AIRBORNE PUBLIC SAFETY ASSOCIATION

The Safety Wire

May 2018

Human Horsepower is no different than engine horsepower. For any activity, a certain amount of horsepower in required. The human horsepower available is determined by a variety of factors that vary from day to day. Some of these factors are:

- **Physical:** the limitations of the five senses.
- **Physiological:** health, illness, fatigue, medication and drugs, nutrition.
- **Psychological:** mental and emotional state, stress, personality traits.
- **Social:** peer pressure, ego.
- **Hardware:** human interface with hardware, controls or displays.
- **Task:** workload, training, ambiguity.
- **Environmental:** noise, temperature, vibration, motion.

An important point to note about this list is that none of these factors require someone to be in an aircraft. That means they apply to the horsepower needed to perform aircraft maintenance, preflight planning or unmanned aircraft operations.

A second common aspect is that all of these factors can vary greatly from day to day, or even minute to minute. The nature of these factors is such that as their negative

influence on our performance grows, our awareness of that impact decreases. In other words, when it is hurting us the most, we are aware of it the least.

Degraded human horsepower leads to many of the common accidents we are all too familiar with. Spatial disorientation, loss of control, CFIT, and most other incidents categorized under ‘human factors accidents’ are a result of exceeding our personal human horsepower, even if just for a moment.

We can determine the horsepower available by using a performance chart similar to our aircraft performance charts.

That chart is also called a Flight Risk Assessment Tool, or FRAT. It should cover all required sources of human power for the task at hand, meaning everyone involved. That could be the whole flight crew, a remote pilot and visual observer, two maintenance technicians, etc.

Intentions to just, “get the job done,” do not change the amount of performance required by the task or available from the people involved. Just because we completed a task safely before, does not necessarily mean we can do it again today. The factors influencing performance change constantly. The margin for error is too small to leave performance planning up to assumption. We must use the tools available to us to KNOW what our potential capabilities are today instead of guessing.

GIVE ME SIX HOURS TO CHOP DOWN A TREE,
AND I WILL SPEND THE FIRST FOUR SHARPENING THE AXE.

~ ABRAHAM LINCOLN

PRACTICAL SAFETY MANAGEMENT

Safety officers, you are coming up on the six-month mark for 2018 and it is a good time to evaluate what has happened in the first half of the year. In June, I recommend sending a short SMS semi-annual report to the unit summarizing at least the following items:

1. The status of the Safety Objectives that were set at the beginning of the year. Hopefully your unit set a few objectives for 2018. How are you doing? Any closer to meeting those objectives? What needs to be done after June to meet them?
2. The performance of any active risk mitigations. Your SMS should have a number of hazards that have been identified and targeted for risk reduction with some kind of mitigation (training, policy, procedure, equipment purchase, etc.). Is the mitigation in place? How is it working (has the likelihood/probability and/or severity of the hazard's risk assessment been reduced)?
3. New reported hazards, incidents or accidents and any plans from you or the safety committee.
4. Result of any inspections or audits conducted so far in 2018.

This is not an all-inclusive list and you may want to add additional information. I would caution against going beyond 1-2 pages. Unfortunately, few people will read past that point no matter how important the information is.

If you are unfamiliar with any of these items or how to include them in a report, please email or call me.

RESOURCES

Databases you can use to research accident history for your type of aircraft or operation:

Aviation Safety Network (links to databases around the world)
https://aviation-safety.net/investigation/aaibs.php

Australian Transport Safety Bureau:
http://atsb.gov.au/publications/safety-investigation-reports/?mode=Aviation

Canadian Transport Safety Bureau:
http://www.tsb.gc.ca/eng/rapports-reports/aviation/index.asp

National Transportation Safety Board (USA):
http://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx

Air Accidents Investigation Branch (UK):
https://www.gov.uk/aaib-reports

APSA Online Meetings

The schedule for upcoming APSA online meetings is as follows.
If you would like to join, send an email to: Safety@PublicSafetyAviation.org

UAS:
Wednesday, June 13, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

Safety Officers:
Friday, June 15, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

Maintenance:
Friday, June 29, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

Can the magic of flight ever be carried by words?

I think not.

~ Michael Parfit
Smithsonian magazine

Reality Check...

