Aviation Human Factors Industry News

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Hello all,

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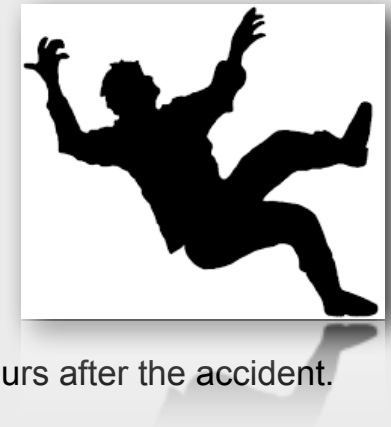
In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

Airport worker seriously injured after falling 30ft while working on a plane



The man was preparing a Thomas Cook jet bound for Orlando, Florida, when the incident happened at Glasgow Airport on Sept. 8, 2017

A Glasgow Airport worker suffered serious injuries after plunging 30ft while working on a plane .The man was helping prepare a Thomas Cook jet when the incident occurred yesterday.The aircraft was due to fly to Orlando in Florida but was delayed for several hours after the accident.

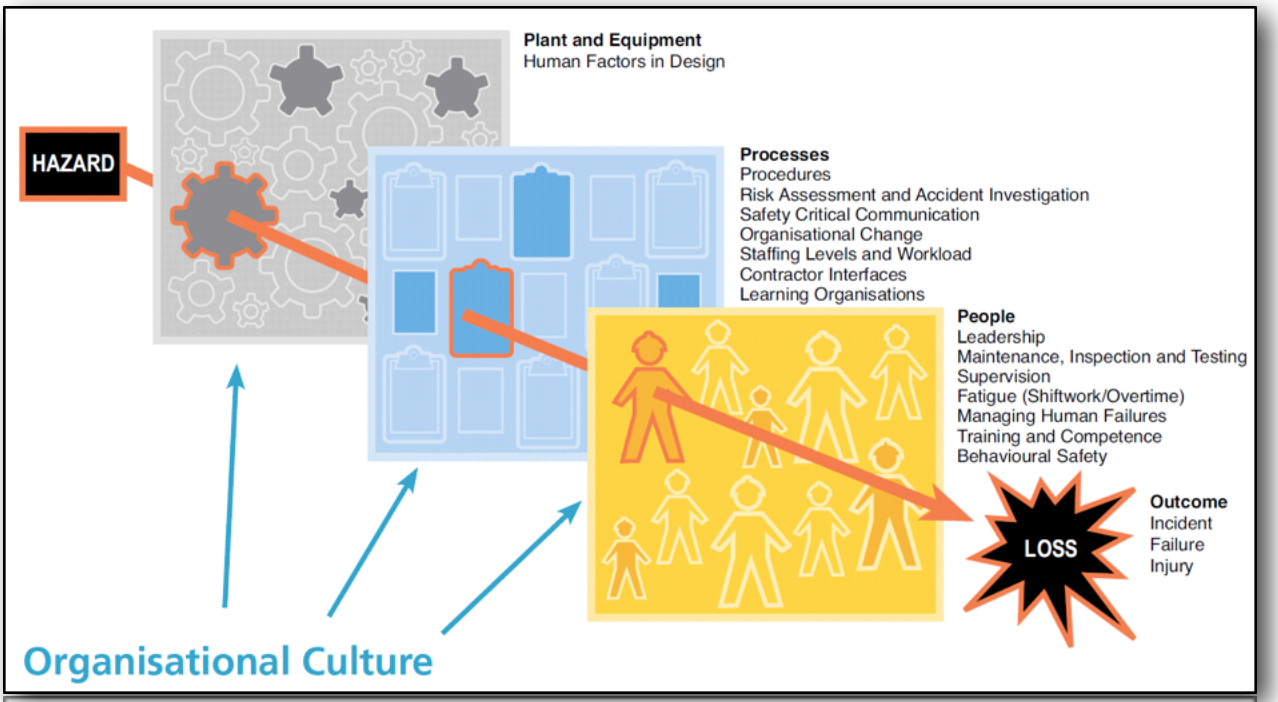
The man is believed to have been working on a low loader when he fell to the tarmac. Members of the aircrew and airport workers rushed to his aid until emergency services arrived.

He was treated at the scene before being rushed to hospital. It is believed that the man suffered serious leg injuries.

