

Complete writeoff of H-43B helicopter resulted when wind shifted to a quartering tail wind component and chopper hit hard, left gear first. Fortunately, crew escaped injury with the pilot's life being saved by crash helmet.



THE FLIGHT MANUAL governing operation of one type helicopter used by MATS states that *the effects of winds on takeoffs and landings are very important factors in the operation of the helicopter.* This might well be considered the understatement of the year. The MATS aircraft accident record has been blemished by the loss of two helicopters, and in both cases wind conditions — or the failure to assess them accurately — played predominant roles.

Fortunately, if not miraculously, neither accident resulted in any fatalities; injuries were only minor. However, the most easily learned lesson is that cheap one which benefits from someone else's experience.

'Tis An Ill

H-43B PRACTICE AUTOROTATION

At an east coast base an instructor pilot of the Local Base Rescue Unit was administering a Form 10C to upgrade another pilot to rescue crew commander. After all required maneuvers had been completed successfully, the student pilot accomplished two practice autorotation landings. The IP then took the controls to make two similar approaches for his own proficiency. On the second approach the helicopter contacted the ground with the left auxiliary (front) landing gear while in a skid to the right. The pilot felt the aircraft pitch forward and to the left, applied control action and engine power, and almost got airborne. The chopper settled and began to porpoise, then oscillate. Cyclic control became so violent that both pilots were unable to overcome its forces.

- The left auxiliary landing gear failed at the axle fork and the bear paw broke loose from the strut assembly.
- Both tail booms broke at the fuselage attachment points, and the fuselage came to rest on its left side, 180 degrees from its original heading.
- Both rotor systems disintegrated, the blades scattering and traveling distances up to 600 feet.
- All four occupants evacuated the aircraft successfully and the wreckage did not burn.

Why did this transition flight come to such an abrupt end when being conducted under VFR conditions by competent crew? The accident investigation determined the primary cause to be that the instructor pilot did not monitor wind direction and attempted the autorotation with a quartering tail wind which increased settling inertia. Unable to correct at the last moment, his aircraft struck the ground in a skid which failed the gear.

Before everyone slams the window on the IP's fingers, let's review the listed contributory causes. First was supervisory error in that *all helicopter Flight Manuals* used by MATS crews explicitly state that practice autorotations should be held to a minimum number necessary to insure proficiency, yet no guidance had been provided in defining the number a pilot is expected to execute. Further, the aircraft manufacturer has recognized a weakness in the gear which, had it been modified, probably would have resulted in less severe damage.

Water over the dam? Certainly. But failure to be sure of wind condition resulted in total loss of a 437,000 dollar aircraft, reduced the crash rescue capability of the installation, and needlessly endangered the lives of four men. Before we leave this one, it is interesting to note that the investigating flight surgeon stated the pilot, whose only injuries were abrasions from his seat belt, probably was saved from death by his crash helmet — which was destroyed by impact!

H-21 DEMOLISHED AT INADEQUATE LANDING PAD

South of the border, way south, an H-21 was on

the MATS flyer

Wind . . .

Emergency flight to resupply a USAF outpost deep in mountainous jungle. After delivering the supplies the aircraft was to search for a scientific party also in trouble in the jungle. Landing was to be made at a site which had been cleared on a knoll at the 2,300 foot level. Surrounding terrain was hilly, stumps from the cleared area had not been removed, no wind sock was available, and the cleared area was small. The aircraft commander, with 812 hours total flying time, evaluated the wind as best he could and commenced his approach.

When approximately 40 feet above the ground the pilot experienced a rapid change in aircraft attitude to a nose high condition. The pilot regained level flight, but could not stop the descent with power. The aircraft contacted the ground and the nose swung out over the mountain slope. Due to terrain, a go-around could not be attempted, and the pilot tried to hold his position and turn the nose back to the pad. It was that or tumble down the mountain. The chopper started to turn, then struck a stump on the lip of the hill and rolled over on its left side, resting on the edge of the pad.

- Collapse of the left main gear ruptured the firewall and main fuel cell, and the aircraft was destroyed by fire.

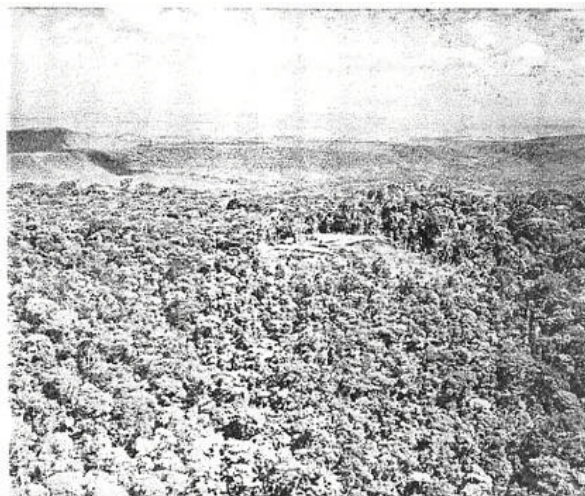
- All crew members exited with only minor injuries.

An accident investigation team went over the situation roughly and came up with the following:

The aircraft was caught either by a sudden shift in wind or by total loss of wind. Subsequent wind measurement — something not tried before the accident — determined that both direction and speed of wind change rapidly and constantly due to the terrain features. *Primary cause was found to be inadequacy of the landing pad surface, made hazardous by the presence of stumps and large stones.*

Contributing factors were weather conditions in that winds, constantly changing in velocity and direction, were not made available to the pilot; supervisory in that the pad was not adequately cleared, a wind sock was not installed, specific touchdown area was not marked, smoke grenades were not available to indicate wind, and a safety survey had not previously been made of the landing area.

Recommendations of the accident investigation board were that this particular landing pad be improved, that criteria be established for H-21 landing pads in this area, and that newly assigned pilots on this project complete a 90 day tour as copilot before being upgraded. It also was noted that ground personnel had not been indoctrinated in proper methods of assisting the chopper crew with the approach, and suggestion was made that ground parties at the sites be provided with material to assist helicopter landings. An IP later stated he hadn't realized how valuable a wind sock would be at this site until he had landed there himself several times after the



Aerial views of jungle landing pad which was clearly hazardous enough without being complicated by improperly cleared tree stumps and lack of wind sock. Crew escaped serious injury but H-21 was completely destroyed in accident.



accident. This information was too late to save one of the most outstanding flying safety records in MATS.

Both ARS and APCS operate helicopters in areas which are undeveloped and hazardous. Aircrews of these services rate high praise for their devotion to duty and overall safety records. The fact remains that MATS operates in the neighborhood of 150 helicopters — a respectable percentage of our total aircraft inventory. Two of these birds have been lost because their pilots were not aware of existing wind conditions. This being the case, every MATS helicopter pilot (fixed wing, too!) would be wise to further his knowledge of aircraft performance as affected by variable wind conditions.

