



Continuing Education Course



Understanding Fireground Command: Making Decisions Under Stress

BY RICHARD B. GASAWAY

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Understanding Fireground Command: Making Decisions Under Stress

Educational Objectives

On completion of this course, students will

1. List and discuss the steps of the Traditional Decision-Making Process and explain why this process is not feasible at emergency incidents.
2. Understand and explain the Recognition-Primed Decision-Making Process and explain how incident commanders use this process.
3. Identify and explain the three levels of situation awareness and give examples of the actions the incident commanders perform at each level.
4. Explain the role of expertise in making decisions under stress and identify ways to accelerate a commander's experience.

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FIREGROUND COMMANDERS WORK UNDER VERY stressful conditions. If you have had the opportunity to be in charge of a multicompany structural fire response, you know the challenges: conditions that are uncontrolled and continually changing; time constraints; too much or too little information; a high degree of ambiguity; and perhaps unfamiliar building construction, contents, or occupancy. Couple these challenges with the declining frequency of structural fire events and the increased use of lightweight materials and plastic products in construction, finishes, and furnishings, and the risk becomes even greater.

Every fireground commander knows the mission: to protect life and property. It is a dangerous vocation. When you are the fireground commander, you know that people (firefighters and civilians) can live or die based on your ability to make sound decisions. It is an awesome responsibility. There is so much at risk, and the potential consequences are so great.

At the 2009 Fire Department Instructors Conference, I was given an incredible opportunity to present the program "Fifty Ways to Kill a Firefighter." It's a powerful, fast-paced look at how fireground commanders make critical decisions under stress, the role that situation awareness plays in decision making, and an evaluation of 50 barriers that can challenge a fireground commander's situation awareness. The program is based on extensive research I have conducted on high-stress decision making in a variety of domains where environments present

challenges similar to those mentioned above. Workers in those domains include commercial and military pilots, battleground and tank commanders, and surgical and emergency room teams. Although the body of research that exists in these domains is extensive, empirical studies of fireground command decision making and situation awareness has been woefully inadequate.

For you who have done scientific research, you know the foundation of a study is built on the work that has already been done by other researchers. This is the reason it's called research. The foundation of a research study is the literature review—an exhaustive process of locating, reading, comprehending, and synthesizing the studies that have already been completed.

THE KLEIN STUDIES

For me, this journey started with a study conducted by Dr. Gary Klein. In the mid-1980s, the United States Army commissioned Klein Associates to conduct a study to improve the understanding of how battleground commanders make decisions under stress.

The Klein researchers realized the best way to obtain this understanding would be to observe the battleground commanders while they performed in their natural environment—on the battleground. However, they knew this would be too dangerous. So, Klein's group brainstormed the issue in an effort to identify another decision-making domain that would have an environment similar to the battleground. They chose fireground commanders. For the study, the researchers rode along with fireground commanders from the Cleveland (OH) Fire Department

and observed their decision-making practices at actual structure fire incidents.

Up to this point, most decision-making research was not conducted in the field but in the laboratory-type setting. Often, that laboratory was a classroom where researchers would administer a decision-making case study scenario to a group of students and evaluate how well they made decisions. For example, a study might ask a group of college students in a finance class to evaluate investment options and decide how to allocate a hypothetical sum of money into a portfolio. The students would conduct some analysis of the data provided and would make decisions and invest their money. The researchers would then ask the students questions about how they made their investment decisions. For their hard work and participation, the students might receive some nominal form of compensation (maybe pizza and beer). It seemed like a logical way to learn about how decisions were made. A series of these studies over the years produced a decision-making process that is still taught in business schools throughout the world today. This Traditional Decision-Making Process has been articulated in various forms, but it essentially is some variation of these eight steps:

1. Define the problem.
2. Identify your decision criteria.
3. Allocate weights to the criteria.
4. Develop alternatives.
5. Evaluate the positive and negatives of the alternatives.
6. Select the best alternative from among the choices.
7. Make the decision.
8. Evaluate the effectiveness of the decision.

Interestingly, when Klein Associates conducted the fireground commander study, the goal was to understand how the battleground commanders used the Traditional Decision-Making Process listed above. However, what the researchers found was very surprising. Fireground commanders did not use the Traditional Decision-Making Process at all. In fact, commanders told the researchers that on the fireground they did not even pick two possible courses of action from which to choose the best. This perplexed the researchers. How could someone make a decision without comparing two or more alternatives?

