ACCIDENT

Aircraft Type and Registration:	Christen Eagle II, G-EGUL
No & Type of Engines:	1 Lycoming AEIO-360-A1A piston engine
Year of Manufacture:	1980
Date & Time (UTC):	29 October 2008 at 1349 hrs
Location:	Seething Airfield, Norfolk
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 (Fatal) Passengers - 1 (Fatal)
Nature of Damage:	Aircraft destroyed, structural damage to spraying vehicle
Commander's Licence:	Private Pilot's Licence
Commander's Age:	49 years
Commander's Flying Experience:	2,500 hours (of which 0 were on type) Last 90 days - 40 hours estimated Last 28 days - 13 hours estimated
Information Source:	AAIB Field Investigation

Synopsis

While making an approach to land, the aircraft collided with an agricultural vehicle that was spraying crops in a field adjacent to the runway threshold. The aircraft was destroyed in the impact and post-crash fire. Both occupants suffered fatal injuries. The investigation concluded that the aircraft's final approach was flown such that its occupants were unable to ensure that the flight path ahead was clear of obstacles. As a result, they were unaware of the vehicle's proximity to the runway. No Safety Recommendations have been made.

Background to the flight

The flight was intended to form the basis of an article in a magazine for General Aviation enthusiasts, in which G-EGUL would feature. The author of the intended article was an experienced private pilot. He had completed a number of such assignments in the past, for which he had established a common flight profile. It was agreed that he would accompany one of G-EGUL's joint owners on a short flight from Seething Airfield, whilst a professional photographer took photographs from the ground to accompany the article.

For the accident flight, the author occupied the rear seat as pilot-in-command, whilst the owner occupied the front seat. The rear seat was the primary position, and the owner did not hold an instructional qualification which would have allowed him to fly as pilot-in-command

from the front seat (which had limited controls). For consistency and ease of reading, this report refers to the author of the intended article as the 'author' or 'pilot'; the joint owner is referred to as the 'owner'.

History of the flight

On the morning of the accident day, the owner of G-EGUL flew the aircraft from its base at Old Buckenham Airfield to a friend's private airstrip nearby. The owner and friend, an experienced Eagle and Pitts Special pilot, discussed the proposed flight and the owner reportedly sought opinion about the manoeuvres that should be included and said he intended to allow the author to handle the aircraft. The owner, who was reported to be well and in good spirits, took off from the strip at about 1115 hrs, and made the short flight to Seething.

At Seething, the owner met the author and the photographer and the three men discussed a profile for the flight. After takeoff, the aircraft would climb overhead the airfield for a short period of general handling, before returning for a series of passes for the photographer, who was to be positioned next to the runway culminating in a low 'head-on' pass. The photographer would then move closer to the runway threshold, while the aircraft flew two or three touch-and-go landings and a full-stop landing. After this discussion, the owner and pilot went to the club house for a light lunch, during which they were overheard discussing aircraft handling aspects, including approach speeds.

The photographer subsequently positioned at the agreed point next to Runway 24, about 350 metres from the threshold. At 1336 hrs, G-EGUL took off and climbed overhead as planned. It returned to the circuit after a few minutes and, for about four more minutes, flew the series of passes as briefed. These were generally estimated by witnesses to be at 150 ft to 200 ft above ground level (agl), with the last 'head-on' pass being flown at an estimated 30 ft agl. Photographs taken during this period show the author handling the aircraft's controls from the rear seat. With the photo passes complete, the aircraft positioned into the left-hand circuit as planned.

The aircraft flew a touch-and-go which was seen by several witnesses. Some thought the approach looked normal, whilst others thought it rather high. The aircraft flared over a point near the threshold, but then floated above the runway for a considerable distance. There was a marked bounce or two, before power was applied and the aircraft climbed away.

As the aircraft flew around the circuit a second time, an agricultural spraying vehicle in an adjoining field was approaching the airfield boundary near the threshold of Runway 24. As it did so, the vehicle turned left to follow an established 'tramline' that ran about 20 metres from the edge of the paved surface (Figure 1). A farm hand, who had watched G-EGUL's manoeuvres and the previous landing, was less than 100 metres south of the spray vehicle tending a herbicide replenishment bowser. He reported that the aircraft appeared from his right and was quite low certainly lower than it had been on the previous approach and, he thought, faster. As it approached the threshold, it did not seem to take any avoiding action and collided with the sprayer vehicle. The aircraft suffered immediate and catastrophic damage. The fuselage came to rest inverted, on the border between the field and the paved area where the airfield perimeter road crossed the Runway 24 threshold.

