

fire building, and placing the second due engine perpendicular to the rear of the ladder company puts a pumper on either side of the ladder and leaves space for removal of portable ladders from the ladder truck and for the ladder truck to move back and forth as needed. They argue that this option would also put the second engine closer to the second hydrant, it has enough room to do so in the parking lot, the first due engine is in front of the ladder truck, and the second engine could supply a large diameter hose to the ladder's intake for aerial master stream operations.

In reply, option b is clearly incorrect. As noted on page 370 of *Fundamentals*, "On some vehicles, portable ladders are stored in compartments under the hose bed or aerial device. The ladders may lie flat or vertically on one beam. To remove or replace them, fire fighters slide the ladders out the rear of the vehicle. For this reason it is important to leave adequate room behind such apparatus so that ladders can be removed at a fire scene." Option C is not the most appropriate answer as a fire engine is being "parked" in the rear of a ladder company that is operating at an active fire scene. This engine parked perpendicular in the rear of a ladder apparatus will hinder and/or eliminate some of its capabilities. An engine company parked to the rear of a ladder truck that is in use will also create an unsafe work area and hinder the operations of the ladder company. Fire departments across New Jersey use a variety of hose lays and fire attack operating guidelines, and ladder trucks are generally dispatched to the front of the fire building to provide easy access to all their tools, ground ladders, and aerial devices. Therefore, they require a large work area so tools and ground ladders can be removed safely. This work area is especially important toward the rear of the ladder apparatus where ground ladders will be horizontally removed from the rear of the truck. Also, if the fire progresses, the aerial device may need to be relocated at a fire scene for more efficient or safer operations outside of a potential collapse zone. Thus, option c is not the best response. The keyed response will not be changed.

Question 17 stated that you encounter a chemical in a bottle, and the label only has the chemical name. It asked for the section of the Emergency Response Guidebook (ERG) that you should look in to find information about the specific chemical. The keyed response was option b, blue. The appellants argue for options a, yellow, and c, orange. In support of option a, the appellants argue that knowing the color of a particular section in the ERG is not critical for effective performance, and the ERG was not on the booklist. They also state that *Fundamentals* indicates the same information is in the blue and yellow sections, just organized differently. In support of option c, the appellants argue that orange is the most correct answer, as information is the section of the ERG which includes safety recommendations, which is information regarding protecting oneself and the public. They argue that information is not found in the blue or yellow sections, and *Fundamentals* indicates that the orange section is the most important, as it provides basic response information for specific groups of chemicals such as potential hazards and public

safety information. They argue that the yellow and blue sections are indexes directing to the appropriate orange section, such as gas, toxic or corrosive-oxidizing.

In reply, this question pertains to knowledge of the ERG, which was knowledge identified by the job analysis as relevant to the subject title. As such, the subject matter of this question was valid for the first level supervisory examination. In *Fundamentals*, the text explains that the ERG is designed to provide basic information and is divided into four sections by color; yellow, blue, orange and green. The yellow section lists hazardous materials by chemical identification number. As such, option a cannot be correct, as the label on the bottle has only the chemical name. The blue section lists hazardous materials in alphabetical order, and the orange section provides basic response information for specific groups of chemicals. This question did not ask for the most important section of the ERG, for information regarding a specific group of chemicals, or for information regarding public safety, potential hazards or emergency response. Rather, the candidate was provided only with a chemical name, and the task of looking for this specific chemical in the ERG. He would look for information regarding the specific chemical by name in the blue section. There he would find the guide number and the four-digit chemical identification number. Using this information, he could proceed to the orange section for further information regarding the group of chemicals in which this one belongs. Proceeding directly to the orange section without first looking in one of the indexes for confirmation of the type of chemical involved is not appropriate. The keyed response is correct.

Question 18 indicated that the fire has reached the roof trusses and is compromising the connection points. It asked what the connections in the truss are known as, and the keyed response was option d, panel points. The appellants selected option a, ties. They argue that page 34 of *Corbett & Brannigan* refers to two connection points, ties and panel points. Specifically, it states that the tensile connecting members are called ties, and connections are called panel points. They also state that panel points are merely connections, and that gusset plates, nails, and glue, can connect web members. They also maintain that connections can be struts, ties or panel points.

In reply, *Corbett & Brannigan* includes diagrams on page 35 of various types of trusses and identifies panel points in those trusses. Those are connections between struts and chords, which are members of the truss. *Corbett & Brannigan* indicates that there are various forces applied to structures including tensile, shear and compressive forces. Compressive forces push the mass of material together while tensile forces tend to pull material apart. Ties hold the members together against tensile forces, and compressive connecting members are called struts. These are truss members which are identified by their purpose. For example, the bottom chord of a truss may be a tie. However, the actual connections in the trusses, which hold the members together, are known as panel points. As a group, the ties, struts and panel points are called the web. The question did not ask for the

tensile connecting members, *i.e.*, ties, but for the connections in the truss. Ties are truss members, not "connecting" points. The keyed response is correct.

Question 19 stated that a firefighter with the interior search crew sees another firefighter get trapped under a collapsing ceiling. It asked what the firefighter who sees this should do, and the keyed response was option b, declare a mayday over the radio and transmit the incident and location of the firefighter. Mr. Parlavechio argues for option d, direct any available hose stream onto the debris trapping the firefighter. In support, he contends that page 442 of *Corbett & Brannigan* states that the firefighter may die if rescue attempts begin without extinguishing efforts, and therefore cooling the firefighter may be more important than calling a mayday.

In reply, the scenario described the building as a single-story commercial building with a steel bar joist roof. Smoke was seen coming from the roof, and question 18 indicated that fire had reached the roof trusses and compromised the connection points. Page 442 of *Corbett & Brannigan* refers to the actions of a RIT, not a fellow firefighter from the search team, which is from the truck company. The firefighter noticing the incident should notify the IC who will send in a RIT and direct the actions of the hoseline. The keyed response is the best response.

Question 20 told candidates that, after the incident, you are reloading the supply hose into the bed of the engine. Your department uses the flat hose load method and forward lay method. It asked how you should load the hose into the bed of the engine, and the keyed response was option a, by placing the male end of the hose coupling in the hose bed first. The appellants argue that the correct response is option b, the female end of the hose coupling in the hose bed first. In support, they state that the male connects to the nozzle; page 530 of *Fundamentals* depicts performing a flat hose load and it shows the male coupling on top of the hose load; this scenario could not specify supply or attack line; while the male end of the hose for supply lines goes into the hose bed first according to page 530 of *Fundamentals*, and the text also states that the female end of the hose should be attached first.