The researchers had their work cut for them as they sought to understand these unexpected findings. If fireground commanders were not using the Traditional Decision-Making Process, then how could they possibly make effective decisions under stress? These observations and interviews with Cleveland's fireground commanders led Klein Associates to discover a new model for decision making, and it set off a whole new paradigm of decision research—studying people in their natural decision-making environment (vs. in the laboratory or in a classroom).

We now know that laboratory decision-making research did not capture how decisions are made in high-stress, real-world situations because of several factors. First, the classroom environment was very controlled—no loud noises, good lighting, comfortable temperatures,

Command Health Check-Up[©]

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| 1. There was one, clearly defined commander at all times during the incident. | Yes | No |
| 2. Command was passed only when necessary and only after a briefing. | Yes | No |
| 3. The commander (or a designee) completed a 360° size-up of the incident. | Yes | No |
| 4. The commander refrained from performing hands-on/tactical duties. | Yes | No |
| 5. Command remained far enough from the incident to ensure a big-picture view. | Yes | No |
| 6. The commander developed and communicated an appropriate strategy. | Yes | No |
| 7. Command gave assignments to companies and coordinated incident activities. | Yes | No |
| 8. Command maintained accountability of personnel (location, crew size, actions). | Yes | No |
| 9. Incident communications were clear and concise. | Yes | No |
| 10. Additional help was called using a pre-established system (e.g., "second alarm"). | Yes | No |
| 11. Tactics were properly matched to the size of the problem (e.g., big fire=big water). | Yes | No |
| 12. The commander maintained a broad perspective of the overall incident. | Yes | No |
| 13. Command was able to think ahead of the incident (predict future events). | Yes | No |
| 14. Radio traffic was disciplined and manageable. | Yes | No |
| 15. Someone was assigned to monitor every radio channel (talk group) in use. | Yes | No |
| 16. Every communication from hot-zone crews was heard the first time transmitted. | Yes | No |
| 17. There was adequate staffing to carry out the strategy safely and effectively. | Yes | No |
| 18. As conditions changed, so did the strategy and tactics. | Yes | No |
| 19. Progress reports were clear, concise, accurate, timely, and informative. | Yes | No |
| 20. There were no conflicting orders or conflicting tactics. | Yes | No |
| 21. Organizational culture did not impact the strategy, tactics, or operations. | Yes | No |
| 22. An incident safety officer was assigned and performed duties appropriately. | Yes | No |
| 23. There were sufficient resources (apparatus and equipment) to accomplish the tactics. | Yes | No |
| 24. Firefighters were adequately trained to perform their assignments. | Yes | No |
| 25. Proper SOPs/SOGs were established, implemented, communicated, and followed. | Yes | No |

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● FIREGROUND COMMAND

and so on. The decision-making environment was not high risk with high stakes. In other words, when the study was done, the students still got their pizza and beer at the end even if their investment portfolio tanked as a result of their poor decisions. Finally, the students (for the most part) did not possess any previous knowledge on the subject matter they were being asked to evaluate. In other words, the students did not have enough experience in managing investment portfolios to know a good decision from a bad decision or, for that matter, what criteria to consider that would lead to a desirable outcome.

RECOGNITION-PRIMED DECISION-MAKING PROCESS

When Klein put researchers on the fireground, they quickly realized these men and women did not use the Traditional Decision-Making Process. Their extensive evaluation of what was happening in the minds of fireground commanders gave rise to the discovery of a new model for decision making—the Recognition-Primed Decision-Making Process. The steps of this process include the following:

1. Conduct a quick scene size-up.
2. Recognize a “typical” way to resolve the problem.
3. Focus on the most relevant information, and seek explanations for unusual things.
4. Mentally game out a single option in your mind, scrapping options that do not work. Repeat this process until you find an option that yields a desired outcome.
5. Form some expectations about how you think things will turn out if you take that action.
6. Look for unusual issues or situations that may impact your intentioned action plan and consider those in your mental modeling.
7. Once you develop a mental model that works, put the decision into action.

