WORK IN PROGRESS

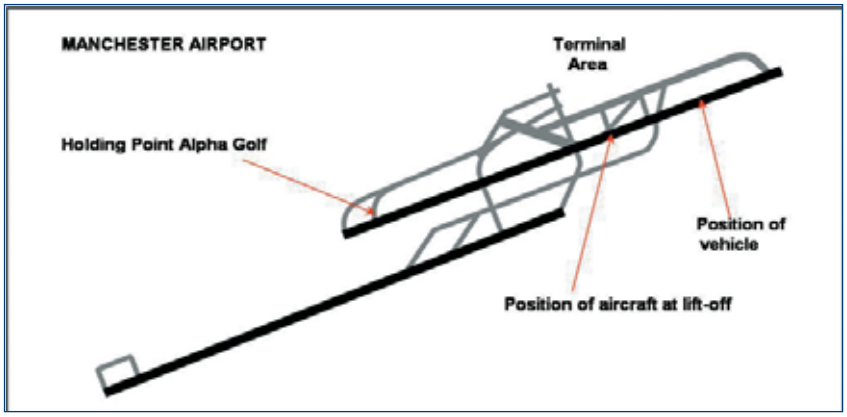
A Boeing 737 was due to depart Manchester on a flight to Greece with seven crew and 190 passengers on board. The scheduled departure time was 1355. At the time, there was work in progress on runway 06L. This involved several large vehicles removing rubber deposits from the 24R threshold. This had the effect of reducing the available runway length for take-off. This information was contained in a NOTAM and also broadcast on the ATIS.

Company procedures required the flight crew to report for duty one hour before scheduled departure time. The co-pilot arrived at 1240 and started preparing for the flight. He received a telephone call from the commander saying that he would be a little late arriving due to traffic. To save time, the co-pilot checked the flight plan, destination NOTAMs and the weather in order to calculate the required fuel load, and passed this information to the aircraft refuellers. However, he did not check for NOTAMs relating to Manchester.

The commander arrived about ten minutes late and checked the co-pilot's fuel calculations; but he did not check the NOTAMs either, deciding instead to read them at the aircraft (in the event, neither pilot read the relevant NOTAM.) The crew walked to the aircraft where the co-pilot carried out the external aircraft check while the commander programmed the Flight Management System. On re-entering the aircraft the co-pilot listened to the ATIS and wrote the runway in use and departure weather in the flight log. He did not note the work in progress. Afterwards, the commander could not recall listening to the ATIS himself.

At 1339 the co-pilot requested departure clearance and was asked if they could accept the reduced take-off distance. The co-pilot replied "YEAH FROM ALPHA GOLF ..." apparently unaware that the reduced runway length was due to the work in progress at the other end of the runway. The commander and co-pilot then independently calculated the take-off performance based on the full length of the runway from holding point Alpha Golf.

By the time the aircraft pushed back, both pilots were aware that some work



was being conducted on Runway 06L, largely as a result of listening to ATC communications with other aircraft, but they apparently believed the work was either at the threshold end of Runway 06L, or in the stop end area, and that in either case it would not affect their performance requirements.

When the co-pilot responded to his line-up clearance he added "WE'RE TAKING OFF FROM ALPHA GOLF". From the CVR replay his voice suggested that he had some doubts about the runway entry point clearance but the ATCO took this as a statement of intent and replied "IF YOU'RE HAPPY WITH THAT THAT GIVES YOU SIXTEEN SEVENTY METRES" to which the co-pilot replied "ROGER." The aircraft then entered Runway 06L and commenced the take-off run.

Runway 06L is built on sloping ground and it is not possible from the AG entry point to see the far end of the runway from the cockpit of a Boeing 737. On cresting this rise, the pilots saw vehicles ahead of them on the runway. At that point, as the aircraft's airspeed was close to rotation speed, a normal rotation was carried out. The aircraft passed very low over the vehicles on the runway and continued its departure. ATC did not comment on the incident either then, or on their return to Manchester. Consequently, as they believed nothing untoward had occurred on the take-off, no report was made. In fact, subsequent calculations suggest that the aircraft passed within 56 ft (17 m) of a 14 ft (4 m) high vehicle (see illustration).

The serious incident was reported to AAIB seven days later. The subsequent investigation revealed that further incidents had occurred during the course of the work, the most significant being on the night before the above incident. On this occasion ATC had instructed three commercial passenger aircraft to go around after they had knowingly positioned them to land on the reduced length runway. The crews of all three aircraft were unaware of the reduced length available and, when informed, stated that it was insufficient for them to be able to land. The closest of the aircraft, a Tristar, was at a range of 2.5 nm when instructed to go around. These incidents were also considered in the subsequent AAIB investigation.

The investigation found that the serious incident which triggered the investigation resulted from non-adherence to established procedures by the flight crew, rather than a failing in the procedures themselves. The pilots correctly determined the aircraft's take-off performance for a take-off from Runway 06L had it been at full length, but this was incorrect at its reduced length.

In fact, the data supplied to pilots by most aircraft operators permits the calculation of take-off and landing performance only for standard runway lengths as published in the AIP. When runway work affects the declared distances, operators may produce performance information for their pilots, but they do not normally do so when the work is to be of short duration, especially when an alternative runway is available. On this occasion, the operator did not do so, therefore the pilots had no means of determining take-off performance from Runway 06L at reduced length.

The report identified additional concerns regarding the planning and management of the rubber-removal operation. They, too, largely centre on non-adherence to established procedures. These included the following findings, which influenced the outcome of events:

- Hazard analysis conducted by the airport operator prior to the incidents did not include all hazards associated with the rubber-removal operation.
- No documented hazard analysis was conducted by Manchester ATC.
- The Operational Advice Notice relating to the rubber-removal operation, published on the day work commenced, contained only limited briefing information.
- Manchester ATC did not publish a Temporary Operating Instruction relating to the rubber-removal work.
- The request for NOTAM action was applied for by the airport operator approximately three hours prior to the commencement of the rubber-removal operation.
- Commencement of reduced runway operations coincided with the ATC shift change.
- There was no blanking of runway lighting in the work-in-progress area of Runway 06L during reduced runway operations.
- There was confusion between Manchester ATC and the airport operator operations staff over the planning restrictions in force limiting the operating time permitted for Runway 06R/24L.

Readers are recommended to read the full incident report, which will be found on the UK AAIB web-site: at *http://www.aaib.gov.uk/sites/aaib/publications/formal_reports/3_2006_g_xlag.cfm .*

COMMENT FROM JON PROUDLOVE, GENERAL MANAGER ATS MANCHESTER AIRPORT

Following on from the AAIB report there has been a significant amount of activity at Manchester.

Key to the ANSP/Airport Operations relationship has been understanding the gap that exits between the ANSP and Airport company safety cases. In that gap is in fact the daily operation and consequently the way in which ATC and the Airport interact at an operational level is absolutely essential.

Manchester Airport now demonstrates industry best practice with regards to integrated safety management. Key elements are joint open reporting (understanding those issues that have the potential to develop into incidents), joint instructions to ensure consistent instruction and a weekly Operations/ATC meeting that reviews all reports and issues. When necessary the meetings conduct joint hazard analysis for future works. Joint safety action tracking is now maturing as well as an integrated investigation process.

All of the above has not only significantly enhanced the safety processes at Manchester Airport but is undoubtedly changing culture. Challenge and be challenged within a just culture is the foundation of our relationship.