

TECHNOLOGY RADIOS, PAGERS & ACCESSORIES

Mayday Communications Clues

Don Abbott offers 16 phrases that should alert the Incident Commander of a possible mayday event.

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“Predictable is preventable” is a comment often made by risk-management specialist Gordon Graham. The same remark could be made related to some of the radio communication heard on the fireground by the incident commander (IC) just minutes before a mayday occurs—except it’s too late in many cases to prevent the mayday.

Project Mayday and communications

Basic fireground operations involve initiating, maintaining and controlling the communications process. Communications is a reflection of our operations—the good, the bad and the ugly. During many incidents, communications becomes a problem and causes the incident to become out of balance. This is especially true during maydays. Why? In most cases, there is either NO communication model or the model is not being followed.

Project Mayday—a nearly three-year study about maydays that looks at when, where and why they occur—examined nearly 3,000 recordings from audio dispatch, dash cams, helmet cams and body cams in order to identify the events and communications that occur during operations that include a mayday. The project found that in 87 percent of maydays, there is a major breakdown in communications, orders issued or received, missed messages, walk-over communications, and the worst of problems, missing a mayday call the first time (54 percent mayday calls are missed). There are many reasons for this: communications equipment that does not meet the department’s operational needs, too many members on the radio at one time, etc.

Through the examination of the recordings, Project Mayday developed a system for tracking phrases repeated over the radio prior to a mayday being called. We compared what was said, when it was said, and the response by the IC. From this information, we compiled a list of 16 phrases that were said but did not result in a change to the IC's plan or behavior. These phrases—which appeared in 88 percent of the mayday recordings reviewed—should serve as a trigger for an IC to reconsider their current operations. For example, hearing one of these phrases should get the IC's attention; two or three could mean a mayday is coming. This could cause an IC to call for an evacuation of the structure or a change in strategy. Let's review the 16 trigger phrases.

1. "We have zero-visibility conditions"

59 percent occurrence in mayday recordings

A crew reports that they have zero-visibility conditions—and then reports the same conditions 10 to 15 minutes later. The IC should review what the structure looked like at the beginning and what it looks like now. Have things gotten worse? Has the crew located the fire? If not, the IC should consider a change in strategy because what they have been doing for the last 20–30 minutes isn't working.

2. "We have fire above our heads"

81 percent occurrence

When a crew reports that they have fire above their heads (basement, first floor, second floor, attic, etc.), can they see it or do they have a thermal-imaging camera (TIC) that can be used? (First-in crews have a TIC with them 59 percent of the time.) The IC needs to know where the fire is located, how much fire is present, and whether crews are able to apply water to the seat of the fire. If the report of "fire above our heads" comes 15–20 minutes after arrival and crews cannot provide any answers to these questions, again, the IC should reconsider their incident action plan (IAP).

3. "We have fire below us"

56 percent occurrence

These words usually accompany basement fires, but we also hear about them from the second- and third-floor reports. In many of these incidents, the follow-up communication minutes later reports a floor collapse (33 percent), a hole in the floor (26 percent) or a stairway collapse (28 percent). In many of these incidents, a 360 walk-around was NOT conducted. Basement fires are dangerous. We often don't know the fire's exact location in the basement or its size. The loss of a basement window can create a flow path problem, catching a crew in a stairway with no backup line at the top to protect them. Again, the IC must review their IAP as conditions and reports change.

4. "We need more line to reach the fire; extend our line"

36 percent occurrence

This report is typically heard at commercial structure fires. In interviewing company officers who requested their lines be extended, most said the problem was that they could not reach the seat of the fire. And in too many cases, the IC will order that an additional length of hose be added to the line. There are several problems with this action. First, you usually must shut off the water to extend the line. That means you have crews in the hazard zone, waiting for water. Second, in 11 percent of the reports, the new hose still wasn't enough to reach the seat of the fire. As such, it's best to leave the line, return outside and find another door that places you closer to the fire, and stretch another hoseline to the interior. Further, think about the size of the line being advanced—the fact that it's charged as well as the number of people on the crew and their spacing in advancing the line. There's a lot of physical stress involved with this operation. With only six months of data, 9 percent of the firefighters who died of a coronary condition were involved in advancing these large lines into structures with a two-person crew. The IC needs to review the resources required whether they have the staffing to advance these lines without putting people and the operation at risk.