This is very different from the traditional process of evaluating and comparing multiple options side by side and weighting each criterion. Simply stated, commanders came up with one way of solving the problem; ran it through a mental checks-and-balances process; and, if it seemed as if it would work, they went with it. But how could they be sure? How were commanders able to be so accurate without a comprehensive evaluation of the alternatives?

Klein discovered that to be effective in making recognition-primed decisions, the commander has to possess four things.

1. Commanders must possess and maintain strong situation awareness. In its simplest definition, situation awareness means that commanders have to *really* pay attention to the things that are happening around them. (More information on situation awareness is below.)

2. Commanders must possess tacit knowledge. Tacit knowledge refers to having a high level of knowledge about a subject but not being able to explain how you acquired that knowledge. In other words, you know it, but you can't explain how you know it. You just know it.
3. Commanders must be able to conduct mental simulations of future events. They not only must be able to form mental models of what is happening at the moment but also must be able to play the movie in fast forward (speaking hypothetically) to predict what the future will hold so that the decision made at this time will ensure that the personnel are prepared for future events.
4. Commanders must possess a high level of self-efficacy (confidence) in their decision making. Commanders will never be able to acquire 100 percent of the information needed to make a decision. Thus, they must be comfortable enough with that “gut” feeling that comes from knowing something is the right thing (or not the right thing) to do. This can be challenging, because we live in a litigious society where command decisions may be called into question, and no commander wants to be on the witness stand trying to convince the judge and jury that the decision was made on a hunch or a gut feeling.

SITUATION AWARENESS

Recall that the first quality a commander must possess and maintain is good situation awareness. If situation awareness were as easy as just paying better attention to what is going on, I would dispense the advice, “Just pay better attention to what's going on,” and I would stop writing. But, there is a reason that flawed situation awareness is the highest ranked contributing factor in near-miss reports and is often implicated in line-of-duty death reports. It turns out that it is not so easy to pay attention in high-stress, high-stakes, fast-paced, ever-changing, high-consequence environments.

Endsley's Levels

To help you fully understand situation awareness, I turn to the work done by Dr. Micah Endsley and her associates at SA Technologies. Through her research, Endsley determined that situation awareness occurs on three levels.

- **Perception.** During this first phase, commanders capture all the cues and clues in the current situation (which even includes information gathered prior to arriving at the incident). This can be a very fast process of scanning the environment and capturing everything you see, hear, smell, taste, touch, and sense. At the first level, you don't spend much time trying to figure out what it means—you are just taking it all in.
- **Comprehension.** During this second phase, commanders make sense of the clues and cues. Hypothetically speaking, they put the pieces of the puzzle together,



(1) Photo courtesy of Spokane (WA) Fire Department Media Services.

Fight or Flight Syndrome

However, as noted earlier, the fireground is a high-risk, fast-paced, ever-changing environment, and those conditions can really elevate a commander's stress level and impact the ability to develop and maintain situation awareness at all three levels. Under stress and pressure, your body engages in a natural reaction referred to as the "fight-or-flight syndrome." The human species has evolved over many hundreds of thousands of years. From our early existence, humankind has dealt with stressful events (like being eaten by carnivores). Over time, our bodies have learned to react to this stress by defending ourselves (fight) or running away (flight).

This stress reaction causes certain things to happen in your body: Your heart rate and res-

much as you do when connecting the pieces in a jigsaw puzzle: As you connect the pieces that go together, the picture starts to take form. The same thing is done on the fireground. Researchers call this process "chunking of information" and "pattern matching"—associating certain cues and clues with each other and putting them together so that they mean something. Conversely, if these clues and cues were examined or evaluated separately, they would likely not mean the same thing.

Referring back to the jigsaw puzzle example, if you had a single puzzle piece that was blue, you might not know what it signifies, but if you join it to a few other pieces that are brown and gray and it starts to form the image of a boat, then you will recognize that that blue piece might represent the water in which the boat is sitting. You were not able to deduce this until you added some other pieces to the single blue one. This is an example of chunking information.

Chunking is very useful to a fireground commander because humans have a limited capacity to process information. Research conducted in the 1950s revealed that the average human can capture and process into meaning seven (give or take two) pieces of unrelated information. In fact, the results of this research led to the creation of the seven-digit telephone number. So, when you can chunk individual pieces of information together so that they mean something, that *something*, in essence, consumes part of the limited working memory space in your brain.