The Thomas Cook A330 jet was heading out to Florida before Hurricane Irma arrival.

How the Improvement of Operational Integrity, Safety, and Human Factors Equals Excellence in Performance

Improvement Process Evolution with HF elements (Source: Human Factors: How to take the first steps)



We hurtle towards, and will soon arrive, in a new era. A new era increasingly run by millennials, managed by the Y generation, and looked back upon by the baby boomers. We all realize that the world is changing at an exponential pace.

When we think about the industries we're currently working in, we all might ask ourselves the same question - whether we'll be able to keep up with these changes? Darwin observed a long time ago, and it has proven to be correct to this day - the survivors will not necessarily be the strongest ones, but those who best adapt to change...

The evolution in principles of operational, safety and human performance

The energy and oil & gas industries are no different to the natural ecosystems that Darwin studied. In this article, we'll look at how the evolution of operational safety and human performance has continued to this day, and how this relates to the drilling & wells operations sectors.

To provide some background context, it was observed in the industry some years back that step changes were needed relating to principles surrounding the human aspects of the workflow. This was to supplement the technical and engineering controls / mitigations needed to improve operational safety and performance after perceived improvements reached a plateau.

Research and case studies have indicated that improvements had certainly been made but they tended to flatline at a certain level. This is where the implementation of Behavioral Based Safety (BBS) programs became more commonplace, and both small and large companies started to embrace BBS. Now almost everyone in the industry is familiar with the STOP card programs, or something very similar with a different name.

These programs were also eventually taken for granted and started to become a paper and reporting exercise for some, rather than providing the true value that was originally intended.

Think about how many times a roughneck or driller's eyes have glazed over when the same basic information has been covered time and again. The reality is for him, it may be too routine, while for new crew members, it will be vital and important information which could save their lives. We came to the point where many recognized that a new step change was required; however, at the time, what that could entail was unknown...

Assimilating lessons from parallel industries

In some other advanced and developing industries, solutions were being discovered. One of these industries operated above (aviation), and one operated below (submarines) the surface of the water where our offshore drilling was taking place. Following serious accidents, practical changes were taking place. These updates were addressing the limited nature of procedural & engineering controls, behavioral science, and on improving human performance and operational integrity.

In a couple of previous articles (found here… http://www.criticalteamperformance.co.uk/perch/resources/phil-smith-human-factors-training-may-2010.pdf and http://www.criticalteamperformance.co.uk/perch/resources/smith-humans-as-heros-novdec-2011.pdf),

Phil discusses these. In the examples, the leadership started to place more emphasis on Non-Technical Skills (NOTECHS) / human factors.

Those monitoring the results identified ways that incidents could be reduced. Crew members were able to deal with stressful and critical situations more efficiently and calmly with their new-found knowledge and greater awareness of NOTECHS. Through post incident feedback and evaluation, they could adjust future decisions based on what they understood about their psychological state at the time.

Training in a number of key elements.

Well Operations Crew Resource Management - assists to facilitate these qualities:

Following the Deepwater horizon disaster in 2010 the International Association of Oil and Gas Producers (IOGP) decided to take firm action. They brought together 2 of their committees (Wells and Human Factors) and came up with a set of guidelines for the implementation of Human Factors awareness across all aspect of Oil and Gas operations. In December 2014 the IOGP issued Report 502 – Guidelines for the Introduction of Well Operations Crew Resource Management (WOCRM). The report specifically highlights the key topics below as being essential content of any WOCRM program.

1) Situational Awareness- Developing and maintaining a dynamic awareness of the situation and the risks present during a Well Operation. This is based upon the gathering of information from multiple sources from the task environment, understanding what the information means, and using it to think ahead about what may happen next.

2) Decision Making- The heightened ability to reach a judgement or choose an appropriate option to meet the needs of an assessed or anticipated situation.

3) Communication- The efficient exchange (transmission and reception) of information, ideas and beliefs, by verbal and non-verbal methods.

4) Teamwork- The core ability to work effectively and interdependently in groups of two or more to achieve a shared goal.

5) Leadership- The ability to successfully influence others to achieve a shared goal by providing guidance, direction, coordination and support.

6) Other external factors which affect human behavior

- *Many factors affect the ability of people to perform reliably. These include stress, fatigue, health, distractions, and environmental stressors. They can arise from sources personal to the individual or can be imposed by external factors such as organizational and task design, team structure and work schedule, and the design and layout of plant and equipment as well as cultural and environmental factors.*

The ultimate question for us is, how does this impact our industry?

