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The Five Hazardous Attitudes, A Subset of Complacency

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The definition of complacency embodies the characteristics of being self-satisfied with the circumstances even when a person is unaware of potential dangers (Mirriam-Webster, 2022). The uninformed self-satisfaction characteristic of complacency frequently manifests itself through a compliance drift or a normalization of deviance. Checklists might be performed from memory without the requisite read and verify protocol. A repetitive deviance that has become institutionalized might make the difference between a professional performance and a hazardous performance. Complacency might be perceived as the overarching human factors hazardous attitude with the Federal Aviation Administration (FAA) identified five hazardous attitudes of anti-authority, impulsivity, invulnerability, macho, and resignation a subset of complacency.

The FAA lists 12 common causes of human factors errors prevalent in the aviation workplace with complacency listed in the number two spot on the list. Complacency is characterized as overconfidence gained through the repetitive performance of a task (FAA Safety Team, n.d.). In the cockpit, repetitive tasks describe the rhythm and choreography of challenge-response or read and verify checklist completion protocols which might lead to the memorization of the checklists. Completion of the repetitive tasks through memorization can lead to normalization of deviance and complacency.

In the case of the GIV flight crew taking off in Bedford, MA., the normalization of deviance manifested itself in the repetitive failure of the crew to unlock the flight controls in the After Start checklist and to perform a flight control check in the Taxi checklist on 98% of their previous 175 flights (National Transportation Safety Board [NTSB], 2015) resulted in the death of seven people.

In this accident sequence, the flight crew appeared to lose focus in the performance of the task at hand. The voice recorder recorded the crew discussing a phone call (NTSB, 2015) prior to starting the engines. By completing the five checklists required from start to takeoff from memory and with less than 100% focus, the crew performed in a hazardous manner. A professional performance of completing the checklists using a challenge-response methodology would have resulted in the correction of the task error of not unlocking and checking the flight controls.

In the case of the GIII accident in Aspen, CO., the crew's actions indicated complacency in committing several critical errors during the flight. The crew never associated the pending mountainous night fall with the prohibition of executing the non-precision approach to the airport (NTSB, 2001). The crew failed in the thorough preparation for the flight during the flight planning phase to recognize that the approach was a circling approach due to the high rate of descent required on the final segment of the approach. The crew completed the tasks in their usual manner. They did not check any airport information beyond getting the weather. These actions violated the procedures outlined in 14 CFR part 91 (FAA, 2021a) that required the crew to become familiar with all aspects of the flight. This superficial preflight seems to be the expected norm and represented a complacent practice on the part of the crew. In combination with several other factors, the accident resulted in 17 fatalities.

Complacency functions as an overarching human factor for the five hazardous attitudes. Overconfidence is a foundational element of complacency with a subset of an attitude that lacks the holding of oneself to a higher standard of performance. This attitude relates to a lack of proficiency and to the acceptance of lower individual standards. A pilot must challenge oneself to learn new things about the airframe and the standard operating procedures or regulations that are a rudimentary part of continuous learning, eliminating complacency, and demanding higher standards of performance. If a pilot is complacent, it is not a matter of if a pilot will exhibit one or more of the hazardous attitudes, but when.

Five Hazardous Attitudes

The FAA has identified five hazardous attitudes that have the potential to influence the pilots' ability to respond to "people, situations, or events" in a manner conducive to aviation safety (FAA, 2017a, p. 2-5). According to the FAA, the hazardous attitudes precipitate poor judgement in all flight regimes. The five hazardous attitudes are represented in Table 1.