- **Projection.** This third level of situation awareness is perhaps one of the most challenging I have seen in my research. At this level, you are able to make accurate predictions about future events. The commander would think beyond the current events and mentally look into the future and make some assumptions about where the incident is heading. The obvious question begging to be asked here is, "If the commander could see a catastrophic event coming, would he not take steps to prevent it from happening?" The obvious answer is yes.

pirations increase, your pupils dilate to let in more light, glucose (sugar) is released into your bloodstream to give you instant energy, endorphins (your body's naturally produced pain killers) are released to dull the pain in case you get hurt, the blood supply to your kidneys and digestive tract is restricted, and your bowels and bladder may release their contents. Also, when you are under stress, your brain and senses will narrow your focus to the most immediate dangers and basic tasks of survival.

There is good news and bad news in how your body reacts to stress. The bad news is that while your mind is narrowing its focus on your most basic and primitive survival needs, other very important things and many of the more complex tasks you may be required to think about are avoided. In other words, this stress reaction challenges your ability to comprehend complex things. The good news is that under stress your primitive instincts take over and tell your body to use your intuition. Intuition is that "gut feeling" you get that can help guide your actions.

Remember in the movie *Star Wars* when Luke Skywalker was being pursued by Imperial Storm Troopers and Darth Vader? Luke was under a great deal of stress. The vessel he was traveling in had taken several direct hits, and he was quickly on his way to becoming space dust. Then the voice of his (now dead) teacher and mentor, Obi-Wan Kenobi, came into Luke's head and told him: "Use the force." He was telling Luke to use his intuition, to trust his gut, and to rely on his instincts to guide his actions. Hey! It worked! But then again, that was Hollywood, and the hero always prevails in the movies.

Seriously though, your instincts are not just random feelings. For your entire life, everything you have experienced is captured and stored in your mind. You cannot stop it, and you cannot control it. Unfortunately, you do not get to decide how or where your brain stores your experiences. If you could control that, imagine how much easier it would be to recall the lessons you have learned throughout life.

For example, if I were to ask you what you had for lunch on September 9, 2004, chances are that you would say you have no idea. But that day is stored in your memory. You may, at the conscious level, think you have long since forgotten such trivial things. Simply because you cannot recall that day into your conscious memory does not mean it is not there. It is there, stored for eternity (or until you become space dust). There are studies that have shown that under hypnosis psychologists have been able to get people to recall things that happened to them decades ago.

Imagine how much easier incident command, not to mention life, would be if you could decide on your own where information was stored in your mind and you were able to instantly recall it by going to the file where that information is stored. As we have previously discussed, stress causes certain changes in your bodily functions and calls into action your primal instincts. Stress impacts your natural (and rational) judgment system. This may be a blessing in disguise, for if you were bound to thinking in rational ways at a fire scene, you would use the Traditional Decision-Making Process (because it is rational to do so). You would look for facts and figures and data to support your decisions. Worst of all, you would possibly lose your ability to make any decision at all because you would continually be waiting for more facts—more information. This is sometimes referred to as “analysis paralysis.”

Intuitive Decisions

Thanks to heredity, your judgment system becomes more intuitive when you are under stress. When you are under stress and making intuitive decisions, your brain (at the subconscious level) is scanning all the images you have stored there. Those images represent the connection of your life's experiences stored in your brain. Your brain searches these images, looking for a similar experience it can draw on to help you know what to do. If you have had this experience before (or one similar to it), your brain will identify a pattern match to the previous event, and you will either become consciously aware of what to do (recall), or you will get a gut feeling (intuition) that tells you what to do in ways that you may not be able to explain how you knew it—you just knew it. As noted earlier in the article, this is tacit knowledge.

However, and this is a vitally important point, for you to have the tacit knowledge to trigger an intuitive decision, you must first have the knowledge and experience stored in your brain. If you lack the training and experience to be a subject matter expert in fireground command, you're not going to be able to make intuitive decisions because your brain will be searching for the pattern match and will come up empty.