5. "We have not found the seat of the fire"

67 percent occurrence

This report is a major concern, particularly when we have been in the structure for 15–20 minutes, and it appears from the outside that conditions are deteriorating. Putting water on the fire early is critical for our safety. But all too often, crews struggle with finding the seat of the fire, and in the meantime, the fire has spread to other areas of the structure. Again, this occurs most often when we do not conduct 360 walk-arounds. The IC needs to consider the issues: Is it the size of the structure or not having sufficient resources to locate the fire?

6. “We are running out of air” (or indications of a “low-air alarm”)

73 percent occurrence

This alert becomes most critical when it comes from multiple units around the same time. Considering the number of radio reports we listen to, it is amazing that the background noise is a low-air alarm and crews are continuing to work inside with little or no concerns about their air. The company officer is responsible for their crew, especially when a member goes into a low-air alarm. The only way for the IC to monitor these situations is to conduct timely air checks. This should serve as a mental alert that the firefighter needs to leave the structure. If it is an air-pack problem, someone should leave with them. There is a big difference between running low on air and an air-pack problem—like calling a mayday!

7. “This is a hoarder structure”

54 percent occurrence

We have learned through our Project Mayday reporting that it’s not just houses that present these conditions but also many apartments and small businesses. Every fire department should have a standard operating procedure (SOP) for handling these types of conditions. Don’t leave this up to a firefighter; they don’t see that many fires and may consider it a challenge, while not acknowledging all the dangers. The IC needs to consider everything from life safety to potential exposures while balancing firefighter safety.

8. “We have had a flashover”

37 percent occurrence

Upon hearing a report of flashover, the IC needs to ensure that the crew is OK, then ask for a report on the environment, fire and heat conditions, and the color of the smoke. What is their hose actions and its results? In 44 percent of the flashovers that resulted in maydays with injuries, most of the injuries were results of the crew already having wet PPE from a previous fire (steam burns) or failing to pull up their hood, put their ear flaps down, gloves on or collar up. Oftentimes it is the results of the flashover that leads to bigger problems—loss of windows, ceiling collapse and extending fire into the attic. The IC needs to be aware of fire conditions, fire behavior and its effects on building construction. Again, the IC needs to review their IAP and make adjustment accordingly to provide the safest environment possible.

One of the issues that we continue hear in our review of dispatch tapes is situational awareness and our description of the conditions. We hear descriptions of smoke or heat conditions as heavy, moderate or light. What does that really mean? Our description should sound like this: “Have black smoke at waist level, and the heat conditions are high; the TIC shows 500 degrees.” That’s a more accurate description that will ultimately help the IC make the right decision about what’s next.

9. “We have had a ceiling/roof collapse”

37 percent occurrence

When we hear the report of a ceiling or roof collapse, we need to think about the “why” factor. Was the collapse caused by the weight of the water or flame impingement? If the latter, we must consider fire behavior and its effect on construction. Could there be another collapse coming? If it is a multiple-story building, what effect has the collapse had on the remaining structural components? In many cases with a ceiling collapse, firefighters become entrapped (covered with drywall or wrapped in electrical wiring, ductwork or insulation). One thing that mayday victims of ceiling collapses and other entrapments have told us is that if you carry personal hand tools, they need to be kept above your waist. Victims found it difficult to reach tools located in pockets below the waist—tools they could use to self-extricate. Further, a roof collapse creates multiple problems: How large of an area is

involved? Is there any equipment (HVAC, etc.) from the roof? What is the extent of the collapse? Most importantly, how much fire is involved? Many victims of roof collapse told us that the worst place to be is a large, open space, where there are no walls or large pieces of furniture that keep the trusses and roof from falling to the floor. They also reported that they quickly become disoriented, especially at night. Members involved in a roof collapse should, if at all possible, describe the situation in detail, including whether special equipment will be needed for the rescue. Anyone involved in the rescue must maintain situational awareness, especially with the potential of further collapse.

10. "We have lost multiple windows"

29 percent occurrence

Losing windows can create a flow path issue. Most mayday victims from these events said that depending on the location in the structure, the situation can go from bad to worse quickly. If a flashover occurs, follow your training; it's your best chance for survival. Several of the victims reported that the loss of skylights seemed to intensify the speed and the impact of the flashover. Several stated that multi-window failures came without warning. When performing a 360, the size and types of windows should be noted. If there are small windows located high on the building, they may fail quicker than a standard window.