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Table 1

Five Hazardous Attitudes

The Five Hazardous Attitudes	Antidote
Anti-authority: "Don't tell me." This attitude is found in people who do not like anyone telling them what to do. In a sense, they are saying, "No one can tell me what to do." They may be resentful of having someone tell them what to do or may regard rules, regulations, and procedures as silly or unnecessary. However, it is always your prerogative to question authority if you feel it is in error.	**Follow the rules. They are usually right.**
Impulsivity: "Do it quickly." This is the attitude of people who frequently feel the need to do something, anything, immediately. They do not stop to think about what they are about to do, they do not select the best alternative, and they do the first thing that comes to mind.	**Not so fast. Think first.**
Invulnerability: "It won't happen to me." Many people falsely believe that accidents happen to others, but never to them. They know accidents can happen, and they know that anyone can be affected. However, they never really feel or believe that they will be personally involved. Pilots who think this way are more likely to take chances and increase risk.	**It could happen to me.**
Macho: "I can do it." Pilots who are always trying to prove that they are better than anyone else think, "I can do it—I'll show them." Pilots with this type of attitude will try to prove themselves by taking risks in order to impress others. While this pattern is thought to be a male characteristic, women are equally susceptible.	**Taking chances is foolish.**
Resignation: "What's the use?" Pilots who think, "What's the use?" do not see themselves as being able to make a great deal of difference in what happens to them. When things go well, the pilot is apt to think that it is good luck. When things go badly, the pilot may feel that someone is out to get them or attribute it to bad luck. The pilot will leave the action to others, for better or worse. Sometimes, such pilots will even go along with unreasonable requests just to be a "nice guy."	**I'm not helpless. I can make a difference.**

*Note***.** Table 1 is reproduced based on Figure 2-4 (FAA, 2017a, p.2-5)

Hazardous Attitudes Explained

Attitude

Merriam-Webster (n.d.) provides a definition of attitude that embodies the concept of a predisposed response to certain stimuli. The stimuli could be situations, objects, or authority. As with the majority of professions, a pilot's positive, negative, or neutral attitude affects performance and decision making. By extension, pilot attitude is directly foundational to aviation safety.

Anti-Authority

Anti-authority exemplifies more depth than the usual antidote of follow the rules. Pilots with an anti-authority attitude often discriminate between legitimate authority and illegitimate authority (Leach, 2005). Legitimate authority is perceived to be federal regulations or standard operating procedures written by a recognized authority such as the FAA or the pilot's employer. Illegitimate authority is perceived to emanate from organizations or persons who do not have delegated authority. The norms of the group do not attribute trustworthiness to the manipulation of the individual or the organization attempting to influence the group (Leach, 2005).

Impulsivity

Impulsivity is commonly defined as the need to do something immediately. The action usually occurs prior to an analysis of the situation and an action to solve or mitigate an issue. Maintain aircraft control, analyze the situation, and take the proper action are emergency situation principles (Hostage, 2016). Components of the analysis include training and experience applied through a prioritization and compartmentalization protocol (Hostage, 2016). An old adage suggests that a pilot should "wind the clock" in the face of an emergency. This action, or euphonism, provides an outlet for the adrenalin surge and allows the pilot to focus and initiate the analysis process. The end result should be the application of the correct procedure rather than a random action with inappropriate results (e.g., shutting down the incorrect engine).

Invulnerability

Invulnerability captures the concept in aviation, as in life, that accidents happen to others, but they will not happen to the individual with the invulnerable attitude. This attitude does not account for an analysis of the risks and an appreciation of possible outcomes predicated by an action. Actions must occur based on an analysis of the facts at hand informed by training, experience, and mission requirements. Accidents/incidents can and do happen to others, but they can also happen you. The saying pilots are often taught during flight training and attributed to E. Hamilton Lee in 1949 captured the antidote to invulnerability with a simple representation that there are old pilots, and there are bold pilots, but there are no old, bold pilots.

Macho

Macho is often associated with competition among members of a profession. Men and women attempt through their actions to demonstrate professional superiority. The competition is thought to be the result of confidence in one's ability to perform any task associated with the profession. Success breeds confidence, however to often confidence exceeds ability (Rossier, 1999). The macho attitude precludes completing a risk analysis identification of the hazards involved. Rather, it is based on a continuous need for a pilot to continually prove himself or herself to be the best (Rossier, 1999). Rossier linked stress and a macho attitude to the syndromes of either get-home-itis or a hurry-up mentality. The best antidote for a macho attitude is the elimination of physical stressors such as fatigue and the few minutes it takes to investigate the potential hazards of the flight and to complete a risk analysis.

