The U.S. Army Combat Readiness Center (USACRC) released an initiative called the “Evil Eight” to address common threats that contribute to primarily on- and off-duty Class A ground mishaps. Notably, when it comes to on-duty vehicle mishaps, a leader failed to correct a deficiency or standards violation in approximately three-quarters of mishaps. One could easily extrapolate this statistic to the aviation community and include poor crew coordination through failure to take action as a pilot in command (PC) or excessive professional courtesy to the PC. The fix to these leader failures really comes down to how one defines a leader and the concepts of knowledge, presence and gumption. And together, these define your unit’s safety culture.

Army Doctrine Publication (ADP) 6-22, Army Leadership, defines a leader as follows: “An Army leader is anyone who by virtue of assumed role or assigned responsibility inspires and influences people to accomplish organizational goals. Army leaders motivate people both inside and outside the chain of command to pursue actions, focus thinking and shape decisions for the greater good of the organization.” This definition underscores two key points. The first defines who can be a leader “by virtue of assumed role or assigned responsibility.” There are no mere Soldiers in the Army, only leaders and aspiring leaders; each with a voice that matters. Second, what do these Soldiers do by virtue of their position? They pursue actions, focus thinking, and shape decisions for the greater good of the organization. So, how do you define a leader in your organization? Does it matter if you are on the ground or in the air? All Soldiers are leaders at different levels and can take action for the greater good of their unit when given the right support. Every crew chief, PC, senior instructor pilot (IP), and commander needs to embrace what it means to be an Army leader and focus on the good of the organization, the team, and commitment instead of compliance.

As leaders and aspiring leaders, the challenge of having the knowledge to make decisions and take risks at the appropriate level in order to support your Soldiers and unit most effectively will always remain. What defines the training path for leaders in the Army? Is it the noncommissioned officer education system or officer education system that defines the requisite knowledge to be an effective Army leader? This is merely the baseline for developing knowledge as an Army leader and is often generalized. Does flight school automatically make someone a professional aviator? Does going to the maintenance test pilot or IP course automatically make an aviator infallible in the cockpit? Of course not. So, how does a leader learn to lead? This can
only be accomplished when leaders within a Soldier’s immediate vicinity are setting the right example and applying the rote knowledge from courses in a real world environment. However, at the same time, leaders must execute within the scope of their knowledge. You wouldn’t expect career aviators to be experts in the emplacement of a fortified fighting position, but you would expect them to know their emergency procedures and limitations verbatim. Senior leaders must invest time in junior leader growth so they can become experts in their craft.

Even armed with the correct knowledge, a leader can only have minimal impact without being present. Leaders must position themselves at the highest point of risk and select junior leaders to support them during execution. During crew selection and flight planning, junior leaders should not be allowed to make all of the decisions without leadership oversight. The mission briefing and approval process ensures that leaders are present to “brief” and review the mission risk assessment and that junior leaders and aviators are operating within their capabilities. This requires knowing your aviators, and ensuring you have the right leaders in place during mission planning and mission execution. Mission briefing officers (MBO) should ensure the crews, PCs and air mission commanders (AMC) have the requisite knowledge and experience to execute the planned mission. The mission approval authority (MAA) identifies the appropriate leader presence and role for the mission. Additionally, MAAs must make themselves available (present) to actively take a role in the mission planning process, even if not actually conducting the mission. The presence of leaders is for the professional development of junior leaders and for risk mitigation.

The final concept is gumption. Gumption is the ability to decide the best thing to do in a particular situation and to do it with energy and determination. Do your leaders have the gumption to stand up against peer pressure and rank or position to ensure others are pursuing actions for the greater good of the crew, team or organization? In order to facilitate gumption, Soldiers must be empowered to take action and must be supported by the chain of command to enforce standards, standard operating procedures (SOP) and regulations. Leaders at all levels must be able to contribute and must be encouraged to speak up. Annual aircrew coordination addresses these concerns in direct correlation with excessive professional courtesy. When crewmembers perceive operations outside of standard, limits or the briefing, they must speak up and take action. We have all seen the “ye of little faith” mishap where the PC asks if the pilot (PI) thinks he can make it through the gap in the trees. The PI’s response, “Nope.” When the PC didn’t listen, bad things happened. Each crewmember, regardless of rank, has the vital role of ensuring the safe operation of the aircraft.