The reality is that we, in Drilling & Well Operations, work in an environment which is incredibly dynamic (literally changing by the hour), and with so many moving programs and parts. The Human Factors impact on overall performance and operational safety & integrity can no longer be ignored, as other industries have observed.

Lord Cullen was most known for his work on the historic (and industry changing) Cullen Report, the investigation and findings following the Piper Alpha catastrophe in 1988. In a recent interview, he stated that these types of events (such as Three Mile Island reactor incident in 1979, Texas City in 2005, Montara in 2009, and the Deepwater Horizon in 2010), were either "caused by, or made worse, by human factors".

Cullen emphasized that managing human factors is crucial to effective overall safety management. Workforce commitment to safety depends on sound leadership, involvement and communication. The working environment should promote safety and guard against human failure and its consequences. To conclude, he said "It is as important as a matter of life and death". (Source: www.iogp.org/blog/2017)

Clearly, what will remain is a continuation of the need to integrate engineering, procedural, operational integrity, and human factors elements into the formula for performance improvement (rather than each in a vacuum). This holds true even in a low-cost environment and/or depressed market.

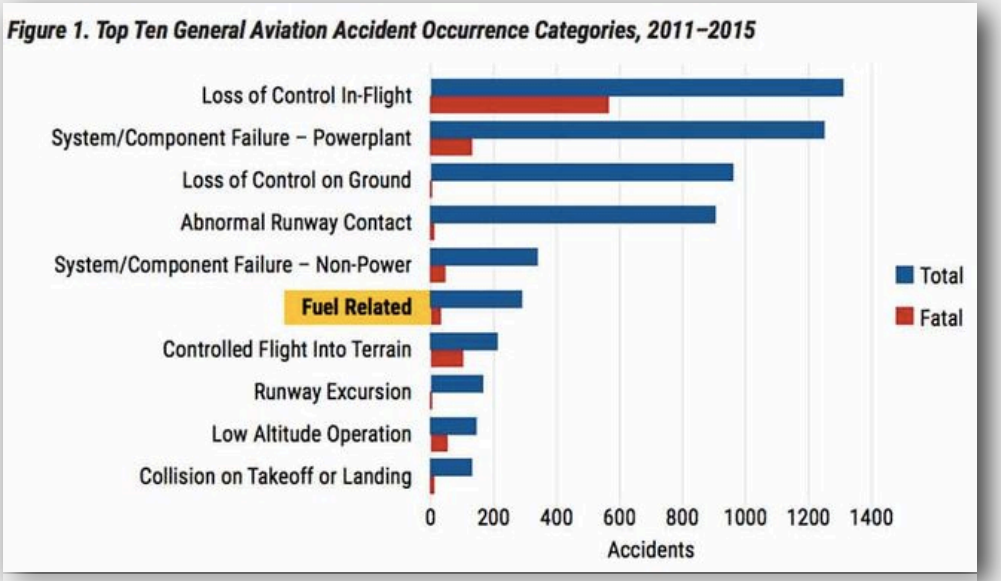
http://www.criticalteamperformance.co.uk/perch/resources/phil-smith-human-factors-training-may-2010.pdf

http://www.criticalteamperformance.co.uk/perch/resources/smith-humans-as-heros-novdec-2011.pdf

http://www.iogp.org/blog/2017

NTSB Cites Fuel-Management Hazard

Better fuel management by aviators could prevent an average of 50 general aviation accidents a year, the NTSB said in a GA Safety Alert issued Tuesday. “The idea of running out of fuel in an aircraft is unthinkable, and yet, it causes more accidents than anyone might imagine,” the alert notes. “Fuel management is the sixth leading cause of general aviation accidents in the U.S.



” Pilot error contributed to 95 percent of the fuel-management-related accidents; equipment issues contributed to just 5 percent.The safety board suggested several strategies that would help to reduce the number of fuel-starvation accidents. Don’t rely exclusively on fuel gauges, visually confirm the quantity of fuel in the tanks before takeoff. Know the aircraft's fuel system and how it works. Have a fuel reserve for each flight. Don’t try to stretch the fuel supply — stop and get gas.

The full safety alert is posted online (PDF).