In reply, page 529 of *Fundamentals* indicates that to set up a hose for forward lay, place the male hose coupling in the hose bed first. The question specifies that it is a supply line, and as such the male end of the hose coupling goes in the hose bed first, as you drop the line at the hydrant and proceed to the fire building. The keyed response is correct.

Questions 22, 24, and 26 through 30 pertain to the third scenario, which indicates smoke coming from the first floor door, and first and second floor windows on side A, of a two-story mixed use office building.

Question 22 asked for the **MINIMUM** working length of the ladder when considering where to place your aerial ladder at this incident according to

Fundamentals of Fire Fighting Skills. The keyed response was option b, 50 feet. The appellants argue that the correct response should be option a, 25 feet. They argue that 25 feet is the minimum working length for aerial operations, page 187 of *Norman* shows the use of a ladder placement at 25 feet on a two-story building, page 175 of *Norman* states that residential buildings can be estimated as 9 feet from floor to floor, and commercial buildings are 12 feet from floor to floor, and neither *Fundamentals* nor *Norman* provides a minimum length. In reply, the illustration on page 187 of *Norman* depicts the placement of apparatus to the fire building and the effect on the scrub area. Nevertheless, the question asked for the minimum working length according to *Fundamentals*, not *Norman*. Page 359 of *Fundamentals* states that aerial ladders are permanently mounted, power-operated ladders with a working length of between 50 feet and 137 feet. Moreover, SMEs determined that the apparatus would not be positioned closer than 25 feet to the building, thus the minimum working length would be greater than 25 feet. The keyed answer is the best answer.

Question 24 states that you order a second alarm, and asks where should the incoming ladder company be directed to position. The keyed response was option c, to a staging area, so they are close enough to the incident without interfering with other apparatus on scene. The appellants selected option a, in the parking lot on Side A, parallel right next to the first arriving ladder company, and option b, on Route 341, to block any traffic from impeding the arrival of the incoming second alarm engine companies. In support of option a, Mr. Bunche argues that the second alarm ladder company should be in position to respond to a rescue, and they would be useless in the staging area. In support of option b, Mr. Oliver states that according to *Fundamentals*, page 303, traffic safety is a major concern for arriving units, blocking traffic for the engine company would be helpful as it would allow them to place the initial hand line between the fire and trapped occupants, and positioning it here would not hinder the use of aerial device.

In reply, option b is clearly incorrect, as the scenario does not specify that the second alarm truck will arrive prior to the second alarm engines. Page 308 of *Fire Officer Principles and Practice*, Third Edition, by Michael Ward, discusses level one staging, and states that "only the predesignated units respond directly to the scene, and later-arriving units remain uncommitted and wait for instructions. For example, the second-arriving aerial ladder would stop about a block short of the fire building, were it would have the flexibility to go to whichever side it was needed." This is the second alarm ladder and it has to have orders prior to committing to a location to park, unless it is ordered to a specific location. Option a is incorrect as that would box-in the second ladder as there will be four engines on scene. The second ladder should be able to commit to placement where it is needed and not be stuck in place. The keyed response will not be changed.

Question 26 indicates that your rescue crew is ready to enter the structure using a guide rope. It asked candidates to complete the sentence, "They should...,"

and the keyed response was option d, set their radios to a frequency that is separate from other activities on the fireground. The appellants selected option a, enter after ventilation is complete and deploy the guide rope, and option b, remove all of the guide rope from the bag before entering the building. In support of option a, they argue that the question did not differentiate whether this was a search and rescue team or a Rapid Intervention Team, and there is no such thing as a rescue crew; page 285 of *Norman* states, "If you are entering an area that is so heavily charged that you have zero visibility, it is an excellent idea to have a hoseline with you, both for protection from fire and for a guidance along the escape path. If no hoseline is available, a light length of rope, say 3/8-in, diameter, is an alternative;" on page 290 *Norman* calls a guide rope a tag line; going into a large area containing smoke and using a hand line or a guide rope does not require changing the radio to a separate channel but remaining on the fireground tactical frequency is sufficient; page 321 of *Norman* indicates that a guide rope is used for one firefighter while search teams use search ropes, and the search team should be on a separate channel; no text besides *Norman* refers to a guide rope; this Class I medical office building with fixed windows has attributes of an under-ventilated fire, and well-placed ventilation enables search teams to locate victims more rapidly; ensuring ventilation is safer than setting radios on a separate channel before entering; and the rescue is part of the operation. In support of option b, they state that the guide rope should be deployed before entering the building for safety reasons; option b would not cause a life hazard; the IC directs radio traffic; chapter 12 of "Fireground Operational Guides" states that RIC teams should operate on the main tactical radio frequency to communicate with distressed firefighters, and that the IC should assign a second frequency for firefighting operations; and that all of the equipment of the rescue crew should be ready to use prior to attempting a rescue.

In reply, option A, enter after ventilation is complete and deploy the guide rope, will delay the search operations at this structure fire. Waiting for ventilation to be completed will delay the primary search of the building and delay access to any victims in an Immediately Dangerous to Life and Health atmosphere (IDLH) and smoke filled structure. Option C is incorrect because emptying the bag of all rope could cause damage to the rope, allow searching members to become entangled in the rope, and delay the crew from exiting the fire building after the tasks are complete. Removing the rope from the bag before entering the building will also force the crew to follow more linear feet of rope versus distance traveled in the fire building if the rope was manually deployed from the rope bag while moving through the building. The keyed response will not be changed.

Question 27 indicated that your crew has reached the standpipe connection on the second floor and is ready to turn on the valve, and asked what they should do. The keyed response was option a, keep in radio contact with the nozzle team to coordinate the flowing pressure. Mr. Bunche selected option d, ensure the valve is completely open before having the engine company charge the standpipe. In

support, he states that option d is correct as standpipes should be completely open before anything else for best flow. In reply, it is not desirable in all situations to have total water flow to the hose. Rather, it is preferable to allow for adjustments to the water pressure to control the flow. Page 152 of *Norman* states that, "A member who manually controls the outlet valve should maintain fire department control over outlet pressure. This member should be in radio communication with the nozzle team to coordinate flowing pressures. In effect, it places the pump operator at the fire floor." Mr. Bunche provides no evidence in support of his assertion that standpipes should be completely open before any other action is taken. The keyed response will not be changed.

