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ROYAL DEPARTURE NOT IMPLICATED IN SAUDI RIYADH TRAGEDY

Contrary to earlier reports, the Saudi Royal family's jet departure was not a factor in the loss of life at Riyadh on August 19, 1980 when all 301 occupants died in the Saudia TriStar disaster.

This is apparent from the transcript of the cockpit voice recorder (CVR) and tower exchanges to which flight has had access. The investigation has been in the hands of the Saudi Government with consultants supported by investigations from the US National Transportation Safety Board, US Federal Aviation Administration, UK Accidents Branch, Lockheed and other specialist authorities.

Although a Royal jet was in fact preparing for departure in the Royal Aircraft Park, take-off clearance had not been requested; and the tower's instruction for a safety vehicle to be cleared from the runway so that the Royal flight could depart came at least two minutes after the last message from the TriStar, which had turned off and parked on a taxiway, apparently not in dire trouble.

The cause of the accident is unlikely to be established for certain, but the prime suspect is an hydraulic fluid fire near the aft belly cargo hold, releasing toxic gas which killed everyone on board before the main fire.

The sequence of events from the first fire warning appears to have been as follows with some flight interruptions.

Seven minutes after take-off, at 18:10, a smoke-detector aural warning preempts conversation about which cargo hold is abnormal. The crew refers to the "abnormals" checklist (apparently not through the emergency list, where the procedure is to be found.)

Three minutes after the warnings, the flight engineer (an American) goes into the cabin to investigate.

At 18:20 a voice is heard to call "FIRE"! The flight engineer reports "just smoke" aft. A female voice is heard inquiring whether to take the food carts down below deck.

The captain decides to turn back. He asks the airport for fire trucks. There is a discussion of landing weight. The flight engineer says "We definitely want preference to land". The captain is advised to declare an emergency, to which his response appears as "huh". He quietly sings (or prays) in Arabic, he reports that the No. 2 (middle) engine thrust lever is stuck (it was later discovered that the underfloor fire had melted the control cables.) The flight engineer advises that the engine is best left alone. The captain says "I'm shutting it down."

A female voice is heard saying "We've tried to put the fire out". The flight engineer says "Put it out". At 18:28 a voice calls "Fire in the cabin". The flight engineer says "Make it go faster". A female voice says "There is no way I can get back - there are people fighting in the aisles". She is heard instructing the cabin staff in emergency drills.

Target speed 141 is called. The flight engineer says he will switch the fuel valves off on landing. The crew look at the runway, one says "There's the airport street (thought to be a row of yellow lights in the town of Riyadh).

At 18:36 a passenger's voice is heard begging his fallen passengers to keep calm and to depend on God. A female voice asks, "Can we evacuate on the ground?"

A leading checklist is then called. The captain says "no" to turning off the fuel valves. Asked about evacuation he replies "Huh".

At 18:32 "runway in sight" is called. The captain sings in Arabic. There are further references to the shutting down of No. 2 engine and its effect on approach speed. At 18:36.22 the aircraft is heard to touchdown. The flight engineer asks whether to order an evacuation. The captain replies "huh". (The aircraft turns off the runway and stops on a taxiway.)

At 18:37.30 the tower asks the rescue services "Do you see a fire?" A fire truck replies "no sign".

The aircraft replies "Standby" when the tower asks whether any assistance is required. Such as a tow.

At 18:39.20 white smoke (of the sort associated with burning Skydrol) is seen under the aircraft. A firetruck asks, "Tell him to switch the engines off." The last call from the aircraft is at 18:40.30 "We are trying to evacuate now."

The tower's controversial call to clear the runway of a vehicle are heard at 18:43, more than two minutes after the TriStar's last call, with still no fire or Mayday. "I want the runway cleared for a Royal flight".

(The first door (R2) was opened by the rescue services some 15 minutes after the aircraft stopped. There was no sign of life. The opening of the door is reported to be when the cabin burst into flames.)

The crew members were found strapped in their seats. A member of the cabin staff was across the throttles, underneath a pile of passengers who had presumably burst through the crew door which she had been protecting. Bodies were piled against the exits.

A number of safety points arise from this tragedy. There was no passenger briefing by the cabin staff, probably because of passenger panic and the commander's apparent "negative panic" or reluctance to accept the seriousness of the situation. The flight crew consulted the wrong checklist for the emergency. There was no Mayday call.

The doors were not opened from inside, perhaps because of the fighting and the crash against them, and the toxic gas. Residual cabin pressure may also have been a factor.

The theory of a burning Calor gas cooker has been virtually ruled out. The prime theory now is that the fierce fire which started in the aft cargo hold was caused by an hydraulic fluid (Skydrol) leak. There is post-fire evidence of a leaking hydraulic pipe in that area. Over a period of time escaping Skydrol might have rotted adjacent electrical insulation, causing an arc which ignited the flammable fluid. The white smoke which emerged from under the aircraft after it came to a stop, and from the cabin when the doors were finally opened is typical of burning Skydrol, the smoke of which is highly toxic and probably killed the occupants before the fire broke out.

The primary cause of the accident is now thought likely to be attributable to aircraft design or maintenance. The flammability and toxicity of the cabin furnishing materials appear to have been secondary. Investigation continues.