Note: *The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in red where appropriate. The goal of publishing these reports is to learn from these tragic events and not to pass judgment on the persons involved.*

Aircraft: **Robinson R44**
Injuries: **None**
ATSB#: **AO-2017-110**

http://www.atsb.gov.au/publications/investigation_reports/2017/aair/ao-2017-110/

When about 40 minutes into the flight, the pilot heard the engine sound decrease and noted that the helicopter was unable to maintain the cruise altitude of 1,000 ft. The pilot checked the manifold pressure gauge and noted it was at 22 inches Hg, however, it was set at 24.5 inches Hg when leaving the reef between 500 and 1,000 ft. In response to the reduction in power, the pilot raised the collective to increase power and maintain altitude, but the manifold pressure did not change. The pilot reported that the indicated main rotor revolutions per minute (RPM) decreased and the low rotor RPM horn activated. The engine RPM indication was also oscillating throughout the range.

In response to the low RPM horn, the pilot increased throttle and again raised the collective. The rotor RPM initially spiked and then decreased with associated re-activation of the low rotor RPM horn. The engine RPM gauge continued to oscillate and the helicopter could not maintain altitude. The pilot noticed the engine noise was changing with the fluctuations in the indications.

Consequently, when at 700 ft, the pilot elected to conduct an autorotation onto the water. The pilot activated the emergency flotation system and broadcast a MAYDAY call on the common traffic advisory frequency. The engine RPM gauge continued to provide erratic readings and the low engine sound continued during the landing. About 30 seconds later, the helicopter landed on the water with the emergency floats deployed. The pilot and passengers remained in the helicopter until the crew of a local vessel rescued them about 1 hour later. All occupants were uninjured. While there appeared to be no observable damage sustained to the helicopter, it later sank and was unable to be recovered.

Without the recovery of the helicopter, the reasons for the partial engine power loss could not be conclusively determined. However, the indications were consistent with a magneto/governor failure, on which Robinson Helicopter Company has published a revised service letter *Governor troubleshooting / magneto maintenance* describing how the failure occurs and the compliance procedure.

Aircraft: **Cessna 206**
Injuries: **None**
ATSB#: **AO-2018-013**

http://www.atsb.gov.au/publications/investigation_reports/2018/aair/ao-2018-013/

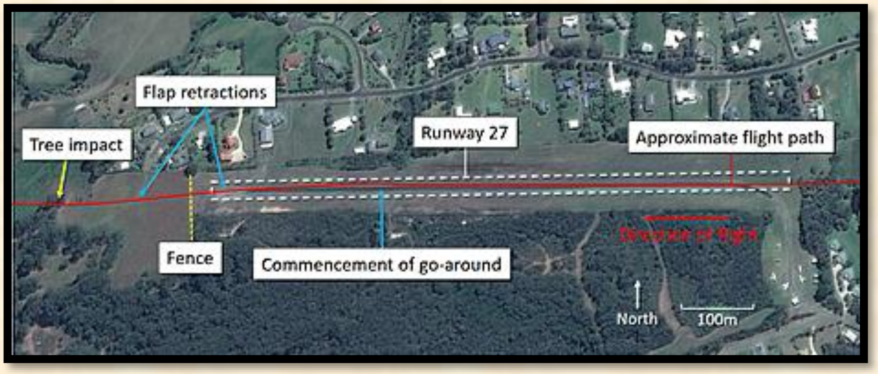
The pilot observed the windsock indicating the wind direction as varying between a south-westerly and a south-easterly and elected to use runway 27 for landing, as this provided an uphill slope. The pilot assessed the wind strength to be about 5–10 kt with gusts up to 15 kt and anticipated a left crosswind during the landing. The pilot conducted a normal approach and positioned the aircraft on the final approach leg at a speed of about 70 kt, with full flap selected.

The aircraft touched down in the normal touch down zone and bounced. The aircraft floated, and the pilot used a slight increase in power to stabilize the aircraft to complete the landing. The aircraft continued to float along the runway and drifted right, over the adjacent grass fly-over area, and a passenger reported that the aircraft bounced a second time. With about one quarter of the runway remaining, the aircraft touched down on the grass and again bounced.