Question 28 stated that your fully equipped crew is performing overhaul, when a rookie firefighter takes his glove off and begins feeling the wall for hotspots. It asked candidates to complete the sentence, "You should...," and the keyed response was option b, stop the firefighter, instructing him to put his glove back on and to use the Thermal Imaging Camera (TIC) to scan for hotspots in the wall. The appellants selected option a, allow the firefighter to continue, but instruct the rookie firefighter to use the back of his hand when touching the wall, and option d, tell the rookie firefighter to feel the wall with the glove on before removing his glove to see if the wall is hot. In support of option a, the appellants state that page 195 of *Norman* supports this option as it follows the 15 second, 2 minute rule;[1] experience is needed to operate a TIC, and a rookie is better off with his hand; pages 634 and 635 of *Fundamentals* support this option by stating that you can use the back of your hand if it is safe to remove your glove; rookies are not given TICs

Also, Mr. Masiak maintains that the keyed response to this question contradicts the keyed response on a question on the 2011 written examination. On that examination, question 10 indicated that, "During overhaul, a firefighter from your crew places his bare hand on a wall. The wall is warm to the touch, but he can keep it there for 15-20 seconds without experiencing undue discomfort." It then asked, "This tells you there is ... ," and the keyed response was "no immediate need to open the wall." Mr. Masiak asks if firefighter safety is an issue, why is it that the firefighter in question 10 is allowed to feel the wall for hot spot with a bare hand. He states that page 195 of *Norman* indicates that if a TIC shows an indication of heat, discretion is needed as the surface may be hot to an inexperienced user. That page also indicates that the firefighter places an ungloved hand on the suspect surface if there is no urgent need to open up, no crackling noise, no smoke pushing, and no increase in temperature. It also states that the four senses are needed in overhaul, including touch. Pages 282 and 283 of *Norman* and pages 39 and 410 of *Fundamentals* indicate that the firefighter must practice with the TIC, and the question indicated that he was a rookie. He argues that not all departments have a

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[1] If a firefighter can leave a bare hand on a wall for 15 seconds, there is no need to open up, but he should check again in 2 minutes, and open it if it feels the same or warmer or leave it if it feels cooler.

TIC, as they are expensive, and it would be handled by an experienced firefighter. He also argues that pages 691 and 692 of *Fundamentals* discuss specific fireground operations and state that you should use the back of your hand to feel for heat coming from a wall or floor in step 4 of locating and suppressing fires behind walls and under subfloors. Next, he argues during overhaul you need to use all four senses, including touch, and feeling the wall for hotspots was not inappropriate. He states that the use of a TIC is ineffective and difficult, as well as inefficient, since it could be used better elsewhere.

In support of option d, Mr. Coppola argues that page 195 of *Norman* supports this option as it follows the 15 second, 2 minute rule.

In reply, the question refers to overhaul operations of a fully equipped crew that contains a rookie firefighter, and on fire scene safety. The equipment issued to firefighters would normally contain a TIC as the State of New Jersey purchased large a large number of these cameras for use by New Jersey fire departments. Since this purchase, the cost of these cameras has decreased, which has allowed for continued widespread use of TICs. Also, a rookie firefighter would not have the experience to conduct overhaul using the back of an ungloved hand and his supervisor, a first Level Officer, should not allow a rookie to perform such a task as it can lead to serious hand and burn injuries. The keyed response will not be changed.

Question 29 indicated that the ceiling collapses on an interior team. You deploy the Rapid Intervention Crew (RIC) to search for trapped firefighters and victims. The question asked what they should immediately do once they are deployed, and the keyed response was option a, utilize a search rope in case the RIC crew requires assistance. The appellants selected option d, activate their PASS devices prior to entering the collapse area. In support, the appellants state that page 49 of *Fundamentals* states that most PASS devices turn on automatically when the SCBA is activated; and that the RIC should do so in the event that they become victims and need rescuing.

In reply, page 560 of *Norman* states that, "The search rope must be deployed so that, once the victim has been located, reinforcements can follow the rope to the exact location if the first team needs assistance or experiences a mishap while making the rescue." Option d indicates that the PASS device has been activated, not merely turned on. If you activate the PASS device before entering the building, it is likely that you will not be able to listen for the victim. The search rope clearly has to be used, and the keyed response is the best response.

Question 30 asked what the Rapid Intervention Crew (RIC) should take, in addition to their minimum required tools, in preparing for deployment at this incident. The keyed response was option c, an additional SCBA for a firefighter or a victim who may need it. The appellants selected option a, a Carry-All bag for

removing debris from the area, and option b, safety chains for securing or removing large pieces of debris. In support of option a, Mr. Quinn refers to "New Jersey's Fire Service Reference Booklet 12," which was not on the suggested booklist, and he does not provide a copy of the page which he references. He states that this document states that, "The RIC is reserved for immediate deployment to meet the needs of life threatening situations of the other firefighters. Therefore, the RIC should not be assigned to other activities at any time." He argues that it is misleading that the keyed response referred to another victim, as the RIC should only be deployed for firefighters. In support of option b, Mr. Miick argues that page 559 of *Norman* states that, in collapse rescue operations, "... use a chainfall, come along, block and tackle, or some other hoisting device. Under these circumstances, everything is expendable."

In reply, this question references RIC responsibilities, and asks what they should carry. It does not indicate that the RIC should perform as a search and rescue team. Rather, it asks what they may anticipate taking with them if deployed. Mr. Quinn provides no evidence that a Carry-All bag for removing debris from the area is preferable to an additional SCBA for the RIC. He merely argues with the keyed response, providing information regarding the purpose of the RIC, not suggested equipment. Mr. Miick's reference is more vague. He refers to equipment needed to raise a load with a tower ladder, instead of the boom, during collapse rescue operations. This is not specific to the RIC. Page 560 of *Norman* states that, "In addition the search team should consider taking along a spare SCBA or RIT-Pak for each victim in the event that the victims have run out of air or that extrication will be delayed." The keyed response is correct and will not be changed.

Questions 32, 35 and 38 pertain to the fourth scenario. In this scene, smoke and fire is seen coming from the door and windows of a Laundromat located in a single story strip mall.

Question 32 asked candidates to complete the sentence, "Based on the construction and current occupancy of this building, it is classified as a...," and the keyed response was option b, low hazard occupancy building. The appellants selected option c, medium hazard occupancy building, and option d, high hazard occupancy building. In support, of option c, the appellants state that according to pages 446 through 448 of *Corbett & Brannigan*, hazard occupancy types for sprinkler system design are listed in tables as light, ordinary and extra, and not low, medium and high; *Corbett & Brannigan* lists a laundry as ordinary; if it is a self-service pick-up and delivery laundromat, it is a "B" occupancy (Business Group), which has no assigned occupancy hazard; page 96 of *Corbett & Brannigan* lists laundries as moderate hazards ("F1"or Factory occupancy); page 204 of *Fundamentals* lists retail stores with onsite storage and hotel laundry rooms as moderate hazards (ordinary); medium and moderate are interchangeable, and laundries are classified as moderate hazards in the New Jersey International

Building Code 2006; and there is no definition of a low hazard occupancy pursuant to pages 95 through 97 of *Corbett & Brannigan*. In support of option d, the appellants argue that it is a strip mall with connecting shops and because of the time of day; chemicals are in the barber shop, the laundromat and the maid service; and *Norman* indicates that life safety is the highest priority, and the building with steel bar joists has a high collapse hazard, in addition to hazardous materials in the laundromat.

