AVIATION FEEDBACK

CHIRP

An independent and confidential reporting system for the Aviation industry

DRONES/UAS

Edition DUASFB 14
September 2025

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The perils of unintentional BVLOS

Contents

Rupert Dent
Drone/UAS Programme Manager

Welcome to Drone FEEDBACK Edition 14.

Another edition of Feedback and another diverse selection of reports, with Human Factors involvement. Whether it is reports from the modelling community that cover the issue of weather causing pilots to lose sight of their aircraft, with the flight then becoming unintentionally Beyond Visual Line Of Sight (BVLOS), momentary distraction of an adult overseeing a young pilot's flight, which then collided with a child sitting on their father's shoulders attending an event, or what looks like triggering of a Return To Home that then climbed into overhead powerlines, there is something for the professional or the amateur to learn from.

Are there any emerging trends? Aside from the recurring issue of pilots getting behind the curve on what automation is programmed to do next, this

month it seems to be that if your flight is non-compliant with the regulations, you are more likely to encounter an occurrence involving Human Factors. Two of this issue's reports have an element of a potentially non-compliant flight turning into an accident.

Read on for the details!

Rupert Dent

Drone / UAS Programme Manager

I Learned About Human Factors From That (ILAHFFT)

Comments on previous editions and reports

We always welcome readers' comments on what we produce. Whilst we try and keep an eye on social media sites, it is not always possible to keep track of the multitude of Drone-related sites and what is being discussed. Do therefore feel you can email us directly with your Human Factors or Just Culture related comments on the reports we write about at mail@chirp.co.uk

A reader contacted us to tell us that he was going to do a blog about HF. We fully supported his initiative and have added a link to what he posted. Many thanks for spreading the word Simon Adams from Heli Tele! The link is here: Insights and Updates on Drone Technology | Heli-Tele Blog

Incidently, we look forward to seeing all those that can make it to this year's 'Drone Industry Flyin' on the 28th September. Drone Flyin – Where Industry Meet Pilots, and Technologies

Report to CHIRP!

Our reporting process is simple and quick using either our website portal or our App (scan the appropriate QR code shown below or search for 'CHIRP Aviation' – avoiding the birdsong apps that come up!). In our reporting portal you'll be presented with a series of fields to complete. Fill in as much as you feel is relevant – not every field is mandatory, but the more information you can give us the better. Although you'll need to enter your email address to get access to the portal so that we can screen out bots etc, none of your details are shared outside CHIRP, and we have our own independent secure database and IT systems to ensure confidentiality. That way you can help to improve safety by sharing important lessons without worrying about possible consequences. Anything that could identify a reporter is removed from our reports before progressing or publishing them, and we liaise with the reporter in every step of the process. Each report plays its part in raising awareness of important safety issues and wider trends and provides lessons for all to learn from. Report-by-report we can make aviation safer – as our strapline says,

"you report it, we help sort it."

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Pooleys have kindly agreed to support CHIRP's fund-raising activities by allocating us a discount code on their website shop. Enter the code 'Chirp' (case sensitive) at the appropriate point at the payment stage to get 5% discount and generate some commission for CHIRP. Sadly, this doesn't apply to the purchase of Bose headsets, but everything else qualifies! If you do use Pooleys for your purchases, or know other people who do, please do share the code. The more the code is circulated, the more it is used and the greater the commission generated to help CHIRP build its resources to do more.

POOLEY'S
FLIGHT EQUIPMENT

Acronyms Table

AAIB	Air Accidents Investigation Branch
AGL	Above Ground Level
BVLOS	Beyond Visual Line of Sight
CPU	Central Processing Unit
CSV	Comma Separated Value
HF	Human Factors
IDn	Identification Number
RTH	Return to Home
SOP	Standard Operating Procedure
UAS	Uncrewed Aircraft System
VLOS	Visual Line of Sight

Reports

Report No1 - DUAS XX26 – 3x BMFA reports of Unintentional BVLOS (Beyond Visual Line of Sight) followed by loss of the Drone

Initial Report

Report A

Please select all appropriate options from below.