Resignation

Resignation manifests itself when a pilot is faced with a situation that the pilot believes is beyond their capabilities or out of their control. The feeling of not being able to change the situation, resignation, is hazardous to life and limb in aviation. Frequently, the hazardous attitude of resignation is precipitated by physical or mental stressors (Rossier, 1999). In order to counter the feeling of resignation, pilots must reduce physical and mental stressors to meet their fiduciary responsibilities to their passengers and to exert control of the situation and effect positive change.

Gulfstream III, Aspen, Colorado_AAB-0203

Accident Summary

The accident occurred when an Avjet Corporation operated Gulfstream III executed the approach to runway 15 in an attempt to land at the Aspen-Pitkin County Airport in Aspen, Colorado March 29, 2001 (NTSB, 2001). The flight originated at the Los Angeles International Airport (LAX) and operated under the auspices of 14 Code of Federal Regulations (CFR) part 135 on an instrument flight plan to Aspen-Pitkin County Airport (ASE). The aircraft impacted the terrain 2,400 feet short of the runway resulting in the deaths of all 15 passengers, 1 flight attendant, and 2 pilots (NTSB, 2001).

Anti-Authority

Circling Approach

The FAA issued a Notice to Airmen (NOTAM) stating that a circling approach was not authorized "at night for runway 15 at ASE [Aspen]" (NTSB, 2001, p. 29). The first officer was made aware that a circling approach to runway 15 at the Aspen airport was not authorized at night when he received his weather briefing from a Hawthorne, CA Flight Service Station specialist. Additionally, the approach title, VOR/DME-C, is designated as a circling approach by the letter "C" versus RWY 15 that would denote a straight-in approach. The flight crew was not authorized to execute the approach after 1855 local time (NTSB, 2001). In violation of the FAA directives, the flight crew executed the approach.

The FAA designates an approach as a circling approach if the final approach course does not fall within 30° of the runway direction or if the descent rate on the final approach segment exceeds 400 feet per mile (FAA, 2017b, p. 4-11. The Aspen VOR/DME-C is designated as a circling approach due to the excessive descent rate required on the final segment of the approach from the final approach fix to the runway threshold crossing height (NTSB, 2001). The accident crew executed the approach even though it was not authorized to do so.

Additionally, the flight crew intentionally violated 14 Code of Federal Regulations (CFR) 91 part 175(c) that required the flight crew to execute a missed approach at the missed approach point if the crew could not maneuver the aircraft for a safe landing using normal rates of descent (FAA, 2021). Further, the flight crew had been advised that previous aircraft had missed the approach due to a lack of required visual references at the missed approach point. The crew knew that at the time they were executing the approach, the required visual references to complete a safe landing were not present. They continued past the missed approach point without the required visual references.

Avjet Operations Documents

The NTSB noted that Avjet company policy required "…that the pilot-in-command will ensure that the flight is conducted in complete compliance with all Federal, Local, and Company regulations and policies" (NTSB, 2001, p. 24). The practical application of these regulations, policies, and best practices is published in company manuals as standard operating procedures (SOP).

In the case of the accident crew, the cockpit voice recorder (CVR) did not record a briefing of either the instrument approach procedure or the missed approach procedure (NTSB, 2001). The CVR tape revealed that the captain did not brief any of the other related required items for the approach to include the speeds, the aircraft configuration, and the process of executing the approach (NTSB, 2001). The lack of a detailed crew briefing by the captain was a clear violation of the SOP.

Impulsivity

Night

The definition of night is found in 14 CFR part 1.1 (FAA, 2021). The regulation establishes the beginning of night as the point where the sun is "geometrically 6° below the horizon" (NTSB, 2001, p. 30). On the date of the accident, the flight crew initiated the VOR/DME-C approach to runway 15 at ASE at 1856:06; 1 minute 6 seconds after the end civil twilight and the beginning of night. The instrument approach was not authorized at night.