These concepts are not sequestered to ground or aviation operations, they span across Army operations. Identifying and mentoring leaders and aspiring leaders is a requirement for safe operations. Have you selected the right leaders to be PCs, MBOs, or MAAs based upon decision making and not just rank or track? Do your leaders have the necessary basic and graduate level knowledge to operate their vehicles or aircraft safely? During crew selection, do you make sure the right leaders are present and able to take action during the mission? Have you counseled designated leaders on expectations of their roles as crewmembers, PCs, MBOs, etc., and ensured your support when they uphold the standard? The key to an effective safety culture is knowledge, presence and gumption. We must constantly reassess our unit and ensure that our leaders pursue actions, focus thinking, and shape decisions for the greater good of the organization.

LTC Randy James
Chief, Aviation Division
Directorate of Assessments and Prevention
U.S. Army Combat Readiness Center
It’s all in the Brief

Or is it? As we continue to train and conduct operational missions in dangerous environments, are all the details we need to cover in the brief? Based on the austere and hazardous situations that Army aviation crews operate aircraft in, do we allow for the variable hazards based upon environmental and crew conditions to be added to our standard briefings?

A relevant example of what may not be fully covered in the brief is operations in degraded visual environments (DVE). Currently we don’t have a system to defeat DVE and, while it appears to be on the horizon, we still must deal with DVE through intense training, planning and effective aircrew decision making. So why, for most units, is DVE not thoroughly covered in the briefing checklist or better integrated into the mission briefing?

Complacency Kills

A definition of complacency: A feeling of contentment or self-satisfaction, especially when coupled with an unawareness of danger, trouble, or controversy. For many reasons, “complacency kills” is a buzz term among individuals who consistently work in hazardous environments. Army aviation is certainly one occupation that consistently takes place in hazardous environments. It allows for very minute margins for error.

Consistent operation in mentally and physically demanding flight environments can breed complacency. As crewmembers gain more experience in operating in DVE conditions (sand storms, brownout landings and overwater routes) they can easily become immune to the catastrophic consequences of simple errors. Without the appropriate pre-flight planning and briefing, these crewmembers easily become positioned for the next accident.

Combating Complacency

To combat complacency, unit commanders should institute actions to impede its development. One effective method includes identifying precautions that are being taken to prevent complacency. This aids units in checklist development. Quite possibly, DVE is not even addressed in the briefing. Additionally, is DVE on your unit mission brief form and/or risk assessment worksheet?

The next part of the prevention equation is training. How much training are units doing to make DVE a critical briefing item for the mission brief and the preflight crew brief? If you answer that currently your unit doesn’t incorporate DVE into the mission brief and incorporates it minimally in the crew brief, then your unit isn’t building the habit of planning for DVE and your crewmembers aren’t thoroughly
prepared to take necessary action when they encounter it. As a side note, did you know that DVE was involved in 36 percent of mishaps to date in FY18?

Unit commanders should institute training that produces mission briefing officers (MBO) who are fully mission qualified on DVE briefing. As for the standards section, all checklists should include DVE as a topic with defined relevant critical point information (e.g., crewmembers actions when encountering DVE: brown/whiteout during landings, spatial disorientation, overwater routes, battle position, and inadvertent instrument meteorological conditions).

**Train, Train, Train**

Training is paramount to the success of defeating DVE. By building the necessary habits for DVE, crewmembers intuitively take the appropriate actions, MBOs brief it accordingly, and crewmembers verbally cover actions required if DVE is encountered.

Commanders influence the training program and provide the time and resources to make training happen and to establish policies and procedures in the unit standard operating procedures (SOP). This creates the positive habits necessary to reduce the mishaps associated with DVE. The same situational training techniques you utilize to build your aviation team to peak performance, focused on large scale combat operation techniques, should be utilized to bring your MBOs and crews to peak performance on planning and actions on contact with the degraded visual environment.

