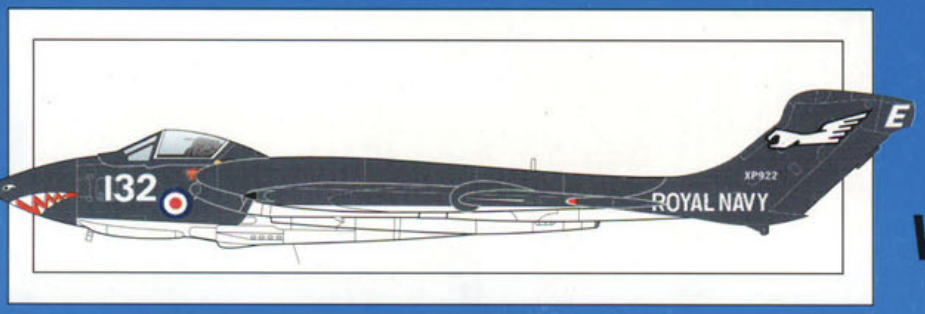
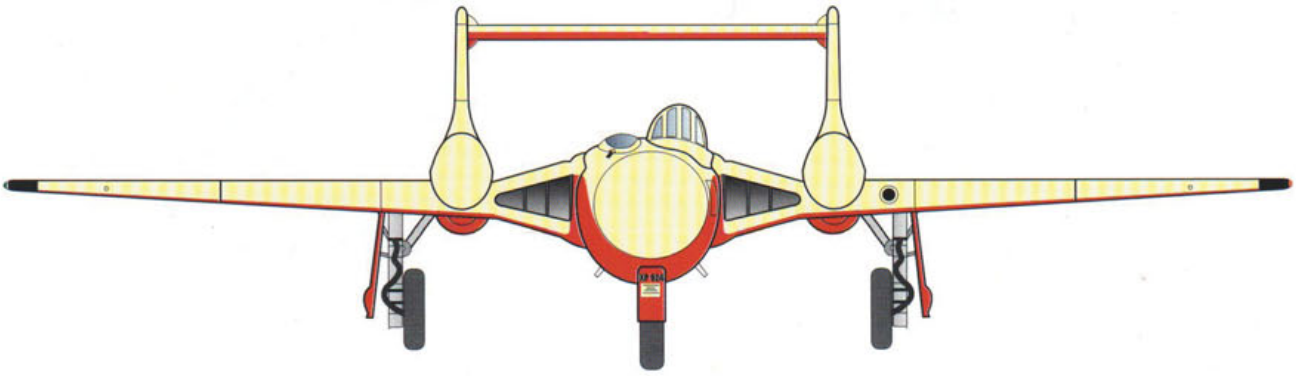


WARPAINT SERIES No. 11

DE HAVILLAND SEA VIXEN

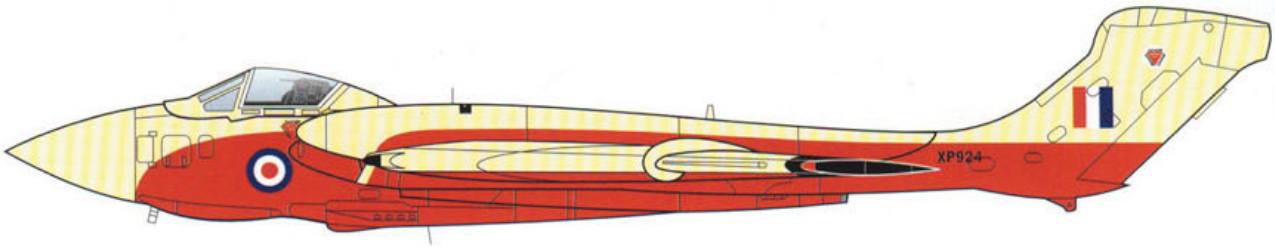
BY STEVE HAZELL

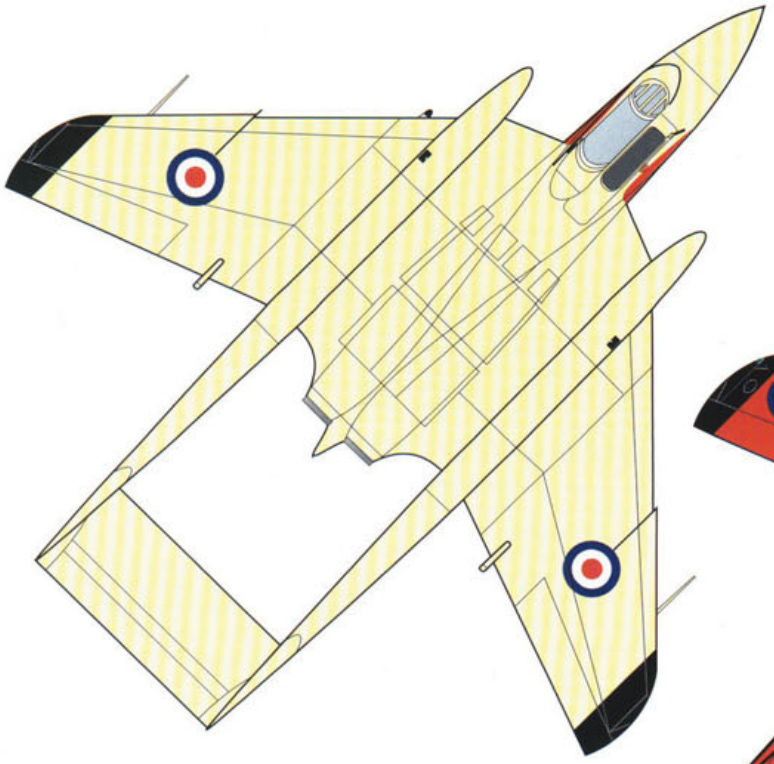
899 Squadron Sea Vixen FAW. 2 XS577:133-E about to launch from *HMS Eagle* in June 1967 during exercises in the English Channel. At the time the bulged observer's hatch had yet to be introduced as standard on sea-going aircraft. (Author)



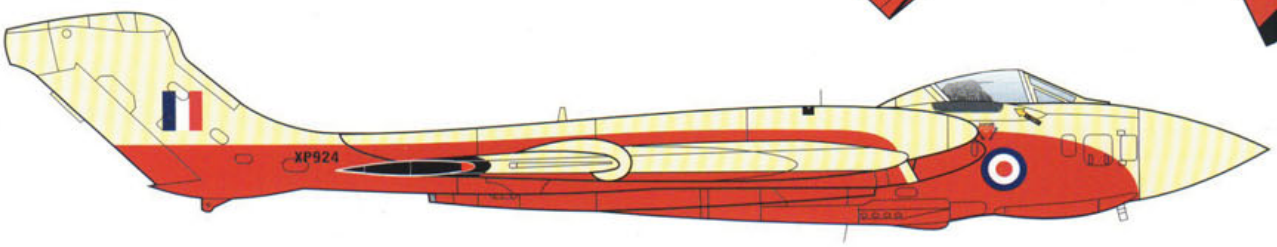
DE HAVILLAND SEA VIXEN D. 3

de Havilland Sea Vixen D. 3 XP924 of RAE Llanbedr during 1989. This aircraft was used for pilotless aircraft trials and wears the initial drone finish with more extensive areas of Deep Cream on the upper surfaces. Its full serial number is stencilled across the nose wheel door in black and unlike the prototype it retained its in-flight refuelling probe mounting.





Drawings by Karl-Heinz Morawietz



de Havilland SEA VIXEN

By Steve Hazell

ONE of the new concepts to emerge tried and tested from World War 2 was the twin-seat, radar-equipped night fighter. Another was the jet engine, which already promised to make all piston-engined fighters obsolete. During the early years of peace after 1945 aircraft development progressed rapidly, especially once the results of wartime German aeronautical research had been analysed and made available to industry. There was also an extra incentive once the former western Allies started reshaping their defence policies to meet the new challenge posed by the era of the Cold War.

By the end of the war the Royal Navy was already considering the de Havilland Vampire as a potential sea-going jet fighter and in December 1945 used one to make the world's first landing and take-off by a jet aircraft from an aircraft carrier. These trials aboard *HMS Ocean* demonstrated that jet operations were feasible from aircraft carriers so the Admiralty immediately set about formulating its requirements for a jet-powered fleet fighter. The result was Specification N.40/46 which was issued in January 1947 and called for a two-seat night fighter powered by two jet engines, capable of operating from the RN's existing Fleet Carriers.