Visibility

Previous traffic had executed the approach legally. However, the crews missed the approach due to the reduced visibility caused by snow showers at the airport (NTSB, 2001). Even armed with this knowledge, the crew impulsively initiated the approach outside of the legal parameters and unreasonably expected to see the airport visually.

Aircraft Configuration

The aircraft configuration alarm sounded for about 9 seconds after 1901.21 indicating the deployment of flight spoilers with the landing gear and flaps fully extended (NTSB, 2001). The NTSB also determined that the engine power was set at 55% N_2 (NTSB, 2001). This configuration violates the Gulfstream GIII Flight Manual that required a minimum N_2 of 64% with the landing gear and flaps extended in order to ensure sufficient power response time to initiate and execute a successful go-around (NTSB, 2001).

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Invulnerability

Initiating the Approach

When the first officer first selected the Aspen Approach frequency, the accident crew heard a preceding crew of a Canadair Challenger request another approach. The accident crew asked the approach controller whether the Challenger crew was executing practice approaches. The approach controller replied that the Challenger crew was executing a missed approach due to their inability to see the runway at the missed approach point (NTSB, 2001). The accident crew knew that they would most likely be unable to see the runway at the missed approach point. At the missed approach point they did not see the runway, and they continued beyond the missed approach point and descended below the minimum descent altitude without visual contact with the runway. They were deluded by their feeling of invulnerability that everything would work out for them. They impacted the ground killing everyone aboard a few minutes later.

Macho

Plan Continuation Errors

Velázquez (2016) identified *Get-There-Itis* (as cited in Dismukes, 2007) as a pilot behavior trap (p. 29) that affects pilot decision making. The PAVE checklist "E" addresses plan continuation error through a risk analysis schema reminding pilots to minimize the negative effects of <u>E</u>xternal pressures. In the case of the accident flight crew, the customer was sitting on the jumpseat during the approach. This dynamic placed an extreme external pressure element to perform on the part of the flight crew. The highly experienced pilots disregarded the conservative decision to miss the approach when they did not have sufficient visual reference with the runway environment to complete the landing. Instead, the crew dangerously continued the approach below the published minimums in the expectation that the weather was not going to impede them, and their superior flying capabilities would result in a satisfactory landing and task completion. Unfortunately for this crew and their passengers, the flight ended by impacting the ground well short of the runway (NTSB, 2001).

Resignation

Missed Callouts

The captain initiated the non-precision, circling VOR DME or GPS-C approach to Aspen, CO after the time the approach was authorized. Although the reported weather and the controlling weather at the time the crew initiated the approach was above landing minimums, the approach was not authorized after the end of civil twilight (NTSB, 2001). Additionally, the crew was aware that preceding traffic had missed the approach. There was no assertive discussion on the part of the first officer to persuade the captain that the best and legal course of action was to fly to and land at their alternate.

By initiating the approach after the night restriction and for a landing in compliance with local noise regulations, the captain was not in compliance with Avjet's policy of compliance with all local regulations (NTSB, 2001). The first officer did not attempt to persuade the captain that initiating the approach violated federal, local, and company policy, and they should execute a missed approach and proceed to their alternate.

During the approach, the first officer was required by company operational policy to make several callouts as part of his pilot monitoring duties. The first officer failed to make any of these required callouts. Additionally, when the captain flew the aircraft into an unusual 40° bank less than 200 feet above the ground, just prior to ground impact (NTSB, 2001), the first officer did not advise the captain of the excessive bank angle nor did the first officer take control of the aircraft and attempt a go around to extricate them from the soon to be fatal circumstances. The first officer's resignation that the crew was going to execute an unauthorized approach into known weather that would prevent a visual night landing regardless of his input to the contrary was a classic manifestation of the resignation hazardous attitude.