In the classes I teach on this topic throughout the United States, I will ask the class if anyone has ever had a near-death experience—an event that had them thinking

they were going to die and their *life flashed before their eyes*. Inevitably, in a class of 400, a half dozen or more students would raise their hands. With their permission, I asked them to recall their story, which usually went something like this (this example comes from a program I did in Florida).

It was 1967, and I was serving as a Marine gunner in Vietnam when my helicopter took a rocket-launched grenade that knocked out our main rotor. We were falling to the ground from 1,500 feet. From the time we got hit until we were grounded was just a matter of a minute or so. In that time, I had images flash in front of me that, to this day, I cannot explain. I saw myself on my first day of school. I had the image of my taking a test in fifth grade. I saw myself driving the first car I ever owned. I saw my bride on our wedding day. I saw my grandmother's funeral.

As many times as I ask this question, and as many times as I have people share their experiences, I am always amazed. When you understand what happens under stress, this experience starts to make sense. Remember that all your life's experiences are stored in your brain (in fact, they are stored in many parts of your brain, but that discussion is beyond the scope of this lesson). Remember, when under stress, you revert to your primitive instincts to survive. When this happens, your brain starts searching your memory stores for a pattern match, experiences you had previously in your life that will tell you what to do here to survive. As your brain is scanning the images of your life, periodically (for reasons that science cannot yet explain) one of those images may pop into your conscious memory—thus, your life is flashing before your very eyes.

Unfortunately, in the case of the helicopter pilot (as in so many of the other examples my students share), he had no previous experience of being in a helicopter crash. Therefore, there was no pattern match, and, consequently, he did not have a gut feeling to tell him what to do to survive.

The same would be true if you were a fireground commander working under stress. Your brain would search for pattern matches that tell you the typical way you should react and guide your decision making. What to do will sometimes come into your conscious memory. However, under stress, you would be more likely to get an intuitive gut feeling that tells you what to do. This gut feeling will come only if you have a pattern match (or a partial pattern match). If you have had no training and experience, you are going to come up empty. This is the reason there is no substitute for training and experience to be a good fireground commander.

However, as you know, the number of fires in many jurisdictions is declining and the opportunity to develop fireground experience is decreasing. This can put fireground commanders in a tough situation. But there is some good news, too. Your brain, as wonderful a creation

as it is, cannot distinguish between experience gained in the real world (actual fire scenes) and that gained in training or simulations. The lessons are the lessons. When your memory forms a pattern match, it does not inform you where that pattern match came from. It might have come from a similar fire to which you responded five years ago or from an article you read in a fire service journal 15 years ago. Your brain will simply recall the similar features about the experience. If a pattern match (or close match) is formed, you draw on your tacit knowledge to guide you in the right decision.

Aspiring fireground commanders can preload their memory with images of fire incidents from participating in realistic training scenarios and simulation exercises; reading near-miss reports, case studies, and line-of-duty death reports; watching videos of fire incidents; and talking with experienced firefighters to learn the lessons from past fires. Remember, once the information is stored, your brain searches for a pattern match without concern for how the images were put into memory.

This discussion would not be complete without some warning about trusting your intuition. Simply because you get a gut feeling about what to do does not mean it is the right thing to do. You can get gut feelings because you are having a pattern match based on assumptions you have made about what is going on. You can be wrong. Before you blindly trust your gut, seek information that validates what you are feeling. Look for some tangible evidence that affirms you are making a good decision. Blindly following your gut feelings when you're making a major purchasing decision (like buying a car) is one thing. Doing that when firefighters' lives are on the line can prove catastrophic. Trust your gut, but verify it with facts.

Putting the "Pieces" Together

As when assembling a jigsaw puzzle, the first thing you do is turn all the pieces face up (so you're not just looking at blank cardboard, which is meaningless). Next, you look for the corners. Why? Corners are facts. If the puzzle is square or rectangular (as most are), there will be four indisputable points of reference—facts, the corners. In fact, if you looked at the puzzle and there were no corners, it would be one of those unusual events/circumstances for which you would have to seek an explanation. If the puzzle were round, for example, there would be no straight edges either, which would strike you as being bizarre. In the square or rectangular puzzle, finding the corners gives you comfort. They are the starting points for piecing the puzzle together. After you find the four corners, you look for flat-edge pieces that adjoin the corners. Why? The flat edges are also facts. They are the indisputable ends of your puzzle. You don't have to worry about anything that might have been in the picture beyond the edges. You look for some facts that validate your hunches. Before you know it, you're able to piece together enough

of the puzzle so that you start to get a good sense for what is happening and how the puzzle is going to turn out.