The watching farm hand saw the accident, and ran towards the sprayer vehicle, which had also suffered

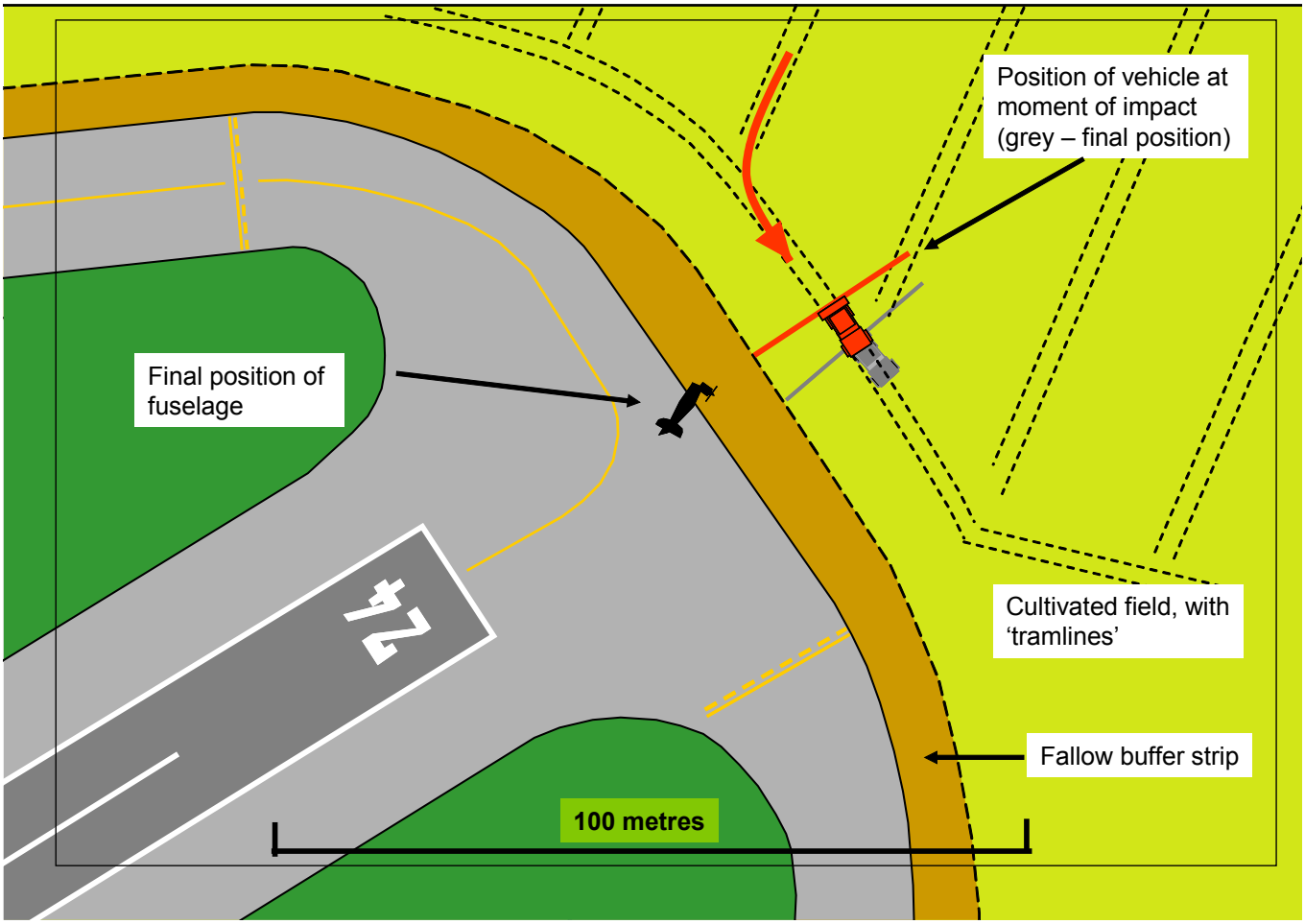

Figure 1

Plan of accident area, showing positions of spray vehicle and aircraft fuselage

considerable damage. He found its driver apparently uninjured, but in such a state of shock that he was unable to extricate him from the cab. The farm hand then went to the aircraft, where a fire had started but, as flying club members were starting to arrive with fire extinguishers, he returned to the cab to attend his colleague. The club members suppressed the fire and gave first aid to the severely injured crew. The emergency services were alerted and an Air Ambulance helicopter arrived at 1414 hrs. The rear seat occupant was declared dead at the scene. The front seat occupant, the aircraft owner, was taken to hospital in a critical condition, but died in hospital 24 days later as a result of his injuries.

Airfield information

Seething Airfield occupies part of a former wartime USAAF airfield; it is about 9 nm from Norwich and is owned and operated by a private flying group. The airfield is licensed by the CAA for operations at weekends, primarily to allow flying training to take place; at other times it operates as an unlicensed airfield[1]. An air/ground radio station operates during licensed hours; at other times the radio may be manned, depending on circumstances and availability of operators. The airfield was equipped with Rescue and Fire Fighting (RFF)

Footnote

[1] Civil Aviation Publication (CAP) 168 deals with the licensing of aerodromes in the United Kingdom.

facilities to 'Category Special' standard. Although this standard was only required to be met during licensed hours, the fire fighting equipment was nevertheless available for use at other times, and was used on this occasion.

The airfield has a single paved runway, designated 06/24, which is 800 metres long and marked on the paved surface of part of an original runway. For licensing purposes, an area surrounding the runway is established that offers, amongst other things, protection to landing aircraft by providing a defined area before the runway which is kept clear of obstacles. For Code 1 runways, such as that at Seething, the minimum length of this cleared area is 30 metres. The marked threshold of Runway 24 was 40 metres from the beginning of the paved runway surface, thereby exceeding the minimum requirement by 10 metres. The field beyond was not under the control of the airfield operator.

Private flights (such as the accident flight) were not required to use a licensed runway, so could take place at any time within the airfield's hours of operation. However, the number of movements on most weekdays was usually relatively low. Private flights could also use the full length of the paved runway surface for landing, without the requirement for a 30 metre cleared area.

