

CALLBACK

From NASA's Aviation Safety Reporting System



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Hazardous Materials (HAZMAT)



Dangerous Goods (DGs) are items that may endanger the safety of an aircraft or persons on board the aircraft. They are also known as restricted articles, hazardous materials (HAZMAT), and dangerous cargo. The International Civil Aviation Organization (ICAO) and local Civil Aviation Authority govern their carriage onboard aircraft, and in the United States, Title 49 of the Code of Federal Regulations regulates their transportation.^{1,2}

Many common items can be considered dangerous goods for the purpose of air transport.³ Nine classes, or divisions, of HAZMAT are designated, and each is unique in regulatory requirements. Regulations are complex. Unfamiliarity and noncompliance can result in many types of infractions. Problems can exist in shipping and handling documentation, chain of custody obligations, loading segregation and quantity limitations, article placement and tie down restrictions, and in communication between flight crews, dispatchers, and load planners. Flight and cabin crews often are the last line of defense when transporting HAZMAT.

This month *CALLBACK* shares reports of HAZMAT incidents that describe some common, but serious, infractions. Lessons learned and wisdom gleaned may afford flight crews some operational insight when mitigating future threats posed by HAZMAT.

Carry On

A Ramp Agent and a Captain identified a HAZMAT threat that may occur when time is typically compressed just prior to pushback. The Captain prescribed retraining and periodic performance monitoring to mitigate the threat.

From the Ramp Agent's report:

■ *Often flight attendants will stop allowing carry-on baggage when the bins are full and then require the passenger to leave their bag at the aircraft door. The passenger is then allowed to continue boarding after the bag is left. The Flight Attendant will then put a note with their seat number on the bag so the agent can then tag the bag correctly, or sometimes a hand written tag is filled out and given to the Flight Attendant to pass back to the customer. The issue is that, in all the haste to get the door closed at the end of boarding, the Customer Service Agent has not asked the customer about hazardous materials, smart bags, or e-cigarettes, etc.*

From the Captain's report:

■ *The flight operated without incident. Shortly after deplaning, one of the ramp agents informed me that one of the gate-checked bags he just removed from our aircraft was a smart bag, and the battery had not been removed. The ramp agent said that he informed the passenger that, in the future, she must remove the battery from her smart bag before checking it. I notified the Company of the situation. As the passenger had already been corrected, there was no further action required.*

As I and the flight crew have preflight duties to perform, we are unable to directly supervise the ramp/gate agents as they receive the gate-checked bags. The only way to ensure that this does not happen again is to retrain the ground operation on how to handle smart bags, as well as periodic monitoring of their performance.

Bipolar Batteries

Although cellphones are not, themselves, classified as HAZMAT, legitimate concerns with their batteries can exist in some circumstances. This B777 First Officer described potential safety concerns of operating the aircraft with a lost cellphone onboard.

■ *I was one of the relief pilots on Flight XXX. During our preflight paperwork review, all four pilots noted a strange carry-forward write-up in the [logbook]. The write-up... read, "Passenger...at seat XXL lost a mobile phone under the seat. Mobile phone rang but couldn't be located." Along with the write-up, the following maintenance action was included: "Unable to locate cell phone."*

Our discussion centered on the potential safety concerns with flying with a lost phone in the aircraft, and in this case, lost under or near a business class seat, with all of the moving parts that could damage the phone and start a thermal runaway.

The Captain asked each pilot if they were comfortable flying the aircraft with this issue, and the consensus was that we were not comfortable, and that the phone had to be found before we would take the aircraft on a 10 hour, Extended-range Twin-engine Operations (ETOPS) segment.

The Captain initiated a phone call with Dispatch, informing them of our intent to refuse the aircraft until the phone

was found. I was not present for the entire phone call, but the Captain relayed that there was a conference call with Dispatch, [Maintenance Control], and the [Duty Officer] to discuss the write-up and our concerns about operating the aircraft with this potential hazard. At the end of the call, the Captain confirmed with all parties that we would refuse to operate the aircraft until the phone could be located.

The Pilot Monitoring entered the appropriate fault code for aircraft refusal into the Electronic Logbook and sent it to [Maintenance Control]. The aircraft was de-boarded and Maintenance commenced a search for the phone. ... Approximately 2 hours and 30 minutes after our original push time, the phone was located in the area under the seat, and it took another 10 to 15 minutes to actually retrieve the phone. The phone was still powered on when it was found!