Failure to Comply

The flight crew failed to comply with 14 CFR part 91.103 that requires that prior to departure for any flight, the crew must be familiar with all available information covering all phases of flight. In the case of the accident crew, they did not discuss the ramifications of the approach into Aspen, CO. The crew was informed that circling minimums were not authorized at night (NTSB, 2001). Although the approach course was straight-in because it was aligned within 30° of the runway, the approach was classified as a circling approach because it required an excessive rate of descent on the final segment of the approach.

If the approach to runway 15 in Aspen was a straight-in approach, it would be denoted as the VOR DME or GPS 15 approach. Therefore, the approach designation, VOR DME or GPS-C, should have keyed the crew that the approach was classified as a circling approach because the approach name ended in a letter versus a runway designation.

The crew was complacent in recognizing the implications of the preceding traffic missing the approach because they failed to acquire the runway visually at the missed approach point. The accident crew was complacent in that they did not apply critical thinking to consider the effects of the weather, the mountainous terrain, the visual illusions created by mountain night time, and the high descent rate required by the non-precision approach. The crew was resigned to the fact that they did not have control of the situation, and they did not act to terminate the approach. This was complacent in meeting their fiduciary responsibility to their customers, their company, and their fellow crew members. The result was a fatal accident that could have been prevented by a non-complacent crew.

Gulfstream G-IV Bedford, Massachusetts – AAR-1503

Accident Summary

The NTSB accident report succinctly summarizes the accident in the following description.

> On May 31, 2014, about 2140 eastern daylight time, a Gulfstream Aerospace Corporation G-IV, N121JM, registered to SK Travel, LLC, and operated by Arizin Ventures, LLC, crashed after it overran the end of runway 11 during a rejected takeoff at Laurence G. Hanscom Field, Bedford, Massachusetts. The airplane rolled through the paved overrun area and across a grassy area, collided with approach lights and a localizer antenna, passed through the airport's perimeter fence, and came to a stop in a ravine. (NTSB, 2015, p. vii)

Anti-Authority

Lack of Checklist Discipline

The NTSB review of the aircraft quick access recorder (QAR) exposed the fact that the crew failed to check the flight controls as required by the After Starting Engines checklist on this flight and on 98% of the previous 175 flights (NTSB, 2015). The NTSB also found that the flight crew had been flying together over the previous seven years, and the crew routinely did not use checklists nor did the crew use the industry best practice of performing checklists using a challenge-response format (NTSB, 2015).

An NTSB review of the G-IV aircraft flight manual (AFM) identified five checklists that should have been accomplished by the flight crew during the period from engine start to takeoff (NTSB, 2015). There is no evidence that any of these checklists were accomplished. Additionally, two of the checklists contained items that would have alerted the flight crew that the flight controls were locked. The NTSB (as cited in Dismukes, et al. 2006) noted that 20% of flight crew accidents are the result of highly trained crews committing an error of omission. The completion of checklists in aviation provides a defense against errors of omission in routine and abnormal circumstances. They are foundational to the development and application of standard operating procedures (FAA, 2004).

The second in command (SIC) on this flight was the Chief Pilot and the Director of Maintenance. These positions are required for 14 CFR part 135 air carrier certification and operations by 14 CFR part 119.69 (FAA, 2021). It is particularly egregious that this flight crew did not follow the best operating practices and standard operating procedures developed by the SIC himself through his position of executive leadership in the company. Seven people might still be alive today if the crew had followed the protocal developed for safe operations.

Impulsivity

Missed Chances

The flight crew decided to disregard the advisory message *Rudder Limit* and to initiate the takeoff without determining the cause of the advisory light. The usual reasoned response to any abnormal or unusual cockpit indication should be to determine a reason for the indication. The accident crew chose to minimize the advisory with a conversation that did not include any investigation regarding cause (NTSB, 2015). After the crew initiated the takeoff roll, the loading of the elevator and the subsequent movement of the elevator toward the neutral position did not occur and went unrecognized by the flightcrew. This movement of the elevator from 13° trailing edge down to 0° trailing edge down at 60 KIAS indicates that the elevator has moved to the neutral position due to airflow over the control surface and is functioning in a normal manner (NTSB, 2015). If the flight crew had recognized this movement and rejected the takeoff in the low speed takeoff regime below 80 KIAS, the accident could have been prevented.

