

PROGRESS REPORT

3,000 hours of flight testing have now been achieved, of which about 1,000 hours have been above Mach 1. The three-thousandth hour was clocked on 12th September by G-BBDG, airborne between Singapore and Bahrain. So three quarters of the planned flight programme are now behind us. Certification is expected in the second half of 1975.

AMERICAN FLIGHTS

Concorde 02 is leaving Toulouse shortly for a demonstration tour via London to Central and South America and the West Coast of the USA.

OLYMPUS

Rolls-Royce-SNECMA report that Olympus 593 engines have now logged more than 37,000 hours of running time, toward the total of 46,000 hours that will have been completed before Concorde enters airline service. By 1st October 3,862 engine hours had been flown at supersonic speed.

The Olympus 593 Mark 610 - the production engine - has successfully finished a 150 hour Type Test, and the few remaining minor certification tests are to be completed by the end of this year.

85 prototype and production standard engines have now been delivered by the Bristol Engine Division of Rolls-Royce (1971) Ltd. and by its French partner company SNECMA.

LANDING GEAR INCIDENT

On flight 437 of prototype 002 a failure occurred on the landing gear mechanism during lowering which resulted in the left hand main gear failing to lock down. In fact the left hand side stay had become disconnected from the main leg which was therefore unrestrained laterally. However this was observed by the crew and a skilful and safe landing was made, the left hand gear remaining upright and supporting the aircraft. After rigging a jury strut the aircraft was towed back to the hangar where inspection revealed no damage to the airframe but failure of the retraction linkage on both main gears.


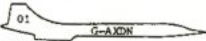


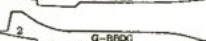

These failures were due to dynamic overloads arising from release of the gears out of the up-locks during a tight turn when the aircraft's normal acceleration was about 1.75 g. In these circumstances the speed of lowering of the gear is determined by the flow of hydraulic fluid out of the retraction jacks and if this flow is unduly restricted the inertia of the gear will cause a sudden build-up of hydraulic pressure in the jacks. The jacks themselves were capable of taking this pressure since they were designed with large strength margins to ensure a long fatigue life. However the corresponding end loads must be reacted by the retraction linkage and part of this linkage failed in compression; as it is always loaded in compression no extra strength margins existed. Failure of the linkage allowed both main gears to fall freely but, despite the high inertia which caused them to drop in 1½ seconds, the side stays arrested the motion and prevented serious damage to the gear and the nacelle. However the consequent elongation of the side stay attachment holes allowed the pin to fall out on the left hand side leaving this gear swinging free.

All aircraft are being temporarily limited to lowering in nominally 1 g conditions with an absolute limit of 1.3 g (flight tests had previously shown that a 1.5 g lowering is quite safe). Modification action is in hand which will reduce the peak dynamic pressures in lowering which, together with some redesign of the mechanism, will enable these restrictions to be lifted and give complete safety for lowering up to 2 g with normal strength factors.

The incident unfortunately happened just before 002 was due to visit the Farnborough Air Show, and although spare gears were available, it was not possible to get these fitted and thoroughly checked out in time. The gears have now been fitted and 002 is again operational.

CONCORDE FLYING SUMMARY

1st October, 1974

001 (for reference)	
002	
01	
02	
1	
2	
TOTAL	

FLIGHTS	BLOCK HRS.MINS	SUPERSONIC FLIGHTS	SUPERSONIC HRS.MINS
397	812 - 09	250	254 - 49
437	835 - 18	196	173 - 26
210	482 - 22	150	186 - 09
184	506 - 05	144	226 - 12
77	191 - 22	41	55 - 44
90	220 - 19	53	69 - 08
1395	3047 - 35	834	965 - 38