In reply, page 204 of *Fundamentals* defines a light or low hazard as areas where the majority of materials is noncombustible or arranged so that a fire is not likely to spread. The scenario indicates a fire in a small laundromat in a strip mall. The entire length of the building is 100 feet by 50 feet and there are three other stores. Therefore, this laundromat is only 25 feet wide. Page 153 of *Dunn* states that, "Type II noncombustible unprotected steel buildings are designed for low hazard occupancies, like schools, offices, and retail shops. This unprotected steel construction should not house high hazard occupancies like wood-working shops, furniture storage, flammable liquids, and furniture refinishing plants unless deluge-type sprinklers and smoke detectors are installed." The diagrams show that it contains washing machines, dryers, small rows of chairs, with a small seating area in the back. This is not a factory laundry processing large industrial loads of wash, or a drop off and delivery laundry, where large quantities of wash are stored. Nor is this a hotel laundry, and there is no indication that there are staff who do laundry working here. It is not a laundry. It is quite clear that this is a local coin-operated laundromat where people do their laundry and leave with it. There is no indication of chemical storage in this unit, or in the other shops. This is a low hazard occupancy building and the keyed response will not be changed.

Question 35 stated that the stores in this building are divided by fire partition walls. It asked candidates to complete the sentence, "This means they typically are fire resistant rated for...," and the keyed response was option a, 1 hour. Mr. Liana refers to question 34, but his arguments are for option b of question 35. He and other appellants argue that page 175 of *Fundamentals* states that a fire resistive rating of 1 or 2 hours may be required for certain elements in noncombustible construction; page 7 of *Essentials* states "fire resistance has a 3 hours resistance;" pages 283 and 284 of *Corbett & Brannigan* [2] state that occupancy separation is required by building codes, and the walls can be one, two, three, or four hour rated, depending on the types of occupancies being separated; *Corbett & Brannigan* contradicts itself as it mentions a 1 hour rating on page 153 and a 1, 2, 3, or 4 hour rating depending on type of occupancies in a strip mall on page 402; and the use of "partition" and "wall" in the question was a contradiction, as *Corbett & Brannigan* gives fire walls a 2 to 4 hour fire resistive rating and a fire partition a 1 hour rating.

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[2] Fourth edition.

In reply, the question did not ask for a general response regarding fire resistive ratings for noncombustible construction, or fire resistive ratings for occupancies strip malls in general. Instead, it referred to fire partition walls in this laundromat located in a single story strip mall. This is a non-combustible type of construction because the structural components contribute little or no fuel, and interior finish materials are limited. Thus, the fuel load of the contents of the building contributes to the fire-resistance rating. There is no contradiction in the use of "partition wall" in the question. *Corbett & Brannigan* defines fire partitions on page 153 as used to create fire-resistive corridors and to separate tenant spaces in covered mall buildings. He defines fire walls as used to create separate buildings. The question states that the stores in this building are divided by fire partition walls. As the stores cannot be separated by exterior walls, they must be separated by interior walls. Clearly "partition walls" was a reference to the interior walls separating the tenant spaces.

Page 153 of *Corbett & Brannigan* states that "fire partitions are typically 1-hour fire resistance rated and are used to create fire-resistive corridors and to separate tenant spaces in covered mall buildings. They are defined in International Building Code as 'a vertical assembly of materials ... designed to restrict the spread of fire in which openings are protected.'" Page 402 states that the walls can be 1, 2, 3 or 4-hour rated depending on the types of occupancies. In this case, the involved store was a laundromat, not a laundry, and does not have a high fire load or hazardous materials. The adjoining businesses are a Barber, an Insurance office and a Maid Service office. Higher ratings may be warranted with the presence of hazards and life safety threats, such as flammable liquids and other hazardous materials in a paint store, dry-cleaning shop, body shop, or swimming pool supply store, or having many people present, such as a childcare center, supermarket or nightclub. While a Maid Service office was located in this strip mall, the scenario gave no indication that a high volume of hazardous cleaning supplies was kept there. *Corbett & Brannigan* indicated that 1-hour fire ratings are typical, and the offices in this strip mall do not suggest that a higher rating would be warranted. The keyed response is the best response.

Question 38 indicated that the fire has become fully developed and reached the lightweight trusses. It asked what danger does this create, and the keyed response was option c, the lightweight trussed rafters may collapse after about 10 minutes. The appellants selected option b, the ability to vent the roof is impossible due to the collapse potential. In support, the appellants state that in eleven instances, *Norman* refers to the quick failure of unprotected steel, within 5 to 10 minutes; in eight instances, *Dunn* refers to the failure of such a roof within 5 to 10 minutes and that roof ventilation would be dangerous; option b is a better choice since, although roof ventilation is possible with aerial operations, the roof could collapse immediately, or within 5 minutes, making the keyed response misleading; option b is safer; firefighters should not be committed to venting bar joist supported metal decks due to the danger of early collapse; page 203 of *Corbett & Brannigan*

states that no one can predict when a collapse of burning trusses will occur; *Corbett & Brannigan* indicates that it may fail in 7 minutes, and working under or on a lightweight wood truss roof well involved in fire is extremely dangerous and must not be permitted: *Norman* states that personnel must be removed from a roof when heavy fire is present in the truss area, and these roofs collapse in minutes; *Dunn* states that lightweight trusses may collapse in 10 minutes, which contradicts other texts that indicate a lesser time, and it also states that they may collapse within 5 to 10 minutes; firefighters should not be on the roof due to the danger of collapse; page 154 of *Fundamentals* states that the fire is fully developed once it flashes over, at approximately 1000 degrees Fahrenheit; *Corbett & Brannigan* states that 1000 degrees Fahrenheit can easily be obtained at any structure fire, and can push out masonry walls causing a wall or roof collapse

In reply, the scenario indicated that this roof was a steel bar joist roof, and the question indicated that the fire had reached it. Page 203 of *Corbett & Brannigan* states that a lightweight wood truss roof involved in fire is dangerous, and any attempt at ventilation must be performed using an aerial device such as a tower ladder. While this is not a wood truss roof, with the selection of option b, the appellants assume that fire fighters are on the roof, and do not recognize that the cut can be made from the aerial ladder platform. Option b indicates that roof ventilation is impossible in a lightweight wood truss roof involved in fire, and this is simply untrue. The question did not state that the fire was fully-developed *in* the trusses, but was fully developed and had reached the trusses. The danger created by a fire in the trusses is early collapse potential, not the ability to vent the roof. The keyed response is the best response and will not be changed.