**Aviation Division**

**Directorate of Assessments and Prevention**
Mishap Review - UH-60M DVE

While performing a visual meteorological conditions (VMC) approach in a sand and dust desert environment in a UH-60M, the aircraft touched down with lateral drift and dynamically rolled. The aircraft was severely damaged and crewmembers suffered minor injuries.

History

Mishap crewmembers began their duty day at 0600. They were slated to support troop movement with pickup at multiple landing zones (LZ) and transport to a single location. The mission was briefed as a low risk operation during VMC weather conditions and daylight. The mission was slated for 0900; however, delays resulted in a 1450 late departure. After the first passenger (PAX) drop-off, crewmembers received a mission change and were tasked to pick up at one other site and transport to the location. Crewmembers conducted the pickup of PAX and on final approach to the drop off location, entered degraded visual environment (DVE) conditions with the tail wheel touching down while the aircraft was in a right lateral drift at the point of main landing gear (MLG) touch down. This resulted in the aircraft dynamically rolling over and impacting the ground on its right side. The aircraft was severely damaged and crewmembers had minor injuries.

Crew

The pilot-in-command (PC) had 506 hours in MTDS and 979 hours total time. The pilot (Pl) had 100 hours in MTDS and 213 hours total time.

Commentary

While performing a VMC approach in a desert environment, aircraft crewmembers executed the maneuvers to aircrew training module (ATM) standards until the touchdown portion of the second approach to the drop off location. The pilot on the controls allowed the aircraft to drift laterally during the final portion of the landing, resulting in the aircraft roll upon MLG touchdown. While conducting an approach and landing in daylight conditions with no obscuration to vision seems mundane, landing in a DVE during any condition is very demanding. While use of the flight director in DVE conditions during flight is the primary means of flight operations, per the warning in the common standards section of the ATM, the approach and landing of the aircraft in brownout conditions is a “hands on” pilot experience. There is little to no allowance for error when crewmembers operate in this environment and especially when shooting the approach to a brownout or whiteout LZ. While crewmembers who conduct operations in a desert or snow environment may have no alternate for landing because of their geographic location (desert/northern latitudes), the unit must have a solid training program to keep their pilots’ skills honed in order to “stick” the landing in DVE situations. From the review, you can see that the crewmembers involved had been sticking the landings until the last one. This just amplifies the criticality of not relaxing during DVE operations. Commanders should make sure that their organizations have an effective synthetic flight training simulator (SFTS) DVE training program. Utilizing situational training exercises in the SFTS gives crewmembers confidence in the aircraft and in their honed skills, allows instructors to demonstrate techniques for various scenarios (to a point, rolling, sling load pickup techniques, etc.), and builds commander confidence. Commanders should utilize local training area conditions, when available, to transition from SFTS to the aircraft for DVE approach, landing, sling load and take-off training. In DVE, there are no easy landings, train for it!
## Class A - C Mishap Tables

### Manned Aircraft Class A – C Mishap Table

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<th>Month</th>
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**Class A Flight Accident rate per 100,000 Flight Hours**

- 5 Yr Avg: 1.23
- 3 Yr Avg: 0.97
- FY 18: 1.19
- Current FY: 1.13

### UAS Class A – C Mishap Table

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Divided Attention in Blowing Snow

The Accident
The pilot was told that he was to be the standby aircraft pilot, with a 0625 crank time. He was not told who his copilot would be, nor was he given an LZ briefing. The two pilots met at 0545, preflighted the UH-1H, and cranked at 0625. A communications check was performed and the pilots were told they would be flying Chalk 9 in a formation of 10 on a tactical training mission. The aircraft left the staging area one at a time due to weather conditions and the flight formed en route to the troop pickup zone (PZ). Upon arrival at the PZ, the infantry element was not ready for pickup. The flight returned to the staging area, refueled, and returned to the PZ. The passengers loaded their equipment. The flight remained in the PZ until the weather in the area of the LZ cleared sufficiently for the flight to continue. The aircrews were in the PZ for 2½ hours with the temperature at -35° F.

