Seven of the squadron's eight remaining Kestrels lined up at West Raynham

Kestrel Evaluation Squadron

by Stephen P. Peltz

Author's photos

IN 1962 BRITAIN, the United States and the Federal Republic of Germany negotiated a tripartite agreement to continue the development programme of the Hawker P.1127 and to provide nine aircraft and eighteen engines for a joint evaluation of the V/STOL concept. After the clearance flying for certification had been completed at A. & A.A.E. Boscombe Down, the Kestrel Evaluation Squadron was formed on 15th October 1964, with W/Cdr. D. Mc.L. Scrimgeour, R.A.F., as C.O.; Deputy C.O. (U.S.A.) is Cdr. J. J. Tyson, Junr., U.S. Navy, and Deputy C.O. (Germany) Col. G. F. Barkhorn. The Joint Military Evaluation Group, which includes representatives from each of the three nations, exercises operational control of the squadron, while for administrative purposes it comes under H.Q. R.A.F. Transport Command.

The squadron is organised along normal functional lines with operational, technical and administrative elements. It has seventeen officers, ten of whom are pilots, and 109 other ranks. The U.S.A. provided four pilots and one engineer officer (all three American services being represented). Britain provided four pilots plus five other officers and Germany two pilots and one engineer officer. All the American pilots are test-pilots while the British and German pilots are normal service pilots.

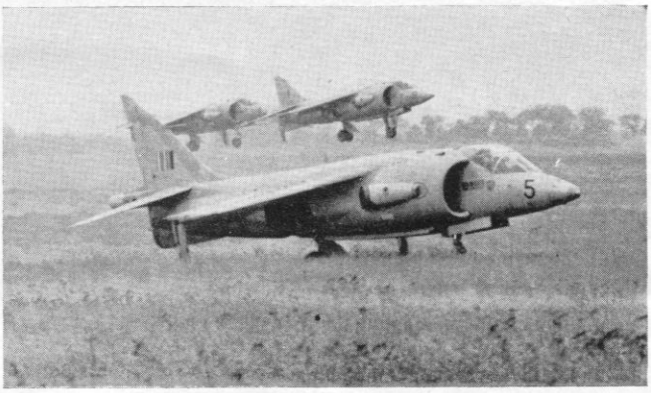
Training

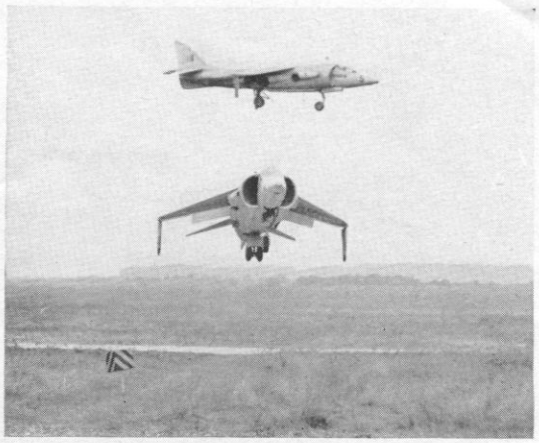
After the formation of the squadron the crews went to Hawker Siddeley for training. The ground crews received technical instruction for one to four weeks depending on their trade. Pilot training consisted of a one-week ground school on the Pegasus 5 engine conducted by Bristol Siddeley, a week's instruction on the airframe, and a three-hour flight programme under the control of Hawker Siddeley's Chief Test Pilot, Bill Bedford.

Despite a variation in operational experience, conversion to the Kestrel passed without incident, each pilot completing ten flights which included an average of eleven vertical take-offs and landings, eleven short take-offs and landings, three conventional take-offs and landings and five accelerating and decelerating transitions. Following the initial conversion, each pilot had an average of thirteen additional flights before trials flying commenced.