Pilot 'very lucky' after emergency landing caused by major fuel bungle

A pilot at a small air charter company was “very lucky” to avoid disaster after a light plane ran out of fuel in far north Queensland, thanks to a major refueling bungle.

Almost two weeks before the crash, a pilot flying for regional charter operator DASAP had ordered 400 liters of fuel from a refueler at Mount Isa Airport but was only given half that amount.Thanks to a "Swiss cheese" combination of factors including incorrect paperwork and design quirks of the 43-year-old Beechcraft Baron twin-engine four-seater, the mistake wasn’t discovered until the plane began losing power on June 26.

The pilot tried boosting fuel to the engines but both eventually failed, and the plane was forced into an emergency landing just north of Normanton, in Queensland’s Gulf country.

In an incident report published on Wednesday, the Australian Transport Safety Bureau said the incident underlined the importance of quickly communicating any errors.

According to the ATSB, the refueler only topped up the plane's 628-litre tank with 200 liters, despite indicating twice that amount on a form left with the plane.

Later in the day, they noticed the error after checking the fuel meter readings at the airport and went to inform the pilot but couldn't find him, eventually getting distracted by a phone call and forgetting to pass the message on, according to the ATSB.

For his part, the pilot cross-checked the fuel amount with the plane's relatively inaccurate fuel gauge but failed to check the meter readings listed on the form.

Because of the plane's design, it wasn't possible to check the fuel level with a dipstick or visually check the fuel tank, and the fuel gauge was not particularly precise.

It was 11 days and several trips later before another pilot used the plane to make the relatively short flight from Burketown to Normanton thinking he had about 250L when the real figure was closer to 50L.

The plane ran out of fuel just out of Normanton and the pilot was forced into an emergency landing in a paddock, escaping injury but leaving the aircraft "substantially" damaged.

DASAP chief pilot Peter Poole said the damage wasn't catastrophic but because of the flying age of the craft, it wasn't worth repairing.

"You've just got to learn from it," he said, describing the incident as "one from left field".

"It's far from minor but the outcome was minor so we're very lucky.

"It could have been a disaster but the plane just landed out."

Speaking to the ATSB, the refueling pilot said it would be good to stay with the plane during refueling and noted the fuel gauge's inaccuracy.

The ATSB noted the fuel provider now required pilots to sign and review the fuel delivery receipt.

Mr Poole said all recommendations had been put in place and the company had stuck with the fuel provider, which it had been using for 25 years.

Civil Aviation Safety Authority corporate communication manager Peter Gibson said almost 100 of the planes were still in action and the incident showed it was important not to rely on fuel gauges and to cross-check fuel levels.

Serious Runway Incursions Dip in Fiscal Year 2017

After an uptick in the most serious categories of runway incursions in Fiscal Year 2016, the number of such events is tracking toward near historic low levels this fiscal year, according to the most recent statistics released by the U.S. FAA.

For FY2017, which runs through the end of September, the total number of Category A and B incursions has dropped to six, two of which involve commercial aircraft. The FAA defines Category A as “a serious incident in which a collision was narrowly avoided” and Category B as “an incident in which separation decreases and there is a significant potential for collision, which may result in time-critical corrective/evasive response to avoid a collision.”With a month remaining in the fiscal year, the number of Category A and B collisions is dramatically down from the 19 last year, 10 of which involved commercial aircraft. This year’s levels also match the levels for all of 2010, when there were six total and three involving commercial aircraft.

In general, the number of such incursions has fallen dramatically since the year 2000, when the totals had reached 67 Category A and B events. The numbers gradually declined throughout that next 10 years and have oscillated between the low point of 6 in 2010 and 19 last year.

The FAA, noting reducing runway risk is a top priority, said it places emphasis on the most serious categories of incursions, using a government/industry collaborative approach. This includes application of safety management systems, training, new technologies and a relatively recent policy relating to converging runway operations.

AIN The Human Factor Podcast, Episode 3 Fuel Emergency—Flying on Empty

How could an instrument-rating student and a flight instructor run out of fuel on a training flight? High-time flight instructor Brian Lloyd recalls his instrument training and an incident that taught him some of his most important aviation lessons. In this episode, **AIN**'s *The Human Factor* delves into how assumptions and a lack of communication become links in the chain of events that could cause an accident. Whether you are a high-time professional pilot or student pilot, this episode is a reminder of how the wrong decisions can turn into potentially fatal errors. In this episode we will hear from:

- Brian Lloyd—flight instructor and member of SAFE (The Society of Aviation and Flight Educators)
- Rick Kelly—Crewmember for a major airline and former U.S. Navy flight instructor

Topics in this episode will cover:

- Crewmember communication
- Unsafe assumptions
- Emergency landings

https://soundcloud.com/the-human-factor-ain

How Could An Open Door Cause A Fatal Accident?