The flight departed the PZ at 1130. Time en route to the LZ was 50 minutes. Upon arrival at the LZ, the flight leader was requested to change landing direction to prevent overflying enemy positions. The flight leader then broke the flight into two flights, one of four and one of six, due to the size and shape of the LZ. The flight of four landed with no difficulties other than self-induced blowing snow. The blowing snow created a whiteout condition, which had not completely cleared when the flight of six prepared to land. The flight of six initiated their approach, but had to make a go-around for spacing. During the go-around, the flight leader split the flight of six into two flights of three each, the first three to go to the right of the LZ and the second three to the left side, with Chalk 8 as their flight leader.

Chalk 8 initiated his approach with Chalk 9 and 10 in a trail formation. On short final, Chalk 8 created a blowing snow condition, causing Chalk 9 to make his landing in a whiteout condition. The pilot of Chalk 9 continued his approach to his intended landing point, which had become obscured by blowing snow. About 20 to 30 feet AGL, the pilot lost all visual ground reference and the aircraft struck the trees, then rolled to the left in a nose-low attitude. The crew and passengers of Chalk 9 were thrown around violently, but were able to exit the aircraft uninjured.

Findings
Crew error was a factor. The pilot talked on the radios while attempting to land the aircraft in formation to a difficult landing zone with blowing snow. Supervisory error was the major factor. The pilot of Chalk 9 lacked experience in formation flying and landing. His copilot’s flight experience in this type environment was very limited. The pilot received no briefing other than the tail number of the aircraft he was to fly and the crank time. The mission was delayed for 2½ hours and the crewmembers were exposed to -35° F. temperatures for the entire period. The landing zone was not big enough to accommodate the entire flight of 10 aircraft. This caused the flight commander to break his formation into three flights at the LZ.

Communications was a contributing factor. The number of radio transmissions was abnormally high. This pilot received three radio calls on short final and he attempted to acknowledge these distracting calls while trying to land.
Forum Op-ed, Opinions, Ideas, and Information
(Views expressed are to generate professional discussion and are not U.S. Army or USACRC policy)

Aviation Technical Inspector Counseling

Technical inspectors (TI) are a critical component to Army aviation. They are the first defense in preventing the next mishap due to a maintenance procedure being performed incorrectly or not at all. The TI, as part of the aviation quality control section, is relied on for his or her knowledge and experience in Army aviation maintenance operations.

Formal
TIs must be selected for their technical qualifications and also for their demonstrated performance, objectivity, judgment, maturity and ability to observe and provide constructive comments (Training Circular (TC) 3-04.71, Aviation Maintenance Training Program, AMTP). With the implementation of TC 3-04.71 in FY18, the TI is also relied upon to evaluate individual maintainers and small unit leaders.

The AMTP provides guidance concerning aviation maintainer training and responsibilities from the aviation brigade to the platoon level. It should be used as the guiding principle on TI duties and should integrate the counseling processes in Army Training Publication (ATP) 6-22.1, The Counseling Process, into the maintenance management program for each unit.

Informal
While formal counseling is spelled out in-depth in ATP 6-22.1, leaders should also utilize informal counseling on an as-needed and, in most instances, daily basis while leading and managing the unit quality control (QC) operations. Aviation maintenance is fast paced and operates on a “thread” with some military occupational specialties (MOS) in very low density. The ability to maintain a viable aviation maintenance QC program requires active engagement by the aviation maintenance officer, production control officer and the QC officer with the TIs.

Some techniques leaders can use to maintain a solid communication line and informal counseling for their TIs are as follows:

Be Available
It is imperative to be available to your subordinates. TI skills can range from initial entry into the job to highly skilled TIs who have been performing Army aviation maintenance for years. Being available for your team members is just as important for the newly signed off TI as it is for the senior experienced TI. In aviation maintenance, no one individual knows it all or has had the same experiences. As a leader, it is important to be available to assist your TIs in making the mission happen safely.

Be Visible
Many of the human factors that occur, and are pre-cursors to aircraft mishaps, can be prevented with leader visibility. This can be as simple as a leader noticing how active the QC program inspectors are on the line. For example, something isn’t right if a task requires one Soldier and four Soldiers are assisting with the task! If a leader, TI, isn’t on the line, this wouldn’t be noticed. Visible maintenance leaders on the line set the example for the TI team.

