

CIVIL AVIATION AUTHORITY OF THE PHILIPPINES
Aircraft Accident Investigation and Inquiry Board
Aircraft Accident Report

BASIC INFORMATION

Aircraft Registration No. : RP-C231

Make / Model : Bell Helicopter / B 2006B3

Owner/Operator : National Grid Corporation of the Philippines
(NGCP)

Address of Owner : Manila Domestic Airport

Address of Operator : Manila Domestic Airport

Date/Time of Accident : March 30, 2010/ 1500H

Place of Accident : NGCP Sub-station, Daraga, Albay

Type of Operation : Landing from a hover

Phase of Operation : Hovering taxi to preposition for Take-off

Type of Accident : Aircraft entered into a rollover (flipped) to the right (after the left skid touched first a higher part of uneven ground (about a foot high) during descent from hover) and subsequently as right skid touched lower ground the helicopter flipped to the right with Main rotor blades hitting ground.

EXECUTIVE SUMMARY

The aircraft took-off from Manila Domestic airport at 0832H on March 30, 2010, picked up the two (2) power line inspectors at Gumaca, Quezon, and after 1+15 hours of flight, landed at Pili airport in Naga City (southeast of Manila) for refueling and lunch. The flight took-off from Pili airport at about 136H to conduct power lines inspection with two inspectors as passengers on board and landed uneventfully (heading north) at NGCP substation, Daraga, Albay at about 1400H to refuel in preparation for the return flight to point of origin.

At about 1500H on March 30, 2010 with the prevailing wind of 060-100 degrees at 15 knots, the aircraft was taxied (hovering) from its parked position to about 30 meters west of the open field to preposition for the pre take-off check (heading 110) to avail of the longer take-off corridor. While performing the descent for landing from a hover (about 4ft high) for the pre take-off check, the aircraft's left skid inadvertently touched down first on higher ground (about on foot high) and as the right skid subsequently touched down on lower ground, the aircraft entered into a rollover (flipped) to the right. While

the pilot applied left cyclic corrections, it failed to effectively control the rollover momentum to the right until the main rotor blades hit the ground.

The aircraft finally came to rest with its right fuselage on the ground and sustained substantial damage overall. The pilot was able to perform shut-down procedure. All the occupants (pilot and air mechanic who were at the right and left in the cockpit respectively together with the two passengers at back seat), were able to egress the aircraft, with the aid of local personnel, with only minor bruises/scratches. There was no post-crash fire and other collateral damage.

PROBABLE CAUSE

- **Pilot Error**

The pilot failed to properly clear the landing area, assumed it was a flat surface and not noticing the presence of a mound. Also, the descent from hover was quite fast to allow for effective corrective actions in case of inadvertent aircraft movements in this case due to the left skid touching ground first and the effect of strong left crosswinds.

- **Contributing Causes**

Pilot fatigue (Human Factor-Physiology)

Prior to the accident the pilot has flown almost three (3) hours as single pilot in a highly demanding flight mission that included power-lines inspection across mountainous terrain. The judgment and actions of the pilot was indicative of the effects of strong crosswinds and the fast descent for landing from a hover with late ineffective corrective actions on the controls.

Unprepared Helicopter Landing area (at NGCP Sub-station Daraga, Albay) - Environmental

- There are portions of the landing field that were not properly prepared (uneven ground surface) for frequent and safe helicopter operations.
- Aside from the 200ft high power lines at the northeast, there are high trees all around the landing field that makes helicopter entry and exit for a shallow to normal take-off and landing very limited for the pilot's safe option.

- **Underlying Cause**

Management factor-Policy – (Man-made environment)

The management policy, (procedure of scheduling flight missions) for single pilot category helicopters from and to the point of origin exceeds four (4) hours within

the day probably has adverse effect on the pilot's physiology, hence, the probable lapse in reflex actions/calculations.

SAFETY RECOMMENDATIONS

As a result of this investigation, the Aircraft Accident Investigation and Inquiry Board made the following safety recommendation:

- CAAP should conduct check ride proceeding on PIC with special focus on hovering maneuvers and landing on limited slopes, among others, before the PIC will be returned to fling status. **(FSIS, CAAP)**
- The company (NGCP), should initiate (may seek CAAP assistance) the conduct of safety Survey/inspection on helicopter landing zone of the Sub-station in Daraga, Albay and other NGCP designated heliports to enhance flight safety conditions of such heliports for helicopter entry, exit and ground maneuvers. Level the grounds (if without cemented helipads) and trim-down trees along appropriate entry and exit corridors. Likewise, it would be best if a standard wind cone can be installed. **(NGCP)**
- The management policy/procedure of scheduling flight missions for single pilot category helicopters that exceeds four (4) hours within the day without sufficient crew rest should be reassessed from the flight safety point of view with special consideration of preventing psychological/physiological stresses to the aircrew. This is to preserve hi-value equipment and human resource (aircrew and including passenger executives) from accidents, and become accomplishment multiplier. Prudence and safety considerations should be exercised especially on psychologically/physiologically demanding type of flight missions. **(NGCP)**
- On-site accident investigators (as in this incident) should aspire to gather the essential factual information related to the accident and come up immediately with a preliminary report based on such facts/data that will support a comprehensive and timely Final Accident Investigation Report as effective bases for accident prevention. To attain this, the forward aircraft accident investigators (go team) should be well trained, organized and armed with appropriate tools and checklist needed to gather as much factual information in a short period of time before evidences are lost due to man-made and natural factors. They should have an established communication to the rear area in CAAP to receive technical guidance and to relay in advance factual information and recommendation that requires higher level decision-making especially on national interest/security issues and for grounding and inspecting the same series of aircraft. **(CAAP GO-TEAM ON-SITE AIRCRAFT ACCIDENT INVESTIGATORS).**
- To facilitate early submission of the Final Aircraft Accident Report for every accident investigation, the designated accident investigators should be required to submit the preliminary report to the AAI Board including substantial documentary/factual facts within the established period (ex within 7 days upon return from the site for complex accidents) so that there will be early

identification of critical missing factual information that should be worked on by the Team.

- The acceptable examples of reasonable causes of delay in submission of factual information are Test and Research on aircraft parts and systems, Transcript of FDR sent abroad, etc with no in-country capability. **(CAAP OFFICERS IN CHARGE OF AIRCRAFT AND AIRCREW RECORDS AND THE INVESTIGATORS)**