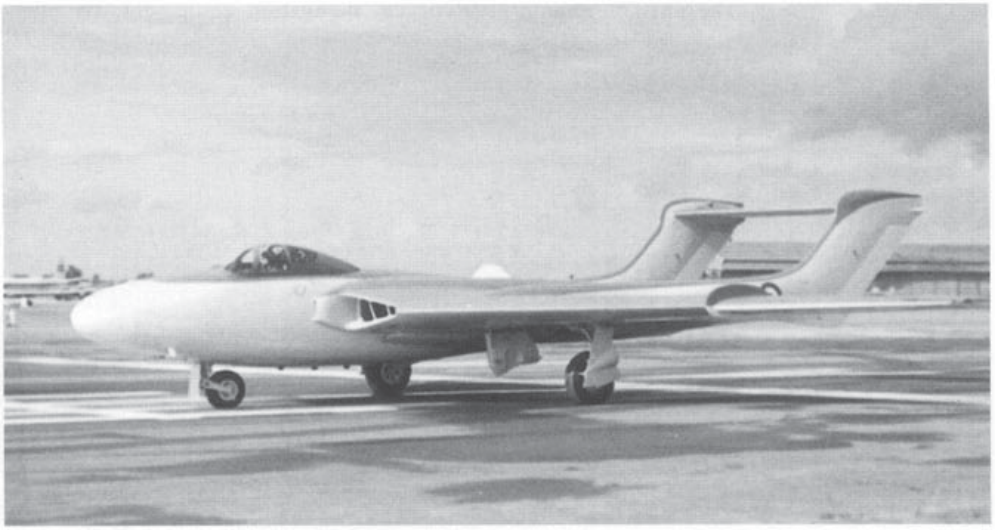
At the same time the Royal Air Force was also formulating plans for various types of jet aircraft with which to equip its front-line squadrons. It too needed radar-equipped night and all-weather fighters so it was hardly surprising that when Specification F.44/46 was issued on 24 January 1947 it called for much the same type of fighter aircraft as the Fleet Air Arm was looking for.

The DH. 110 second prototype WG240 at Farnborough in 1953. It is finished in a Sky and Extra Dark Sea Grey finish approximating to the contemporary naval colour scheme for publicity purposes, when it was offered to the Admiralty as the prospective naval all-weather fighter. (A.W.Hall)

THE DE HAVILLAND DH. 110

Because of the similarity between Specifications N.40/46 and F.44/46 the de Havilland Aircraft Company decided to submit one basic design to cover both, giving this proposal the company's type number DH. 110. Like the Vampire it had a fuselage pod set between twin booms which extended back from each wing and supported the tailplane, but this aircraft was to be powered by two fuselage-mounted jet engines, have a crew of two and, most significantly, would have swept wings. Wartime German research made available to de Havilland convinced the company that swept wings was an idea worth developing so it built the DH. 108 research jet to investigate, amongst other things, the behaviour of swept wings on a high-speed aircraft. As a result of these trials de Havilland decided to use a 40 degree angle of sweep for the wing leading edges of the DH. 110 which would permit supersonic speeds to be achieved in a shallow dive.

In order to minimise handling problems during asymmetric flight following an engine failure the engines were mounted side-by-side buried in the after fuselage, each fed from an air intake at the leading edge of each wing root. The crew sat forward of these intakes on Martin Baker ejec-



XJ486, one of the pre-production Sea Vixen FAW. 1s in use with 700Y Squadron at Yeovilton during early 1959. The early aircraft off the production line lacked the water dispersal fairing around the canopy front and IFR equipment.

One of the Sea Vixen FAW. 2s used by RAE Bedford was XN653, which had previously served with 892 Squadron. It flew from Bedford throughout the 1970s devoid of naval markings and with a raked fin flash applied, and never fitted with the bulged, frangible observer's hatch. (A.W.Hall)

tion seats with the pilot offset to port beneath a sliding canopy. The radar operator sat to starboard and back from the pilot in a fully enclosed compartment accessible through a hatch in the upper fuselage, with two small windows to help spatial orientation. This claustrophobic environment was necessary because, to obtain the best results from early radar displays, the operator had to work in near darkness. The main gun armament of four 30-mm cannon was concentrated in the underside of the fuselage below the cockpit area leaving the nose free to house the AI radar and aerial.

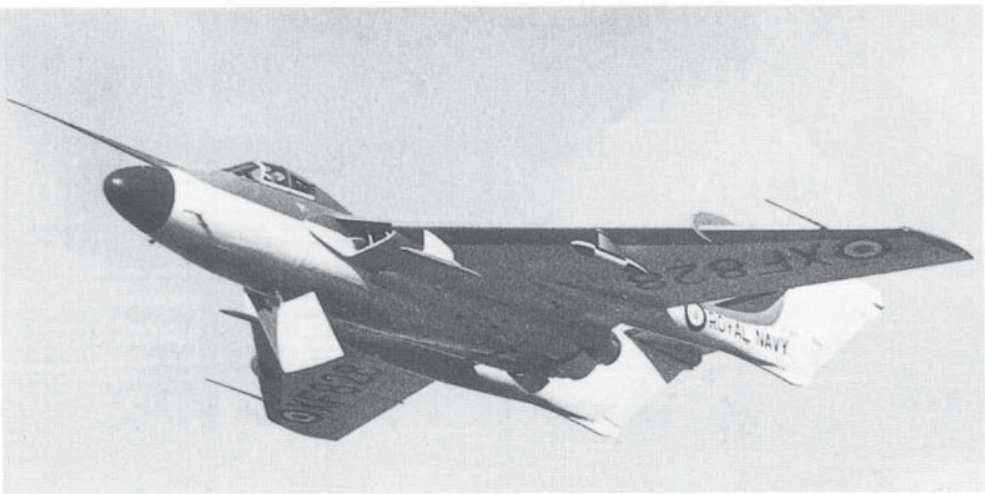
For the naval version of the DH. 110 de Havilland made provision for the wings to fold outboard of the booms so that aircraft would fit into existing flight deck lifts, and for an arrester hook under the rear fuselage between the exhausts. The airframe would also have the ventral fittings for the strop and hold-back bridle necessary for catapult launches, and the whole airframe would be suitably strengthened to withstand the stresses of catapult launches and arrested landings.

In February 1948 Specification F.44/46 was replaced by Specification F.4/48 specifically tailored to Air Staff Operational Requirement 227 of December 1946. This demanding Specification called for a two-seat aircraft with a maximum speed of 525 knots at 25,000 ft (972 km/hr at 7,620 m) and an endurance of at least two hours, which was capable of intercepting targets at night and in all weather. The fighter had to be able to reach its service ceiling of 45,000 ft (13,716m) within ten minutes of engine start, with a take-off run of no more than 1,500 yards (1,372m). The airframe was also to be capable of withstanding stresses of up to 4g during manoeuvres at sea level.

The new aircraft was to carry Airborne Interception (AI) radar, an Identification Friend-or-Foe (IFF) transponder and 'Rebecca' navigation equipment. Its main armament was to be four 30 mm Aden cannon mounted internally each with ammunition for 15 seconds continuous firing, but in addition it also had to be able to carry unguided rockets and the new air-to-air guided missiles then under development. There was also to be provision for the carrying of underwing drop tanks to extend endurance. The crew compartment was to be pressurised so that up to the aircraft's ceiling of 45,000 ft cabin pressure would fall no lower than the ambient pressure at 25,000 ft, and sufficient oxygen had to be carried to permit two and a half hours flying at these heights. Both crew members were to be provided with ejection seats.

RAF INTEREST

Initially it was the RAF which showed the most interest in the DH. 110 as a contender for F.4/48. In April 1949 the Ministry of Supply placed an order for nine prototypes to be completed as seven night fighters and two long-range fighters, but only as an insurance against the failure of the Gloster GA.5 of which four prototypes had been ordered. Later this de Havilland order was reduced to five airframes with the serials WG236, WG240, WG247, WG249 and WG252. Besides ordering the DH. 110 for the RAF the MoS also ordered four for the Royal Navy to be equally divided between the night fighter and strike fighter roles, covered by Specification N.14/49. However, later that year economic factors and changes in policy took a hand. In November the Admiralty decided that instead of waiting for the expensive and still unproven DH. 110 it



The sole DH. 110 Mk. 20X all-weather fighter prototype XF828. It is shown during early testing fitted with a nose instrumentation boom and experimental underwing pylons. (MAP)

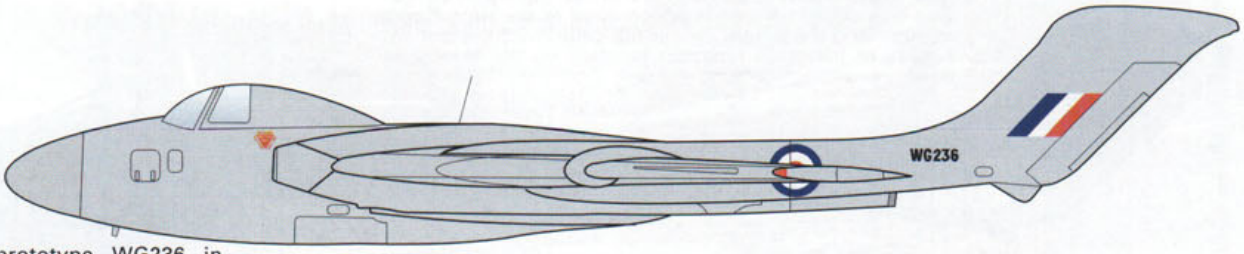
de Havilland Sea Vixen camouflage and markings

