NAVAL SAFETY COMMAND
SAFETY AWARENESS DISPATCH SA 26-26

Shipboard Elevator Mishaps

Those of us who have been on a carrier know how frequently shipboard elevators are used in day-to-day operations. They're used so often that it's easy to overlook their capabilities (both good and bad). The aircraft elevators on Ford-class carriers weigh approximately 120 tons, Nimitz-class a little less. There are very few things onboard a ship that are going to stop a system powerful enough to move that kind of weight. So, when something breaches the safety perimeter — it's easy to imagine what can happen. To add to the potential consequences, keep in mind what they move. They're designed to move aircraft, ordnance, support equipment, and the designated personnel necessary to complete the move. One wrong move can cost hundreds of millions of dollars or loss of life.


File photo, not associated with mishap

The Unexpected Nose Job

An aircraft was chocked and chained on the elevator all day and into the night. Flight Deck Control briefed plans to move the aircraft and gear to the hangar bay. Shortly after midnight, the Aircraft Move Director under instruction (AMD UI) completed the preparation to run the elevator. He conducted a safety walkaround to ensure edges were clear, noted the elevator stanchions were inoperative and had temporary ones put in place. The AMD UI radioed the supervisor, reported the elevator prep and safety walkaround complete, requested power be applied to the elevator and the locks be released. The supervisor—who was transiting back from another location and not physically present for the request nor AMD UI's safety walkaround gave permission to run the elevator via radio. The AMD UI then directed the elevator operator to run the elevator to the hangar bay.

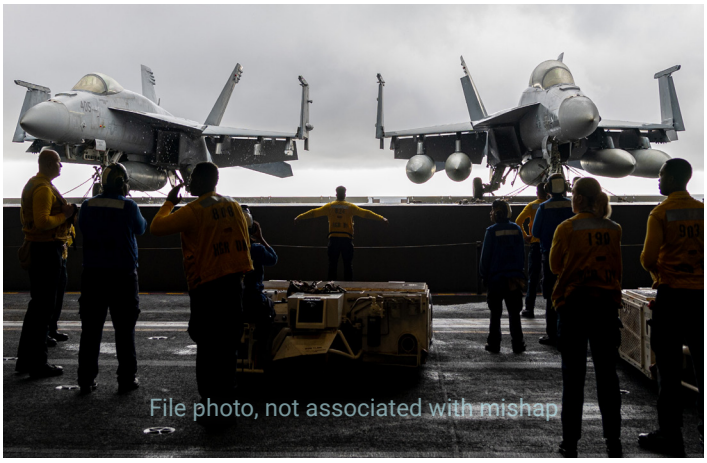
Shortly after it started descending, both the AMD UI and the operator realized the nose of the aircraft wasn't going to clear the flight deck edge. The AMD UI signaled emergency stop via wands and radio. The operator hit the emergency stop button, but not hard enough to activate it. The aircraft's nose struck the flight deck, lifting the nose and snapping the chains securing it, as the elevator continued its descent. The radome fractured and the nose dropped back to the elevator deck. In the end, damage to the aircraft included a broken radome, broken nose gear pin and a damaged nose gear assembly. *— Always take that extra second to make sure there's clearance. Never assume. Stop. Verify. Measure. Written procedures only work when they're followed. Critical layers of defense failed: an unqualified director, an ineffective safety walkaround, an on-site supervisor who should have been providing forceful backup was absent from the evolution. When numerous safeguards designed to mitigate risk fail, the consequences are often severe. Shipboard elevator moves must never be treated as mundane tasks.*

Getting Stanchioned

It was after midnight, and Flight Deck Control ordered the crew to man-up for elevator operations to move an aircraft that had already been pre-positioned on the elevator. A qualified elevator operator manned the elevator control station to direct elevator movement, and the aircraft director went about completing the required pre-movement walkthrough. During the walkthrough the director noticed the aircraft's side-by-side drop tanks were split between the elevator and the aft elevator stanchions. However, instead of verifying clearance for stanchion extension, the director "assumed" the path would be clear. *(This was noted in the investigation report. Assumed? Not a good way to do business in this environment.)* After the walkthrough was complete, the director instructed the elevator operator to raise the aft stanchion group.