Mentor, Don’t Blame
Mentor your TIs. Everyone starts at square one. You should understand where your individual TI’s are at in their career path. You may find that some of your more seasoned TIs require just as much mentoring as your less experienced TIs. The ability to mentor them on the good outcomes and poor outcomes without blaming will provide a good working dialogue between the leader and the TI.

Address Deficiencies Immediately
We are all fallible human beings. When deficiencies are noted, the most important action is immediate action to correct it. If the QC team has a deficiency, it directly impacts all the work being executed by Soldiers on the line and in the shops. This directly affects safety of flight and could be the reason for the next mishap. If a deficiency by a QC TI is noted, leaders must take immediate action. The training deficiency must be corrected and all previous work of the TI must be reviewed to ensure that any irregularities are found and corrected to standard.
Maintain a Working Log

Maintaining a working log of informal counseling is a tried and true measure and can assist aviation leaders in managing their QC personnel. It supports the visibility of how well the QC program is working. Additionally, it provides information on training requirements and formal performance counseling.

Summation

Informal counseling is the hinge pin that provides daily interaction between aviation maintenance leaders and their QC team. Army aviation maintenance is most efficient when quality assurance is conducted throughout the maintenance task, not just when it is complete. Aviation maintenance leaders provide the necessary direction and feedback to maintain a quality TI staff, while providing the availability and visibility of leadership on the floor or in the shop sections. Lack of informal counseling may mean leaders are not available or visible and are setting the wrong example for their QC team.

Jeff Warren
Retired Aviator

Mishap Briefs #77

ROTARY WING

CARGO
H-47
**F Model** - Aircraft crashed on infill during brownout conditions. Aircraft destroyed in place. (Class A)

UTILITY
H-60
**L Model** - Bird strike and engine damage. (Class B)

**L Model** - Parked aircraft sustained main rotor system damage while moored and tied down when the airfield experienced reported wind gusts up to 57 knots. One MRB is reported to have separated and resulted in additional aircraft damage. (Class B)

**L Model** - Parked aircraft sustained damage to the main rotor system during high wind conditions on the airfield. Aircraft was moored/tied down at the time of the damage. (Class C)

**L Model** - Aircraft was struck by lightning while parked on the airfield. Two main rotor blades and a mast hub were damaged. (Class C)

**M Model** - Service member fell during offload onto a building from an H-60M aircraft. (Class A)

H-72
**A Model** - Engine #1 exceeded turbine output temperature (TOT) limits during aircraft start-up for maintenance test flight (MTF). (Class C)

UNMANNED

RQ-7
**BV2 Model** - Crew experienced loss of link while aircraft was at altitude and subsequently descended to ground impact upon fuel starvation. System was located. Flight termination system (FTS) chute had not been deployed and it was recovered with damage. (Class B)

**BV2 Model** - Warning logs in the ground control station (GCS) and reports from JRTC operations indicate that air vehicle (AV) experienced failure of the mission processor and simultaneous loss of GPS. Under these conditions, the AV would attempt to fly to the return home point and loiter; however, GPS outage would result in the aircraft dead-reckoning from inertial sensors and the AV would drift away from the set return home location. The AV has not been recovered so root cause cannot be determined at this time. (Class B)

**BV2 Model** - Aircraft sustained damage to the right wing during landing in reported strong-crosswind conditions. (Class C)

**BV2 Model** - Crew received Engine Fuse Fail indication during climb-out from launch. FTS was deployed and system was recovered. (Class C)
Imagine that you were the pilot in command of a four ship mission, flying in chalk three, and you start to notice a decrease in visibility, as well as scintillation (distortion) in your goggles, combined with blowing dust in the air due to wind. Do you say anything? Do you speak with your crew? Do you question the decrease in visibility within the flight or with the flight lead? Or, do you just wait until the visibility has reduced so much to the point that it is no longer within the briefed mission standards and risk assessment? Simultaneously, running thru your head, and probably the heads of the crew, is the million-dollar question, “Are we going to punch in and go inadvertent instrument meteorological conditions (IIMC)?”

Actually, at this point in time, you have probably already crossed into a degraded visual environment (DVE). If it was an actual IIMC situation, “Announcing IIMC” is most likely ingrained in your head as Task 1184, on the tip of your tongue, and very familiar to all crew members. However, what do you say or announce for a degraded visual environment? Do all crewmembers know what it means and have you rehearsed a DVE scenario like you have for IIMC? What is the first step in the DVE task? Better yet, what is DVE?