Could a baggage door take down an airplane? In this accident, it's most likely the primary cause.

On July 8th, 2016, a Piper Cherokee Lance took off from West Houston Airport (KIWS) and crashed shortly after takeoff, killing all 4 aboard the aircraft.

According to multiple witnesses, this is what happened:The Takeoff Roll

The Piper Lance began its takeoff roll from runway 15 at KIWS, which is a 3,953' x 75' runway. According to witnesses, the forward baggage door was open before the aircraft began rotation. The witnesses reported the baggage door was in the vertical position while the aircraft was still on the ground.

The aircraft continued its takeoff, and began a climbout on runway heading.

Climbout

During the climbout, the aircraft remained on runway heading to approximately 100'-150' AGL. It appeared that the aircraft was having difficulty climbing, which was most likely due to a performance penalty from the open baggage door forward of the cockpit.

Turn To Downwind

At 100'-150' AGL, the aircraft began a left crosswind turn as the airplane was crossing over the departure end of the runway. According to witnesses, the aircraft maintained a bank angle of 30-45 degrees during the turn.

The airplane rolled wings level momentarily on crosswind, and then resumed a turn to downwind.

Throughout the turn, the witnesses didn't report hearing any engine abnormalities. However, the retractible landing gear was in the extended position.

Stall/Spin On Downwind

As the aircraft entered a downwind heading, it entered an aerodynamic stall/spin to the left, and descended into terrain.

The aircraft crashed into a wooded area approximately 1/2 mile northeast of the airport.

The Accident Site

While much of the aircraft was destroyed by a post-crash fire, investigators were able to determine a several things:

1. The gear selector was in the "gear down" position, and all three gear actuators were fully extended.
2. The ignition switch was found in the "both" position.
3. The fuel selector was positioned to the right tank.
4. The baggage door latch mechanism was found unlatched, and its key-lock assembly was unlocked.
5. The latch mechanism was tested post-crash, and no anomalies were found.

What Can Be Learned?

While the final report isn't out yet, it's clear that the open baggage door had a major performance impact on the aircraft.

In addition to that, the pilot left the gear down in the traffic pattern, which may have been a result of distraction from the baggage door, or intentional. Either way, the gear had a performance impact on the aircraft as well.

Combined, the aircraft didn't have enough performance to continue climbing.

It's impossible to say whether any other action would have had a different outcome once the plane was in the air. But what is clear, and very eye-opening, is that something as benign as an unlatched baggage door could have such a catastrophic outcome.

Preflight was the pilot's first opportunity to break the accident chain, making sure that the baggage door was locked. But the second opportunity was on the takeoff roll. Had the pilot noticed the baggage door was open and decided to abort, rather than continue to the takeoff, this would have most likely been nothing more than an embarrassing few seconds on the runway, with a taxi-off to fix the situation.

Overconfidence, Complacency and Checklist

As an aviation machinist's mate and collateral duty inspector (CDI) for work center 110 (power plants), I had performed enough engine removals on the F/A-18 Super Hornet to feel very comfortable briefing and leading my team on what seemed to be a routine engine removal evolution to facilitate other maintenance on the aircraft. Before starting the evolution, we briefed the engine drop at the night check maintenance meeting and ensured that my team members knew their responsibilities.

Both team members had prior engine removal experience and I had removed a F414-GE-400 engine from a Super Hornet within the past month.Having completed the brief, my two team members checked out all tools required for the job and I placed all three of us in work on the maintenance action form (MAF). Next, we positioned the engine removal cart under the aircraft, ensuring the guide rails were lined up properly to transfer the engine during removal. Once the cart was in place, we ensured that the proper procedure for the job was open in the interactive electronic technical manual (IETM) computer we had on hand at the work site. I instructed my team members to remove all the necessary engine accessories for the evolution. Once they were complete, I inspected the engine to make sure all steps had been completed prior to lowering it from the aircraft engine bay.