Assessing that insufficient runway length remained to complete the landing, the pilot elected to conduct a go-around. The pilot applied full power and recalled the aircraft nose pitched up to a high attitude. The pilot observed that the aircraft did not climb away from the rising ground as expected, and as the aircraft passed the end of the runway at low height, he retracted the flaps one stage to 20 degrees in an attempt to improve climb performance. The aircraft did not climb sufficiently to clear the airfield boundary fence and the left undercarriage leg struck the fence, sustaining minor damage, including fracturing the brake line.

After striking the fence, the aircraft continued flying. The upslope on the hill reduced and then the ground started to descend into a valley. The pilot advised that the climb performance degraded and he elected to retract the flaps a further stage to 10 degrees. The flap retraction resulted in a significant loss of lift and the aircraft descended. The pilot identified trees in front of the aircraft and banked the aircraft right to turn away from a larger group of trees. While turning, the right wingtip struck the canopy of a single tree positioned about 225 m beyond the end of runway 27.

After impacting the tree, the aircraft accelerated over the descending terrain and then began to climb. The pilot then completed a left circuit for runway 27 and landed without further incident.



Safety analysis

After the initial bounce and the aircraft's right-drift off the sealed runway, the pilot did not commence a go-around. The aircraft continued to float over the grass fly-over area until, with about a quarter of the runway remaining, the aircraft again bounced before the pilot elected to go-around.

After commencing the go-around, the pilot did not immediately follow the go-around procedure to retract the flaps to the 20-degree position as directed by the aeroplane flight manual. It is likely this, combined with the upslope of the runway and the heavy load of the aircraft, prevented the aircraft from climbing sufficiently to clear the airfield boundary fence.

After the aircraft struck the fence, the pilot did not follow the correct go-around procedure and raised the flaps to 10 degrees before allowing the aircraft speed to increase and ensuring all obstacles had been cleared. The flap retraction resulted in a loss of lift which led to the aircraft descending and impacting the canopy of a tree 225 m beyond the airfield boundary fence.

Aircraft: **Airbus H135 T1**

Injuries: **2 Fatal**
ASTB#: **AO-2015-131**

http://www.atsb.gov.au/publications/investigation_reports/2015/aair/ao-2015-131/

I highly recommend looking at the report on the website to see the additional photos of the weather taken by the occupants before the crash.

On 7 November 2015, the owner-pilot of an EC135 T1, departed Breeza, New South Wales, on a private flight. This was a private flight under the visual flight rules (VFR) for the pilot and his wife to attend an event. The pilot's wife was also a qualified helicopter pilot. About 40 km to the south-west the pilot diverted towards the coast, probably after encountering adverse weather conditions. Witnesses in the Laguna area observed the helicopter overfly in the direction of higher terrain. The helicopter was then observed to return and land in a cleared area in the valley.

After 40 minutes on the ground, the pilot departed to the east towards rising terrain in marginal weather conditions. About seven minutes later and approximately 9 km east of the interim landing site, the helicopter collided with terrain. A search was initiated about 36 hours later. The helicopter wreckage was found at about 1840 on 9 November 2015. The pilot and two passengers were fatally injured.

In 1991, the pilot was issued a Night VFR Helicopter rating and in 1992, the pilot completed low flying training. Between 2005 and 2008, the pilot was approved by the Civil Aviation Safety Authority (CASA) to give endorsement or conversion training in EC-135 helicopters. The pilot did not hold an instrument rating and there was no indication that he had sought to obtain one. This limited the pilot to visual flight operations. The pilot's logbook recorded a total aeronautical experience of 2,654 hours, which included 1,256 hours on the EC135 helicopter type. This included a total of 5 hours of simulator experience, 7.5 hours instrument flight time, and 8.1 hours in command at night. No night experience was logged since September 2010.

A search of the ATSB database yielded notifications regarding two significant occurrences involving the pilot and VH-GKK: a weather-related event in December 2004 and a wire strike in November 2012. This earlier event is described in a book published by the pilot. As the book relates, the pilot became caught in cloud at low level over water then climbed to a safe altitude to continue in cloud with reference to a GPS moving map. The pilot advised air traffic services of the situation and sought information about the extent of the weather. Approaching land displayed on the moving map, the pilot slowed down and gradually descended until the coastline became visible. According to the book, to cope with this type of situation the pilot was night-rated and regularly practiced flying on instruments, and the helicopter was equipped with an autopilot and instrumentation.