

An Ambulance Jet With Large Cabin And Long Range: Canadair Challenger 601 A Fifteen Years Experience

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Abstract

Since 1982 Swiss Air-Ambulance REGA has been operating a fully medically dedicated ambulance jet with a large cabin: the Canadair Challenger. It was to our knowledge the first and only fully medically dedicated private aircraft of that size.

At the time of purchase REGA was flying to Iran several times a week and the idea was to operate an aircraft that would allow to transport up to six patients per flight. The political situation in this region changed dramatically soon after the completion of the aircraft. The airplane was then successfully used for other long range and/or combined ("collection" of several patients from the same region) missions. The former CL600 was sold in the early 90ies and replaced by a CL601 3A offering a increased range of an average of 3350 miles (Learjet 35 approx. 1800 miles).

Figure 1

The former Canadair Challenger CL 600



Figure 2

The Canadair Challenger CL 601



The medical interior has been designed for the transportation of either a large number of non intensive-care patients (usually up to six, in certain cases up to eight supine patients) or for up to two ICU patients with full monitoring and respiratory support. The medical equipment is carried in the bases of the stretcher-supports, the monitoring equipment and ventilators, suction units etc. are located at the head side of the stretchers.

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Figure 3

The inside of the Challenger 601

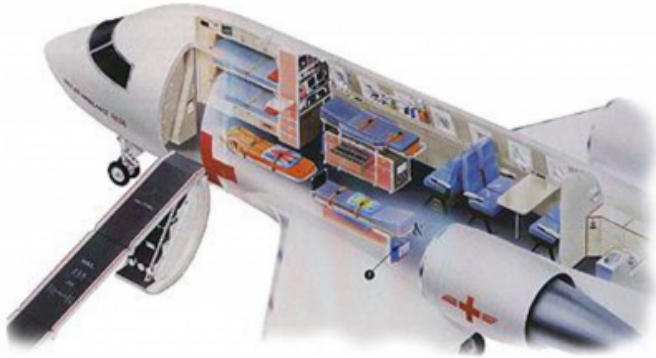


Figure 4

The 2 ICU places aboard the Challenger



To load and unload patients, a special folding ramp has been designed. It allows the patients to be trolleyed on the ambulance stretcher through the broad entrance door right into the cabin where he can be lifted onto the aircraft stretcher. This is specially appreciated in bad weather conditions!

Figure 5

The special designed ramp



Figure 6



Three separate electrical sources have been installed: 220 V AC, 24 V DC and 12 V DC. Combined with the internal batteries of most devices it gives an optimum of safety. A central tank carries more than 14'000 liters of oxygen and in the near future a redesigned on-board-oxygen-generating system will provide as much oxygen as needed for long range flights with very high oxygen demand.

An aircraft of the size of a Challenger allows to carry out combined missions which are advantageous both from an operational as well as from a financial point of view. During high season it may be very difficult or even impossible to find the required number of seats for the installation of a stretcher on board of a scheduled aircraft. In other cases, patients have to change airlines several times to arrive to their final destination. Some airlines and charter operators do

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not accept any stretcher cases at all. During summertime, REGA quite often flies e.g. to Greece and gets all patients of that region on board and brings them back to Switzerland. The price per patient (and relative!) is then lower than all the tickets on a scheduled flight.

The large cabin also allows to take along special and voluminous material as e.g. IABP, special ventilators, patients with large traction devices, multiple drainage systems etc. Everyone who has performed CPR in a Learjet 35 knows how narrow a cabin of that size can get...

Figure 7

Transportation of a newborn



The wish of relatives to accompany the patients is easily met with the possibility of offering a total of a maximum of ten seats (including a minimum of two for the medical team). A galley allows to carry hot water and coffee, to keep drugs (and food) refrigerated, to warm up menus in the oven (a nice option during transatlantic flights and flight to or from Africa..). A toilet with wash basin and running water is essential for hygienic reasons.

In the last few years, the Challenger has flown a total of nearly 100 missions per year. In 30-40 % of the flights more than one patient was transported. In 1996, the average mission time was 23 hours in comparison with 7.5 hours for the smaller ambulance jet operated by Swiss Air-Ambulance, the Hawker 800, during the same period. 20 % of all missions had a mission time of over 38 hours. The average actual flight time per mission was 9.3 hours in comparison with 2.9 hours for the smaller Hawker 800.

During 1997 the Challenger 601 has flown a total of 138 missions. Among the non-European destinations are:

Figure 8

Transports from	No.	Transports to	No.
USA	9	USA	14
Nigeria	5	Kingdom of Jordan	2
Saudi Arabia	3		
Egypt	2		
Russia	1		
Tunisia	1		
Uzbekistan	1		

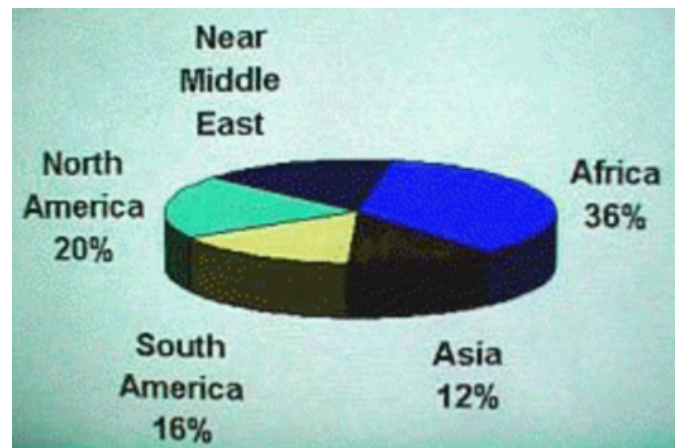
Other destinations included e.g.: Cameroon, Hong Kong, India, Ivory Coast, Kazakhstan, Malaysia, Maldives, Nepal, South Africa, Pakistan, Venezuela.

The longest flights were:

- from Poona (IND) to Cleveland (USA)
- from Jeddah (SAR) to Cleveland (USA)
- from Houston (USA) to Riyadh (SAR)
- from Cordoba (ARG) to Barcelona (ESP)

The distribution of the non-European destinations was as follows:

Figure 9



In the near future, new aviation regulations will come into effect in Europe (JAR). They might deeply effect air-ambulance operations. Especially for ETOPS (long range flights) it could mean that it will be no longer possible to perform commercial flights with only two engines over the Sahara during night time or over the Atlantic Ocean. The only alternative in this case would be a three-engine aircraft (e.g. Falcon 900-series).

Over 15 years of experience in operating an ambulance jet with large cabin have shown that an aircraft like the

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Challenger 601 has a variety of clear advantages. As member of the medical Team of Swiss Air-Ambulance, measuring 190 cm and having flown missions to West-

Africa and Asia with a Learjet 35, I can tell the difference!

References

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