The squadron is charged with evaluating the V/STOL concept and the associated problems of command and control and logistic support. The Joint Military Evaluation Group issued a trials instruction in October 1964 which divided the trials into three phases and seven separate tasks. The first phase consisted of operations from West Raynham (a prepared base), the second from semi-prepared areas at Bircham Newton (a disused grass airfield) and North Pickenham (a disused airfield which includes a vacated missile site enclosed by a 12 ft. fence), and the third

LEFT: *A Kestrel, XS695, landing on an aluminium mat at Bircham Newton.* RIGHT: *As XS695 taxies away, two more Kestrels come down behind it. Note height of grass—it did not present any great problem to the aircraft*





ABOVE: *As the lower aircraft prepares to land on a polyester surface, a second Kestrel goes past at* 30 *knots.* LEFT: *XS692 landing on unprepared surface*

from the Army Practical Training Area at Stanford where the unprepared strips were located.

The seven tasks assigned to the squadron were as follows. First, flight operating procedures and transition techniques prior to operations in the field and to provide data for the evaluation of handling characteristics and future training requirements. This task has almost been completed and standard operating techniques have been established for: (*a*) all forms of take-off and landing, including traffic patterns, overshoots and recovery; (*b*) fuel reserves for various conditions; and (*c*) multiple aircraft operations.

The second task was to examine the advantages and disadvantages of the various modes of take-off and landing.

This led to a comparison of the payloads that could be carried (and resultant useful load and radius of action) for each take-off technique—being at a minimum with vertical take-off and at a maximum when full use was made of a prepared runway. This phase also included an evaluation of the effects of jet efflux, ground erosion problems, and the use of artificial surfaces that had been prepared for test.

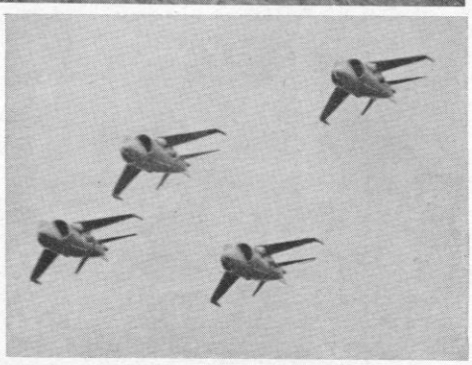
An extensive build-up of knowledge for operating from grass surfaces has been obtained and it is interesting to note that grass does not show any visible signs of scorching until about twenty-four hours after the take-off or landing has been made. This means that the aircraft can be quickly redeployed, making them difficult to trace. Three types of artificial surfaces have been used—membranes, polyesters and aluminium mat. Both the polyester and aluminium surfaces have proved very successful. It was found that mat sizes could be reduced to 50 ft. square, and the squadron is confident that this can be reduced still further.

Jet-borne flight

The third task was designed to see what application there is for low-speed flight where there is insufficient lift from the wings to sustain flight—*i.e.*, jet-borne flight. The Kestrel was originally cleared for jet-sustained manoeuvring at speeds up to 30 knots but this has now been extended for speeds between 90 and 150 knots. There are possible applications in reconnaissance and for manoeuvring during transition before landing and after take-off.

The fourth task, and one of the most important, was that to study the suitability of V/STOL aircraft for operation in the field. Among the advantages of V/STOL aircraft are the fact that they do not need long runways, and can therefore be dispersed over many small sites to reduce vulnerability while on the ground; also they cut "response time" since they can be located in forward areas. Against these must be weighed the disadvantages, such as the problem of logistic support for dispersed aircraft and increased difficulty of command and control. With the cancellation of the Hawker Siddeley 681 there are no V/STOL support aircraft in sight—although the joint Dornier-Hawker Siddeley project may result in a substitute—

RIGHT: *Three Kestrels at Bircham Newton. Exposed film is being extracted from the F-95 camera in the nose of the nearest machine.* BELOW: *XS694 on a* 50 *sq. ft. experimental polyester surface at Bircham.* BELOW RIGHT: *Fly-past by four Kestrels*



Four of the Kestrel pilots (left to right): *W/Cdr. Scrimgeour, R.A.F., C.O. of the squadron; Col. Barkhorn, Deputy C.O. (Germany); Cdr. Tyson, Deputy C.O. (U.S.A.); and F/Lt. Munro, R.A.F.*

Kestrel . . .

and the problem of logistic support in the field remains difficult.

