

No. 41

Gulf Aviation Company Ltd., DC-3, VT-DGS, accident near Sharjah
(Persian Gulf Area), 10 July 1960. Report released by the
Office of the Director General of Civil Aviation, India.

(In accordance with Annex 13 to the Convention on International Civil Aviation, the inquiry was undertaken by the Indian authorities. The Airport Commandant, Bahrain Airport, acted as the accredited representative of Her Majesty's Political Resident, Persian Gulf and a Senior Inspector of Accidents of the Ministry of Aviation, United Kingdom, attended the inquiry as an adviser.)

Circumstances

The aircraft took off from Bahrain Airport at 0411 hours GMT on a scheduled passenger service to Doha (Qatar), Sharjah (Trucial Oman) and return. The flight had been cleared on an IMC (instrument meteorological conditions) flight plan to Doha where it landed at 0446 after an uneventful flight.

Departure from Doha was at 0516 hours and the aircraft was cleared to flight level 70 for the second segment of the trip. The aircraft reported to ATC Bahrain at 0604 hours that it was off Das Island at 0546 and stated that it was in contact with Sharjah and estimated its arrival there at 0645. Bahrain ATC cleared the aircraft to the Sharjah frequency. The last contact of the aircraft with any ground station was at approximately 0605 hours when it reported to Sharjah that it was at flight level 70, estimating Sharjah at 0642. Sharjah advised the aircraft to call again when in VHF range. At 0635 Sharjah attempted to contact the aircraft repeatedly without success.

At a time estimated by the pilot of a Heron aircraft, approaching Sharjah from Das Island at flight level 50, as between 0644 and 0648 hours GMT, he heard VT-DGS call Sharjah twice on 3023.5 kc/s. No message was, however, transmitted, and the calls were not heard by Sharjah.

Search and rescue action was initiated promptly by Sharjah ATC when the aircraft failed to reach its destination. In spite of an extensive search, the aircraft was not located. The search was abandoned on 17 July 1960. Three crew and 13 passengers are missing and presumed dead.

Investigation and Evidence

The aircraft held a current Certificate of Airworthiness and was certificated for the flight.

The crew held valid licences.

Weather

Neither the crew nor the Operator's representative reported for a weather briefing. No route or terminal forecast was asked for or prepared for the flight.

No weather information was asked for by the crew or offered by any air traffic control unit during the flight excepting the actual weather included in the landing instructions at Doha. The crew were, therefore, not in possession of any forecast or actual weather information pertaining to this flight. This point is of special significance as poor weather conditions (poor visibility) prevailed throughout the route as well as at the destination airport where the visibility was

990 yd in thick dust haze at the expected time of arrival of the aircraft.

- (i) Weather conditions prevailing at 0500-0800Z on 10 July 1960 on the route Doha to Sharjah and over the Hormuz Peninsula (as assessed by the Chief Meteorological Officer, Headquarters British Forces, Aden Peninsula)

The most probable conditions based on the information available is considered to be as follows for the route Doha to Sharjah:

Upper wind	-	NW 15 kt becoming
Doha to		10 kt towards
Sharjah at		Sharjah
7 000 ft		
Cloud	-	no cloud below aircraft
Visibility	-	2 NM becoming 700 - 1 000 yd towards Sharjah due to thick dust haze

No information was available for the Hormuz Peninsula, but conditions on the western side were probably similar to those obtaining at Sharjah.

- (ii) Height of the top of rising dust or sand on the route

Top of thick dust haze was reported by aircraft to be 5 500 ft first half of the route rising to 7 000 ft the second half and with the sea stated as invisible from 2 500 ft near Sharjah.

- (iii) No information available regarding turbulence but expectation would be of nil or light turbulence.

The following information regarding en route weather was obtained from the captain of a Heron aircraft operating the Das Island/Sharjah sector:

(Set course Das Island 0625 - overhead Sharjah 0718 hours)

".... I then requested descent clearance (from Sharjah). This was given down to 2.5 VMC if at all possible, which it wasn't and at 2.5 the aircraft was well and truly IFR. I hastily asked for further descent. If this was not given I would have turned 180° due to a chance the Dakota might have been using the standard let down. Eight miles from the coast I was contact. Visibility was about 1 000 yd on the surface, less in the air. First contact was about 1 200 ft but reasonable contact could only be made at about 800 to 600 ft." This flight experience a tailwind component of approximately 28 kt at flight level 50.

Navigation Aids and Radio Equipment

The navigation aids available at Bahrain, Doha, Das Island and Sharjah and required for this flight were functioning normally at the respective stations.

The radio equipment aboard the aircraft was adequate for utilizing the ground facilities required on the flight. There was no reason to doubt its serviceability.

Flight Plan

A flight plan concerning this flight of VT-DGS was submitted by a staff member of Gulf Aviation to the ATC officer on duty at Bahrain Airport at 0300 hours the morning of 10 July. In accordance with the usual procedure all entries were filled in by him. The true airspeed was entered as 150 kt and the elapsed times for the Bahrain/Doha and Doha/Sharjah segments were given as 35 minutes and 1 hr 30 min respectively. The winds forecast were not taken into consideration. The endurance listed (6 hours) was also not consistent with the amount of fuel on board.

Fuel

The aircraft was refuelled at Bahrain. 350 gallons were on board. The load:

sheet was prepared by a traffic officer of Gulf Aviation. The total all-up weight of the aircraft was 10 875 kilos at time of take-off. No trim sheet was prepared.