Questions 41, 44, 47 through 51 pertain to the fifth scenario wherein smoke is seen coming from a first floor window on side A of a single family townhouse.

Question 41 stated that you order your engine to back up in order to obtain a better position next to the hydrant. One of your crew members jumps off the rig to help guide you backwards. It asked where the crew member should stand when guiding you, and the keyed response was option c, standing off to one of the sides within the driver's view. Mr. Crawford-Cobbs argues for option d, standing on the rear of the rig within the drivers view. In support, he states that the driver's side-view mirror is directly within the field of view of the driver, and increases the likelihood that the spotter will remain in the view of the driver. In reply, page 304 of *Fundamentals* indicates that the crew member should stand off to one side, where the driver can see him in the rear-view mirror. This is a better option than standing on the rig, as the crew member could fall off the rig, or may not be able to view the rig in relationship to the hydrant and other obstacles, both behind the rig and in front and on the side. The keyed response will not be changed.

Question 44 asked for the correct term used for the support that spans above the first floor window casement based on the description of this townhouse (#410)

and the diagram on page 15 of Booklet B. The keyed response was option b, header. Ms. Nally selected option a, stud. In support, she argues that a stud is a support on the wall, and a jack stud is a support that supports a header. In reply, page 198 of *Corbett & Brannigan* clearly indicates in figure 7-9 that the horizontal support that spans above s window is called a header. A stud is a vertical beam or column in the frame. The keyed response will not be changed.

Question 47 stated that you order a search of the house and the search crew enters through the front door on Side A. It asked where they should exit the building when they have completed their search, and the keyed response was option a, front door on side A. Mr. Masiak selected option b, rear sliding glass door on Side C. In support, he states that it is a general practice to exit through the door that we gain entry, but not always, and not under all circumstances. He argues that option a was "too shallow," as there was a rear side C sliding door leading to a deck, and since rear decks are, or could be, considered a structure, as some are integral parts of the building and others only require a structural construction permit, making them structures directly attached to, and part of, a fire unit. He states that this scenario did not show a clear view of a deck, but the presence of partitions, awnings, furnishings, or any debris, is and should be expected, and that area should be searched. He maintains that a "search of the house" includes searching the deck, and therefore, the crew would exit from the rear to search the deck. He states that the question implies that a search crew has completed searching the entire house but still has not searched the deck part of this unit; therefore, searching the deck requires exit through the side C sliding door. However, after completing the deck search, this crew could reenter the unit and walk across it, back to the front door. He continues with, when searching outside, for best results it would be logical to take off the face pieces, ensuring better visibility and communications with IC and coordinating activities with other units, and reentering the building would require donning the face pieces back on and crawling through. He adds that the size and length of the entire townhouse row structure would present difficulties in access to an outside crew, and the time required to walk around could have extended the time of the interior searches. He argues that the question did not limit the search to the interior. The appellant states that *Norman* recommends the establishment of a roof division to check the rear for a rear report. Since this is a townhouse, it is therefore built of lightweight roof trusses that prohibit rooftop operations directly on the roof. The use of an aerial ladder or a bucket would not be beneficial in the process of locating any victims in the rear. The rear has to be checked and searched, and the best and quickest way is directly through the large sliding glass door to the deck. He states that he is concerned with the necessity to search all ways out and all areas where occupants could be hiding, found unconscious, or have jumped. In the scenario for question 47, the second floor windows were right above the deck, and that is where the fire was. As such, an occupant could have jumped and landed on the deck. A primary search should be thorough, and cover any places where victims are likely to be found, and a secondary search should include the perimeter of the building, including any rooftops or setbacks to which people may have jumped, as

well as the areas beneath the windows. This scenario question did not mention the type of a search as a primary or secondary, but only stated "searches," and there is not enough information to determine the exact type of a search.

In reply, the scenario does not indicate whether the deck is elevated, or whether it has an opening from which to exit. The crew may potentially be stuck on the deck, and it is not known if one can exit from the rear of it. The appellant argues that it takes too much time to walk to the deck from the front, although the appellant's approach of leaving from the deck, and walking to the front for the next assignment also takes time. It is noted that the fire is located on the first floor on side B, near side A, opposite from side D, where the deck is located. The appellant's assertion that the fire is on the second floor on side D is merely incorrect. Further, search and rescue personnel use standard search patterns. When searching rooms or structures using a standard search pattern, crews will work their way around the search area in a pattern and arrive back at the entry point at the end of their search. The deck in question may be quickly searched during search operations but would not be an immediate priority as it is not inside the house and the IDLH atmosphere. However, the search of the deck may be included in the complete search plan. Checking the deck area would not result in the search being completed until the team returns and exits the structure on Side A, where they started the search of the townhouse. The keyed response is the best response.

Question 48 identified that your attack crew is in the kitchen where there is balanced thermal layering. It asked how they should proceed with directing a stream onto the ceiling of the kitchen. The keyed response was option a, ensure any heated gases are vented while using short bursts from the hoseline to cool any remaining superheated gases. Mr. Crawford-Cobbs selected option c, break the windows of the kitchen and allow all smoke and gases to self-vent before directing a full stream from the hoseline onto the ceiling. In support, he argues that breaking the windows is the most effective way to vent the gases, directing a full stream from the hoseline onto the ceiling would lower the temperature significantly more effectively than short bursts, and the cascading water would act like a sprinkler and assist the hose stream once directed onto the fire from the ceiling.

In reply, this question pertained to fire charecteristics, specifically, balanced thermal layering. This is important as creating a thermal imbalance can result in superheated steam and severe burn injuries. Both the key and option c include ventilation. Option a is the best response as it does not involve waiting for the windows to self-vent, and is the proper fire suppression method for avoiding a thermal imbalance. As indicated on page 155 of *Fundamentals*, the short bursts cool the super-heated gases without resulting in a flood of steam. The keyed response will not be changed.

Question 49 stated that fire has extended into the built-in kitchen cabinets. It asked for the concern based on this information, and the keyed response was

option d, fire entering the soffit above the cabinets and spreading undetected. Mr. Mulroy selected option a, fire spreading to the exterior via the Side A window. In support, he argues that page 405 of *Norman* indicates that closely spaced buildings of wood-frame construction and combustible roofing and siding pose a serious threat of extension, and that fire would extend to the common cockloft almost immediately along the siding as soon as the kitchen window failed. In reply, the question indicated that the fire has extended into the built-in kitchen cabinets, which are primarily along the wall of side B and interior walls. There are no kitchen cabinets under the windows on side A, so a concern about fire spreading to the exterior via the Side A window based on fire in the built-in kitchen cabinets is illogical. The keyed response is correct.