Following this jigsaw puzzle example enables you to understand (at a conscious level) what your brain is doing at the subconscious level when it is developing and maintaining situation awareness.

Referring to Endlsey's first level of situation awareness, Perception, gathering the clues and cues is analogous to turning the pieces face up, scanning the colors and textures, and looking for corners and edges when determining where to begin putting the puzzle together.

In Level 2, Comprehension, you make sense of the clues and cues. In the jigsaw puzzle, this is where you start putting together pieces that did not mean much when each one stood alone. Now, you are coupling them with other pieces, and they come to mean something. They start to form the picture.

Level 3, Projection, predict future events, is akin to forming in your mind an image of what the completed puzzle will look like. It helps you to identify the pieces in your mind that go together.

LESSONS LEARNED

From my evaluation of cases involving firefighter near-miss events and casualties, I offer the following observations:

- Developing and maintaining situation awareness is not easy. In fact, you could be a commander with a stellar safety record on your incident scenes, but perhaps up to this point, you may only have been lucky.
- When you are under stress, your situation awareness can fade away slowly, and you may never realize it is being lost until it is too late.
- The things to which you should pay attention are not always obvious or intuitive. No neon arrow is pointing down from the sky to tell you that a particular something happening on the incident scene is important.
- Humans have a limited capacity to capture and process clues and cues. Knowing which are the most important and which are not is critical. Equally as important as the cues and clues present at an incident scene are the cues and clues that are *not* present—the "negative cues and clues." It takes someone with expertise to be able to look at a situation and understand that when something is missing, it is important.
- Commanders must remain hands off and big picture. If you find yourself, for whatever reason, being hands on, you are no longer fulfilling your obligation as a commander, and you are at risk of missing very important cues and clues.
- Conducting a size-up and developing/maintaining your situation awareness (Levels 1, 2, and 3) are continual processes.
- Research has shown that it takes 10 years to develop expert-level knowledge and performance, if the person

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COURSE EXAMINATION INFORMATION

To receive credit and your certificate of completion for participation in this educational activity, you must complete the program post examination and receive a score of 70% or better. You have the following options for completion.

Option One: Online Completion

Use this page to review the questions and mark your answers. Return to www.FireEngineeringUniversity.com and sign in. If you have not previously purchased the program, select it from the "Online Courses" listing and complete the online purchase process. Once purchased, the program will be added to your **User History** page where a **Take Exam** link will be provided. Click on the "Take Exam" link, complete all the program questions, and submit your answers. An immediate grade report will be provided; on receiving a passing grade, your "Certificate of Completion" will be provided immediately for viewing and/or printing. Certificates may be viewed and/or printed anytime in the future by returning to the site and signing in.

Option Two: Traditional Completion

You may fax or mail your answers with payment to *PennWell* (see Traditional Completion Information on following page). All information requested must be provided to process the program for certification and credit. Be sure to complete ALL "Payment," "Personal Certification Information," "Answers," and "Evaluation" forms. Your exam will be graded within 72 hours of receipt. On successful completion of the posttest (70% or higher), a "Certificate of Completion" will be mailed to the address provided.