At Doha some freight was offloaded, but no fuel or freight was taken on. A load sheet was made out by a traffic officer of Qatar National Travel. He referred to the traffic documents of the previous sector in order to prepare the load sheet for the Doha/Sharjah segment ... a distance of 209 NM. When he spoke to the captain about the fuel figures the latter said that he had 200 gallons on board. This was the figure entered in the load sheet. In fact, according to calculations, the aircraft had almost 300 gallons on board. The endurance of the aircraft was, therefore, in the order of 4 hr 15 min. The flight from Doha to Sharjah was planned for 1 hr 30 min, leaving a further endurance of 2 hr 45 min remaining when above Sharjah. This would have been sufficient for the aircraft to return to Doha, or to proceed to Bahrain, a designated alternate, with sufficient reserve on board.

On departure from Doha the aircraft's all-up weight was 10 680 kilos.

Description of Terrain in the Accident Area

It was the opinion of responsible persons thoroughly familiar with the terrain to the east of Sharjah that because of the nature of some parts it may not be possible to locate wreckage in this extremely difficult country. The area has not been surveyed accurately. Air crews estimate the highest terrain to be 9 000 ft amsl. It consists of steeply rising ridges forming narrow ravines. An aircraft striking at the side of a ridge could disintegrate and slide down a ravine with little chance of being observed, especially from the air. The area is sparsely populated, principally by tribesmen.

Spasmodic reports of aircraft wreckage having been sighted continued to come in from various sources after the main

search had been abandoned. In every case a search of the area referred to was carried out with negative results.

Discussion of Evidence

Operational control

The aircraft was on a charter to Gulf Aviation. According to a clause in the agreement between Kalinga Airlines and Gulf Aviation, the aircraft and crew were to remain at the disposal and under complete operational control of Gulf Aviation for the entire period of the charter whether the aircraft and crew were actually employed on any work or not.

The question as to who would be responsible for establishing and maintaining a method of supervision of flight operations was discussed with representatives of Gulf Aviation and Kalinga Airlines. Gulf Aviation were of the view that the responsibility for operating the aircraft rested with the owners of the aircraft. Kalinga, however, were of the opinion that all instructions regarding operational control could be given by Gulf. There is undoubtedly some ambiguity in the position which is undesirable. However, in the circumstances of the subject flight, it would appear that Gulf Aviation was the Operator and should have ensured that the operating crew were provided with an up-to-date copy of an Operations Manual. This was not done, nor did Gulf Aviation ensure that the statutory checks on the operating crew had been fulfilled.

Briefing

It is noteworthy that neither the pilot (nor any other crew member) visited Air Traffic Control or the MET office for briefing prior to the flight.

Facilities for weather briefing exist at Bahrain where there is a forecaster on duty 24 hours a day. In addition, the ATC authorities at Bahrain, Doha and Sharjah obtain and pass on the actual weather at the destination airports on receiving such

a request from crew members. Quite frequently, however, on domestic flights of Gulf Aviation, information regarding actual weather is obtained by the crew on R/T from the destination airports. As stated, in this case no information regarding the forecasted or actual weather was asked for by the crew.

Weather Minima

The International Convention for Civil Aviation does not require States to establish weather minima for airfields and none had been established for the airfields concerned with this flight, nor had Gulf Aviation established minima for Dakota aircraft operating to these airfields.

The Gulf Aviation minima for scheduled operations at Sharjah, with Dove and Heron aircraft are:

Field Elevation	6 feet
Runway	A 11
Facility	NDB - VHF/DF
Landing and Take-off Minima:	
Critical Height (ab. field level)	400 feet
Runway Visual Range	1 200 yards

Kalinga's Operations Manual specifies weather minima for Dakota as -

"The following minima were applied for by day or night for all aerodromes in general:

Landing	: Cloud base 300 ft above the highest terrain within a radius of 5 NM and/or visibility 1.5 NM
Take-off	: Cloud base 300 ft above the highest terrain within a radius of 3 NM and/or visibility 1 NM"

The surface visibility at Sharjah never exceeded 990 yd during the period of flight. However, the surface visibility at Bahrain, a designated alternate, was satisfactory.

Probable Cause

The probable cause of the accident was not determined.

It can only be a matter of conjecture as the wreckage was not located. All possible factors were explored, but none appeared plausible.

Absence of radio communication between the aircraft and Sharjah after the initial contact and the absence of any distress call might have led to the tentative conclusion that the aircraft had met with a catastrophic disaster while still over the sea. However, the interception of a radio call from the aircraft at about its expected time of arrival at Sharjah and the considerable tailwind on the route seem to indicate the possibility that the aircraft overflew Sharjah under conditions of poor visibility. It is noteworthy that that ETA given by the aircraft as 0642 did not allow for any appreciable tailwind component which was indicated by the evidence of the Heron pilot. Not accounting for this factor could have resulted in the aircraft's descent on its ET into high ground to the east of Sharjah. It may also explain the inability of Sharjah to receive any message which may have been transmitted on VHF. However, the NDB at Sharjah was fully operational during the period of the subject flight and should have indicated to the pilot that Sharjah had been overflown unless the ADF system in the aircraft was mishandled or suffered a multiple failure.

Recommendation

When an aircraft is on charter from one operator to another the responsibility for establishing and maintaining a method of supervision of flight operations should be clearly defined.