The [Maintenance Release] was cleared to reflect the resolution of the maintenance item, and we departed ZZZ1 approximately 3 hours late.

During our investigation into the...write-up, we discovered that the phone was lost on a previous flight to ZZZ [two days earlier]. The write-up was added to the maintenance history in ZZZ [that day]. The aircraft subsequently flew a segment on [the following day] from ZZZ to ZZZ1, where it remained overnight prior to our flight.

It is very concerning to consider the huge risk that was introduced...by allowing an aircraft to fly an ETOPS segment with this potential hazard on board. ... That crew either questioned the write-up and concluded that it was okay, or they didn't...realize the hazard. ... ZZZ1 Maintenance confirmed to us that they had not taken any actions to locate the phone prior to our refusal to operate the aircraft. ...

There are far too many examples of lithium ion battery hazards to flight for this to have happened on these flights. It is completely unacceptable to me as a professional pilot.

A Cargo Bin Concoction

This B777 flight crew discovered that HAZMAT had been loaded incorrectly on their aircraft. HAZMAT handling and segregation procedures were cited, as well as training and the loaders' lack of concern regarding classification or content.

From the Captain's report:

■ The aircraft was loaded well prior to the pilots' arrival. [We] received the Notice to Captain (NOTOC) from the Crew Chief. Clearly on the NOTOC it was stated that a flammable liquid was loaded in the same compartment as lithium batteries. This is a violation of company guidelines as clearly stated in our tables. The Relief Pilot brought it to the Crew Chief's attention when he handed over the NOTOC.

This Crew Chief was not the Crew Chief that loaded the aircraft. Further inquiry revealed that the loaders were only concerned with weight and not content. I was given a NOTOC with all the correct signatures on it. This could have resulted in the loss of an aircraft. ... The flight was canceled as the Flight Attendants' crew day expired while the ground crew was relocating the flammable liquid.

This event occurred because the people loading the aircraft had no idea about handling hazardous material and how to correctly load it. They had not consulted the hazardous material loading tables and were only concerned with proper weight and balance, not content. I question the training of all the people involved, from the loaders to the people who signed the NOTOC. This event slipped through so many safety safeguards, it is frightening.

From the Relief Pilot's report:

■ Since the cargo was already loaded, I stopped to ask a Crew Chief if I might have a copy of the NOTOC to give to the Captain. He gave me a copy and I asked if he knew what was loaded on the aircraft. He said the original crew that loaded the aircraft had ended their shift and departed, but he was there to make sure the aircraft departed safely. I reviewed the NOTOC and was surprised to read that Lithium Batteries, Radioactive Material, and Flammable Liquids were all stored together in the forward cargo compartment. I asked the Crew Chief if he could check the legality of this, so he took the paperwork and went inside.

After waiting about 10 minutes, I followed the Crew Chief inside and found him on the phone with the Cargo Planners asking for their reference on how they planned the load. He had the Dangerous Goods Cargo Segregation Chart up on the computer as his reference. The chart clearly states that Classification 3 = Flammable Liquids must not be transported in the same cargo compartment as Lithium Batteries.

The planners assured him that the weights of the three containers were within weight limits, but...they did not take into consideration the classification of the items. ... The Crew Chief...asked me what to do, and I told him to do what needed to be done to correct this safety problem. ... [I] recommend that ground personnel review dangerous goods segregation procedures.

1. <https://www.iata.org/whatwedo/cargo/dgr/Pages/faq.aspx>

2. <https://www.ecfr.gov/cgi-bin/text-idx?SID=028795e5b4a0b194cc473338c7237c13&mc=true&tpl=/ecfrbrowse/Title49/49CISubchapC.tpl>

3. https://www.faa.gov/hazmat/what_is_hazmat/

ASRS Alerts Issued in July 2019	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	1
Airport Facility or Procedure	1
Company Policy	1
Hazard to Flight	1
TOTAL	4

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July 2019 Report Intake	
Air Carrier/Air Taxi Pilots	6,065
General Aviation Pilots	1,579
Flight Attendants	1,098
Controllers	586
Military/Other	416
Mechanics	302
Dispatchers	154
TOTAL	10,200