COURSE EXAMINATION

- The risk of structural firefighting has been increasing because of, in part,
 - A reduction in the number of structure fires.
 - Changes in building construction and materials.
 - Greater use of plastics in construction, interior finishes, and furnishings.
 - All of the above.
- In the mid 1980s, Gary Klein and his associates were hired to study the stressful decision-making environments of
 - Fighter pilots.
 - Surgical teams.
 - Police officers.
 - Battleground commanders.
- The Klein research group members knew they could not study the subjects of their research in their real working environment because it would be dangerous, so they selected which other vocation wherein to conduct a comparative study involving high-stress, high-consequence decisions:
 - Commercial airline pilots.
 - Fireground commanders.
 - Air traffic controllers.
 - Race car drivers.
- Even though they were proven wrong, when Klein and his associates conducted their study, they had every intention of demonstrating how their study subjects use this decision-making model:
 - Recognition-Primed Decision-Making Model
 - Naturalistic Decision-Making Model
 - Traditional Decision-Making Model
 - Stress-Driven Decision-Making Model
- Up to the time when Klein's group made its discovery, the established method of decision making involved steps that included
 - Defining the problem.
 - Identifying decision criteria.
 - Considering typical ways of reacting to the situation.
 - a and b only.
- Early research into decision making conducted in laboratory settings failed to uncover what Klein's group revealed. The reason for this oversight was that early studies
 - Failed to provide participants with enough information to make good decisions.
 - Failed to consider the experience level of the study participants.
 - Created false expectations in the minds of the study participants.
 - Failed to control the outcome variables.
- The steps in the Recognition-Primed Decision Making Model include all of the following, except
 - Compare two or more alternatives to determine which decision is best.
 - Seek explanations for unusual events.
 - Quickly size-up the situation.
 - Focus on the most relevant information.
- The four things that must be present to make good Recognition-Primed Decisions are
 - Situation awareness, tacit knowledge, mental simulations, and self-efficacy.
 - Experience, education, training, and knowledge.
 - Situation awareness, command presence, communications skills, and expertise.
 - Tacit knowledge, self-confidence, problem-solving skills, and command presence.
- According to Dr. Micah Endsley, the levels of situation awareness include all of the following, except
 - Comprehension.
 - Perception.
 - Competence.
 - Projection.
- According to Endsley, Level 3 situation awareness involves
 - Understanding what is happening around you.
 - Being able to sort out what is important from what is not.
 - Capturing cues and clues from your environment.
 - Predicting future events.
- According to Endsley, Level 1 situation awareness involves
 - Understanding what is happening around you.
 - Being able to sort out what is important from what is not.
 - Capturing cues and clues from your environment.
 - Predicting future events.

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12. According to Endsley, Level 2 situation awareness involves
- Understanding what is happening around you at the current time.
 - Being able to sort out what is important from what is not.
 - Capturing cues and clues from your environment.
 - Predicting future events.
13. When you get a “gut feeling” about what to do on an emergency scene,
- Don't waste any time; trust your gut. It's trying to tell you something.
 - Don't trust your gut; it's not reliable. Use facts and data to make your decisions.
 - Validate your gut feelings with some facts to support what you're feeling, but know you will never have access to all the data available.
 - a and c
14. Under stress, that incredible “computer” we call the human brain will
- Rely on your rational judgment systems to help you make decisions.
 - Rely on your intuitive judgment systems to help you make decisions.
 - Be able to process hundreds of pieces of critical information.
 - Help you avoid distractions.
15. In this article, the method by which your brain searches for and connects unrelated pieces of information was compared to how a person assembles a jigsaw puzzle. In this example, the corners of the jigsaw puzzle were described by the author as
- A safe starting place to start assembling the puzzle.
 - Facts.
 - The first thing you're going to look for after you dump the puzzle out on the table.
 - Unreliable because not every puzzle is square or rectangular.
16. When you are under stress
- Your ability to pay attention can be impaired.
 - Your body's natural stress reaction can cause you to become overly excited.
 - Your rational judgment systems are going to shut down.
 - All of the above.
17. Research has suggested that the human brain has a limited capacity and is, on average, able to receive, comprehend, and remember only how many pieces of unrelated information?
- 10 (+/-2).
 - 7 (+/-2).
 - 30 (+/-10).
 - Science has not been able to determine that number, but it is known that there is a limit.
18. According to research involving experts in many fields, how long, on average, did the participants say it took them to develop their expert-level knowledge and performance?
- Three to five years, practicing once a week.
 - Ten years if they practiced almost every day.
 - Seven years, practicing three times each week.
 - Five years if they practiced almost every day.
19. Fireground commanders can accelerate their level of expertise beyond responding to emergency calls by
- Participating in realistic (and repetitive) training evolutions.
 - Reading near-miss reports and case studies of firefighter injuries and deaths.
 - Reading articles in fire service publications that describe incidents to which other departments have responded.
 - All of the above.
20. In conducting a size-up, it is important to capture cues and clues that are present. It is also vital to take note of the cues and clues that are absent, as they may indicate something is about to go wrong. The cues and clues that are absent at a scene are called
- Transparent cues and clues.
 - Deficient cues and clues.
 - Negative cues and clues.
 - Hidden cues and clues.

