UNEXPECTED EMERGENCY EVACUATION

Recently a crew experienced a suspected odor event which lead to a diversion, and ultimately an evacuation. Suspected odor events introduce challenges and task loading for all crew members, however this specific event deteriorated even further after landing where no gate was available for the flight to "terminate" and allow disembarkation. With extended time inside a seemingly toxic environment, and with increasing concern of passenger health, the flight crew made the determination that an emergency evacuation would be the best course of action. Several days after the event, the Pilot and Flight Attendant ASAP Event Review Committees (ERCs) conducted a joint investigation to meet with the crew in an attempt to identify what went well during this abnormal event as well as what can be done to improve the safety of the airline. The ERCs identified a lot from this investigation that could be shared with the associated groups.

Event Summary

The flight, operating ORF to MCO, started out as any other. Takeoff and initial climb out were normal and did not present any major concerns. Shortly before leveling off, the AFT Flight Attendants began to identify a concerning odor along with a few physiological symptoms and contacted the Flight Deck to advise them of their concerns. The Flight Crew determined that the most appropriate action would be to initiate the *Elimination of Odor in Flight Deck/Cabin* procedure. Following the guidance of the procedure, the flight crew donned their oxygen masks and began efforts to mitigate the identified odor. Shortly into the checklist, one Flight Crew member removed his mask briefly and identified that not only was the odor pungent in the Flight Deck, but the clean oxygen from the mask lessoned the physiological symptoms that presented before donning the mask. With the odor reportedly getting worse in the cabin and the identified threat to the safety of everyone on board, the flight crew immediately initiated a diversion to RDU. The Cabin Crew was advised about the planned diversion via a Cabin Advisory.

Once on the ground, the a/c taxied to the commercial terminal ramp to wait for a gate. Due to lack of gate or ground crew availability the a/c was not able to continue taxiing. Over the next few minutes, the cabin and flight deck crews worked together to monitor the condition of everyone on board. As time progressed, it became clear to the flight deck crew that a normal deplane process via a jet bridge was becoming less likely. Since the flight diverted to a station with no Frontier station personnel available at the time, finding an open gate or ground crew was increasingly difficult. After more time had passed the odor continued and the Cabin Crew reported increasing degradation of the health of customers on board, thus the Flight Crew determined an emergency evacuation would be necessary. Following the Emergency Evacuation reference card on the back of the QRH, the Captain commanded an evacuation. The cabin crew conducted the emergency evacuation utilizing only forward emergency exit (1L & 1R) slides (standard procedure utilizes all available exits). No passengers or crew were severely hurt.

Investigation Findings

Finding #1

CRM between the inflight and flight crews is critical in emergency situations. Following procedures dictate how each person "should" be operating. Good CRM relies on a general awareness of what each work group is tasked with in normal and emergency operations.

Effective CRM means communicating when a member or members of the team is and is not following procedures. Neglecting a crew brief or dedicating less effort to building a professional relationship with the entire crew is not recommended. The effectiveness of the communication between these crews highlights the importance of building that relationship and developing an environment of open communication.

Finding #2

The use of the Elimination of Odor in Flight Deck/Cabin as well as the associated decision-making tool can be an effective instrument in mitigating odor/fume events. Utilizing these resources can help the crew not only filter what could be a benign smell (e.g., foul trash or deice fluid) versus threatening odors that can harm you due to pyrolyzed oil. The Inflight ERC determined that there is a deficiency of this information in the Flight Attendant Manual (FAM) and a corrective action has been made.

When discussing these tools with the crew, the ERC recognized that not all flight crewmembers had the opportunity to utilize this abnormal procedure in the training environment. With that, the ERCs identified benefit of recommending that this procedure and its associated tools be discussed (at a minimum) on a regular basis in recurrent and initial training. This provides the assurance that crews fully understand all the resources available to them.

Finding #3

The Flight Crew identified the delayed realization of the physiological effects of this event. Shortly after takeoff, they noticed a slight "smell" which faded away rather rapidly with no additional sign of concern until much later in the climb. With no indication of "smell" issues, the crew did not identify any concerns. Once the Cabin Crew identified a deteriorating situation in the AFT of the cabin and the Flight Crew donned the oxygen masks, it became evident that other psychosocial symptoms had occurred that were not easily detected. The Flight Crew mentioned that as they continued breathing the "clean air" supplied by the oxygen mask, their senses become sharper; revealing the potential that physiological symptoms were affecting them without being detected. Eventually, one of the crewmembers removed his mask briefly and immediately identified the pungent odor.