SEA VIXEN COLOUR KEY

Black | White | Roundel Blue | Roundel Red | Aluminium | Matt Aluminium | Light Grey

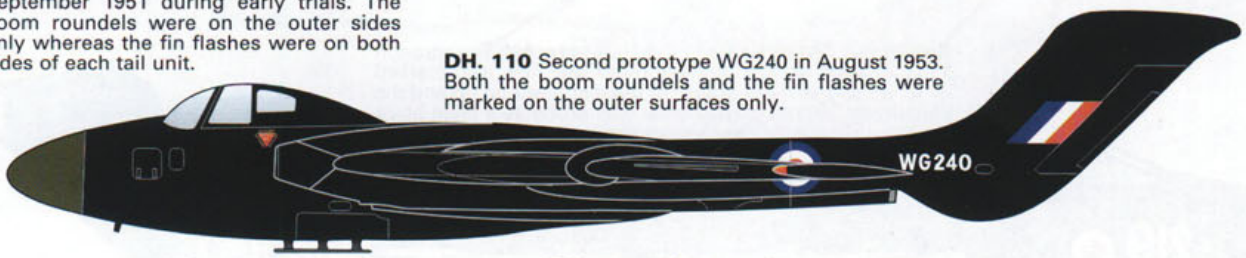
Extra Dark Sea Grey | Sky | Cream | Yellow | Nose on WG240 | Dayglo | Post Office Red

Drawings by Karl-Heinz Morawietz

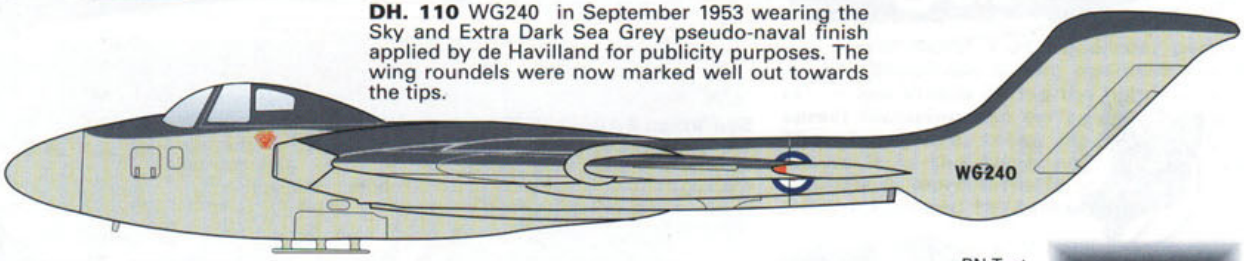


DH. 110 First prototype WG236 in September 1951 during early trials. The boom roundels were on the outer sides only whereas the fin flashes were on both sides of each tail unit.

DH. 110 Second prototype WG240 in August 1953. Both the boom roundels and the fin flashes were marked on the outer surfaces only.

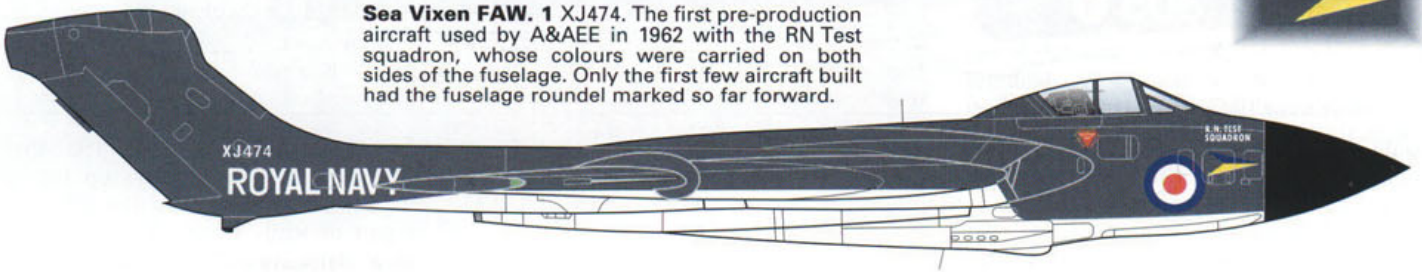


DH. 110 WG240 in September 1953 wearing the Sky and Extra Dark Sea Grey pseudo-naval finish applied by de Havilland for publicity purposes. The wing roundels were now marked well out towards the tips.

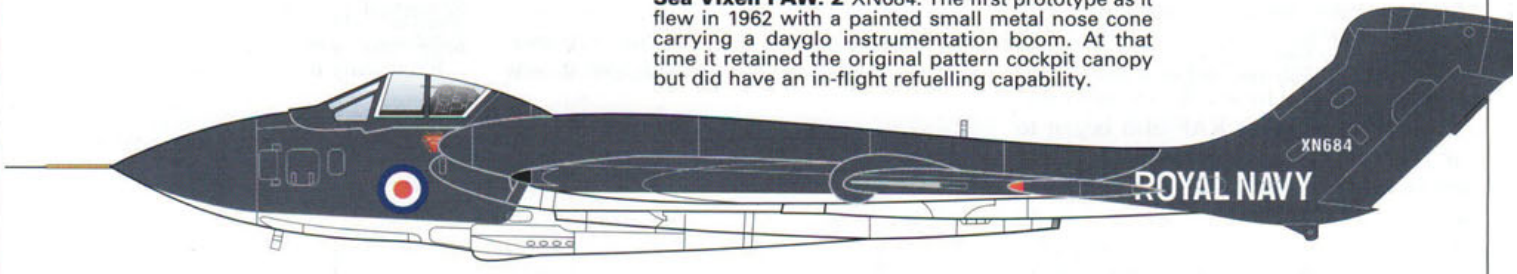


RN Test Squadron, A&AEE, nose marking

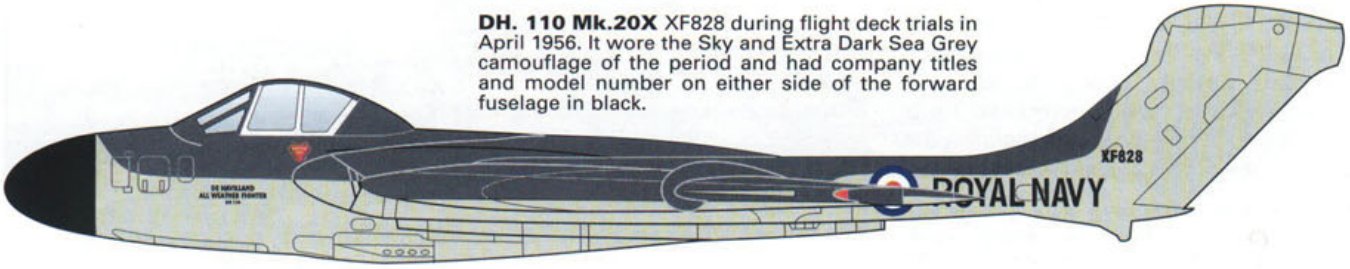
Sea Vixen FAW. 1 XJ474. The first pre-production aircraft used by A&AEE in 1962 with the RN Test squadron, whose colours were carried on both sides of the fuselage. Only the first few aircraft built had the fuselage roundel marked so far forward.



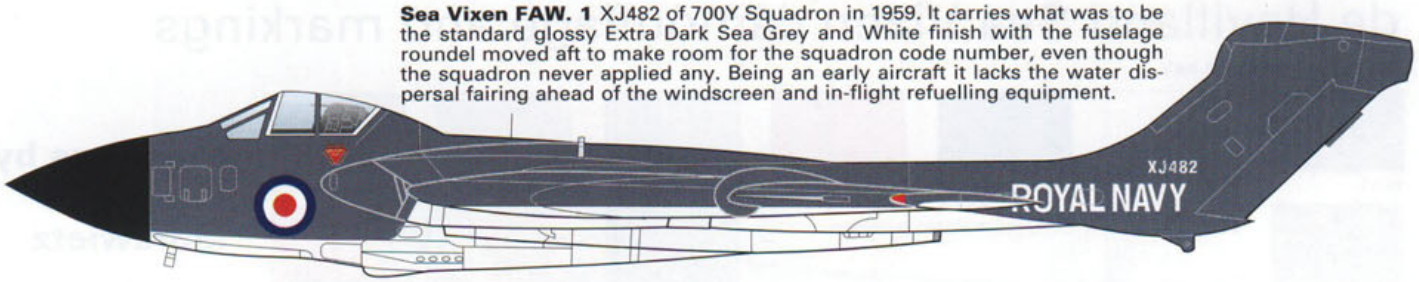
Sea Vixen FAW. 2 XN684. The first prototype as it flew in 1962 with a painted small metal nose cone carrying a dayglo instrumentation boom. At that time it retained the original pattern cockpit canopy but did have an in-flight refuelling capability.



