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Category: Drone

Report TitleF4 Scale Phantom crash

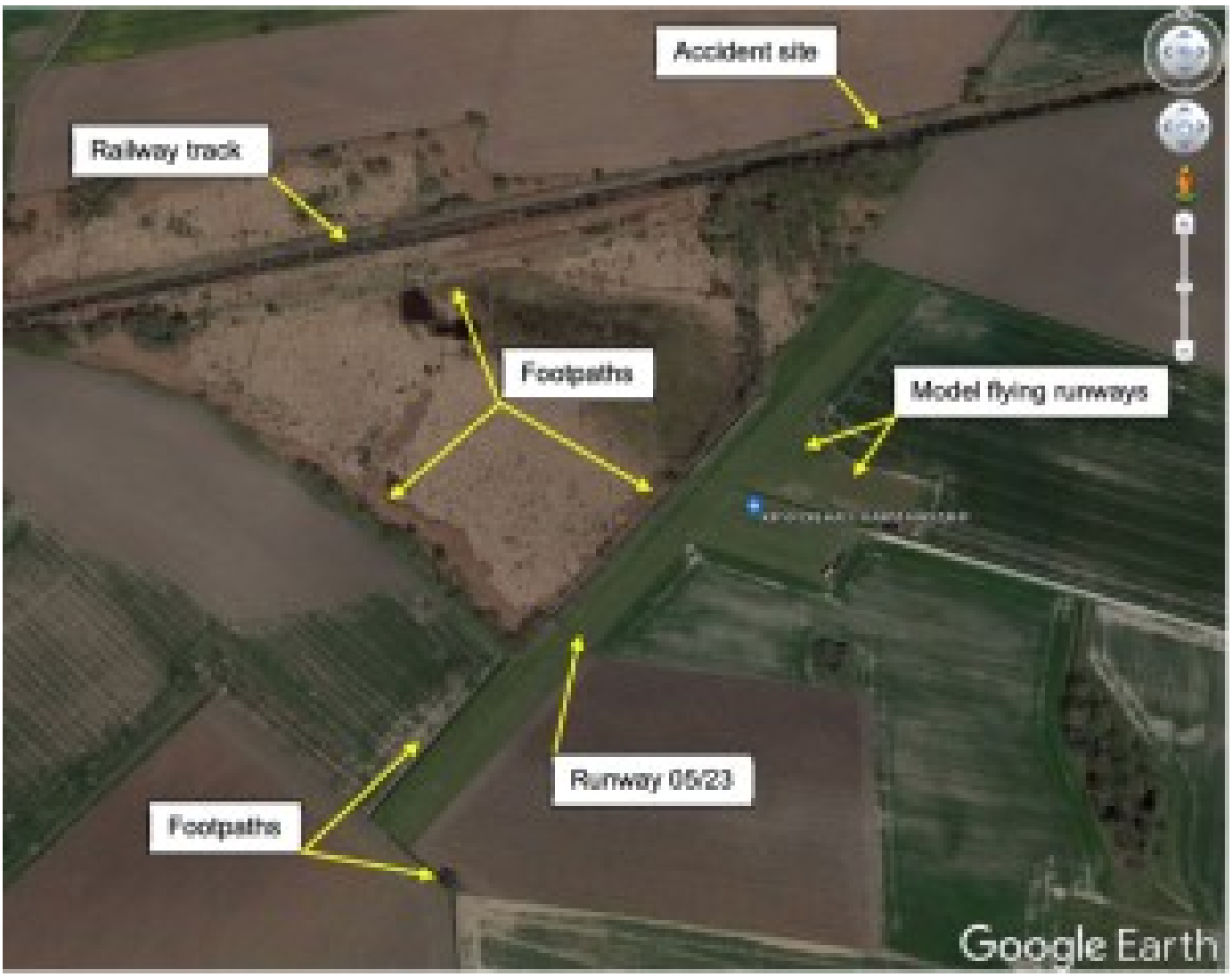
Initial Report

From AAIB Bulletin10/2022 (AAIB-27831). A turbine powered model aircraft suffered a loss of control during its maiden test flight. It continued to fly beyond visual line of sight before crashing on a railway track and was subsequently run over by a passing train. Safety actions taken as a result of this accident include publication of enhanced guidance for members by the British Model Flying Association (BMFA). The model flying club also amended its procedures relating to flying turbine powered models.