However, the squadron, bearing this in mind, has envisaged the following basic situation. The primary site would contain the squadron H.Q., servicing elements and operations centre from which control would be exercised. Around the primary site at varying distances would be the sub-sites on which aircraft could be dispersed. These sub-sites could have different support facilities varying from full turn-round and rearming capability down to no logistic support whatsoever. Aircraft could then be operated, for example, by: (i) taking off from site, going to target and returning to site for turn round; (ii) aircraft dispersed at sub-sites, take off and land at primary site for fuelling and rearming, going to target and returning to sub-site; or (iii) aircraft take off fully armed from primary site, land at sub-site, remaining there until called upon to strike a target, and then returning to primary site for refuelling and rearming. In the latter two cases the very minimum of logistic support would be required at the sub-sites.

Task 5 was to establish operating procedures, to determine weather minima and approach-aid requirements, and to comment on the adequacy of existing aircraft instruments for V/STOL. In conventional flight the aircraft can be operated in weather limits similar to those for other fighter types. The V/STOL aircraft has the potential advantage of rapid deceleration when breaking clear of cloud base close to the landing area or of actually flying the instrument approach at slow speed to allow a lower weather minimum than conventional aircraft. Although V/STOL flight in actual instrument conditions has not been permitted during the evaluation, instrument take-offs and transitions under simulated conditions have been accomplished.

Task 6 calls for evaluation of all the ramifications of night flying. Little is yet known about operating V/STOL aircraft in darkness and in particular from small non-permanent dispersed sites in such conditions. During this evaluation the squadron is co-operating with the Experimental Blind Landing Unit at R.A.E. Bedford.

The trials are scheduled to end on 30th November 1965. After that the U.S.A. will be free to take back to America three aircraft, Germany two aircraft and the rest stay in England. After the evaluation of the trials has been completed it is hoped that the British Government will finally confirm the order for 100 Kestrels for the R.A.F. without any further delay.

KESTREL PILOTS

W/Cdr. David McL. Scrimgeour, Commanding Officer of the Kestrel Evaluation Squadron, joined St. Andrew's University Air Squadron in 1945 and learnt to fly at No. 19 F.T.S., Cranwell, and No. 6 F.T.S., Tern Hill, followed by a Spitfire conversion course at No. 229 O.C.U., Chivenor, in 1948. Thereafter he served with No. 249 Squadron in Iraq and the Canal Zone, flying Spitfires, Tempests and Vampires until 1951, when he took the C.F.S. course at Little Rissington. From 1951 to 1954 he flew Meteors, Vampires and Venoms with the Central Gunnery School at Leconfield. He was later training officer with No. 500 (County of Kent) Squadron, R. Aux. A.F., flying Meteors, and then went on an exchange posting to the U.S.A.F. at Nellis AFB, Nevada, where he flew F-100s and F-86s. In 1959 he was appointed C.O. of No. 43 Squadron (Hunters) at Leuchars, and in 1961-62 served at R.A.F. Fighter Command H.Q. He took the R.A.F. Staff College course at Bracknell in 1963 and became C.O. of the Kestrel Evaluation Squadron in October 1964.

S/Ldr. F. A. Trowern joined the R.A.F. in 1951 and learnt to fly at Thornhill, Southern Rhodesia, on Tiger Moths and Harvards; he received advanced instruction on Meteors at Driffield and Stradishall. From 1952 to 1955 he flew P.R. Meteors and Vampires with No. 2 Squadron in Germany. After taking the C.F.S. course he instructed on Provosts, Jet Provosts, Meteors and Vampires at Syerston and Hullavington, and in 1959–60 flew Meteors with the Peninsula Reconnaissance Flight at Khormaksar, Aden. He then joined No. 8 Squadron (Venoms, Meteors and Hunters) in Aden, and in 1961–64 instructed at Chivenor, flying in the Hunter aerobatic team.

F/Lt. R. J. A. Munro, A.F.C., joined the R.A.F. as a Halton apprentice in 1947. He learnt to fly on Chipmunks and Harvards at Thornhill, Southern Rhodesia, in 1952, and his advanced instruction was undertaken on Meteors at Finningley. From 1953 to 1957 he flew Meteors, Vampires, Venoms and Swifts with No. 79 Squadron in Germany, and in 1957–58 was Fighter Command liaison officer at Aldergrove, Northern Ireland. He flew Meteors with the Peninsula Reconnaissance Flight in Aden, 1959–60, after which he became a flight commander with No. 8 Squadron (Venoms, Meteors and Hunters) at Khormaksar. He was an instructor at No. 229 O.C.U., Chivenor, in 1961–64, flying in the Hunter aerobatic team in 1963.