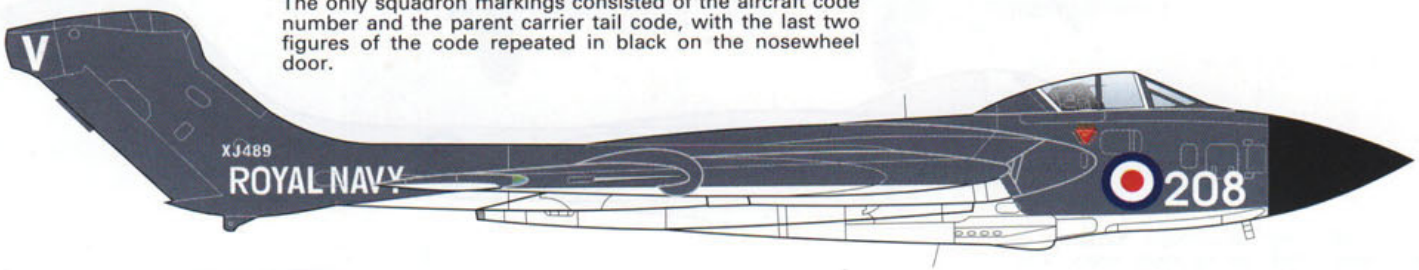
DH. 110 Mk.20X XF828 during flight deck trials in April 1956. It wore the Sky and Extra Dark Sea Grey camouflage of the period and had company titles and model number on either side of the forward fuselage in black.



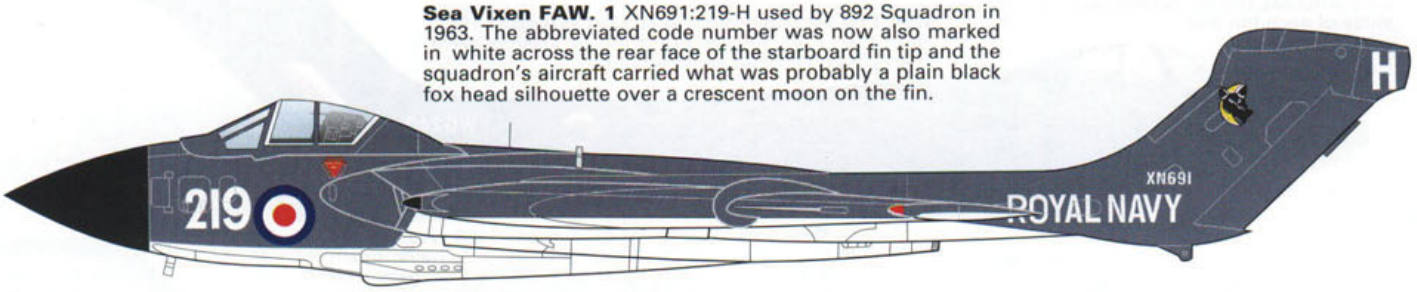
Sea Vixen FAW. 1 XJ482 of 700Y Squadron in 1959. It carries what was to be the standard glossy Extra Dark Sea Grey and White finish with the fuselage roundel moved aft to make room for the squadron code number, even though the squadron never applied any. Being an early aircraft it lacks the water dispersal fairing ahead of the windscreen and in-flight refuelling equipment.



Sea Vixen FAW. 1 XJ489:208-V of 892 Squadron in 1961. The only squadron markings consisted of the aircraft code number and the parent carrier tail code, with the last two figures of the code repeated in black on the nosewheel door.

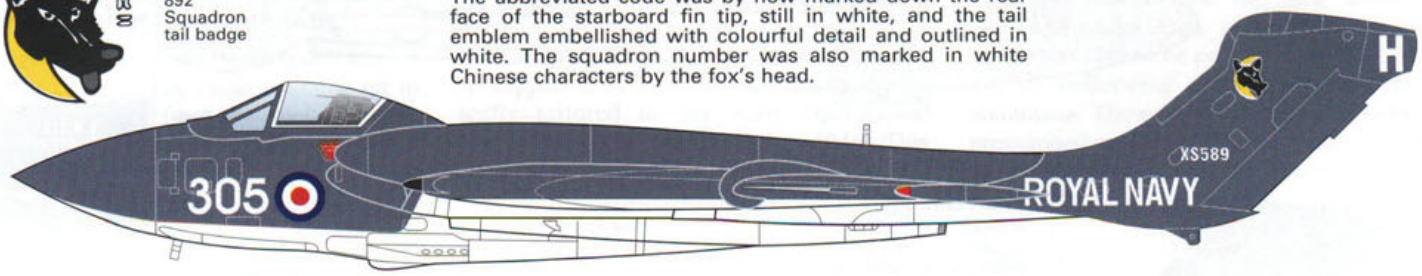


Sea Vixen FAW. 1 XN691:219-H used by 892 Squadron in 1963. The abbreviated code number was now also marked in white across the rear face of the starboard fin tip and the squadron's aircraft carried what was probably a plain black fox head silhouette over a crescent moon on the fin.



892 Squadron tail badge

Sea Vixen FAW. 2 XS589:305-H of 892 Squadron in 1966. The abbreviated code was by now marked down the rear face of the starboard fin tip, still in white, and the tail emblem embellished with colourful detail and outlined in white. The squadron number was also marked in white Chinese characters by the fox's head.



would opt for the cheaper DH. 112 Sea Venom which promised to be a lesser risk and would be available sooner. As a consequence the N.14/49 prototypes were cancelled and naval interest in the DH. 110 greatly diminished.

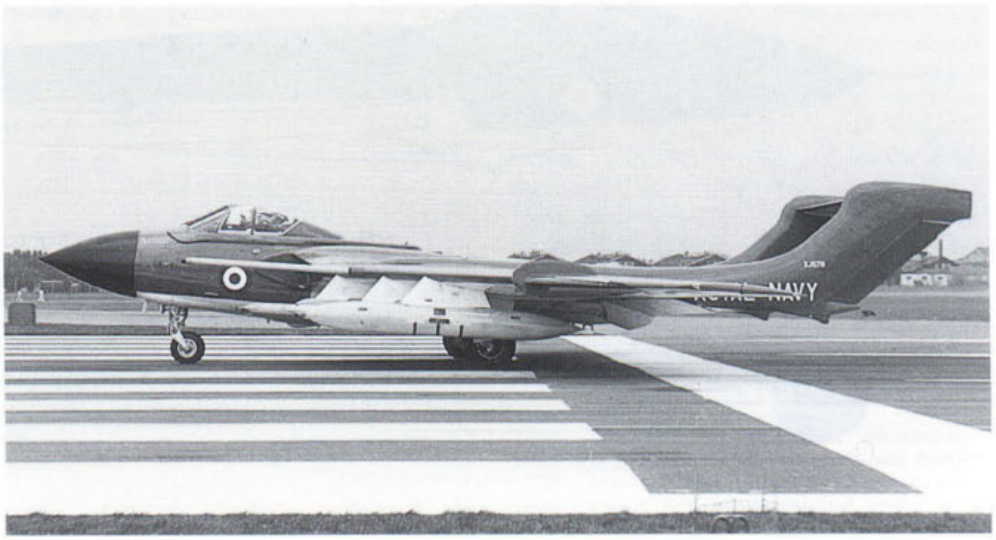
Similarly concerns were also being felt by the RAF which saw a growing problem with its fighter defences the longer it waited for the advanced DH. 110 or GA. 5 to enter service. Consequently the RAF also began to look for a less risky, more readily available alternative, and opted for a mixture of Vampires, Venoms and Meteors as interim night fighters. Work on the F.4/48 prototypes continued but the orders were reduced to two each of the DH. 110 night fighter version (WG236 and WG240) and the GA. 5.

The GA. 5 was the first to fly and despite some early setbacks during the test programme it soon became apparent that it was the RAF's first choice. It was therefore no surprise when the MoS announced on 7 July 1952 that the Gloster Javelin would be ordered in quantity with a 'super priority' production status, thereby ending all RAF interest in the DH. 110.

