



Northrop YRB-49A: Externally similar to the cancelled YB-35B, this six-jet conversion is nearing completion; it will be the sole survivor of the all-wing jet-bomber project. Powered with six Allison J-35-19 (5,000-lb) turbojets (four inside and two outside the wing) it will be a photo-reconnaissance version.

CHRONIC SONICS . . .

months ago, Northrop had what looked like a firm contract for 30 B-49s, with roseate prospects of a big production order running into several hundreds—which, no doubt, was the first seed sown by Congress towards the 70-group rearmament programme. Unhappily for some members of the aircraft industry, much of that early seed has fallen on the stony ground of economic retrenchment. In the case of Northrop, perhaps it might be fairer to say that the germinative process is being choked in the weed-patch of the wasteland that divides the piston-engined era from that of the jet. With this, then, as a working hypothesis, a quick look-back over the landscape is in order, to show the progress made and the general direction in which Northrop is heading; it may also possibly mark some of the detours along the way.

Originating as far back as 1941 or 1942 in competition with the B-36, the Northrop B-35 Flying Wing has had rather a chequered history, with more than the usual share of development bugs on the power-plant side to confuse and bemuse the structural and aerodynamic issues. Looking at the asymmetric positioning of the pusher airscrews in relation to the wing trailing edge, one might suspect this sort of geometry to have been a contributory factor in the malfunctioning of the airscrew-drive-system, but Northrop believe that most of the troubles can be traced to faulty propeller design. Be that as it may, when the jet engine appeared on the American scene, the company was quick to size up its obvious potentialities when harnessed to the all-wing airframe; and out of the original contract for 15 piston-engined B-35s, two were converted into jet-wing YB-49s powered with eight Allison J-35 4,000-lb turbojets while still in the embryo airframe stage. These are the two casualties referred to previously.

Purely from the aspect of aerodynamic cleanliness, the jet conversion had all the airmarks of an eminently successful job, with the two banks of four-jet units submerged neatly within the wing envelope on either side of mid-section bomb-bays. This arrangement, together with the reduction of crew and armament rendered feasible by the big jump in performance, provided additional volume within the wing for increased jet tankage. Indicative of current range performance was a cross-country flight last year of nearly 3,500 miles. Theoretically, at least, the YB-49 wing envelope appears capable of housing sufficient fuel for a maximum range of 5,000 miles in combination with a bomb load of 30,000 lb. If the bomb load is reduced to 10,000 lb and additional fuel carried in the bomb-bay, the maximum range could be stretched to 6,000 miles. These theoretical predictions, it might be stated, are postulated on a cruising specific fuel consumption of 1.0 lb/hr/lb at stratospheric altitudes.

Of the remaining 13 aircraft, three were completed and extensively flight-tested in their original YB-35A pusher-propped condition and, in spite of the somewhat temperamental power-plant performance, they have yielded valuable data on the stability and control of the ecaudate wing configuration. We understand that one of these YB-35A airscrew-driven Flying Wings is being maintained more or less in the original condition for further test purposes, possibly for installation with later versions of the P. and W. Wasp Major such as the VDT model. The other ten aircraft were slated for jet conversion (nine flight and one static test) as YB-49As, similar to the first pair which have since been destroyed.

Later, however, Northrop announced a new conversion programme with some interesting variations on the original theme. Eight of the jet conversions were to be redressed with six Allison J-35-19 5,000-lb turbojets in place of the eight earlier-model 4,000-lb units—that is, a total static thrust of 30,000 lb in lieu of 32,000 lb. Surprisingly enough—for Northrop—four of the jet units were snugly buried inside the wing, but the other two were now suspended Boeing-wise, under it, as illustrated on page 499. The reason for this Northrop heterodoxy is not immediately obvious, although a first thought suggests a static-balance compromise, plus the further possibility of squeezing more tankage volume out of the wing. The six-jet theme, for example, ought to save at least 5,000 lb of power-plant weight, which is equivalent to a dividend of some 800 gallons of U.S. jet fuel.

Six out of the eight jet-conversions, designated as YB-35Bs, were intended for non-tactical purposes in advanced exploration of the all-wing principle. (A great deal of comment has been rife concerning its steadiness as a bombing platform.) The seventh was classified as the YRB-49A, indicating a long-range photo-reconnaissance version rather than a medium-range bomber. Theoretically, again, if the



“Remachable” transonics: Boeing B-47A medium-range Stratojets are now coming off the production line at Wichita, first of a batch of 75. The B-47 is an ingenious structural interpretation of the Mach theme in its application to the thin, flexible, swept-back wing.