The flight crew also missed a second chance to abort the takeoff when the SIC called V_1 6.2 seconds after the 80 Kt callout. The speed, V_1, is considered the takeoff decision speed and represents the last speed at which the aircraft can be aborted safely in the remaining runway. During the takeoff roll, the crew was preoccupied with the thrust lever annomoly and with the locked flight controls. Additionally, the PIC attempted to use an unapproved procedure to free the flight controls in this high speed regime between 80 KIAS and V_1. Other than the standard callouts, the SIC appeared to offer no input regarding the PIC's actions during this phase of flight (NTSB, 2015).

Invulnerability

Lack of Situational Awareness

According to the NTSB accident report, AAR1503, when the aircraft taxied onto the runway, the rudder limit light illuminated with the associated RUDDER LIMIT advisory message appearing on the engine instrument and crew advisory system display (EICAS). The crew discussed the light, but did not resolve the problem. This light was the first indication that there was an issue with the flight control system. Other than discussing and resolving the issue, the crew ignored the advisory light and continued the takeoff.

The crew neglected other clues during the takeoff roll that if they were noted, analyzed, and acted upon would have prevented the accident. The crew did not note that the elevator did not move to the neutral 0° position at approximately 60 KIAS from 13° down at the beginning of the takeoff (NTSB, 2015). This lack of movement should have been a clear indication that the flight controls were locked.

The SIC continued to make the 80 KIAS, V_1, and V_R calls while the PIC was struggling with the flight control issue. It appears that the SIC manifested his invulnerability as overconfidence in the successful resolution of the issue in time to preclude any mishap.

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Macho

Wanton Disregard

This flight crew had been flying together for seven years (NTSB, 2015). The NTSB found that "the pilots had neglected to perform complete flight control checks before 98% or their previous 175 takeoffs" (NTSB, 2015, p. vii). This data reveals a consistent disregard for industry best and standard practice.

This crew was routinely noncompliant with the SOP that required the performance of the five checklists in the start to takeoff phases of flight. Disengaging the flight control lock is an item on the Starting Engines checklist (NTSB, 2015). Checking the flight controls for free and unrestricted movement is an item on the After Starting Engines checklist (NTSB, 2015). The Lineup checklist in use by the flight crew included a note to remind the pilots to confirm the movement of the elevator to the 0° neutral position at 60 KIAS.

It is worthy to note that the company chief pilot was the SIC on this flight. The company did not have a flight data monitoring (FDM) program in place nor did it have a surveillance program where qualified outside observers monitored flight crew for compliance to SOP and standard industry best practices (NTSB, 2015).

The accident flight crew that included the chief pilot as the SIC had completed 172 takeoffs and developed a normalization of devience of not checking the flight controls prior to flight. The purposeful failure to complete the five checklists in the engine start to takeoff phase of flight represents procedural drift (Decker, 2006). The procedural mismatch manifests itsel in a macho approach of attempting to prove oneself better than the average pilot who relies on the checklist as a last chance safety measure. In the case of the GIV accident at Bedford,MA, the macho attitude contributed to the death of seven people.

Resignation

Reliance on Automation and Silence

The most disturbing indication of resignation on the part of the PIC was manifested through his use of autothrust. The PIC manually advanced the thrust levers for takeoff. The PIC was not manually able to attain takeoff thrust due to the gust lock/throttle interlock (NTSB, 2015). Instead of initiating a rejected takeoff at a very slow speed, the PIC engaged the autothrust; confident the computer would complete the task. The effective pressure ration (EPR) required for takeoff was not attained by the autothrust for the same reason. This action demonstrates a clear indication of resignation on the part of the human pilot by relying on the automation to accomplish the task. Additionally, the action of the PIC indicates complacency manifested by the lack of systems knowledge on the mechanics of the gust lock system.