DH. 110 PROTOTYPES

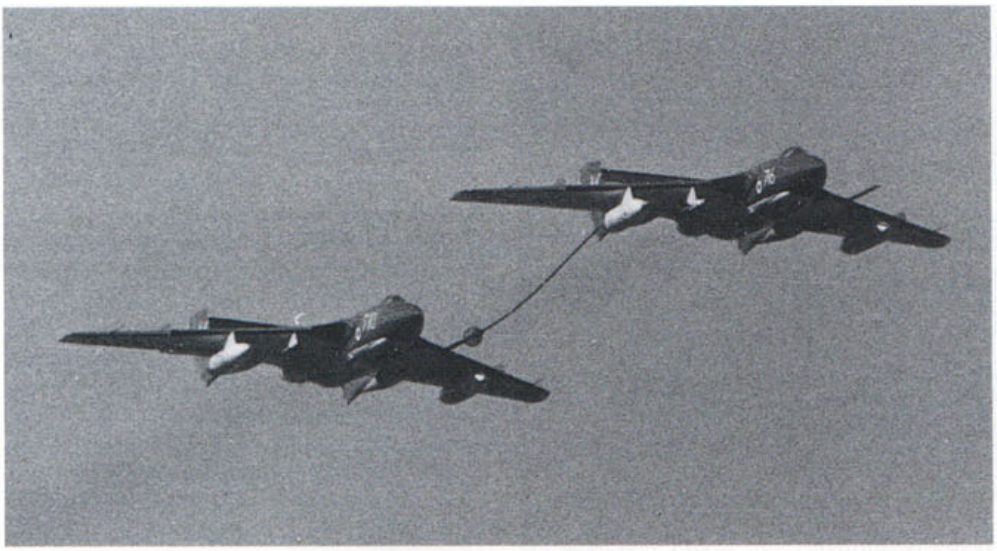
However, work on the two DH. 110 prorotypes continued at Hatfield and it was from there on 26 September 1951 that John Cunningham took WG236 up for its first flight, lasting 46 minutes. It was powered by a pair of Rolls Royce Avon RA.7 engines each delivering 7,500 lbs of thrust, and immediately after its maiden flight embarked on an extensive flight test programme.

Eventually on 9 April 1952 during a shal-



Sea Vixen FAW. 1 XJ578 was one of the aircraft used for in-flight refuelling development work. The manufacturer's and aircraft name are marked ahead of the cockpit in white. (MAP)

The Royal Naval Test Squadron, part of A&AEE Boscombe Down, operated a variety of Sea Vixens during the type's service career including this early FAW. 1 XJ488. The photograph, taken in January 1971, shows it in the black and white colour scheme it wore until it was withdrawn from use around 1973. (Author)

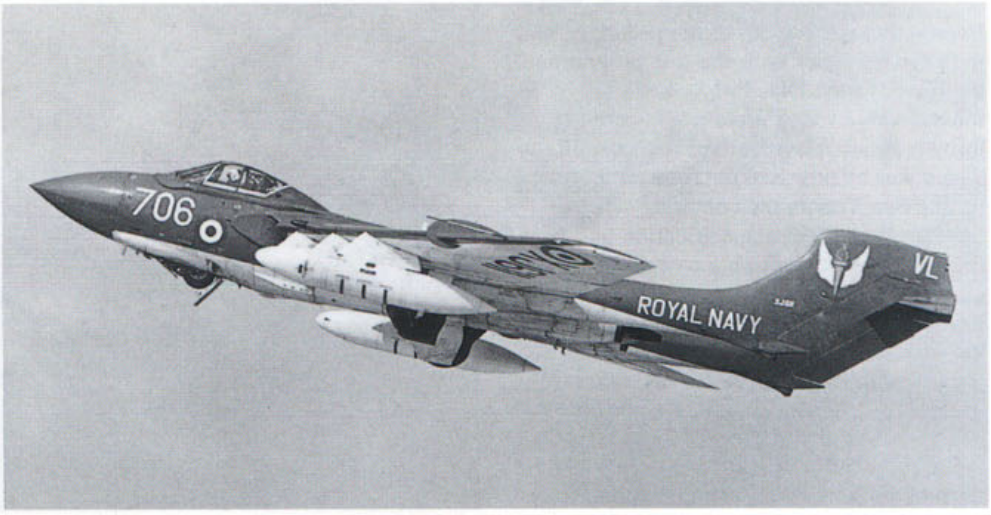


A pair of 766 Squadron Sea Vixen FAW. 1s practise buddy in-flight refuelling procedures. The refuelling pod was always carried on the starboard outer pylon and balanced by a drop tank on the port side. (A.W.Hall)

low dive, WG236 went supersonic for the first time. The second prototype, WG240, made its first flight at Hatfield on 25 July 1952, and also joined the test programme.

Eager to show off its new jet fighter de Havilland demonstrated the Sea Vixen at that year's Farnborough Air Show but on 6 September tragedy struck. Whilst coming out of the final loop of its display WG236 disintegrated and crashed in front of the spectators. One of its engines broke free from the airframe and was carried forward by its own momentum into the public enclosure where it cut a swathe through the crowd before finally coming to rest. Not only were the pilot, John Derry, and his flight test observer, Tony Richards killed in the crash, but 29 members of the public were also unfortunately killed.

Immediately the DH. 110 flight test programme was suspended and WG240 temporarily grounded until investigators had established the cause of the crash. The investigation finally concluded that a combination of rapid acceleration and a high rate of roll at low level had set up torsional stresses which caused the wing leading edge skins to fracture and peel back. This in turn led to a failure of the outer wing structures which disintegrated. As a result of these findings the outboard wings of WG240 were reinforced, notable by the addition of a second skin to critical areas of the leading edges. Whilst WG240 was grounded de Havilland took the opportunity to revise the shape of the vertical tail surfaces and in the spring of 1953 the sole remaining DH. 110 resumed test flying.



766 Squadron Sea Vixen FAW. 1 XJ611: 706-VL during 1966. The tail emblem is in the enlarged style with red detailing to the flames introduced that year. (APN)

XS579:130-E, a Sea Vixen FAW. 2 of 899 Squadron firing two inch rocket projectiles from one of its four underwing pods. The picture dates from early 1967. This aircraft was later written off in April 1968.

893 Squadron Sea Vixen FAW. 1 XN651:461-C in 1963. The squadron's running fox emblem, used whilst the unit was part of *Centaur's* air group, appears on the tail sides facing towards the front.

SEA VENOM REPLACEMENT

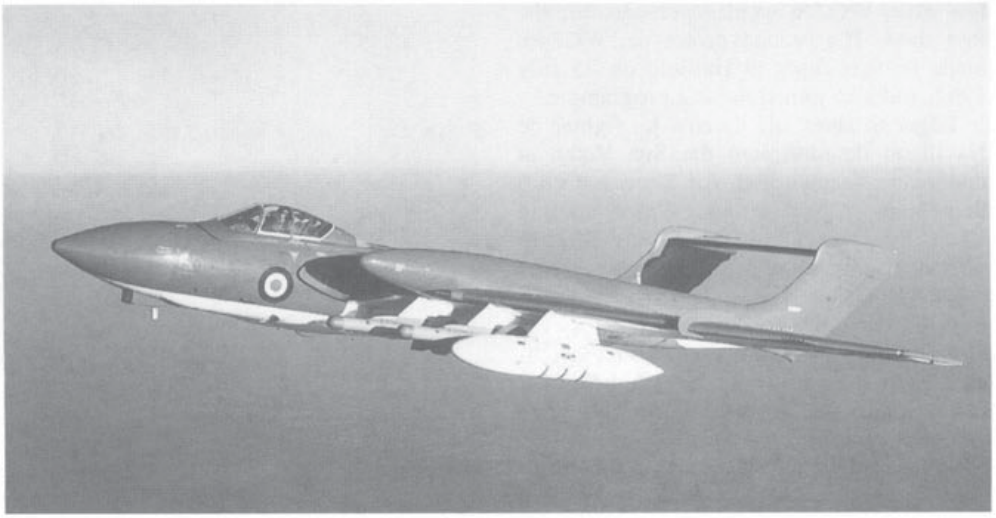
Even without the crash of the prototype and the ensuing delay with the test programme, the future of the DH. 110 looked very bleak indeed. However, a lifeline was about to be thrown to de Havilland by the Admiralty which was by now looking for a replacement for the Sea Venom then entering service.

Already in 1952 a specification had been issued for an aircraft able to carry out both all-weather fighter and ground attack missions. To meet this de Havilland proposed the DH. 116, essentially a swept-wing Sea Venom with improved radar, and two prototypes were actually ordered before the project was cancelled in 1953.

The navy instead decided to go for a twin-engined fighter which would not only offer better performance but would also have the improved safety margin which came with two engines. This policy shift prompted de Havilland to abandon the DH. 116 and instead to submit a thoroughly updated, fully navalised version of the DH. 110 utilising more powerful Avon engines and armed with the new air-to-air missiles.

With the Royal Navy now the sole potential customer for the DH. 110, de Havilland lost no time in producing a demonstrator to show the feasibility of its proposal. The remaining DH. 110 prototype was adapted as far as possible in the time available to be representative of the naval DH. 110. More powerful Avons were installed and the aircraft repainted in suitable naval colours, and by September 1953 it was being demonstrated as the navy's potential new fighter.