The edge of the paved surface at the beginning of Runway 24 marked the airfield boundary at that point. A warning in the airfield's entry in the UK Aeronautical Information Publication (UK AIP) stated:

> *'Agricultural vehicles and equipment may be crossing close to the threshold of Runway 24.'*

The flying group at Seething, which owned the airfield, specifically prohibited flights over the airfield at less than 500 ft agl, (except during takeoff or landing), as well as *'beat ups'* and *'low fly pasts'*. These rules were promulgated in the group's *Pilot's Order Book*. Although some of those present on the day were aware of the general purpose of the flight, the airfield's management reported that no exemption had been sought from the group's low flying rules. The management was thus unaware of the planned activity, or of the presence of a photographer next to the runway.

Personnel information

The author of the proposed article had flown as a private pilot for 21 years, accruing a total of about 2,500 hours flying time. He was a regular flyer at Seething, having been a member of the club there for some 20 years. He part-owned a De Havilland DHC-1 Chipmunk which was based at the airfield, and which he also flew as a member of a display team. In November 2007 he gained a Class Rating Instructor qualification, which entitled him to conduct recurrent flight checks on other club pilots.

The author's flying experience was recorded in his personal logbooks, not all of which were located. However, it was clear that he had always flown regularly and in a number of different types, some of which he had part-owned. The majority of this flying was on older 'taildragger' aircraft such as Jodels and a Tiger Moth, as well as the Chipmunk, in which he was most current at the time of the accident. There were no logged flights in aircraft of similar performance or configuration to G-EGUL, and associates of the author confirmed that he had limited experience of this type of aircraft. The author's last logged flight was on 15 June 2008, though it was established that he continued to fly regularly until the date of the accident. Quoted flying hours for the periods beforehand are estimates, based on historical flying rates.

The owner of G-EGUL was aged 51 years and held an Airline Transport Pilot's Licence. He served 16 years in the RAF, latterly flying high performance single seat jet aircraft. He left the Service in 1995 and, from that date, flew commercially for a major international airline; by the time of the accident he was flying as commander on long range jet transport aircraft. He acquired a share in G-EGUL and first flew the aircraft in August 2004. A breakdown of his flying hours is at Table 1.