The director didn't notice that the stanchion impacted the drop tank in the "assumed" to-be-clear area, and so, reported to flight deck control that the safety walkthrough was complete, stanchions were raised, and requested permission to pull the elevator safety locks. Upon completion of the elevator run, the night flight deck lead relieved the aircraft director of his shift and noticed the damaged drop tank from the stanchion being raised into it. *— AGAIN - Always take the time to ensure adequate and required clearance. Never assume. Stop and verify. Visual verification is not a check in the block. Look with the intent of finding an issue. There are already procedures in-place to prevent this from happening (COMNAVAIRINST 3700.1C). No aircraft shall restrict the full extension of the elevator stanchions. If an aircraft is spotted on the elevator and fouls or prevents the elevator stanchions from being raised safely, the director will notify Flight Deck Control and correct the deficiency. At least no one was injured.*

A Light Touch Hits Hard


File photo, not associated with mishap

A servicemember was working in the weapons magazine and lowered the weapons elevator; however, the loading ramp didn't automatically lower to the deck via the hydraulic system because it was slightly jammed against the elevator door. Following proper procedures, the servicemember called for maintenance to come take a look *(good call - not trying to fix a system you're not qualified to fix)*. A maintenance tech arrived and proceeded to troubleshoot. He stepped onto the elevator, barely touching the loading ramp with his hand, when the jam unexpectedly became unjammed from the slight movement, sending the ramp crashing to the ground on top of his *(poorly placed)* foot. The incident required a medevac, almost two weeks of convalescent leave and over two months of limited duty. — *Thinking through the process before jumping right in is an essential part of risk management. Potential hazard areas should have been identified before the troubleshooting started, i.e., where the ramp is now as compared to where it should be positioned. Had the maintainer thought through the process, and been more attentive to the danger areas, they would have taken action to avoid this painful lesson.*

The Chain That Took Command

Shortly after midnight *(yet another incident taking place at night … coincidence?)*, the division lead completed a safety walkaround of the aircraft elevator (ACE) in preparation for a move. With the crew members in place and preps complete, the elevator was lowered to the hangar bay. During the descent, a loud noise was heard by the entire team. After the run, an investigation found there were aircraft intake screens secured in the catwalk using an aircraft tiedown chain, which shouldn't have been a problem, but it appears that one end of the chain used to secure them was mistakenly connected to the elevator and the other end was attached in the catwalk. When the ACE was lowered the chain pulled downward, damaging the catwalk railing until eventually the chain snapped *(hence, the loud noise)*. — *Connecting a chain between the catwalk and an elevator rated to move thousands of pounds only has one ending, a bad one. This is precisely why the CVN NATOPS manual (NAVAIR 00-80T-120) has a WARNING about it that says splitting or fouling the elevators with tiedowns may result in damage to the aircraft, equipment and injury or death to personnel. Thankfully, no one was injured in this incident. Tiedown chains are designed to carry a heavy load, and are under tremendous strain if they break, potentially creating lethal shrapnel for anyone nearby. The safety walkaround conducted before the ACE run is a layer of defense designed to correct that issue before it ever becomes an issue … but in this case, failed to do so.*

Key Takeaways

There's always a looming danger that things could go wrong when using any kind of heavy machinery. However, the Navy has a layered defense of safeguards in place to reduce risk and prevent catastrophe ... we just need to follow them.

Complacency (avoid it): If there is one topic that sounds like a broken record, it's complacency. When we perform the same task hundreds of times, it begins to feel second nature to us. When we aren't actively thinking about what we're doing, we tend to become less alert to the hazards and less aware of the deviations; this is when mistakes happen.

Compliance (just do it): The work we do is already outlined for us in directives, SOPs, checklists, etc. In a perfect world, if we follow instruction and procedure everything theoretically works out for the best. But unexpected things happen. This is where sound judgment, vigilance and attention to detail come into play. Know your job thoroughly, so when things don't go as planned, you still know what to do.

Do not split the elevator. Never bridge or cross tie aircraft or equipment across the elevator boundary. The elevator's drive systems will not "feel" the resistance; instead, they will part tiedowns or rip out structural components, introducing a high-risk for personnel injury as the elevator continues its cycle.

And remember, "Let's be careful out there"