The occurrence involved a high risk of injury to people

The occurrence involved operating less than 50m from uninvolved people

The unmanned aircraft flew beyond visual line of sight and was recovered

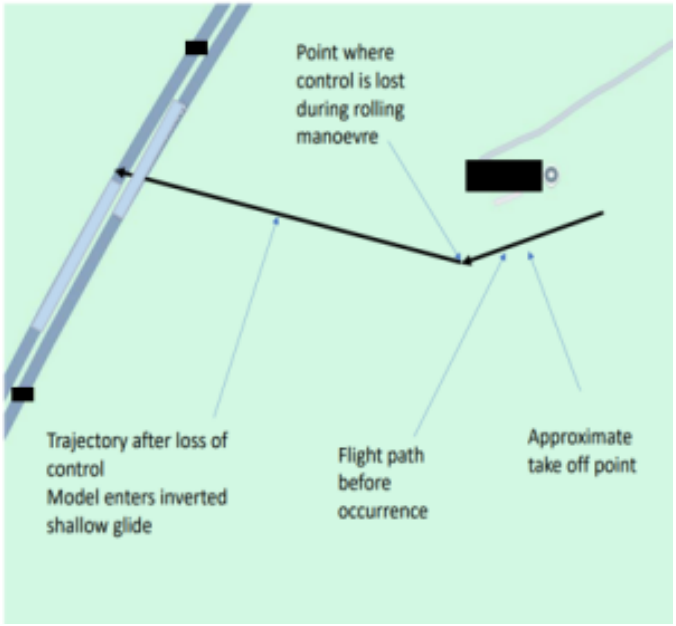
Give full details of the occurrence stating fully how it happened:

The model in question is a Freewing MIG29 EDF foam model with twin 80mm fans. It flies on 2 x 6S 6000mAh lipos. I have flown it many times and had already flown it once on the day of the occurrence with no issues. I had been flying the model for about 1/2 a normal flight so about 2 minutes. I flew along the XXX field at about 50 feet and pulled up over the field at the western end with the intension of turning left by rolling to the right, followed by a turn to the left. As I rolled the model stopped inverted, motors cut, and it entered a shallow glide slightly northwest in the direction of the motorway. The glide was stable, and I had no further control.

The model disappeared over the tree line. After an extensive search in the field to the northwest of the XXX field, I took the decision to push through the bushes which line the top of the motorway embankment and when standing in the open I could see the model still inverted and under the Armco barrier on the opposite side of the motorway. There were no stopped cars or persons near the model. After returning to the flying field, I took the car around to the other side of the motorway and eventually recovered the model. As these high power EDF models do not have a very long flight time of around 3-4 minutes and this varies greatly depending on the use of throttle, I always fit a Spektrum energy sensor which indicates verbally how much energy in mAh I have used every 10 seconds of flight. Unfortunately, this sensor was supplied with two EC3 connectors and my lipos have EC5 connectors so I replace the two plugs and leads. I do this by removing the existing wires and connectors and using a commercially purchased lead assembly with 200mm of lead with a female EC5 on one end and a male EC5 on the other. I cut the black lead in the centre and solder in the current sensor. The female EC5 is then plugged into the ESC and the male into the Lipo connector. On recovery of the model i found that the positive wire in the male EC5 connector which forms part of the purchased lead had come loose due to a dry or poor solder joint. This caused the supply to the BEC to fail shutting down the radio and both fans.

Estimated distance from flight area (point of launch) to occurrence location

400m



Report B

Please select all appropriate options from below.

The unmanned aircraft flew beyond visual line of sight and was recovered

Give full details of the occurrence stating fully how it happened:

Model Aircraft incident XXXX. Time 11.40am approx. Eight flight had previously been flown, and at take-off the met conditions were fine for flying. The model flew a circuit however; a bank of sea fog rapidly blew across the flying site. Pilot endeavoured to carry out a quick return and land as soon as possible but visual contact was lost. Accordingly, the pilot cut the power and made a note of the direction in which the model was last seen. The

model was subsequently found in an empty horse paddock. There was no injury or damage to property.

Report C
Please select all appropriate options from below.
The unmanned aircraft flew beyond visual line of sight and was not found
Give full details of the occurrence stating fully how it happened:
1.5m foam glider (e-flite Conscendo) entered updraft/thermal with S/W wind Approx 10-15mph) quickly became beyond line off site with control single loss.
Estimated distance from flight area (point of launch) to occurrence location
1.5 kilometre

CHIRP Comment

The Board had the following comments:

