Zeitschrift: The Swiss observer : the journal of the Federation of Swiss Societies in the UK

Herausgeber: Federation of Swiss Societies in the United Kingdom

Band: - (1981)

Heft: 1777

Artikel: Pioneers in the propeller era [To be continued next month]

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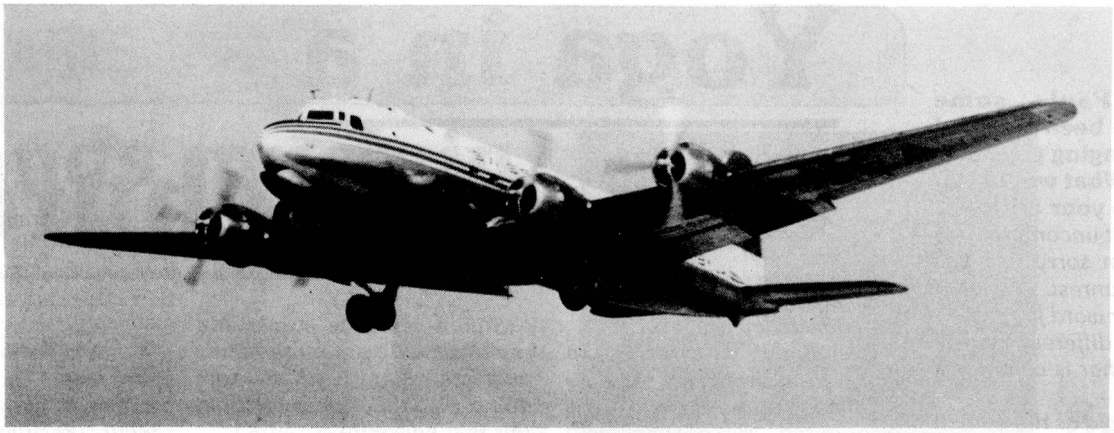
DOI: https://doi.org/10.5169/seals-687720



Pioneers in the propeller era

By Swissair captain **Alfred Muser**

SWISSAIR came into existence at a time when "blind flying" – that is, flying on instruments alone without visual reference to the terrain below – was just beginning to make headway in Europe.

The 'old guard' pilots inherited from Balair and Ad Astra spent a large part of the winter months, during which air transport went into hibernation, in somewhat reluctantly getting the feel of flying "blind", using what was known as a "needle and ball" (gyrostabilized turn and bank indicator), in an effort to lessen the dependence of scheduled flight operations on weather conditions.

Then Swissair ordered two US Lockheed-Orion speedplanes. Nothing could have been calculated to make the infant airline better known or more popular.

Reports of the high crusing speeds which these aircraft were capable of had reached European shores, but had been received with little more than incredulity, especially by aviation experts.

When they proved to be true on runs between Zurich and Munich and Berlin, there were no bounds to the general astonishment, nor to the publicity aroused.

For the pilots, though, the Orion was something of a step backwards. They flew alone in a half-open cockpit, operating a single-engined airplane without a radio operator or flight engineer and entirely dependent on visual ground contact. Yet, nonetheless, exceptional standards of regularity were achieved.

The next US plane to be delivered, the Clark CA-43, was also a single-engined craft, but because it was equipped with radio (plus radio operator) and an artificial horizon, it could also be operated on night and instrument flights.

On May 5, 1936, however, the Federal Air Office placed a ban on the use of single-engined aircraft for such operations.

Luckily Swissair had already tackled the task of modernising its flight equipment in the previous year, during which five twin-engined Douglas DC-2s had entered service. The standard crew complement on aircraft of this type consisted of one pilot, one radio operator and one stewardess.

For the first time, too, the cockpit was equipped with an automatic pilot (known as the "robot"), which was able to hold the aircraft on a specific course.

Unlike the equivalent devices of today, these autopilots could also be used for take-off in poor visibility, provided (according to the instructions) that the pilot exerted "full negative pressure for six minutes" to make sure the pneumatic gyro was operating at the necessary RPM rate.

Soon flying on instruments became a routine affair, though the procedure was somewhat complicated and lengthy. The radio operator received radio bearings from the ground station which he then wrote down and held in front of the pilot so that the latter could undertake any course correction that might be necessary.

If the message "ZZ" was received it meant that the aircraft had flown over the listening post on the airfield boundary and could thus begin its descent.

On one particularly foggy day a pilot reported he had only been sure of reaching the airfield after glimpsing the silhouette of a stationary aircraft on the ground.

As a result, the authorities at Dübendorf airfield toyed with (but eventually rejected) the idea of leaving an aircraft on the ground at all times during severe weather conditions of this sort.

While the navigational aids and cockpit instruments of these early days were greatly inferior in terms of precision to those in use today, the slow approach airspeed of the aircraft, together with the large and open character of airfields at that time, poor visibility landings were made which were not improved upon in scheduled services until the second half of the seventies.

In the ZZ approach procedure the pilot had to rely completely on the data transmitted to the plane from ground stations. All this changed with the introduction of the Standard Beam Approach (SBA).

In this procedure the pilot was able to make his descent along a specific approach route in the direction of the airfield with the help of acoustic signals and instrument readings generated by a system of localizer beams.

The cockpit was also equipped with a glide slope indicator, but this was rather a hit-and-miss affair so that pilots usually made their descent in distinct stages after flying over certain specific signals.

A glide slope indicator was rather a hit-and-miss affair

By the end of 1935 winter operations had become a reality, although the DC-2 aircraft were not equipped with proper de-icing systems. These were first in the form of pneumatic de-icing "boots" for the leading edges of aerofoil surfaces and a de-icing solution for the propellers on the DC-3, which made its debut at Swissair in 1937.

With the advent of this aircraft the early pioneering days were destined to pass into history. It even became possible to operate a scheduled air transport services on a more secure profit-making basis for the first time.

The six-year break in commercial air transport caused by the Second World War was followed by a period of intense growth and development, both in terms of aircraft technology and traffic volume.

Swissair's pilots, traditionally rather conservatively inclined at this time, attempted to prevent the introduction of radio telephony, which threatened to deprive radio operators of their jobs.

Though the delay achieved was minimal, for several years the DC-3 was flown by one pilot only in addition to a radio operator in charge of the radio telephonic devices on board. The two-pilot cockpit for the DC-3 was not introduced until 1954.

To be continued next month