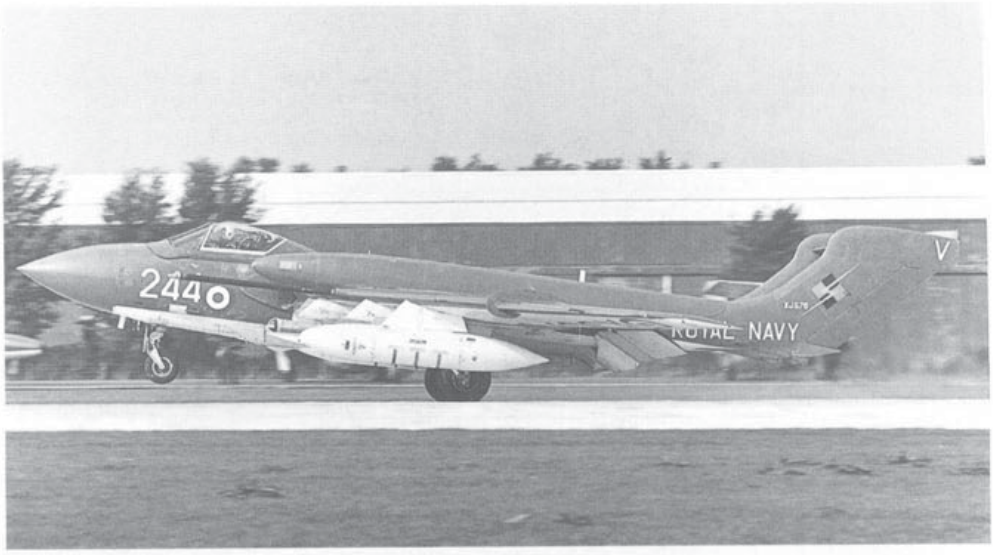
The first Sea Vixen FAW. 2 prototype XN684 during Red Top guided missile trials during the early 1960s. It is fitted with a metal nose unit with a camera fairing on the underside, and unlike production FAW. 2s still has the ventral rocket packs.



Right: 893 Squadron Sea Vixen FAW. 2 XJ576: 244-V during 1966 when it was part of *HMS Victorious'* air group. (APN) Lower right: XJ575:251-V, a Sea Vixen FAW. 2 of 893 Squadron in use during 1967. It carries the black, blue and yellow tail emblem worn by all the squadron's Mk. 2 aircraft. (MAP)

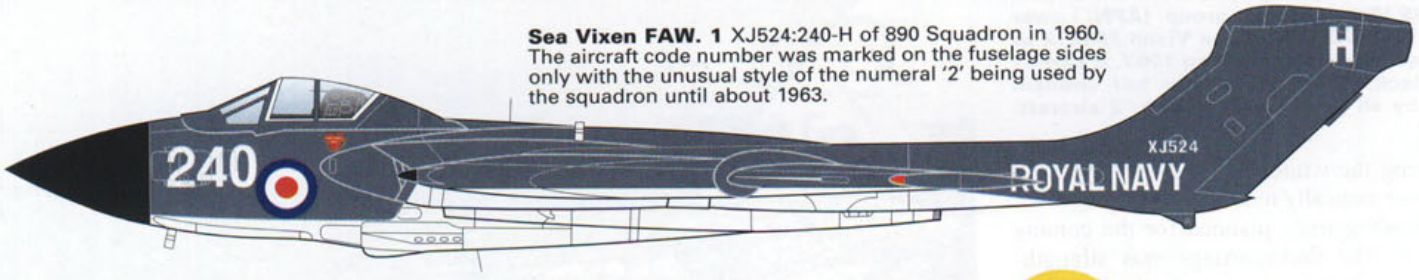
During the winter of 1953-1954 WG240 was more radically modified in readiness for deck landing trials planned for the coming summer. The undercarriage was strengthened to withstand the stresses imposed by carrier operations and the original fixed tailplane and hinged elevator were replaced by an all-flying tailplane. To improve low-speed handling during carrier approaches cambered leading edges were fitted to the outer wings together with enlarged wing fences, and more prominent tail bumpers were added to protect the airframe against impact damage from the flight deck at high angles of attack. Internal fuel capacity was also increased, but at this stage neither folding wings nor an arrester hook were fitted.

Following these modifications WG240 recommenced test flying on 11 June 1954 and went supersonic during its second flight on 14 June. After appearing at that year's Farnborough Air Show WG240 went to the Naval Test Squadron at A&AEE Boscombe Down for service handling trials which culminated with a series of overshoots and roller landings aboard *HMS Albion* in the English Channel on 23 September.



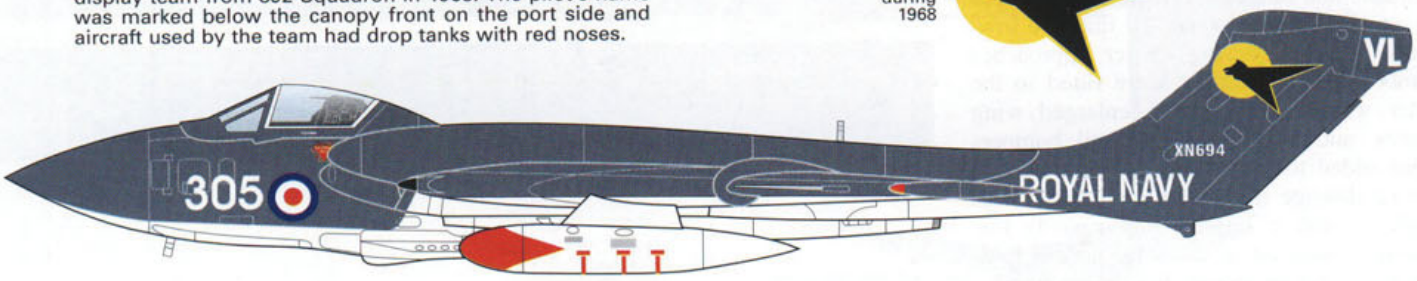
Several of 899 Squadron's Sea Vixen FAW. 2s lined up on the rear deck of *HMS Eagle* during exercises during 1967. Note the lashing points round the nose wheel of the nearest aircraft and the practice Red Top missiles fitted. (A.W.Hall)

Sea Vixen FAW. 1 XJ524:240-H of 890 Squadron in 1960. The aircraft code number was marked on the fuselage sides only with the unusual style of the numeral '2' being used by the squadron until about 1963.

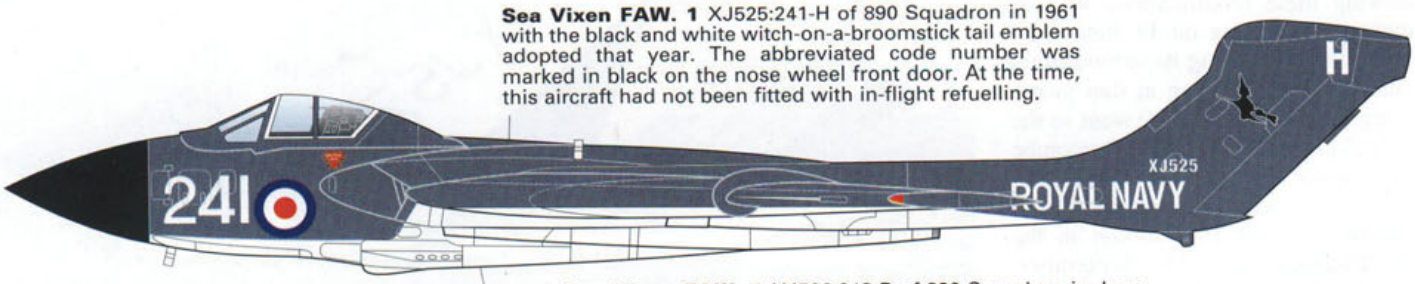


892 Squadron badge during 1968

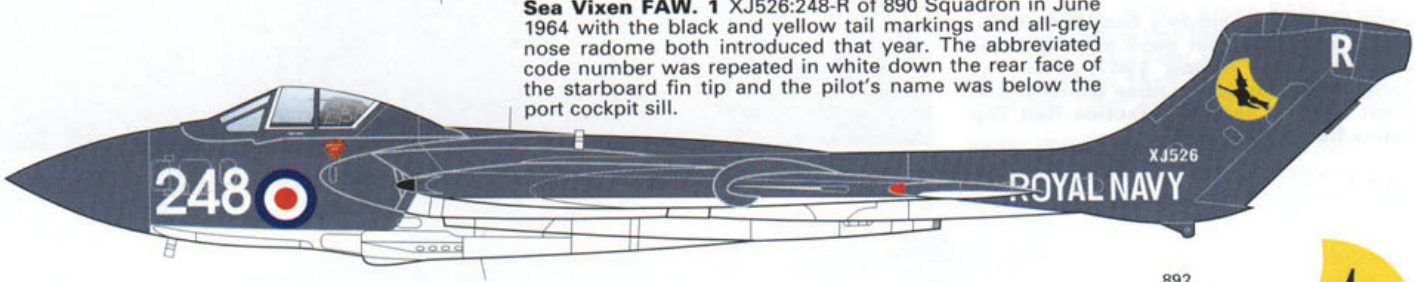
Sea Vixen FAW. 2 XN694:305-VL used by 'Simons Sircus' display team from 892 Squadron in 1968. The pilot's name was marked below the canopy front on the port side and aircraft used by the team had drop tanks with red noses.