Question 50 stated that the fire has weakened the floor below a cast-iron bath tub in the upstairs bathroom. It asked for the type of load of the cast-iron bathtub, and the keyed response was option d, concentrated load. Mr. Funk selected option a, live load. In support, he states that *Corbett & Brannigan* describes a movable safe as a live load, and that a cast-iron bathtub is much like a safe. In reply, a live load is movable and a dead load is fixed, as part of the real estate. In this case, the bathtub is fixed, as it is attached to the real estate by pipes. It is not a live load, but it is a concentrated load, which is a load applied within a limited area of a structure. The keyed response is correct.

Question 51 asked what tools should be used to remove the baseboard and window casings during overhaul in the kitchen. The keyed response was option c, Halligan and/or crow bar. Mr. Gutierrez selected option a, pike pole and/or ceiling hook. In support, he argues that a pike pole would be more effective during overhaul as the fire extended into the cabinets in the kitchen proximal to the windows, and the pike pole extends beyond the reach of a halligan. In reply, as stated previously, the kitchen cabinets were not near the windows, and the question did not ask about the cabinets. The question asked for the best tools to remove the baseboard and window casings. Page 636 of *Fundamentals* indicates that crowbars and Halligan-type tools are used for removing baseboards and window or door casings and pike poles and ceiling hooks are for pulling ceilings and removing gypsum wall board. The keyed response is correct.

Questions 53, 54, and 56 pertain to the sixth scenario involving smoke coming from the roof of a single-story restaurant.

Question 53 asked for the **MAXIMUM** distance you should expect the open web steel bar joists to be spaced based on the construction of the building. The keyed response was option c, 8 feet apart. The appellants selected option b, 4 feet apart, and option d, 10 feet apart. In support of option b, the appellants argue that page 138 of *Dunn*[3], regarding lightweight steel bar joist roofs, states that the roof

[3] First edition.

joists may be spaced four or eight feet apart instead of 16 or 24 inches; page 356 of *Norman*, regarding metal deck roofs, states that joists can be up to 60 feet long and may be spaced up to 6 feet apart; page 419 of *Norman*, regarding steel bar joist roofs as strip mall roofs, states that steel-bar joists are generally spaced relatively close together, from 2 to 6 feet apart. In support of option d, Mr. Feeney argues that page 56 of the text *Structural Steel Drafting and Design*, by David MacLaughlin and Hector Estrada, states that "A typical composite steel-and-metal deck floor system might consist of 18-gage [sic] metal deck supported by beams spaced at 8- or 10 foot center...." This sentence was not given in its entirety, no copy of the page or subchapter was included, and this text was not on the booklist. He also quotes page 116 of the *Engineering Journal*, Third Quarter, 2002, also not on the booklist, and does not provide a copy. He states that this page indicates that, "The floor framing is composed of joist and girder composite elements with the majority of the 80 composite open web steel joists spanning 49.2 feet (15 m) and spaced at 10-ft (3.05 m) centers." Based on these citations, he concludes that there are two correct answers, 8 feet and 10 feet, options c and d. Also in support of option d, 10 feet apart, Mr. Oliver indicates that page 356 of *Norman* refers to 6 feet apart, while page 151 of *Dunn* refers to spacing up to 8 feet apart, and this discrepancy should necessitate a review of the question for accuracy.

In reply, the text on the booklist was the second edition of *Dunn*, not the first. Page 151 of that text states that open-web steel bar joists can be spaced up to 8 feet apart, depending on the size of the steel used and the roof load. Page 356 of *Norman* states that joists may be spaced up to 6 feet apart, but he is not definitive with this distance and does not state that 6 feet is the limit. Mr. Feeney's citations refer to flooring instead of roofing, one citation is incomplete, the cited texts were not on the booklist, and no copies were provided. Mr. Oliver's arguments do not support option d. *Norman* states that the joists in metal deck roofs may be up to 6 feet apart, while *Dunn* states that open-web steel bar joists can be spaced up to 8 feet apart. As *Dunn's* response is the larger number, and the question asked for the maximum distance you would expect them to be, the keyed response is the best response.

Question 54 asked where your nozzle team should stretch their hose before calling to have the line charged. The keyed response was option a, stretch dry to a safe area as close to the fire is possible. The appellants selected option b, outside the building near the engine company, and option c, outside the building in the parking lot on Side A. In support of option b, the appellants argue that the line should be charged before entering the building; the keyed response is less safe; reach and penetration of the hose stream is used to stay out of the truss area; and the front door is the safest option for ordinary construction. In support of option c, the appellants argue that pages 683 through 685 of *Fundamentals* indicate that you should open the nozzle to purge air from the system and make sure it is flowing; the fire attack should be from side a as it is the unburned side, and would protect fleeing occupants and the primary means of egress; page 309 of *Fundamentals*

indicates that flames can spread through void spaces to other areas, and often the location of the fire within a building cannot be determined from the exterior, particularly when the exterior is obscured by smoke; page 445 of *Fundamentals*, regarding backdrafts, indicates that the lines should be charged outside of the building; page 35 of *Norman* indicates that lines should be properly positioned and operated, page 73 provides the priorities for proper placement of hoselines, including protecting human life, and page 74 indicates that, for fires in one-story commercial buildings, the hoseline should be placed to cut off fire from the unburned side; the keyed response is too limited in its explanation; page 683 of *Fundamentals* states that the pump operator should be signaled when you are ready, and then the structure should be entered, and all fire should be extinguished as the seat of the fire is approached; pages 428 and 429 of *Norman* indicate that venting the cockloft in a store is a proper tactic for moderate fires in a ground-floor store, that fire in the cockloft should be expected in heavy fires, the fire must be pushed back, pumpers should not block the telescoping platform, and the biggest extension problem will be in the cockloft; and, in the 2007 Charleston, South Carolina fire that killed nine fire fighters, the sofa super store was a similarly constructed building wherein fire in the cockloft killed the firefighters.

In reply, page 38 of *Norman* states that the nozzle team should stretch dry to a safe area or get as near to the fire as possible before calling to have the line charged. This does not mean that they must enter the building if it is not safe. Nevertheless, stretching hose lines dry to a safe area allows the nozzle team to attack the fire faster as the uncharged hose is easier to stretch due to its lighter weight and mobility. The lighter hose allows the nozzle team to quickly approach the seat of the fire and potentially search off the line for victims faster, and also prevents the early disturbance of the thermal layering and steam production in the immediate fire area which could injure trapped victims. Stretching hose dry to a safe area as close to the fire as possible also allows the nozzle team to arrive near the seat of the fire without expending unnecessary physical energy from dragging heavy water filled hose. The keyed response will not be changed.

