No: 11/84 **Ref: EW/C899**

Aircraft type and registration:	Boeing 707 330B Z-WKV (Multi-jet public transport aircraft)
Year of Manufacture:	1963
Date and time (GMT):	29 September 1984 at 0645 hrs
Location:	Gatwick Airport
Type of flight:	Scheduled Passenger
Persons on board:	Crew — 11 Passengers — 141
Injuries:	Crew — Nil Passengers — Nil
Nature of damage:	Heat damage to No 1 engine pylon and thrust reverser shroud
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	
Commander's total flying experience:	11379 hours (of which 1191 were on type)
Information Source:	Field Investigation.

The aircraft had landed at Gatwick at 0638 hrs GMT after a ten hour direct flight from Harare. Clearance was given to stand 63 and while the aircraft was travelling over a temporary taxiway adjacent to stand 42 a member of the airfield operations staff observed that a considerable quantity of unused fuel was being blasted rearwards by the jet efflux of the No 1 engine. He therefore followed the aircraft for the remaining 300 to 400 yards to stand 63 with the intention of telling the ground engineers of the problem. As the aircraft was drawing into stand 63 the ground operations vehicle overtook the aircraft on the right. As he drew level with the right wing tip the driver looked at the aircraft and could see flames on the ground underneath the wing on the other side of the aircraft. He informed the ground movements controller by radio.

From his position, in the new control tower overlooking the aprons, the ground movements controller saw the fire adjacent to No 1 engine and he alerted the airport fire service immediately.

In the aircraft, as it was turning to line up with stand 63, the captain called for No 1 and 4 engines to be shut down. Just prior to stopping at the stand he called for No 2 to be shut down. After the aircraft had halted he gave clearance for the emergency chutes to be disarmed and then he continued with the normal shut down checks. While waiting for ground power to be connected the captain looked out of the port window and saw a man trying to attract his attention and pointing to No 1 engine. The captain then saw a ring of flames around the joint between the thrust reverser cowling and the engine cowlings of No 1 engine and flames also in the tail pipe area of this engine. He immediately called for the fire drill on No 1 engine. The co-pilot reported the fire to ground movements control who replied that the fire services were on the way. The captain summoned the senior hostess to the flight deck and then completed the initial fire drill actions from memory, firing the first fire extinguisher into No 1 engine. Having briefed the hostess to evacuate the passengers from the right side of the aircraft, the captain completed the emergency drill from the check list with the aid of the flight engineer, firing the second fire extinguisher into the engine. At no time was there any aural or visual warning on the flight deck of the engine fire.

Because steps were already being positioned against the port forward door and the fire was some distance away, the cabin staff decided to use this exit for the evacuation of the forward passengers. Approximately 90 passengers vacated the aircraft through this exit while the remainder went via the rear starboard emergency chute. Looking out of the window the captain saw that passengers were disembarking from the forward door and, since the fire presented no immediate danger to them, he allowed evacuations through this exit to continue. No 3 engine was then shut down.

Approximately 35 second after the fire service was alerted the rapid intervention vehicle arrived at the site and a total of five fire appliances were deployed around the port side of the aircraft. As the fire crews were running out the lines there was a loud bang and two metal covers from the engine pylon blew outboard of the engine for approximately 30 yards. The fire was rapidly extinguished using BCF and this was followed immediately by water spray to cool the engine pod, pylon and underneath of the wing.

Investigation showed that a coupling nut in the low pressure fuel line where it passed through the wing front spar into the top of the No 1 engine pylon was very loose. As a result the upper pylon had flooded with fuel and as the

engine was shut down and the airflow over the outside of the nacelle died away this fuel ran down the side of the pylon into the rear of the engine cowling and into the thrust reverser shroud where it ignited on the hot parts of the turbine casing and jet pipe. The heat of the fire caused local softening of the No 1 pylon inboard skin and considerable buckling of the thrust reverser shroud.

No record of disturbance of the loose coupling, which should be torque tightened to between 600 and 900 inch pounds, appears in the recent servicing history of the aircraft. No provision is made for positive locking of fuel line couplings in accessible areas in this type of aircraft.

In this particular aircraft the low pressure fuel cocks are wired so that movement of the engine start lever to 'stop' closes the cock, thus cutting off the supply of fuel to the pipe in the pylon. It is understood that this feature is not present on all Boeing 707 models.