After completing the pre-removal inspection, we raised the cart and locked it to the engine. With the engine mounts disconnected from the aircraft, I instructed the team members to begin lowering the engine and cart. As they did this, I heard an abnormal sound and told them to stop. I began to inspect the engine cavity and then looked under the engine fan. It was then that I saw the engine anti-ice clamp was still attached to the line coming from the aircraft at the forward fire wall of the engine bay. The anti-ice ducting line was bent, cracked, and broken. We had failed to remove the clamp as we disconnected the engine from the aircraft.

As the team lead for the evolution, it was my responsibility to make sure my team members were following the checklist and to verify all steps had been completed. Instead, I let them complete the engine removal steps from memory without using the personal electronic maintenance aid (PEMA) to verify they had done each item on the checklist. For an engine removal, the IETMs procedure states: “Loosen nut, open duct coupling clamp halves, and separate forward anti-icing duct and inlet device aft anti-icing duct flanges.” Once this step is performed, a noticeable gap will develop between the two sections of ducting. When I conducted the visual inspection of the engine to make sure all steps were complete, I failed to notice that the gap did not exist.

After further investigation, we determined that the damage to the engine and aircraft would cost more than $30,000, making it a Class D mishap. Because of my complacency and the overconfidence of my team, we thought we could do a routine engine drop without following the checklist. I definitely learned that no matter how many times I have done a specific job, I need to follow the procedure. Failure to do so puts our people and equipment at risk and leads to preventable mishaps.

US Navy ships in deadly collisions had dismal training records

The two US Navy destroyers involved in deadly collisions in the Pacific this summer both had lengthy records of failure to fulfill key training requirements, according to Government Accountability Office data provided to Congress and obtained by CNN.

The USS Fitzgerald had expired training certification for 10 out of 10 key warfare mission areas in June, and the USS John S. McCain had let its certifications lapse in six out of the 10 mission areas, the data show.

The dismal training record for the two ships sheds new light on one factor that may have contributed to the two collisions with commercial ships in June and August, which killed 17 sailors.

The training records of the McCain and Fitzgerald were worse than the average warship in the Pacific, but they weren't the only ones with training problems. GAO testimony released last week revealed that expired training certifications for the Navy's 11 cruisers and destroyers based in Japan had skyrocketed five-fold from 7% in January 2015 to 37% in June. Two-thirds of the certifications had been expired for at least five months.

The deadly destroyer accidents -- along with two Navy cruiser collisions Pacific earlier this year -- prompted the dismissal of the Navy's 7th Fleet commander Vice Adm. Joseph Aucoin, as well as multiple reviews of the way the Navy trains, maintains and deploys its fleet that's stretched thin.

A Navy official contested the GAO's training certification data, arguing that the GAO was focused on higher-level warfighting certifications and not the nuts-and-bolts certifications for operating ships where the Pacific fleet's destroyers and cruisers have a better record. There are 22 certifications required for each ship and the GAO only reported on half, the official noted, though they declined to provide the full training records for the USS Fitzgerald and USS McCain, citing the ongoing investigations into the collisions.

Senior Navy officials told lawmakers last week that the service is committed to getting to the root of the issues that have contributed to the spate of collisions.

"We ask the sailors to do an awful lot ... and perhaps we've asked them to do too much," Vice Chief of Naval Operations Adm. William Moran told the House armed services committee at a hearing last week on the collisions. "That's what the comprehensive review will look at."

Moran told lawmakers he had made a "wrong assumption" that forced forward-deployed naval forces in Japan were the most proficient and well-trained because they were operating all the time.

A Pacific Fleet spokeswoman said the Navy will examine all aspects of surface fleet operations with an emphasis on the 7th Fleet as part of the review ordered by Chief of Naval Operations Adm. John Richardson.

"This will include, but not be limited to, looking at operational tempo, trends in personnel, materiel, maintenance and equipment. It also will include a review of how we train and certify our surface warfare community, including tactical and navigational proficiency," Lt. Cmdr. Nicole Schwegman said in a statement. "It would be premature to comment on any one part of the investigation before it is complete."

Expired training certifications mounted

The GAO examined training records in June for all of the Japan-based destroyers and cruisers, focusing on 10 key warfare training areas. They included air warfare, ballistic missile defense, electronic warfare, fire support, cruise missiles and more. The USS Fitzgerald had let its training certifications expire for all of them, according to the GAO data.