- Three reports with a common outcome between them: unintentional BVLOS
- From the first report it seems that there was one part that had been changed after purchase and this then required soldering. The aircraft had been flown several times and indeed once before on the day of the occurrence. Whilst the reporter doesn't mention that a pre-flight check was or was not performed, it would seem advisable that regular checking the one part that had been changed would be advisable. This might have caught the cracked soldering.
- The second point to mention is that there must have been an element of luck involved in the aircraft not being run over by cars on the road or distracting a driver as it crossed over at what must have been a low altitude.
- The subsequent two reports have been the result of encountering weather that was difficult to predict in advance using commonly available Apps.
- BMFA continues to emphasise the **S**un, **W**ind, **E**ventualities, **E**mergencies, **T**ransmitter control and **S**ite rules "SWEETS" protocols in its Members Handbook, to deal with these eventualities. A link to the BMFA website giving details of what the acronym SWEETS is all about, can be found here: https://handbook.bmfa.uk/13-general-model-safety
- It is also worth mentioning that although helpful, weather Apps can be inaccurate if they are not based on a local Met Station. Some Operators therefore look at several weather Apps and then try and interpolate what they think the weather will be at a particular location.
- The Board would also recommend adapting a methodology for model aircraft and Drones called the Radial Scan. It is a systematic way to monitor aircraft instruments, emphasizing the attitude indicator (AI) as the central reference point. The scan involves focusing on the AI, then quickly checking other primary instruments (like airspeed, altitude, heading) and returning to the AI to make necessary adjustments. This pattern is repeated, creating a radial or spoke like pattern of visual checks. It could be adopted for flying aircraft models or Drones and involve switching from looking at the controller and then back at the aircraft, improving the pilot's ability to maintain Visual Line of Sight of the aircraft.

Report No2 - DUAS XX27 – Nottingham Carnival

Initial Report

Note: this originated from AAIB report no 30300

Type of report: Accident

Aircraft Type and Registration: DJI Ultralight Mini 2

No & Type of Engines: 4 electric motors

Year of Manufacture: Unknown (Serial no: Unknown)

Date & Time (UTC): 18 August 2024 at 1830 hrs

Location: Victoria Embankment, Nottinghamshire

Type of Flight: Private (UAS)

Persons on Board: Crew – None Passengers – None

Injuries: Crew – N/A Passengers – N/A Other – 1

Nature of Damage: Destroyed

Commander's Licence: Unknown

Commander's Age: Unknown years

Commander's Flying Experience: Unknown hours (of which Unknown were on type)

Last 90 days – Unknown hours

Last 28 days – Unknown hours

Information Source: Enquiries made by the AAIB

Synopsis: The UAS was being flown near the Nottingham carnival and during the flight the UAS was commanded to land by a minor who accompanied the remote pilot. At the time the remote pilot was distracted by talking to another person and as the UAS approached the ground it struck an uninvolved minor who was sitting atop someone's shoulders. The uninvolved minor suffered a cut to the forehead. The police attended the scene and the UAS was confiscated. The UAS did not display an

Operator ID and was being flown over crowds of uninvolved people.

Despite AAIB enquiries it was not possible to understand what, if any, risk assessment had been carried out by the remote pilot, the purpose of the flight or why the UAS was being flown over crowds of uninvolved people.

CHIRP Comment

The Board had the following comments:

- Firstly, it was noted that the text of the report left as many questions as it answered. However, it has been included in Edition14, not because it has an element of non-compliant flying that is part of it, but because it shows the dangers of distraction and a couple of other Human Factor aspects of flying a Drone.
- If you are providing oversight of how a flight is undertaken, particularly if it is a minor operating the controls, beware of being distracted, a great deal can happen in a very short space of time whilst for instance talking to someone who is not involved in the flight!
- If you are providing oversight, make sure you are aware of the regulations. Providing oversight implies an element of guidance, but being ignorant of the regulations means the guidance given may not be correct. It is worth refreshing your knowledge of the Drone and Model Aircraft Code here: https://register-drones.caa.co.uk
- The Board also pointed out that when handing over control of an aircraft to a co-pilot, the normal sequence is a) there should be a briefing between pilots, b) actual handover then takes place with a verbal confirmation and c) a short period of monitoring takes place by the pilot that was flying. None of this appears to have happened.
- When flying near an assembly of people, it is imperative to choose a safe take-off and landing area away from the crowd. The fact that the minor landed the Drone in the middle of the crowd seems to indicate they had not taken off from a safe place and had not had any sort of briefing at all.
- The DJI Mini 2 controller is a mobile telephone with an App. It is possible that the individual providing the oversight did not hear any of the automated landing sounds triggered by the minor, because the volume was not turned up.

Report No3 - DUAS 0034 – DJI Mavic 4 screen freeze

Initial Report

When flying drones, it is not only the aircraft that has limitations; the controller itself can become overloaded if too many functions are run at the same time. This report highlights the importance of understanding controller capacity when combining multiple functions such as waypoint flying and screen recording.

Report Text

A DJI Mavic 4 Pro was being flown using the 'Waypoint Mission' functionality, with a mission comprising 87 waypoints.