The actions of the SIC during the takeoff roll indicate an attitude of resignation as well. The SIC provided no input into identifying the potential issue with now two obvious hints that the flight controlls were locked. The SIC continued to make the standard callouts of 80 KIAS, V_1 and V_R (NTSB, 2015). If the SIC was an active participating crew member, the SIC should have expressed concern about the flight control issues presented by the aircraft. Instead, the SIC was resighned to be along for the ride without active participation in crew problem solving. If a rejected takeoff was initiated at any point from the RUDDER LIMIT advisory to 11 seconds after the recognition that the flight controls were locked as the PIC attempted to rotate the aircraft, the aircraft could have been safely stopped on the runway (NTSB, 2015). The SIC provided no input or assistance and appeared resigned to the outcome; a fatal crash taking seven lives.

Conclusions

According to Kern (n.d.), "Our industry (operations and ATC) is becoming infected with complacency, casual noncompliance, and sloppiness" (slide 8). Complacency is an appropriate overarching human factors attitude that embodies as a subset the five hazardous attitudes. Beatty (2016) correctly maintained that a complacent attitude is a potentially foundational cause of aircraft accidents. He further implied that any organization must apply the principles of continuous learning and improvement in order to combat complacency bread by past successes. SKYbrary (2018) defined complacency as a sense of approval of the situation that implies a lack of awareness of potential hazards due to lack of experience or due to inadequate situational awareness.

Both of these accidents represent complacency and the sub-set of the five hazardous attitudes. In the case of the Aspen, CO accident, the crew was complacent in-flight planning that eventually led to the execution of an unauthorized approach. The crew violated numerous regulations and company policies through their actions. At some point during the flight and on the approach, the crew demonstrated each of the five hazardous attitudes toward an action they were performing. Their unprofessional actions did not meet the fiduciary standards implicit in the crew-passenger relationship. The result was an unacceptable 17 fatalities.

Sumwalt (NTSB, 2015) sought to explain why the crew of the Bedford, MA runway overrun accident acted the way they did. He noted that both crew members completed recurrent training at a highly respected training provider within the previous 12 months. Both crew members completed training satisfactorily implying that they knew how to operate the aircraft in accordance with the published regulations requiring checklist compliance and compliance with the aircraft flight manual.

The crew had been flying together for seven years. Sumwalt postulated that overconfidence based on routinely operating together did not require them to follow the required operating protocols. Complacency based on their overconfidence precipitated the five hazardous attitudes prevalent in the accident. The flight crew did not hold themselves to the standards expected of them by their passengers. Their unprofessional action characterized by complacency and the subset of the five hazardous attitudes resulted in the unacceptable outcome of seven fatalities.

Recommendations

Further research into the subject of complacency is warrented. Complacency is listed on the 12 human factors most often cited as contributions to an aircraft accident. It is the overarching issue of which the five hazardous attitudes are a subset.

Aviation operators should implement a set of protocols that require periodic outside review of the established operational policies and standard operating procedures. Some of these programs are in existance in the form of contract training organizations. The protocols should be expanded to include follow up line checking in between visits to the recurrent training facility.

A professional working attitude should be instilled in employees so that they meet the high standards expected by passengers. This attitude should be internally generated during training and stimulated by a desire to be knowledgeable about the aircraft, the regulations, and the standard operating procedures. Additionally,it is imperative that flight crew members hold themselves to the highest physical and mental standards. Aviation professionals have a fiduciary resposibility to set high expectations and meet them for themselves and their passengers. The requirement for safe operations and the complexity of the industry demand it.

References

Beatty, J. (2016, October 11). Fighting complacency. *Flight Safety Foundation*.

Decker, S. (2006). *The field guide to understanding human error.* Ashgate.