One definition, from the Degraded Visual Environment Product Manager, Aviation Systems Project Office defines DVE as, ‘an environment of reduced visibility, wherein situational awareness of the aircrew or control of the aircraft can be completely lost, or cannot be maintained as comprehensively as they are during flight operations within clear or undiminished visibility.’ If further categorized, DVE conditions into eleven different types: smoke, smog, clouds, rain, fog, snow, whiteout, night, flat light, sand, and brownout.

The UH-60 aircrew training module (ATM), dated 31 January 2019, defines DVE in a WARNING, in module 4, as ‘A degraded visual environment (DVE) is a circumstance where weather, obscurants or obstacles hinder the ability of the crew to determine where they are in relation to the surrounding terrain.’ Of all of the aircraft series, CH-47, AH-64, LUH-72, and the UH-60, the UH-60 series ATM is the only module with an actual definition. Additionally, the UH-60 series is the only ATM which specifically address DVE as a separate item in the crew briefing checklist (example) Table 4-1, under brief emergency actions. The CH-47 ATM does have an ‘F’ model Task 2046, titled Perform Degraded Visual Environment Approach Utilizing Velocity Stabilization Modes, and it does address the actions of both the pilot on the controls (P*) and the pilot not on the controls (P) if external visual reference is lost but, it does not define DVE as separate from IIMC in the crew briefing checklist. However, the AH-64 and the CH-47 series do have Snow/Sand/Dust Considerations related to Task 1184, Respond to Inadvertent Instrument Meteorological Conditions.

DVE and IIMC are not the same. And there is generally no training task or discussion proposed within any of the above referenced ATMs towards the topic of DVE. All PCs are responsible to ensure that the crew briefing is done and that the mission is performed according to the mission briefing, ATC instructions, regulations, and SOP requirements. But the DVE scenario, a degraded visual environment, is not generally a topic addressed, to the same degree as an IIMC scenario. Below are five considerations, ‘food-for-thought,’ which are an example addendum to the crew briefing checklist, specifically focused at a DVE scenario or situation:

1. “Announce DVE” based on conditions listed below (DVE trigger points):
   a. Lack of visible horizon – But still operating VMC
   b. Diminished visibility that impedes visual flight (< 1 mile/blowing sand, dust etc.) - Below briefed minimums
   c. Low cloud cover that reduces crew’s situational awareness of the aircraft’s environment – Below briefed minimums
   d. Low illumination/poor contrast that inhibits the detection of aircraft movement.
   e. Other (i.e. blowing snow, sand, etc.)

2. Establish a DVE scan. As outside references diminish more use of the instruments to maintain situational awareness is required (Attitude, heading, airspeed, and altitude checks increased.)

3. Divide duties and set control measures: P* establishes a DVE scan to assist their outside references, P backs up with instrument monitoring. Control measure assignment, such as no turns greater than half standard rate, no pitch excursions in excess of 5 degrees and parameters for rates of climb/descent, heading changes +/-, etc. These are thresholds for crew action. Crew chiefs maintain vigilance outside, monitor activities up front. Everyone cross-monitors crew actions and communicates. Increased situational awareness aimed at maintaining aircraft control and avoiding spatial disorientation.

4. Set a course of action. Deviate: exit DVE conditions, land, mission abort, or execute contingency plan based on IMC vs. IIMC (COA discussion to be had during the crew mission briefing IAW the AMB and the mission.)

5. Make a plan, have a plan, add the discussion to your crew mission briefing! – Consider making DVE a sterile cockpit event.

Back to the beginning and the four ship mission… you are chalk three of four, the weather is coming down, visibility is decreasing, there is zero illumination, blowing dust and sand in the air, but you are not yet IIMC, what do you say to your crew? Do you wait for actual IIMC, do you wait to hear chalk one call IIMC and then reference your IMC break-up card for your specific actions, do you even have a plan? As the PC of the aircraft (responsible for the safety of the crew, passengers, and yourself and for the crew mission briefing) is now the right time to have this discussion of how to react/respond in a degraded visual environment?