AIR ACCIDENT INVESTIGATION UNIT

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PRELIMINARY INCIDENT REPORT

This is preliminary information, subject to change, and may contain errors. Any errors in this Report will be corrected when the Final Report has been completed.

Report No:	2006-024
1. AIRCRAFT MANUFACTURER:	Eurocopter
Model:	AS 350
State of Registry:	UK
Registration:	G-JESI
Serial Number:	1205
Year of Manufacture:	1980
2. OPERATOR:	Cabair
3. TYPE OF OPERATION:	Public Transport -unscheduled
4. DATE / TIME:	23 September 2006 @ 19.10 hrs (L)
5. POSITION OF OCCURRENCE:	Dunkerrin, Co Offaly
6. PERSONS ON BOARD:	Crew: 1 Passengers: 4
7. INJURIES:	Crew: 0 Passengers: 0
8. DAMAGE:	None
9. INVESTIGATOR-IN-CHARGE:	Graham Liddy

Following arrival from Adare Co. Limerick on the Morning of 23 September, G-JESI, a Eurcopter AS350 helicopter, engaged in a private charter, was refuelled at the refuelling point in the helicopter landing site at the K Club, Co. Kildare, during the Ryder Cup event.

The refuelling was conducted "hot" i.e. with the engine running and the rotors turning. Prior to re-fuelling, the helicopter fuel gauge was reading 18% (97 litres). During refuelling the gauge rose to 20% (108 litres) and stopped. The Pilot asked the refueller operator how much fuel had been put into the helicopter and was told 250 Litres. The Pilot surmised that the gauge was sticking and therefore unreliable, and asked the refueller to put in a total of 300 Litres. The refuelling reportedly overran slightly and the Pilot was presented with a manually-generated fuel docket for 302 Litres, which he signed. The gauge remained at 20%.

The helicopter then took off and air-taxied to a landing point nearby. The helicopter remained parked at this location all day. At 18.30 hrs the helicopter started up and four passengers were embarked for a flight to Adare, Co. Limerick. The helicopter departed the K Club at approx 18.35 hrs. At this time the fuel gauge was still reading approximately 20%.

At 19.10 hrs, the helicopter landed in a field at Dunkerrin, Co. Offaly, south-west of Roscrea, due to a low fuel situation. The AAIU responded to this event. The fuel tank was drained the following morning and 6.5 Litres of fuel was recovered from the tank. No evidence of a leak was found on the helicopter, in the field at Dunkerrin, or where the helicopter was parked at the K Club.

The helicopter was subsequently checked, and refuelled. During refuelling, the gauge and low contents warning light were checked against the bowser meter and appeared to be working normally. The helicopter was then flown back to the K-Club without any problems.

The facilities of the refuelling provider were subsequently inspected by the AAIU, with the assistance of the IAA, at both in the K Club and their main base. A series of anomalies in the fuel accounting system were noted. Due to these anomalies, it was not possible to audit the amount of fuel dispensed at the K Club on 23 September, and to reconcile this with the fuel received by each helicopter. The Irish Aviation Authority's (IAA) Aeronautical Information Circular (AIC) Nr 12/00, "*Fuel at Aerodromes and Heliports"* lays down the requirements for refuelling installations. There may be some doubt as to whether this AIC, which applies to "*aviation fuel installations*", applies to mobile refuelling facilities. This doubt could be compounded by the existence of paragraph 6 of the same AIC which covers "*Aviation Fuel Installations at Places used by Aircraft including Rotorcraft and Airships, other than Aerodromes*" which appears not to require the same record keeping as that laid down for Aerodromes and Heliports. Furthermore while this AIC does require records of fuel disbursements to be maintained and retained, in the case of Aerodromes and Heliports, it does not explicitly require the maintenance of the records required to conduct a full audit of the quantities of fuel received into the facility and dispensed or removed from the facility.

Hot refuelling is somewhat unusual, in that it is impossible for the helicopter's pilot to check the fuel contents independently of the fuel gauges, without shutting down, which would negate the purpose of the exercise. Given that a pilot must remain at the flight controls of a helicopter during hot refuelling, it is therefore difficult for the pilot of single-pilot helicopters to discharge his obligations under paragraph 1 of IAA AIC 38/98, "*Loading of Aviation Fuel*".

The AAIU Investigation noted that hot refuelling is not mentioned in the refuelling provider's exposition or in their Operations Manual. The Investigation also noted that all the fuel dockets are manually written.

The Investigation is on going, but the AAIU makes the following six Interim Safety Recommendations:

1. The IAA should consider rewording AIC 12/00 to ensure that it explicitly covers mobile refuelling installations. **(SR 9 of 2006).**

2. The IAA should ensure that the hot refuelling of helicopters should only be provided where the provision of this service is explicitly covered in the refuelling provider's exposition. **(SR 10 of 2006).**

3. The IAA should ensure that the hot refuelling of helicopters, and associated safety procedures, should be explicitly covered in the Operations Manual of all refuelling providers who supply such a service. **(SR 11 of 2006).**

4. The IAA should ensure that the procedures covering hot refuelling of helicopters engaged in Public Transport and Aerial Work operations should be clearly laid down in the helicopter operator's Operations Manual. **(SR 12 of 2006).**

5. The IAA should ensure that the helicopter operator's Operation's Manual section covering the hot refuelling of helicopters should require the pilot to reconcile the initial fuel contents, and the added fuel, as per the refuelling docket, with the contents indicated by the helicopter's fuel gauge at the end of refuelling. If such reconciliation is not achieved, the helicopter should be shut down, and remain so until the fuel contents are independently verified. **(SR 13 of 2006).**

6. The IAA should ensure that providers of fuel to Public Transport and Aerial Work helicopters, who are authorised to provide hot refuelling, should be required to present the pilot with meter-generated (printed) fuel dockets when a helicopter is hot refuelled. On this docket, the initial and final fuel meter readings, and the quantity of fuel dispersed, should be clearly printed. Exemption from such a requirement may be issued to individual operators to cover specific situations such as helicopter SAR operations. **(SR. 14 of 2006).**

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