Dismukes, R. (October 16-20, 2006). Concurrent task management and prospective memory: Pilot error as a model for the vulnerability of experts. *Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting.* San Francisco, CA

Dismukes, R., Berman, B., & Loukopoulos, L. (2007). *The limits of expertise: Rethinking pilot error and the causes of airline accidents.* Aldershot, UK: Ashgate.

Dupont-Adam, R. (2021 Jun 24). *Let's talk human factors - Complacency.* http://aviationsafetyblog.asms-pro.com/blog/let-s-talk-human-factors-complacency: SMS Pro Aviation Safety Software Blog 4 Airlines & Airports

FAA Safety Team. (n.d.). *Avoid the dirty dozen.* www.FAASafety.gov

Federal Aviation Administration. (2004). *AC 120-51E, crew resource management training.* https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-51E.pdf

Federal Aviation Administration. (2017a). *Pilots handbook of aeronautical knowledge* (FAA-H-8083-25B). http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/

Federal Aviation Administration. (2017b). *Instrument flying handbook* (FAA -H-8083-16B). https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/instrument_procedures_handbook/media/faa-h-8083-16b.pdf

Federal Aviation Administration. (2021a). *14 CFR part 91.103.* https://www.ecfr.gov

Federal Aviation Administration. (2021b). *14 CFR 91.175.* https://www.ecfr.gov

Federal Aviation Administration. (2021c). *14 CFR part 1.1.* https://www.ecfr.gov

Federal Aviation Administration. (2021d). *14 CFR part 119.69*. https://www.ecfr.gov

Hostage, M. (2016, July 26). Wind the clock. *Texas Top Aviation*. http://txtopaviation.com/wind-the-clock/

Kern, T. (n.d.). *Making professionalism personal, empowered accountability in aviation operations and air traffic control.* https://www.ntsb.gov/news/events/Documents/aviation_pro-Kern-NTSB-Professionalism-Forum.pdf: Convergent Performance

Mirriam-Webster. (n.d.). *Complacency. In Mirriam-Webster.com dictionary.* . Retrieved January 16, 2022, from https://www.mirriam-webster.com/dictionary/complancency

National Transportation Safety Board. (2001). *NTSB/AAB-02/03 DCA01MA034*. https://www.ntsb.gov/investigations/AccidentReports/Reports/AAB0203.pdf

National Transportation Safety Board. (2015). *NTSB/AAR-15/03 PB2015-105492*. https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR1503.pdf

Nunez, B., Lopez, C., Mora, O. A., & Roman, K. (2019). *Hazardous attitudes in US part 121 airline accidents*. 20th International Symposium on Aviation Psychology, (pp. 37-42). Dayton, Ohio: https://corescholar.libraries.wright.edu/isap_2019/7

Rossier, R. (1999, September 5). Hazardous attitudes which one do you have. *AOPA Flight Training Magazine*. https://www.aopa.org/news-and-media/all-news/1999/september/flight-training-magazine/hazardous-attitudes

Shapiro, J. (2020, May/June). Five hazardous attitudes of aviation. *USHPA Pilot,* 50*(3),* 28-31. https://issuu.com/us_hang_gliding_paragliding/docs/pilot2003_issuu

SKYbrary. (2018). Discipline. *The Operator's Guide to Human Factors in Aviation (OGHFA).* skybrary.aero/index.php/Discipline_(OGHFA_BN)

The Moffit Corporation. (2019). The five hazardous attitudes in the workplace. https://www.moffittcorp.com/five-hazardous-attitudes-workplace/

Vaughan, D. (2010). The normalization of devience. In F.T Cullen & P. Wilcox. (Eds.), *Encyclopedia of Criminological Theory* (pp. 976-980). Sage. http://dx.**doi**.org/10.4135/9781412959193.**n269**

Velázquez, J. (2016). *Behavioral traps in flight crew-related 14 CFR part 121 airline accidents* [Doctoral Dissertation, Embry-Riddle Aeronautical University], Embry Riddle Aeronautical University Commons, https://commons.erau.edu/edt/193/