Midway through the flight the pilot switched to the 'Map View' screen to check progress. At this point the DJI Fly App froze, and the drone paused in flight at its current position.

Attempts to switch modes on the controller or return to the camera view were unsuccessful. The pilot then initiated a manual 'Return to Home' (RTH) using the controller button. The aircraft responded, and control was regained during the RTH operation. However, the Fly App remained frozen until the controller was powered down after landing.

Subsequent investigation suggested a potential issue with the DJI Fly App (running on the dedicated RC2 controller). If a large number of waypoints are used and the view is switched to 'Map View', the system may freeze.

The reporter noted that on re-running the same waypoint file the following day, the mission completed without incident. One possible contributing factor was that screen recording had been enabled during the problem flight; this feature was not used during the successful rerun. The reporter's assessment was that running both screen recording and a large waypoint mission may have exceeded the processing capacity of the RC2 controller. By comparison, they regularly use both features in parallel on enterprise drones such as the M30T/M300 without issue, but those controllers are significantly more capable.

Reporter's Observations

- No on-screen notice was displayed about a waypoint limit.
- No "Resume" button appeared when the app froze.
- The mission remained wholly within Class G airspace.
- Obstacle avoidance was set to default (on).
- The reseller has not yet been contacted.
- The reporter's experience suggests the issue was not the number of waypoints per se, but the RC2 being overloaded by simultaneous tasks (screen recording, waypoint mission management, C2 data/video feed).

CHIRP Comment

The Advisory Board made the following observations:

- If there is a maximum number of waypoints, or a CPU processing limit when running multiple tasks, this should be

clearly stated in the User Manual. On-screen alerts should also warn the pilot if limits are exceeded.
- In the absence of such guidance, pilots are left to discover operational limits by trial and error.
- Human Factors considerations apply as much to system design and documentation as to pilot behaviour; in this case, the lack of clear limits has created unnecessary risk.
- The Mavic 4 Pro with the Fly App may be more optimised for filming tasks than for complex waypoint mapping.

CHIRP will contact DJI to highlight this report and the concerns raised.

Report No4 - DUAS XX29 – Fatigue and Stress (A NASA Report)

Initial Report

ACN: 2121377

We were flying an inspection of a section of power line. From the starting point I flew in reverse motion to follow the line to the end point. Near the midpoint of flight, the sensor requested a yaw motion. I finished the mission, with 32% left on my batteries. I started home, not realizing my perception of the drone orientation was not correct. When I moved to come home, the motion was in an unexpected direction, and I lost sight of the craft. Knowing I was at the max of 400 ft AGL and well above any obstacles I used the distance from home in an attempt to return home. The batteries hit 20% which was our minimum setting. I was unaware the craft started descending when the batteries reached the minimum setpoint. I hit the return home button, the craft continued to descend into a tree approximately 1700 ft from my launch point.

CHIRP Comment

The Board had the following comments:

- As part of the Operator training and their pre-flight checks, the pilot should have seen that the settings had been configured such that the aircraft would land when the remaining battery reached 20%. The 20% battery setting should have been set out in the Operations Manual if it was a company Standard Operating Practice.
- Using the distance from home figure on the controller to help determine orientation manually was an excellent back up plan for when the pilot lost sight of the Drone.
- The report doesn't note the Drone type, but 1,700 ft is a fair distance away from the home point and this would have made seeing and having any sort of perspective on a small Drone, difficult. The pilot lost situational awareness. In the UK the rule is that a pilot should always be able to see the orientation of their Drone. In the USA things may be different!
- Part of understanding Human Factors includes being able to recognise the limitations of one's own capabilities. If you do not have a good feel for what your own personal limitations are, it is going to be difficult to prevent yourself from exceeding your own limitations. It looks to us as if there is an element of the pilot not fully appreciating their own limitations, that has come into play during this occurrence.
- Although it isn't specified, the report details imply that the Operator is undertaking commercial work. As such they will almost certainly have a Safety Management System in place. This occurrence will no doubt get recorded in the company's SMS and will lead to an analysis of the root cause of what happened. This will also provide an opportunity to work through an exercise on how to do things better in the future.
- A two-crew operation, might have made a big difference in this situation.

Report No5 - DUAS XX28 – Highways England Report

Initial Report

Whilst some of you may have already received the report below, originally circulated by Highways England, we thought it merited broader circulation, so we have included it in Feedback 14. The report was also included in the **AAIB Record -only UAS Investigations reviewed October – November 2024**. We have reproduced the text of the AAIB report below and this is then followed by the Highways England notice that it sent out, that deals with the occurrence.