Flying experience	11,800 hours (of which 88 were on type)
Last 90 days	160 hours (of which 3.25 were on type)
Last 28 days	48 hours (of which 1 was on type)

Table 1

The majority of the owner's flying hours were on commercial jet aircraft. He last flew G-EGUL 16 days before the accident. During 2008, he had flown a total of 13 hours in an Eagle II, mainly in June and July, when he had use of another Eagle II (G-EGUL was being re-covered during this period, so was unavailable for use). The owner had then flown 1.75 hours since G-EGUL was returned to service in early September. The majority of his total flying in the Eagle II was logged as aerobatic, formation practices, displays (he held a Display Authorisation), and transit flights. On only one occasion had he recorded that he flew the aircraft from the front seat; this was during conversion training for a new joint owner, 11 months before the accident.

Aircraft information

The Christen Eagle II is a tandem-seat aerobatic biplane, with a tubular steel space-frame fuselage and wings constructed from wood and fabric. Flying controls are conventional and manually operated, with ailerons on both sets of wings; wing flaps are not fitted. The Lycoming piston engine drives a two-blade, metal constant-speed propeller. In its standard two-seat layout, the aircraft is flown solo from the rear seat. Full engine and propeller controls are provided for the rear seat occupant only, with only basic flight controls and throttle available to the front seat occupant. The cockpit is protected from the elements by a side-hinged one-piece canopy.

G-EGUL was built in 1980 but had not flown between January and September 2008, during which time the airframe was re-covered. The Permit to Fly renewal was dated 1 September 2008. A post-accident calculation showed that the aircraft was operating within the prescribed weight and balance limitations being below the normal maximum gross weight, with a centre of gravity slightly aft of the mid position.

Accident site details

A grass strip approximately 8 metres wide acted as a buffer between the edge of the paved surface and the cultivated area of the field. The crop-spraying vehicle had been travelling from right to left in front of the runway threshold (as viewed from the approach) with the tip of the right hand spray boom close to the edge of the grass strip. The span of the booms was 24 metres. It was clear that the aircraft had struck the vehicle amidships, with the fuselage passing through a fibreglass tank that contained the remnants of an agricultural herbicide solution. The collision actually occurred when the spray vehicle was about midway between the extended runway centreline and a line extending from the northern edge of the marked runway, ie just before the sprayer would have crossed the runway centreline.

Figure 2 shows a photograph of the aircraft and vehicle shortly before the impact, taken from the photographer's position beside the runway. The crop-sprayer was a

Photo: Oliver Wilson

Figure 2

Long focal length view of aircraft and spray vehicle shortly before impact

tall, four-wheel drive vehicle with the spray booms located at the rear which could be raised and lowered hydraulically on steel guide rails. Aft of the driver's cab was a steel gantry above the engine compartment, which provided access to the top of the tank. The handrail and other structural members had been distorted as a result of the impact, with similar damage visible on the boom support structure at the rear of the vehicle. Part of the lower left wing leading edge was found wedged in the air intake in the engine compartment on the left side of the vehicle. Oily deposits in the form of two parallel stripes were noted on the outboard leading edge of the right upper main plane 0.4 metres from the tip; these were consistent with striking the vertical guide for the left spray boom.

Figure 3 shows the vehicle with the likely impact positions of the wing leading edges. The right wings were torn off in the impact and came to rest by the side of the vehicle. The left wings mostly disintegrated, but the larger fragments remained attached to the bracing wires and were carried to the main impact area along with the fuselage.

