Owning the Aviation Edge NVGPID: A Simple Device to Train Crucial Skills

By CW5 Randall Gant

ARMY PHOTO BY SGT NICHOLAS MINECCI

Aircrews can encounter brown-out and white-out conditions anywhere in the world and need to train for this situation. Here a UH-60 helicopter with 1st Bn., 228th Avn. Regt., kicks up a cloud of dust as it lands at Base Camp Quetzal in Guatemala during Exercise New Horizons 2004.

I had the opportunity to attend this year's Aviation Senior Leaders Conference held at the Army Aviation Warfighting Center at Fort Rucker, Ala.

Among the many very informative briefings at the conference was COL George Bilafer's excellent presentation on accidents, trends and the *"Own the Edge"* philosophy from the Army's Combat Readiness Center (CRC).

The *"Own the Edge"* philosophy is basically to identify the edge of our capabilities and train to proficiently operate up to, but not over that edge.

Bilafer's briefing prompted me to pick the Night Vision Goggle Power Interrupt Device as a topic for this month's article.

Its use in training is a great example of the application of the *OTE* philosophy.

The Brown Out Threat

Brown-out landings have long been a significant event in the life of many aviators.

The brown-out environment is an extremely tough environment for our crews because a large volume of communication, coordination, and visual, instrument and symbology scanning has to occur in a very short time span.

This is an area that has proven to be "on the edge" of our aircraft and aircrew capabilities.

As some of you may remember, we lost several aircraft due to roll-overs while executing dust landings during operations Desert Storm and Desert Shield.

In the years since Desert Storm and between operations Enduring Freedom and Iraqi Freedom, we continued to suffer damage (over 40 cases) while encountering brown-out conditions during training at the National Training Center in California, and other various sites.

Since 1991, there have been over 230 cases of aircraft damage and/or injury due to unsuccessful take-offs or landings in a dust environment.

Although the majority of the incidents occur during landings, there have been a significant number of incidents occurring during take-offs as well.

For the more than 50 brown-out incidents with damage reported to date during the OEF and OIF time 80 percent were during landings and 20 percent during takeoffs.

The solution to the brown-out take-off and landing problem lies in equipment improvements, planning techniques and realistic training.

Army aviation is in the process of acquiring longer term material solutions to the problem by equipping the fleet with improved capabilities.

Our newer "glass cockpits" in the AH-64D, OH-58D and special operations aircraft already have some of these capabilities.

The fielding of the UH-60M and CH-47G will allow us a more deliberate approach to dust landings by use of velocity vector, acceleration cursor, instantaneous vertical speed indicators or IVSI, radar altimeter, and heading, all grouped together in a "Hover Page" configuration which allows the pilot to find all information necessary to land safely in a small scan area.

This technology may eventually enable the development of a separate aircrew training manual (ATM) task for landing without visual reference for all airframes, not just special operations aircraft.

Moving to the Edge

The risk of brown-out can also be mitigated by planning accordingly.

One could argue that the spike in brown-out accidents during the initial phases of combat deployments is directly attributable to the initial use of field sites, forward arming and refueling points, and desert laagers.

The shift to the use of hardstand locations for the majority of take-offs and landings have resulted in a subsequent reduction in accidents.

Choosing to locate landing zones, refuel and rearm

ARMY PHOTO BY PFC JAMES MATISE

Brown-outs can easily occur during take-offs and result in about 20 percent of the accidents with damage. Here a CH-47 Chinook lifts off during a March 2003 mission with a communications container in Iraq, creating brown-out conditions that could hamper other aircraft in the area.

points, laager and assembly areas at improved sites or in known suitable terrain avoids the risk altogether.

For some operations, the selection of improved locations is not always possible–and contingencies do arise–therefore aviators must always be prepared for the possibility of conducting operations in an environment where brown-out exists.

Perhaps the most effective way to reduce accidents during initial operations in immature theaters is the realistic training of take off and landing in brown-out conditions.