Sea Vixen FAW. 1 XJ525:241-H of 890 Squadron in 1961 with the black and white witch-on-a-broomstick tail emblem adopted that year. The abbreviated code number was marked in black on the nose wheel front door. At the time, this aircraft had not been fitted with in-flight refuelling.

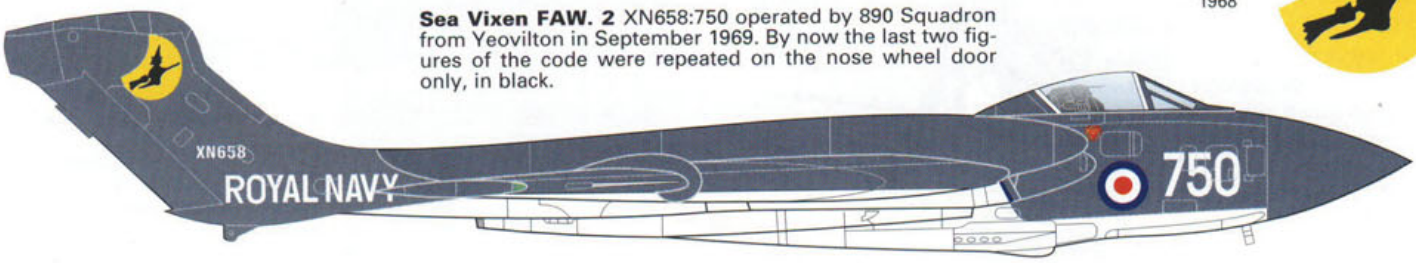


Sea Vixen FAW. 1 XJ526:248-R of 890 Squadron in June 1964 with the black and yellow tail markings and all-grey nose radome both introduced that year. The abbreviated code number was repeated in white down the rear face of the starboard fin tip and the pilot's name was below the port cockpit sill.

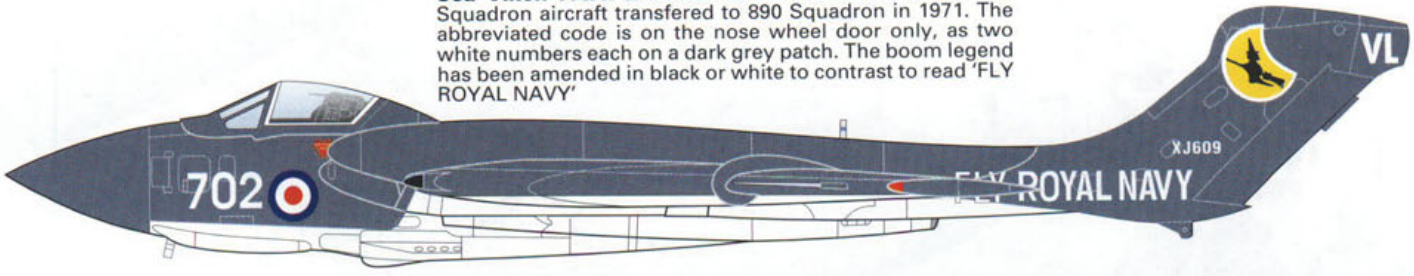


892 Squadron badge during 1968

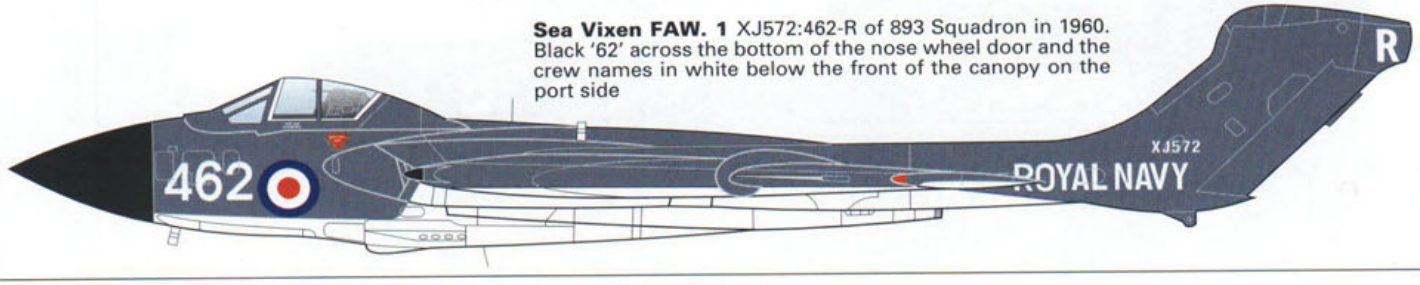
Sea Vixen FAW. 2 XN658:750 operated by 890 Squadron from Yeovilton in September 1969. By now the last two figures of the code were repeated on the nose wheel door only, in black.

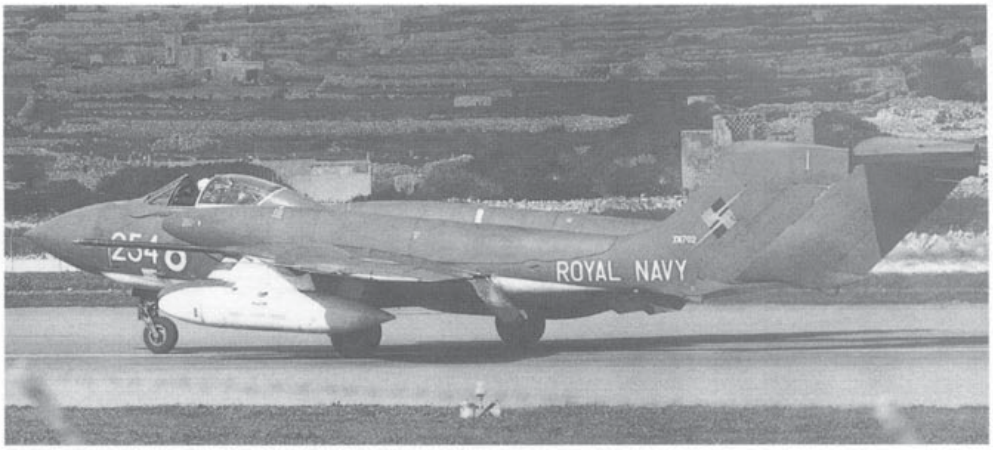


Sea Vixen FAW. 2 XJ609:702-VL one of the former 766 Squadron aircraft transfered to 890 Squadron in 1971. The abbreviated code is on the nose wheel door only, as two white numbers each on a dark grey patch. The boom legend has been amended in black or white to contrast to read 'FLY ROYAL NAVY'



Sea Vixen FAW. 1 XJ572:462-R of 893 Squadron in 1960. Black '62' across the bottom of the nose wheel door and the crew names in white below the front of the canopy on the port side





Sea Vixen FAW. 2 XN702:254 of 893 Squadron ashore at RAF Luqa, Malta, from *HMS Hermes* during 1970. The aircraft had recently joined the squadron and lacks the *Hermes* tail code but it does have the luminous strip on the nose and tail sides carried by some of the aircraft during their last deployment. (G. Mangion)

Company trials then resumed during the course of which WG240 was fitted with two pylons carrying dummy Blue Jay missiles below each inboard wing to establish the optimum positioning for such pylons. No internal armament was ever fitted to this prototype, however.

Eventually WG240 was modified to represent as closely as possible the definitive aerodynamic shape of the Sea Vixen, including the pointed nose radome and more angular tail profile. It later became an Instructional Airframe and was finally sold for scrap in July 1965.