The nose and engine of the aircraft passed through the vehicle, disrupting the relatively insubstantial tank structure, although, as can be seen from Figure 3, the landing gear would have impacted the vehicle chassis. It was clear that the main wheels had detached at this point, with the vehicle running over one of them during the estimated 4 to 5 metres it took to come to a halt. The fuselage had 'nosed over', striking the ground some

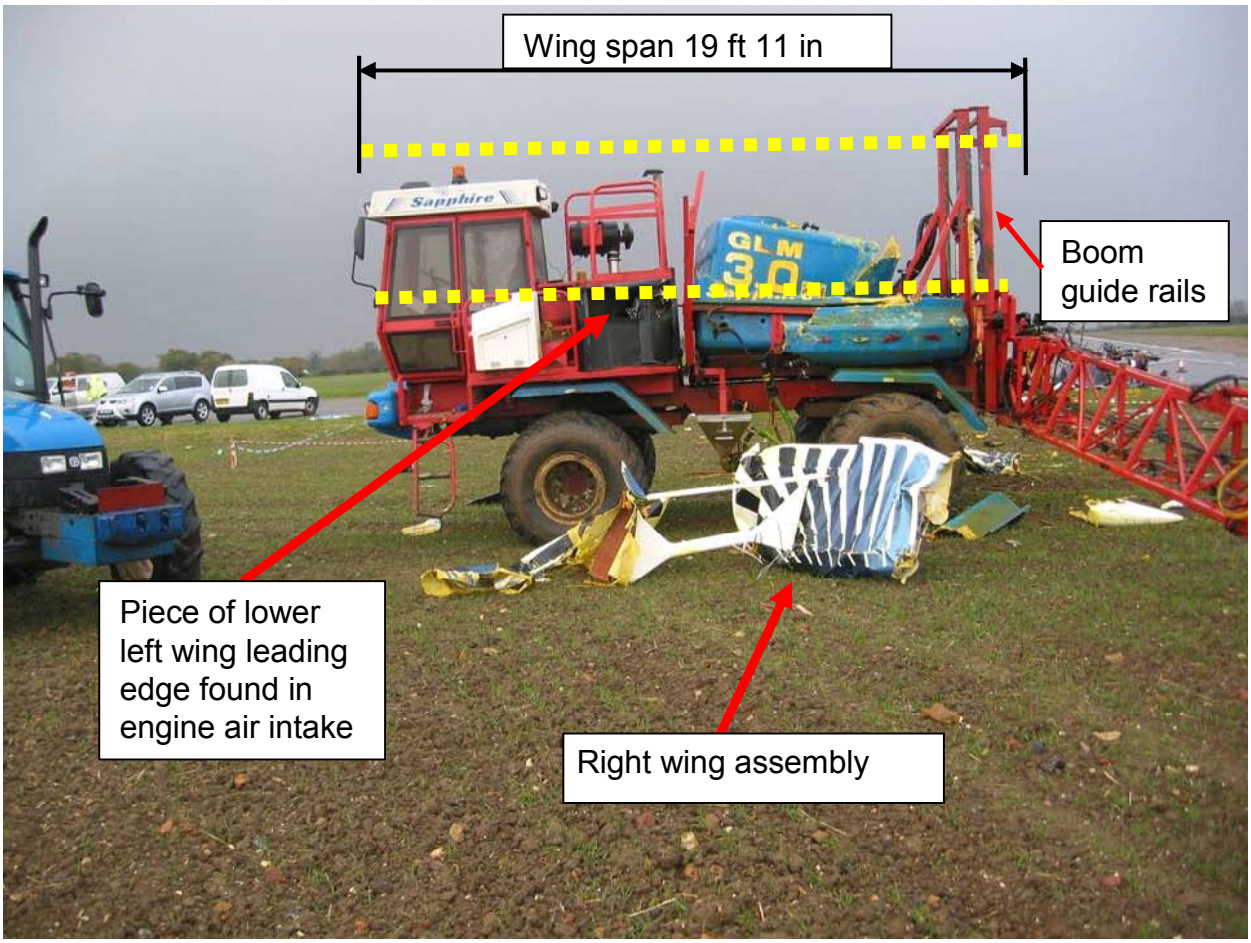

Figure 3

Probable wing impact positions on vehicle

15 metres beyond the vehicle. The fuselage structure partially failed ahead of the front cockpit; this had exposed the fuel tank and had resulted in fuel spillage that formed the seat of the post-impact fire. It is probable that the ignition of the fuel was caused by contact with part of the hot exhaust manifold. The tank itself had a large hole in it resulting from pieces of the tank wall melting and falling into the fuel. As found, the tank was still approximately one third full.

Following an on-site inspection, the wreckage was recovered to AAIB's facility at Farnborough for a more detailed examination.