Often, we focus on the olfactory sense (sense of smell. This event highlighted the importance of utilizing every sense to detect physiological degradations. In this case, while the AFT Flight Attendants were able to identify the abnormal situation through the sense of smell, the Flight Crew were being impacted physiologically while not identifying a concern due to their sense of smell. Because of this, the ERCs reminds everyone to be attuned to all senses to identify detriments to physiological state during potential abnormal events.

Finding #4

The human factor of falling into a comfort zone during routine operations simply because everything always seems to go well should be avoided. This event provides the importance of all crewmember procedures working in concert and remembering that an evacuation can occur for many more reasons than the commonly trained "worst case" incident scenarios.

In this incident, the crew was stuck in a difficult situation being "trapped" in an aircraft, feet away from a gate, with no access to get the customers and crew safely off the airplane. As time ticked by with no end in sight, the Flight Crew did advise the Flight Attendants that if they were unable to get assistance, an emergency evacuation may be the only option. This provided an opportunity for the Cabin Crew to prepare both mentally and physically for this potentially demanding procedure.

With no sign of services to provide normal means of deplaning developing, the Captain initiated the Emergency Evacuation Checklist. The evacuate call was made to the cabin, and the evacuation efforts began. With a light load, most passengers towards the front half of the aircraft, and finally an older passenger with a physical disability, the Cabin Crew determined the best course of action was to initiate the evacuation from only the two forward exits, despite Frontier's procedure to utilize all available exits in an evacuation. An additional factor was the unusual condition in which this evacuation was initiated. The aircraft was safely on the ground and had been on the ramp for a considerable amount of time. It was clear to the entire crew that the only reason for the evacuation was the lack of resources to allow the customers to deplane in a normal fashion. There was no damage, injuries, fire, or any other indication of the necessity to initiate an emergency evacuation.

While we can all probably understand how the evacuation was conducted by only deploying half of the emergency exit doors, the ERCs identified this event as a tremendous opportunity to underline the importance of adhering to the procedure. If an emergency evacuation is necessary, no matter the reason, crewmembers must remember to comply with the procedures and execute duties exactly as done consistently in training. Each crewmember plays part to ensure not only an expeditious departure from the aircraft, but also provide the best chance of maintaining the safety of customers and crew. This includes deployment of all the slides, keeping customers informed, and accomplishing each requisite task depending on assigned position. The call for an emergency evacuation can come at any time. All crewmembers must be prepared to execute procedures precisely and expeditiously whenever required.

Conclusion

This event exposed the crewmembers to significant challenges. Not only from the experienced in-flight odor event but after the conclusion of the flight where they found themselves without the basic support services necessary to safely deplane the passengers. After completing the investigation, the ERCs wanted to emphasize a few lessons learned from this event:

1. Utilize all tools available when encountering a potential odor event. We experience many unpleasant smells all the time and most are simply that; unpleasant and non-toxic. The key is to utilize the resources and all senses to determine if a smell is simply unpleasant (e.g., dirty trash cans, lavatories or even deice fluid) or if the odor is suspected to in fact be potentially harmful. Remember, in the case of the latter, more than your sense of smell will most likely be impacted. This can include developing certain tastes, sensations of burning eyes, headache, dizziness, or other physiological detriments. Being aware of all of senses, utilizing the decision-making flow chart, and effective use of CRM between all crewmembers can be the greatest tools to determine if there is a concerning or simply unpleasant odor.

2. Open communication provides the opportunity for good CRM both in normal and abnormal situations. When beginning a flight, take the time to set the tone of an open communication environment by participating in a crew brief together. This ensures everyone is on the same page and provides the opportunity for everyone to get acquainted which helps facilitate open communication.
3. Always be prepared to execute emergency procedures when necessary. While we sharpen our emergency procedure skills during certain scenarios in training, this event reminds us that skills are most important, not the scenario. Remaining ever vigilant and executing emergency procedures precisely when necessary, no matter what scenario, is critical to maintaining the safety of all crew and customers.

Finally, while these odor events caused by physiologically harmful pyrolyzed oil are not common, the ERCs would like to remind everyone of the resources available from ALPA and AFA. These are excellent resources when seeking medical advice. Your health is a top priority after experiencing one of these events. Never hesitate to seek medical assistance. As with any other event, we hope you had the opportunity to learn. Stay safe and always remember to contact your ASAP program when identifying a safety concern.