11. "It's really getting hot in here; we are backing out"

44 percent occurrence

In most cases, crews experiencing this problem found that they either did not recognize the situation fast enough to fully react (situational awareness) or did not move far enough to be safe. Other problems reported included a delay in applying water or applying NO water. Many of the crews in this situation were burned (23 percent). It's important for crews to maintain situational awareness and ideal for them to have a TIC to assist. It's also important for company officers to report the location of the problem encountered, the crew's actions and where they're located in the structure. A more critical part of this problem is a crew that does not have a

hoseline, as it means that they have no protection, except to escape their situation if they can. Again, maintaining situational awareness is critical.

12. "Our exit has been blocked"

21 percent occurrence

A blocked exit creates multiple problems. Firefighters involved in this type of situation reported looking for any landmark that would direct them to another exit, but in many cases (27 percent), a mayday was not initially called because they spent time looking for alternatives. The main problem with this action depends upon crew size and the amount of area that needs to be covered. However, in most cases, this means firefighters are getting off the line, which exposes them to becoming lost, yet still NO mayday had been called! This is why crewmembers should carry hand tools that may allow them to make their own exit.

13. Interior: "We are sending a firefighter out with a problem"

19 percent occurrence

This is a tough call for any company officer to make, depending on the problem and the time it will take to exit. The IC in most cases is just following the recommendation of the company officer. It is important for the IC to identify the problem and then consider actions that could be taken. For example, if the problem is air-related (low air, bad seal of the facepiece or a regulator problem), consider exit time and actions that must be taken. Other considerations include the firefighter's experience, fitness level and weight. The company officer may send another firefighter in or have another crew enter to lead the firefighter out. If it's a medical situation (chest pain, difficulty breathing, numbness in extremes, etc.), the entire crew should exit together, with the firefighter with the medical issue positioned in the middle of the crew. Follow your department's SOPs for this.

14. "We have a hole in the floor" or "we have had a floor collapse"

56 percent occurrence

The first part of this problem is identifying that there is a hole in the floor. Often the hole is not found until it's too late. Why? Some reasons include smoke conditions, standing up, not probing with hand tools, rugs and tile covering the hole, and a TIC not showing you what you need to see.

Floor collapse presents a variety of issues: How big is the collapse area? Is there fire coming out of the hole? Have any other parts of the structure been compromised? Remember, in most cases, the basement holds up the structure. It may not be a basement ceiling, but rather an upper-story floor. This type of operation puts other interior crews into a potential collapse zone. Remember, during the rescue, do not overload the floor and create a larger collapse area.

Stairway collapse can occur in any area of the structure. It is important to identify the location of the collapsed stairway. Firefighters involved in stairway collapses report that they were not able to conduct self-rescue if they fell three-quarters of the way through the stairway. Remember that most stairways have some form of storage under them, meaning in most cases there is concentrated fire load exposure.

15. "Command has lost communications with multiple crews"

19 percent occurrence

This situation has occurred most often in both high-rise and commercial buildings. When fire departments investigated the problem, they found that most of the portables had low batteries. Command has to identify several things: Where are the crews located in the structure? How long has the problem been occurring? Where is the fire? What is the type of structure? What is the construction material? Then Command must establish an approach to the problem.

16. "We have a lot of sprinkler heads going off in here"

54 percent occurrence (commercial structure—rack storage)

This has become a growing problem, based on the number of maydays in commercial structures. Remember, anything on the top of those racks at places like Home Depot, Lowes, Costco, Sam's Club, Office Depot, etc., will become soaked, and at some point,

those items will come down off the shelves and onto you. Crews must maintain situational awareness about what areas of the structure they are in, and what is housed on the shelves above them. They must also be mindful of the depth of water on the floor of any aisle. If water covers your glove, find another aisle.

Final thoughts

Anytime a fire department has a mayday, leadership should review its communications from the incident and establish a timeline reflecting strategic and tactical issues. For example, did any of the communications contain any of the mayday trigger phrases included in this article? If so, when did they occur and did it have an impact on strategy and tactics? Visit projectmayday.net for more information.