Airframe examination

No pre-existing faults or defects were discovered during the examination of the airframe. This finding was consistent with witness and photographic evidence of the aircraft being flown apparently under control until the moment of impact with the agricultural vehicle.

Engine examination

Inside the cockpit, it was noted that the mixture and propeller speed controls were at their fully forward positions, ie full rich and maximum speed. The throttle lever was towards its aft, ie low power position and the elevator trim was approximately neutral. Whilst these

indications appear to be representative of what might be expected to be set for an aircraft on final approach, there would have been some scope for movement during the impact.

Most of the damage to the engine was confined to the underside; this included detachment of the fuel injector body and part of the exhaust system. The spark plugs were normal in appearance and, following removal of the rocker covers, the valve gear was observed to operate when the engine was turned over by hand.

Although there was no reason to suspect that the engine had not been operating normally, it was decided to test the propeller governor, since a failure of this component to supply the appropriate oil pressure to the propeller hub could cause the propeller blades to adopt a fully coarse pitch angle and a consequent inability for the engine to develop maximum speed and hence power.[2]

The essential components of the governor comprised a gear-type oil pump, a flyweight assembly and a spool valve located within one of the rotating gear pump shafts. The spool valve was connected to the propeller speed control in the rear cockpit. Moving this control positioned the spool valve longitudinally relative to ports within the shaft and also adjusted the compression of a speeder spring attached to the flyweight assembly. This determined the force and hence the rotational speed at which the flyweights would operate to lift the spool valve to port oil pressure away from the propeller hub, thus increasing the pitch angle of the blades.

Although the governor had been close to the seat of the post-impact fire, it did not appear to have sustained any mechanical damage. However, after being placed on a test rig, it did not generate any output pressure, regardless of the position of the control lever. Subsequent disassembly revealed that the spool valve had become jammed inside the gear shaft; force was required to separate the components, which were otherwise in good condition. Measurement of the valve land diameters indicated that they were several tenths of a thousandth of an inch larger than the internal diameter of the shaft. Normally a clearance of a similar dimension would be expected, thus giving a sliding fit, although the governor Overhaul Manual indicated that an accumulation of tolerances could result in a maximum clearance of 0.002 in. A slight discoloration on the outer surface of the shaft showed that it had been heat affected and a metallurgical examination further indicated that the Rockwell Hardness value was at the very minimum of the range specified for the material. This led to speculation that the heat had resulted in physical changes to the shaft material, with a consequent dimensional change.

It was concluded that the governor could not have been in the observed condition prior to the accident, since it would have prevented the engine from developing high rpm/power. Clearly it had not operated in this condition, as the interference fit between the spool valve and the rotating shaft would have resulted in severe surface distress.

Determination of engine/propeller speed

In Figure 2, the blur of the rotating propeller is clearly apparent, and this enabled the angular arc of a propeller blade leading edge to be measured. Together with knowledge of the camera shutter speed, this led to the determination of an engine speed of approximately 1,960 rpm. Potential errors in the measurement process

Footnote

[2] Note: the propeller pitch control on this type of aircraft operates in the reverse sense to that found on most single engine aircraft, in that governor oil pressure is used to move the blades towards fine pitch, in opposition to coarsening forces generated by the blade counterweights and a spring within the hub.

mean that this calculated value would be subject to an estimated tolerance of ± 10%. Bearing in mind the as-found positions of the propeller and throttle controls, an engine speed of around 1,960 rpm appears credible, with the low power setting resulting in the speed falling below the governed range.

Survivability

In addition to the damage to the forward fuselage noted above, considerable damage had occurred to the underside as a result of the impact with the vehicle. This had resulted in disruption to the cockpit floors and the fracture of the steel tubes to which the main landing gear spar had been attached. Otherwise, the space-frame had remained substantially intact, which had largely preserved the 'living space' in the two cockpits. However, the survivability of the accident had been compromised by the inverted attitude in which the aircraft had come to a halt, and the deceleration forces involved. The canopy transparency would have afforded little protection, and in any event, a trail of clear plastic fragments between the vehicle and the main wreckage indicated that the canopy had disintegrated on impact with the vehicle.

Both occupants were dressed in normal, casual clothing and wore cloth flying helmets. They were secured in the aircraft by five-point harnesses and auxiliary lap straps. It was observed that neither harness had failed and these had all been cut by personnel from the rescue services during the operation to remove the occupants from the aircraft.