Question 56 indicated that firefighters on your interior crew encounter a drop ceiling. The question asked candidates to complete the sentence, "They should **IMMEDIATELY...**," and the keyed response was option c, radio this information to you or the incident commander. The appellant argue for option a, remove all the ceiling tiles. In support, they contend that no text supports the key; pages 430 to 432 of *Norman* state that firefighters have been killed by ceiling collapses and, to avoid this, make a preliminary ceiling opening at the entrance to each area with a suspended ceiling, and continue poking until you reach the roof boards; page 171 of *Dunn* states that concealed space above a suspended ceiling must be checked as soon as possible for fire spread; page 551 of *Essentials* states that when entering an occupancy with a suspended ceiling, the first thing to be done is to have a tile pushed up from the safety of the doorway into the area to determine the conditions

above the ceiling; notifying the IC first can be "too late" to prevent collapse and fire spread.

In reply, page 175 of *Dunn* states that you should do early identification of suspended ceilings, and if firefighters discover a suspended ceiling, they should immediately communicate this information to the IC in charge of the fire. Page 171 of *Dunn* is not as specific to the question, as it refers to checking the concealed space above the ceiling as soon as possible after the fire has been extinguished. *Norman* does not specify the first action to be taken upon discovery of a drop ceiling. The excerpt from *Essentials* refers to advancing under a drop ceiling. The question did not indicate that the crew was advancing under the ceiling, but only that they encountered one. Also, removing all ceiling tiles is unnecessary and certainly not the same as making a preliminary ceiling opening or pushing up *a tile*. The keyed response will not be changed.

Questions 63 through 65, 67, 68, 70, 71, 73 and 74 pertain to the seventh scenario. In this scene, the candidate notices smoke coming from the first floor window on side A of a single family house.

Question 63 stated that your engine is approaching from the east to the west, and it asked for the **MOST APPROPRIATE** hose lay for this incident. The keyed response was option a, forward. The appellants selected option b, reverse. In support, they argue that the key would require the apparatus to stop in front of the house to wrap the hydrant, then pull forward to unload the large diameter hose, while the reverse lay requires the apparatus to stop only once while members pull the hose to the hydrant and the team advances the attack line; wrapping the hydrant and pulling forward to leave room or a ladder truck may be considered a reverse lay since the hydrant is directly in front of the house; and neither the forward lay nor the reverse lay match descriptions in *Fundamentals*.

In reply, the proper positioning of the engine is on the a/b corner on side a, as the engine is coming from the east to the west. This allows for a three-sided view of the house when approaching the scene, and proper placement of the aerial/truck in front of the house. Option b, reverse lay, requires manually pulling the hose back to the hydrant. This is inefficient, time consuming, and an unnecessary use of manual labor as firefighters stretch the hose back to the hydrant. A forward lay does not require the firefighters to manually pull the hose to the hydrant. The keyed response is the best response.

Question 64 asked what type of roof this house has based on the diagram on page 22 of Booklet B, and the keyed response was option c, gable. Mr. Vargas selected option a, hip. Nevertheless, Mr. Vargas argues that the keyed response was hip and he selected gable, and he provides a citation regarding the type of roof. Clearly, Mr. Vargas is mistaken about the key and his choice. The keyed response is the correct response.

Question 65 asked for the appropriate size hoseline on this scenario description, diagrams, fireload and your desire to have between 120 and 180 gallons per minute (gpm). The keyed response was option c, 1¾ inch. Mr. Basso argues for option b, 1½ inch. In support, he cites page 61 of *Norman* which states that the fire in a residential occupancy which has reached the flashover stage should have a hose line of at least 1½ inch diameter, and that respective practical maximum flows of 125, 180 and 225 can help you decide the most appropriate line. He argues that the only choice between the values 120 and 180 would be a 1½ inch line with a max rate of 125. In reply, according to page 553 of *Fundamentals*, a 1¾ inch hose can flow between 120 and 180 gpm. Mr. Basso's reference in *Norman* is not as specific as that of *Fundamentals*, and the 1½ inch hose line is inadequate given the requirement of 120 and 180 GPM. The keyed response is the best response.

Question 67 indicated that you order the front door forced open, and the crew confirms the door is locked. It asked what they should do before forcing the door with the irons, and the keyed response was option a, ensure there is a safe area for the swinging axe and Halligan wedged between the door frame. The appellants selected option d, remove any screen or storm door to allow for the maximum work area around the solid door. In support, they argue that this is a hypothetical situation and a screen or storm door should be removed for maximum work area, a safe work area, and for proper use of tools. Additionally, they state that none of the six given reading sources refer to screen doors. Pursuant to an article titled *Simple Truck Company Duties That Can Break an Incident*, by Jim McCormack, in the February 18, 2013 issue of FireRescue magazine (copy included), storm and screen doors are another problem area and they should be taken off to avoid spending a lot of time trying to pry them open at the handle, or latch mechanism if they are locked, leading to frustration. They argue that older wooden screen doors are only held in place by two or three small hinges that can be taken out in seconds by closing a door on a Halligan bar, the screen door's available space of opening is limited to its arm length at its setting for a door closer or a chain, usually less than a right angle, rendering the opening too narrow. To prevent the door from closing and to keep it open as wide as possible, it is propped open with a nearby object, but chocking and propping are dangerous ways to keep a door open, considering the possibility of the door closing on a dry line, resulting in pinching, or the object being obstructed by smoke and/or being physically in the way of egress. Also, a partially-open screen door will cause some resistance to ventilation, and the amount and size of available working room and access is a problem. To force open the inward-opening door, a Halligan tool is inserted across the face of the door with its claw between the doorjamb and the door itself on the lock side, and the striking end of the tool, known as the adz, located at the door hinge side. This setup makes it very difficult to swing an axe safely. On page 322, *Fundamentals* states, "Before swinging a striking tool, make sure there is a clear area of at least the length of that tool handle." The available room with the screen door being left open is not big enough for this to happen and enough space to clear the tool handle cannot be

achieved unless the screen door is removed. The appellant argues that both the screen door and the main door will have their hinges on the same side of a jamb, and it is not a desired space for another forcible entry technique to be employed by forcing the hinge side of the main door if the first method fails, or the screen door will be obstructing the Halligan tool's direct access to the main door hinges. If it is not taken out, the end of the Halligan adz will literally be touching the screen door. They argue that ensuring a safe area for swinging the axe was a very broad, general response. Instead, removing the screen door for maximum working area around the door directly and specifically provided an approach to the initial problem of having a main door behind a closed, and possibly locked, screen door that needs to be removed. Since one cannot skip the sequence process in forcing entry to this structure, removal of the screen door must be taken into consideration first.