The Navy's preliminary findings in its Fitzgerald investigation found the crew failed to understand and acknowledge the cargo ship was approaching and failed to take any action necessary to avoid the collision.

The ship's commanding officer, executive officer and senior non-commissioned officer were relieved of their duties following the collision.

The USS McCain's training record was better than the USS Fitzgerald, but the ship was still overdue on a majority of its training certifications.

A source familiar with the training data told CNN that other ships in the Pacific have similar poor training records.

John Pendleton, the GAO's director of defense force structure and readiness issues, testified last week that eight of the 11 destroyers and cruisers in the Pacific, or 73%, had expired training certifications for seamanship and undersea warfare, and 64% had cruise missile and surface warfare certifications that had expired.
The ships' basic certifications were better, Pendleton said, but he noted that seamanship stood out as a problem area.

Moran said that when a ship's certifications expire, the vessel's commanding officer is required to put a plan in place to mitigate risk that must be approved up the chain of command. He also said there have been problems getting officials from the Pacific's Afloat Training Group, which certifies the ships, to conduct certifications due to staffing issues.

"We have allowed our standards of the numbers of certifications ... to drop as the number of certification waivers have grown," Moran said. "While not against the rules, they are below the standard that we should accept."

Less training for overseas ships

Rep. Joe Courtney, a Connecticut Democrat, said he was concerned about who was approving the waivers and who ultimately decided that a ship with expired training was fit to deploy.

"The certification process which covers key competencies in seamanship, surface warfare, ballistic missile defense to, name just a few, needs to be reviewed and approved by an accountable decision-maker," he said.

The training issues have been particularly acute for ships based in Japan.
The Navy has moved toward a model of basing ships abroad so they can deploy more quickly and frequently, but that method has come at the cost of training and maintenance, the GAO has warned

The GAO found in past reports that ships based overseas had less time for training and maintenance time compared to ships that call US ports home, and Pendleton testified that ships in Japan had no dedicated training periods at all.

"Their aggressive deployment schedule gave the Navy more presence, it's true. But it came at a cost, including detrimental effects on ship readiness," Pendleton said. "In fact, we were told that the overseas based ships were so busy that they had to train on the margins. Term I'd not heard before. And it was explained to me that meant that they had to squeeze training in when they could."

http://docs.house.gov/meetings/AS/AS03/20170907/106357/HHRG-115-AS03-Wstate-PendletonJ-20170907.pdf

http://www.cnn.com/2017/07/21/politics/fitzgerald-initial-investigation-blames-navy/index.html

3 out of 4 of employees work during vacation, despite knowing they don't have to

A new poll by the HR Certification Institute (HRCI) found that 75% of employees work while vacationing, even though half of non-essential staff say they don't believe they are expected to. HRCI polled 300 HR practitioners. According to the survey only 31% of employers have policies that discourage working during vacation. Survey results show that when there is a written policy discouraging work while on vacation only 10% of workers say they always or almost always work during their vacation. Without a policy in place, 21% of workers say they almost always work on vacation.

“Most workers bring their laptops with their flip-flops on vacation. Employees are confounded by a mixed bag of written company policies, unspoken expectations, shared beliefs and poor examples set by CEOs and supervisors," HRCI researcher and spokesperson Barry Lawrence said.

Insight:

With only one-third of employers discouraging workers from performing their jobs while vacationing, as HRCI's survey shows, it's not surprising that work and vacation have become indistinguishable. But by not taking time to refresh and regroup, employees can become over-stressed, even burned out. Stress leads to health problems, which, in turn, can increase absenteeism and lower productivity. This also means higher healthcare costs for employers.

HRCI's study confirms what many other studies have found: that employees are working around the clock. HR managers may want to discourage employers from working while taking time off by establishing mandatory vacation policies, but there are also simple cultural changes that can be made to ease problems. Leaders should be seen taking the time off they need and should be encouraging and supportive when an employee recognizes that it is time for him or her to take time off as well.

https://www.hrci.org/docs/default-source/web-files/vacation-poll-results.pdf?sfvrsn=a1a14e61_2

http://www.hrdive.com/news/up-to-30-of-vacationers-stay-connected-to-the-office-and-thats-a-problem/445210/

http://www.hrdive.com/news/mandatory-vacation-might-curb-costly-absenteeism-among-employees/449188/