Medical and pathological information

The author in the rear seat was declared dead at the scene of the accident. A post-mortem examination showed that he had died of a head injury. The owner survived the accident with multiple injuries, including serious head injuries, fractures and burns. Of these, his head injuries were the most critical, and included those typically caused by abnormally large deceleration forces. After a period in intensive care, it became clear that, whilst he was expected to recover from the lesser injuries, he had suffered severe and irreparable brain damage. A decision to withdraw life support was made 22 days after the accident. He died two days later.

Meteorological information

The general weather conditions were excellent, with clear skies and a very light surface wind, generally from the north-west. The sun was 25º to the left of the runway heading, at an elevation of about 18º. It had been a consideration for the photo passes, but was not thought to have presented a problem for landing. Only the rear seat pilot was wearing sunglasses.

Aircraft handling aspects

Like other aircraft of similar configuration, the Eagle II's forward fuselage restricts the occupants' forward and downward view during approach and landing. The manufacturer's Flight Manual described a landing procedure which took this into account. It recommended that the final approach should be adjusted to keep the runway threshold in sight, by flying a continuously turning final approach until just before the landing flare.

The aircraft owners had agreed a standard finals turn technique which met the manufacturer's recommendation: from a base leg position, the aircraft would be turned and side-slipped towards the runway, approaching it at an angle of up to 30º from the centreline, so keeping the runway threshold in sight until the aircraft was straightened just before the flare. The aim was to make a relatively high approach, and to remain out of an area up to 15º either side of the runway centreline, so keeping the runway threshold in view.

Agricultural operations

Flying had taken place at Seething in close proximity to agricultural operations for many years. The vehicle involved in the collision had been spraying a young crop in an adjoining field, over which an aircraft approaching Runway 24 would need to fly. The field was about 900 metres long by 180 metres wide, and extended away from the Runway 24 threshold area in a generally north-east direction. The spraying vehicle had been operating in the field for about an hour before the accident. Its normal operating speed was 12 km/hour, which was about its maximum speed. The tramlines it was following were mainly orientated along the length of the field, so the vehicle's proximity to the airfield boundary had varied between about twenty metres and 900 metres during this time.

As the sprayer approached the airfield boundary, it turned left to follow the 'head tramline'. The herbicide level was low, so instead of turning left again onto the next tramline, the driver intended continuing towards the replenishment bowser, stationed about 100 metres to the south and attended by the second farm worker. It was just after the sprayer turned left that it was struck by the aircraft.

At interview, both the farm vehicle drivers demonstrated a good understanding of the flying activities at Seething, and the potential for conflict between vehicles and aircraft. The driver of the sprayer, who appeared very familiar with airfield operations, said that he saw the aircraft take off, and again whilst it was flying low over the airfield. He saw it make an approach to the runway when he was furthest from the airfield and, as it disappeared from view down the runway, thought it had landed. There was not normally a great deal of flying activity on weekdays and, believing G-EGUL had landed and not having seen any other aircraft, he thought that the circuit was then clear of aircraft.

The driver did not see or hear the aircraft before the collision. He recalled only hearing it as a very loud bang and feeling a significant lurch to the right. At first, he assumed that something had failed or exploded on his vehicle, and was only aware that an accident had occurred when he saw the aircraft wreckage nearby.

Analysis

The engineering investigation, supported by witness and photographic evidence, established that the aircraft was serviceable and under control at the time of the collision. There was no evidence that either occupant was anything other than fit and well prior to the flight. This analysis therefore concentrates on the interaction between air and ground traffic at Seething, and possible reasons why the crew of the aircraft apparently remained unaware of the presence of the spraying vehicle.

The airfield operator had no authority or control over the land on which the spraying vehicle was operating, and there was no reason why the vehicle should not have been working in the area. Both farm vehicle drivers involved in this accident demonstrated good awareness of operations at the airfield and there was no evidence to suggest they would knowingly act in a hazardous manner. Nevertheless, the proximity of agricultural land, and the possibility of encountering uncontrolled farm vehicles close to the runway, necessitated the inset threshold of the licensed runway, and gave rise to the warning in the UK AIP.