In reply, the SMEs indicated that option d, remove any screen or storm door to allow for the maximum work area around the solid door, is incorrect because the task would require firefighters to remove an entire door before beginning their forcible entry assignment on the solid entrance door. They stated that this is a matter of efficiency and would delay time-sensitive fire department operations in the structure. The entire screen door does not need to be removed to allow for a safe workspace. Using forcible entry tools and chocking doors open is a common fire ground tactic that ensures a safe work area and allows crews to quickly enter the structure. The keyed response will not be changed.

Question 68 stated that your ladder company is performing forcible entry on the front door and the Halligan is secured between the jam and door. It asked how they should apply pressure to the Halligan to open the door. The keyed response was option b, press the halligan toward the door. Mr. Gutierrez selected option a, away from the door. In support, he states that the picture on page 22 shows the door flush with the door frame, indicating that it opens outward, so the Halligan would be pulled outward as well. In reply, the diagram on page 24 shows all the doors and windows on the first floor, and the door is clearly shown as opening inward. Page 38 of *Norman* states that once the tool has secured a substantial hold, force is applied by one or both members toward the door. The keyed response is correct.

Question 70 stated that you are about to enter the front bedroom on the first floor with a charged line, and it asked where all of the nozzle team members should be. The keyed response was option d, kneeling or laying down on the same side of the hose line. Mr. Mulroy selected option a, standing on the same side of the hose line, while Mr. Rocklein selected option c, kneeling or laying down at least 5 feet apart on the hose line. In support of option a, Mr. Mulroy argues that *Norman* states on page 39 that when you enter the fire area, try to stay off your knees to avoid painful burns, and duck walk by squatting on your haunches. In support of option c, Mr. Rocklein argues that the members could all be on the same side of the hose line 5 feet apart, or opposite each other to facilitate hoseline advancement.

In reply, pages 38 and 39 of *Norman* states that, "Members should all position themselves on the same side of the line and get down low, on their hands and knees or even on their bellies. There can be a difference of more than 200 degrees in the zone between 2 and 3 feet off the floor." Option c, kneeling or laying down at least 5 feet apart on the hose line, will result in the crew being spread apart at least 5 feet in an uncontrolled atmosphere with poor visibility and poor company accountability. In fire buildings with low visibility, firefighters often stay in extremely close proximity to each other in order to maintain crew integrity, verbal communications, and company accountability. Option c would spread a crew of three firefighters at least 5 feet from one another or a total of 15 feet of separation for the entire crew. The keyed response, kneeling or laying down on the same side of the hose line, has the members working on the hose line in close proximity to one another, and maintains crew accountability, integrity, and communications under adverse conditions. They keyed response is the best response.

Question 71 indicated that the ceilings in the bedrooms are lined with a foam plastic that chars and burns, but does not flow. It asked candidates to complete the sentence, "This is an example of a...," and the keyed response was option b, thermoset. Mr. Bunche selected option a, thermoplastic, and argues this choice "due to thermoplastic burns as well as thermoset question." Mr. Gutierrez did not respond to this question. Nevertheless, he argues, "Knowing what thermoset is, is not critical for effective performance." In reply, this question asks for the term that defines foam plastic that chars and burns, but does not flow. The keyed response is correct pursuant to page 81 of *Corbett & Brannigan*. Firefighters must know what thermoset is, and page 81 of *Corbett & Brannigan* indicated that the plastic interior finish played a critical role in the rapid development of fire and smoke in the West Warwick, Rhode Island nightclub fire that killed 100 people. This question is appropriate to the test, and the keyed response will not be changed.

Question 73 stated that a backdraft has occurred in the bathroom during a search knocking a firefighter unconscious, and it asked what action your interior crews should take **IMMEDIATELY**. The keyed response was option d, radio a mayday giving their conditions and status. The appellants selected option c, activate their PASS devices. In support, they argue that page 26 of the *Addendum* states that "A person in distress who initiates an emergency traffic or mayday call shall first activate their personal alert safety system (PASS) device and if applicable, their radio's emergency button. A person in distress who initiates an emergency traffic or mayday call shall coordinate his or her radio transmissions with the activation of his or her PASS device." They state that encountering a downed fellow firefighter causes distress. In reply, pages 312 and 313 of *Norman* state that, "To be effective, each organization must have certain protocol in place that define what constitutes a Mayday message, as well as how everyone who hears it should react. Among the most important items to establish is what constitutes an

emergency and that warrants transmission of a Mayday message. Any situation that puts a firefighter or officer in danger of losing his or her life is definitely a Mayday situation, including the following: An unconscious firefighter or one suffering a potentially life threatening injury or medical condition has been discovered." The PASS device is activated to indicate a location, not a mayday. The *Addendum* refers to the first action taken by a person who has initiated an emergency traffic or mayday call. That is, the mayday call has already been given, and the next step is to activate the PASS device. If the PASS device is activated before the mayday call, the firefighters or the IC may not be able to hear or understand the mayday transmission. The keyed response will not be changed.

Question 74 indicated that during overhaul, the crew finds a charred area with white and gray ash on it, and it asked candidates to complete the sentence, "You should...." The keyed response was option a, order a hose team to douse the area with water and confirm the color has changed to solid black. The appellants selected option d, have the area checked with a Thermal Imaging Camera (TIC). In support, they argue that you cannot go wrong with using a TIC before a hoseline; a TIC is vital in that it conserves property, limits water damage, preserves evidence and locates hot spots, and allows for effective use of water; a check with a TIC could show how much water needs to be used to douse the fire and prevent a rekindle; and page 635 of *Fundamentals* states that a TIC can decrease the time needed to overhaul a scene and reduce physical damage. In reply, page 193 of *Norman* indicates that, "As a guide, normal Class A combustibles that are showing a white or gray ash on the surface are still hot enough to reignite. Dousing them with water turns this ash a solid black. This rule of thumb applies equally to almost all Class A materials, even though no open flame or glowing embers are visible." While checking the area with a TIC is helpful, option d does not put out the fire which is burning. Water has not touched this and the area is still hot, as evidenced by the area with white and gray ash on it. The area will need to be doused, and option d does not do this. The keyed response will not be changed.

CONCLUSION

A thorough review of appellants' submissions and the test materials reveals that, with the exception of question 11, which should be doublekeyed to options b and d, 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 question 11 be doublekeyed to options b and d, Mr. Brower be credited with one point, and the remainder of the 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 15th DAY OF APRIL, 2015

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