F/Lt. David J. McL. Edmonston joined the R.A.F. in 1953 as a Cranwell cadet. From 1956 to 1958 he served with No. 19 Squadron (Meteors) at Church Fenton, and for the next two years was with No. 111 Squadron at Wattisham, flying Hunters in the "Black Arrows" aerobatic team. From 1960 to 1962 he was with No. 8 Squadron in Khormaksar, thereafter going to No. 229 O.C.U., Chivenor.

Cdr. J. J. Tyson, Junr., U.S. Navy, Deputy C.O. (U.S.A.), learnt to fly with the U.S. Naval Air Training Command in 1948–49. From then until 1953 he flew with Fighter Squadron 173. He was a flying instructor with the U.S.N. Air Base Training Command, 1953–55, and in 1956–57 was aviation transport officer and communications officer in U.S.S. *Corregidor*. After taking an engineering degree at Stanford University he went to U.S.N. Guided Missile Unit No. 41 and Air Development Squadron 4 at Point Mugu, California, as missiles officer and project pilot. He was a student test pilot at the U.S. Naval Test Pilot School in 1960–61, and for the next two years served as a test pilot at the U.S. Naval Air Test Center, Patuxent River, Maryland, flying land- and carrier-based U.S.N. aircraft. He was the U.S.N. project officer for the P.1127 at the U.S. Office of Naval Research in London from 1963 to 1965, after which he joined the Kestrel Evaluation Squadron.

Maj. John K. Campbell, an experimental test pilot with the U.S.A.F., gained a commercial flight instructor's licence and in 1941–42 instructed at Tennessee (South Carolina) and Randolph Field (Texas). He was commissioned in the U.S. Army Air Corps in January 1945, and for the next year flew B-25, B-26, B-29 aircraft. He left the service in 1946 but was recalled to the U.S.A.F. in 1950, and flew 1,000 hours in Korea, and in 1952–54 completed 1,400 hours of test flying at Wright-Patterson AFB, Ohio. In 1955 he went to the Experimental Test Pilots' School at Edwards AFB and from 1956 to 1962 was an experimental test pilot at Edwards. From 1962 to date he has been V/STOL project officer in Europe with particular reference to the P.1127.

Maj. Paul R. Curry, U.S. Army, joined the U.S. Army in 1950, being commissioned in 1952. After learning to fly he took a helicopter course in 1954 and from then until 1958 served in Alaska and the Panama Canal Zone. After taking an engineer officer's advanced course he was transferred to the Transportation Corps in 1959 and in 1960 was at the U.S.A.F. Experimental Test Pilot School. He was assigned to the U.S. Army Transportation Research Command in 1961, and as a research pilot flew VZ-4, VZ-2, XV-4A, XV-5A, X-14, XV-3, XH-51A and other aircraft. He was assigned to the Kestrel Evaluation Squadron in June 1965.

Maj. John A. Johnston, D.F.C., U.S. Army, has served at Fort Sill (Oklahoma), Fort Eustis (Virginia), Fort Riley (Kansas), Fort Rucker (Alabama) and Thule AFB, Greenland. As an experimental test pilot at Edwards AFB he has flown a wide variety of rotating-wing, fixed-wing and VTOL aircraft, including the experimental XROE, XV-3 and XV-6.

Col. Gerhard F. Barkhorn, Deputy Commanding Officer (Germany), flew a Messerschmitt Me 109 with the *Luftwaffe* and became Germany's second top-ranking scorer, claiming 301 victories, mostly on the Russian front.

First Lieutenant V. Suhr, joined the German Air Force in 1958, learning to fly on Piper L-18s, Piaggio 149Ds and T-33s in Germany and F-84Fs at Luke AFB, U.S.A. At the end of 1961 he was posted to a NATO-assigned reconnaissance squadron at Eggebek, Northern Germany. He has been with the Kestrel Evaluation Squadron since November 1964.