ARMY PHOTO BY SPC KIERAN MOORE

Use of hardstand locations for take-offs and landings help to reduce the possibility of a brown-out accident. A Soldier with the 159th Cbt. Avn. Bde. helps guides a UH-60 air ambulance to a hardstand landing near Mosul during their August 2003 deployment to Iraq.

The VMC or visual meteorological conditions approach task, as defined in our current ATMs, briefly discusses considerations and actions for loss of visual reference.

The ATM read slightly different, but in each description of TASK 1058 (Perform Visual Meteorological Conditions Approach) has the statement: "The pilot should perform a go-around if a successful landing is doubtful or if visual reference with the intended termination point is lost."

The ATM also states that the go-around should be initiated prior to going below obstacles or ETL (effective translational lift).

The UH-60 ATM additionally has TASK 1068 "Perform Go-Around" which states:

Night or NVG Considerations: A go-around should also be initiated if visual contact with the landing area is lost.
Snow, Sand and Dust Considerations: If during the approach, visual reference with the landing area or obstacles is lost, initiate a go-around or instrument takeoff (ITO) as required, immediately.

Be prepared to transition to instruments.

Once visual meteorological conditions are regained, continue with the go-around.

Most aviators will agree that there exists a point, close to the ground, where it is more risky to attempt a go-around than to continue the maneuver to the ground.

In fact, the ATM states that a go-around should be initiated prior to going below obstacles or ETL.

In dust or snow conditions, the brown-out will occur after both of these conditions have passed, in the last few feet of descent.

ARMY PHOTO BY KEITH A. MILKS

As brown-outs occur, aircrews need to rapidly adjust from outside cues to instruments and symbology scanning to safely complete a landing or initiate a go-around maneuver. Here a dust cloud forms as a CH-47 helicopter lands in Oruzgan Province, Afghanistan.

These final seconds in a brown-out condition require a contingency task that should be trained to individual and crew-level proficiency. The most critical part of landing in a dust environment is the final seconds of the maneuver.

The need to train aviators to continuously scan, and to train the ability to rapidly adjust from outside cues to instruments, is paramount to success in the brown-out landing contingency.

Our ATMs contain a task for another similar contingency–inadvertent instrument meteorological conditions (IMC)–which also requires a similar scan transition from visual cues to instruments for aircraft attitude control.

A method of replicating brown-out is needed similar to "foggles" or vision restriction visors that are used to train IMC maneuvers, and "the bag" that is used to train AH-64 pilots to fly using symbology.

Simulation is a valuable tool to aid in training aviators in the dust landing profile, and it is getting better all the time, but it cannot replace the feel, motion and characteristics of the real thing.

Using the NVGPID

The Night Vision Goggle Power Interrupt Device is a simple tool that allows individuals to gain proficiency and confidence in the task before ever truly performing the maneuver in the actual conditions.

– The device simply allows the instructor pilot to fail the pilots' night vision goggles at the appropriate point in the landing profile to replicate a brown-out condition, forcing the pilot to make use of the instruments and symbology to complete the maneuver.

Similarly, the danger of browning out during take-off exists, and pilots can train to use the system capability to minimize the risk associated with this task.

The use of the NVGPID is a valuable tool in training the practical application of these systems with respect to brown-out conditions.

Trainers can bridge the gap between simulation training, and training or operating in the actual conditions, by training with this device in conjunction with aircraft systems in a controlled environment, developing more proficient aviators and reducing the overall risk.

In terms of investment, this relatively inexpensive piece of equipment when properly used, can save thousands, if not millions of dollars in potential damage, not to mention increasing the safety of our crews and the precious cargo we carry by increasing our proficiency in this contingency task.

The NVGPID has other useful contingency-task training applications, such as inadvertent IMC and NVG failure training. This device helps trainers to simulate brown-out conditions and other contingencies in a realistic manner, allowing instructors to train the aviation force to "*own*" this piece of "*the edge*."

For more on the NVGPID technical data, parts list, manufacturer's information and Air Worthiness Release, please contact me at randall.gant@us.army.mil or (334) 255-2162.

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