26 Nov 2024	DJI Mavic 3 Enterprise	Elmbridge, Surrey	The UA was engaged on an automated mapping flight when it began to behave erratically. The UA did not respond to the remote pilot's return home command, and it was guided over a field where it came down.

CHIRP Comment

The Board had the following comments

- For those that are interested, it is worthwhile clicking on the link below to look at the CSV files and Flight Log that Highways England circulated and which is pasted below.
- Focussing on the HF aspects of this flight, maintaining VLOS is critical to flight safety. The detailed flight logs seem to suggest that the aircraft hit something in the air after the Return to Home button had been pressed. The further away the Drone was from the pilot the more difficult it would have been to determine whether it was going to clear the cable in between the pylons, as the Drone climbed to its RTH altitude.

Perspective is increasingly difficult to judge, the further away an object is.

- If you are planning a mapping mission that goes anywhere near powerlines, one of the pre-flight checks that should be undertaken is to measure the exact height of the powerlines above your take-off point and ensure your flight stays well clear of them. It is worth noting that if the ground where the pylons have been installed is flat, the powerlines themselves will still tend to dip in the middle!
- With regulatory approvals for flights within an Atypical Air Environment beginning, this occurrence highlights the need to carefully assess the ground risk associated with the infrastructure that is being overflown.
- The potential for loose wires swinging in the wind at altitude, was a particular example highlighted by an operationally experienced Board member.

DJI Flight Log Viewer – PhantomHelp.com


national highways

INFORMATION

Safety Alert

M25 Junction 10 – Drone Incident

05 June 2025

Background information

On 26 November 2024 a DJI Mavic 3 Enterprise drone suffered a mid-air incident during a mapping flight, resulting in an uncontrolled descent and crash landing. Whilst over the A3 carriageway, the Remote Pilot received an 'Obstacle Detected' warning on the drone's controller, at which point the drone became largely unresponsive. With what control remained, the Remote Pilot was able to steer the drone towards a safer location, resulting in a hard landing in a nearby field.

The National Highways Drones Governance Hub (DGH) were not notified as per GG 954 – Drones Operations & GG 128 – Requirements for Reporting Incidents, nor were the Civil Aviation Authority (CAA) / Air Accident Investigation Branch (AAIB) in accordance with CAP 722 UAS Operations in UK Airspace – the incident only came to light in January 2025.

Additionally, the drone was undertaking mapping activities, an activity type outside of the project's accepted plan of work. The Operator was suspended from operating on behalf of National Highways on 8 January 2025, pending a full investigation.

The DGH, working alongside the UAS Operator and the project's Activity Manager, oversaw an investigation.

The 3 possible causes included:

- Bird strike
- Cable strike
- Drone hardware failure

However, due to the likelihood of the Remote Pilot not maintaining Visual Line of Sight (VLOS) of the drone and its surrounding airspace for the purposes of avoiding collisions, the exact cause could not be determined. The DGH investigation concluded the following:

- VLOS was not being maintained by the Remote Pilot, the drone was being flown approx. 325m from its take-off location at the point the incident occurred.
- The Remote Pilot was not operating in accordance with the mitigations in their 'accepted' OS 104. The drone was approx. 18m from overhead cables, rather than the minimum 50m that should have been maintained.
- There was a lack of understanding as to National Highways (GG 954 & GG 128) and CAA (CAP 722) incident reporting requirements within the Project Team.

NHa360

If you have any queries about this safety alert information announcement or any other safety announcement then please contact Drones@nationalhighways.co.uk

home safe and well


national highways

INFORMATION

Safety Alert

M25 Junction 10 – Drone Incident

05 June 2025

Lessons Learnt

Drone activities on the M25 J10 project have recommenced now, that the following actions have been undertaken and evidenced by the Operator:

- Formally reported the incident to National Highways via iHART, as well as the CAA and AAIB
- Attended an Incident Review Panel, providing evidence in relation to each possible cause e.g. flight logs, pylon/cable clearances
- Update of the project's system of work to include mapping activities
- Briefed all Remote Pilots on this scheme and others where the Operative flies on behalf of National Highways, covering the:
  - Definition of VLOS
  - Importance of pre-flight checks
  - Contents of the 'accepted' GG 104 Drone operation risks and associated mitigations e.g. separation distances from tall structures
  - The additional requirements of GG 954, over and above those of CAA's CAP 722

To view how the incident unfolded, please click here

NHa360

If you have any queries about this safety alert information announcement or any other safety announcement then please contact Drones@nationalhighways.co.uk

home safe and well

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