The F4 Scale Phantom is a 1:10 scale flying model of the McDonnel Douglas F4 Phantom jet aircraft. It has a takeoff mass of 6.4 kg and is powered by a turbine engine using kerosene. The recently-built model aircraft was undergoing its first test flight. Pre-flight preparation had included an independent check of the control surface sense and deflections, as well as range checks between the transmitter (on the controller) and the receiver (on the aircraft), from multiple angles. A normal takeoff was performed to a height of approximately 200 ft agl, for a flight that predominantly comprised of left hand 'race-track circuits.' During the flight the pilot noted that the aileron response was "sluggish", but he considered it sufficient for safe flight. He subsequently noted that up elevator was required to maintain level flight and progressively applied 'up' trim. During a 180º downwind turn, the aircraft suddenly veered to the right putting it on a north-west heading. Despite the pilot applying corrective aileron inputs, the aircraft did not respond and control was lost. It subsequently stalled, entered a spin and disappeared out of visual line of sight below a tree line. The model aircraft was later found to have come to rest on a railway track adjacent to the airfield, close to a pedestrian crossing, and was subsequently run over by a passing train. The wreckage was recovered by the pilot and other club members. There were no injuries or damage to property. The model aircraft was destroyed. The pilot considered that he had let the airspeed drop too low while concentrating on applying corrective elevator trim. Airfield information: the model flying club is based at Kenyon Hall Farm Airstrip (Figure 1), which is an unlicensed airfield with a grass Runway 05/23 for full size aircraft. There are two runways for model flying, a 75 m strip adjacent and parallel to 05/23 and a 110 m strip, which runs in an east-west direction. A railway track passes to the north of the site. There are several public footpaths which run along the north-west boundary of the airfield, and in the area between the airfield and railway track.

Following the accident, collaboration was undertaken between the BMFA and Network Rail's Air Operations team. This resulted in the provision of tailored guidance for unmanned and model aircraft operators which will be incorporated in the BMFA's member's handbook. It included the provision of a 24-hour emergency contact telephone number for reporting railway safety threats, including the presence of people or objects on or near railway tracks. The BMFA also published an article about this accident, and operation in proximity to railways in general, in the July 2022 edition of its member magazine 'BMFA news'. In addition, the BMFA has updated its incident/accident reporting portal to specifically guide members to telephone Network Rail immediately if an aircraft has come down on Network Rail property, in addition to the requirement to inform the AAIB. After the accident the club amended its procedures to require any turbine powered model to be approved by the club committee before it can be flown at the site, so that its suitability can be assessed. Following this investigation, the club added a section to its procedures relating to retrieval of models that land outside the airfield boundary, which directly references the Network Rail 24-hour emergency telephone number.

Comment



The above report appeared in October 2022's AAIB Bulletin. Reading the report and Safety Actions, there has clearly been some good collaboration post the incident between the BMFA and Network Rail. The thought however that occurred to us is that there is one Human Factor aspect worth pointing out. In the aftermarth of the accident it appears that both the pilot and club members went about recovering the aircraft by walking on a high speed electrified railway track. In a situation like this it is very easy to concentrate on one part of an occurrence and loose a sense of judgement about increasing the overall risk profile of the situation on the other. Perhaps group think created a false sense of safety which is why they decided to recover the aircraft from a live and high speed railway track. We would not recommend RPAS pilots try and recover their aircraft from any environment where they are putting themselves in a position of significant risk. It is better to work out how to manage the risk first. In this instance, calling Network Rail for advice before contemplating going onto the track, would have been wise. As drones are increasingly used by non aviation industries, considering the risks associated with those industries becomes more and more

important. A similar situation arose in September in Belgium where a pilot was recovering their drone from a rail line. The outcome however was different inasmuch as the individual was hit by a train and subsequently died from their injuries.

It is also worth pointing out that railways are increasingly powered by electricity, both from an overhead source and a parallell electrified 3rd rail on the ground, which if touched can cause severe burns or fatal injury. Caution should be exercised when picking an object such as a drone off the ground, because if it is made of carbon fibre and happens to be touching an electrified rail, it will electrocute the individual picking it up.

For information, the Network Rail telephone number to call in an emergency is: **0345 711 4141**. We recommend that pilots flying anywhere near rail lines ensure they have a note of this number close at hand.