Notes

Understanding Fireground Command: Making Decisions Under Stress

PROGRAM COMPLETION INFORMATION

If you wish to purchase and complete this activity traditionally (mail or fax) rather than Online, you must provide the information requested below. Please be sure to select your answers carefully and complete the evaluation information. To receive credit, you must receive a score of 70% or better.

Complete online at: www.FireEngineeringUniversity.com

PERSONAL CERTIFICATION INFORMATION:

Last Name (PLEASE PRINT CLEARLY OR TYPE)

First Name

Profession/Credentials License Number

Street Address

Suite or Apartment Number

City/State Zip Code

Daytime Telephone Number with Area Code

Fax Number with Area Code

E-mail Address

TRADITIONAL COMPLETION INFORMATION:

Mail or fax completed answer sheet to
Fire Engineering University, Attn: Carroll Hull,
1421 S. Sheridan Road, Tulsa OK 74112
Fax: (918) 831-9804

PAYMENT & CREDIT INFORMATION

Examination Fee: \$25.00 Credit Hours: 4

Should you have additional questions, please contact Pete Prochilo (973) 251-5053 (Mon-Fri 9:00 am-5:00 pm EST).

- I have enclosed a check or money order.
 I am using a credit card.

My Credit Card information is provided below.

- American Express Visa MC Discover

Please provide the following (please print clearly):

Exact Name on Credit Card

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ANSWER FORM

Please check the correct box for each question below.

- | | |
|---|---|
| 1. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 11. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 2. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 12. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 3. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 13. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 4. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 14. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 5. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 15. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 6. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 16. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 7. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 17. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 8. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 18. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 9. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 19. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |
| 10. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 20. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D |

COURSE EVALUATION

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 1.

- | | | | | | |
|--|-------|---|---|-----|----|
| 1. To what extent were the course objectives accomplished overall? | 5 | 4 | 3 | 2 | 1 |
| 2. Please rate your personal mastery of the course objectives. | 5 | 4 | 3 | 2 | 1 |
| 3. How would you rate the objectives and educational methods? | 5 | 4 | 3 | 2 | 1 |
| 4. How do you rate the author's grasp of the topic? | 5 | 4 | 3 | 2 | 1 |
| 5. Please rate the instructor's effectiveness. | 5 | 4 | 3 | 2 | 1 |
| 6. Was the overall administration of the course effective? | 5 | 4 | 3 | 2 | 1 |
| 7. Do you feel that the references were adequate? | | | | Yes | No |
| 8. Would you participate in a similar program on a different topic? | | | | Yes | No |
| 9. If any of the continuing education questions were unclear or ambiguous, please list them. | _____ | | | | |

10. Was there any subject matter you found confusing? Please describe.

11. What additional continuing education topics would you like to see?

PLEASE PHOTOCOPY ANSWER SHEET FOR ADDITIONAL PARTICIPANTS.

AUTHOR DISCLAIMER
The author(s) of this course has/have no commercial ties with the sponsors or the providers of the unrestricted educational grant for this course.

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COURSE EVALUATION and PARTICIPANT FEEDBACK
We encourage participant feedback pertaining to all courses. Please be sure to complete the survey included with the course. Please e-mail all questions to: Pete.Prochilo@penwell.com.

INSTRUCTIONS
All questions should have only one answer. Grading of this examination is done manually. Participants will receive confirmation of passing by receipt of a verification form.

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Completing a single continuing education course does not provide enough information to give the participant the feeling that s/he is an expert in the field related to the course topic. It is a combination of many educational courses and clinical experience that allows the participant to develop skills and expertise.

COURSE CREDITS/COST
All participants scoring at least 70% on the examination will receive a verification form verifying 4 CE credits. Participants are urged to contact their state or local authority for continuing education requirements.

RECORD KEEPING
PennWell maintains records of your successful completion of any exam. Please go to www.FireEngineeringUniversity.com to see your continuing education credits report.

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Immediate access to critical data makes fire ground decision making easier.



CommCAD



Navigator



FireEMS



AIMS on Scene

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