The driver of the sprayer vehicle did not see the aircraft in the moments immediately before collision; had he done so, it is unlikely he would have been able to influence the outcome, considering the speed and

manoeuvrability of his vehicle. Similarly, as Figure 1 indicates, the decision to go to the replenishment bowser was not a factor. Had the vehicle continued spraying, it would still have been in about the same position, although probably at a different aspect because it would have been turning onto the next tramline.

During the photo passes, the vehicle would have been travelling away from the runway, and was at the far end of the field as the aircraft flew its first circuit. Before the start of the final circuit therefore, it was either unlikely to have been seen, or not considered a potential hazard. Thereafter, probably the only times the crew were likely to have seen the vehicle would have been whilst downwind, or early in the finals turn. It is reasonable to assume that, had the vehicle been recognised as a potential hazard, they would not have allowed themselves to lose sight of it on finals.

As one aim of the flight was to get photographs of the aircraft landing, and the photographer had moved closer to the runway threshold for the second approach, there would have been a desire on the part of the crew to avoid landing a long way up the runway a second time. This may have caused the crew to modify their next circuit. As a private flight, the aircraft was not required to use the marked threshold, but any attempt to land at the start of the paved surface would have lost the measure of obstacle protection afforded by the displaced threshold. The second approach appears to have been different from the first. Whether because of a modified circuit, use of a different aiming point, or just lack of familiarity with the aircraft, it appeared to have been flying a shallower final approach than the time before.

Had the aircraft maintained a steeper, curved or side-slipped approach to the point of flare over the threshold, there would have been increased obstacle clearance and a greater chance of seeing the vehicle in time to take avoiding action. However, the use of side-slip, and low applied power through a constant-speed propeller, creates high drag. This, combined with a drift into the declared 'no-fly' zone about the runway centreline (possibly resulting from a modified circuit pattern), could account for the aircraft being in the situation seen at Figure 2, ie approximately on the centreline, with wings about level and relatively low. It is clear from the photograph that neither occupant could have seen the vehicle at this point. If any avoiding action was taken by the crew of G-EGUL, it was so late as to have had no effect on the flight path. As both occupants were experienced pilots, either could have taken action to avoid the collision if they had seen the danger in time, but it appears neither of them did so.

A plausible scenario is that neither occupant saw the sprayer vehicle before starting the finals turn. With a left-hand circuit and the wind, albeit very light, from the north-west, any side-slip would naturally be to the left (ie aircraft nose displaced to the right and with increased left bank). Whilst this would afford a better view of the threshold, the blind spot behind the aircraft structure would have displaced to the right with respect to the ground, so shielding the approaching vehicle from view. Possibly because of the higher drag of side-slipping, or simple lack of familiarity, the aircraft ended up too low, and on the centreline too early. By the time it rolled wings level, the vehicle had moved closer to the approach path, and thus remained in the blind spot, now directly ahead and below. From this point, it was not possible to visually clear the flight path ahead. Both men knew that the approach path near the runway was over a flat field, and they appear to have relied on this fact for obstacle clearance. Although the only safe option would have been to discontinue the approach, it

is clear that neither occupant had any reason to suspect that an obstacle lay directly ahead of the aircraft.

From the available evidence and considering the aim of the flight, it is probable that the author was flying the aircraft at the time of the accident, although this cannot be established with certainty. Although an experienced private pilot, the author had very limited experience on this type of aircraft, and the owner, who had flown the aircraft for less than two hours in the preceding three months, had probably only flown once from the front seat with a pilot new to type in the rear. As the two men had not previously flown together, the owner's decision to let the author fly as pilot-in-command from the rear seat is likely to have been influenced by the author's experience and qualifications, and may have been a factor in the accident.

The airfield's management was unaware of the intended flight manoeuvres (which were specifically prohibited by the airfield's low flying rules), or of the presence of the photographer by the runway. Furthermore, there were no radio calls from G-EGUL informing other aircraft of the non-standard manoeuvres being flown. It is not known why the group's rules were disregarded, but they should have precluded Seething as a suitable location for the planned flight.

Conclusions

While making an approach to land, the aircraft collided with an agricultural vehicle that was spraying crops in a field adjacent to the runway threshold. The investigation concluded that the aircraft's final approach was flown such that its occupants were unable to ensure that the flight path ahead was clear of obstacles. As a result, they were unaware of the vehicle's proximity to the runway.