XJ526:255-H of 893 Squadron landing at RAF Luqa probably during 1970. It carried full squadron markings together with the luminous nose and tail stripes.(G.Mangion)

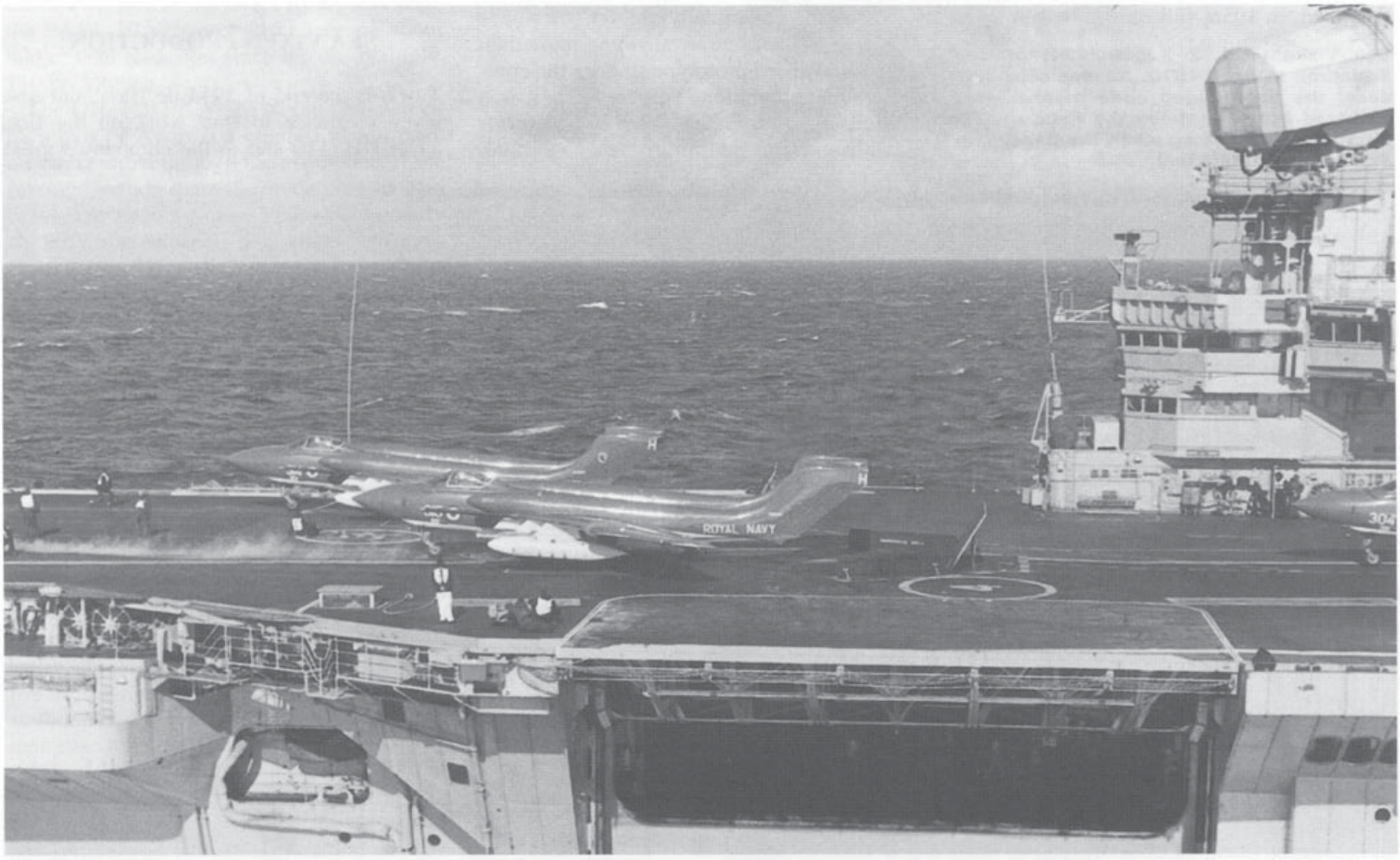
THE DH. 110 MK. 20X

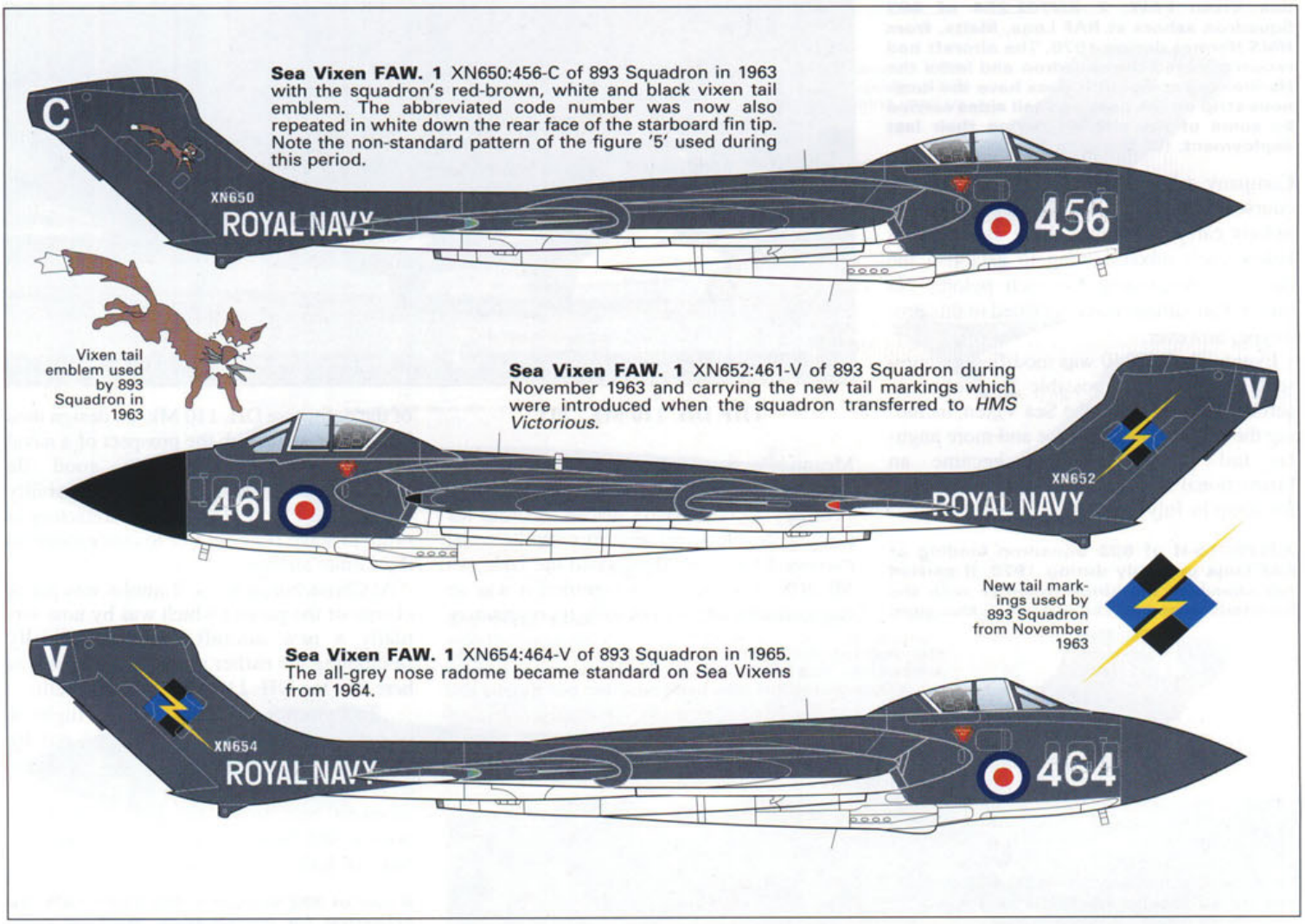
Meanwhile, naval interest in the new version of the DH. 110 was increasing and in February 1954 the MoS placed an order for a single development aircraft with the serial number XF828 and designated the DH. 110 Mk.20X. The 'X' suffix signified it was an experimental aircraft not fully representative of the definitive DH. 110 Mk. 20 design then being finalised. With the prospect of a naval order looking increasingly good de Havilland transfered design responsibility for the DH. 110 to its Christchurch factory in order to leave Hatfield free to concentrate on the Comet airliner.

At Christchurch W. A. Tamblin was put in charge of the project which was by now virtually a new aircraft only superficially resembling the earlier prototypes, and it was here that the DH. 110 Mk. 20X was built.

The aircraft made its maiden flight at Christchurch on 20 June 1955 piloted by Jock Elliott and powered by a pair of uprated Avon 208s each delivering 11,230 lbs static thrust. Specifically for flight deck operations it had been given a revised undercarriage of longer stroke, an arrester hook and

A pair of 892 Squadron Sea Vixen FAW. 2s preparing for launch from the bow catapults of *HMS Hermes* during 1966. The farther one, 314-H carries the squadron's fox head and crescent moon fin badge and has a white underside to the nose radome whilst 315-H, the nearer, lacks both of these features. The aircraft are probably XJ564:314 and XN694:315. (A.W.Hall)





Sea Vixen FAW. 1 XN650:456-C of 893 Squadron in 1963 with the squadron's red-brown, white and black vixen tail emblem. The abbreviated code number was now also repeated in white down the rear face of the starboard fin tip. Note the non-standard pattern of the figure '5' used during this period.

Sea Vixen FAW. 1 XN652:461-V of 893 Squadron during November 1963 and carrying the new tail markings which were introduced when the squadron transferred to *HMS Victorious*.

Sea Vixen FAW. 1 XN654:464-V of 893 Squadron in 1965. The all-grey nose radome became standard on Sea Vixens from 1964.

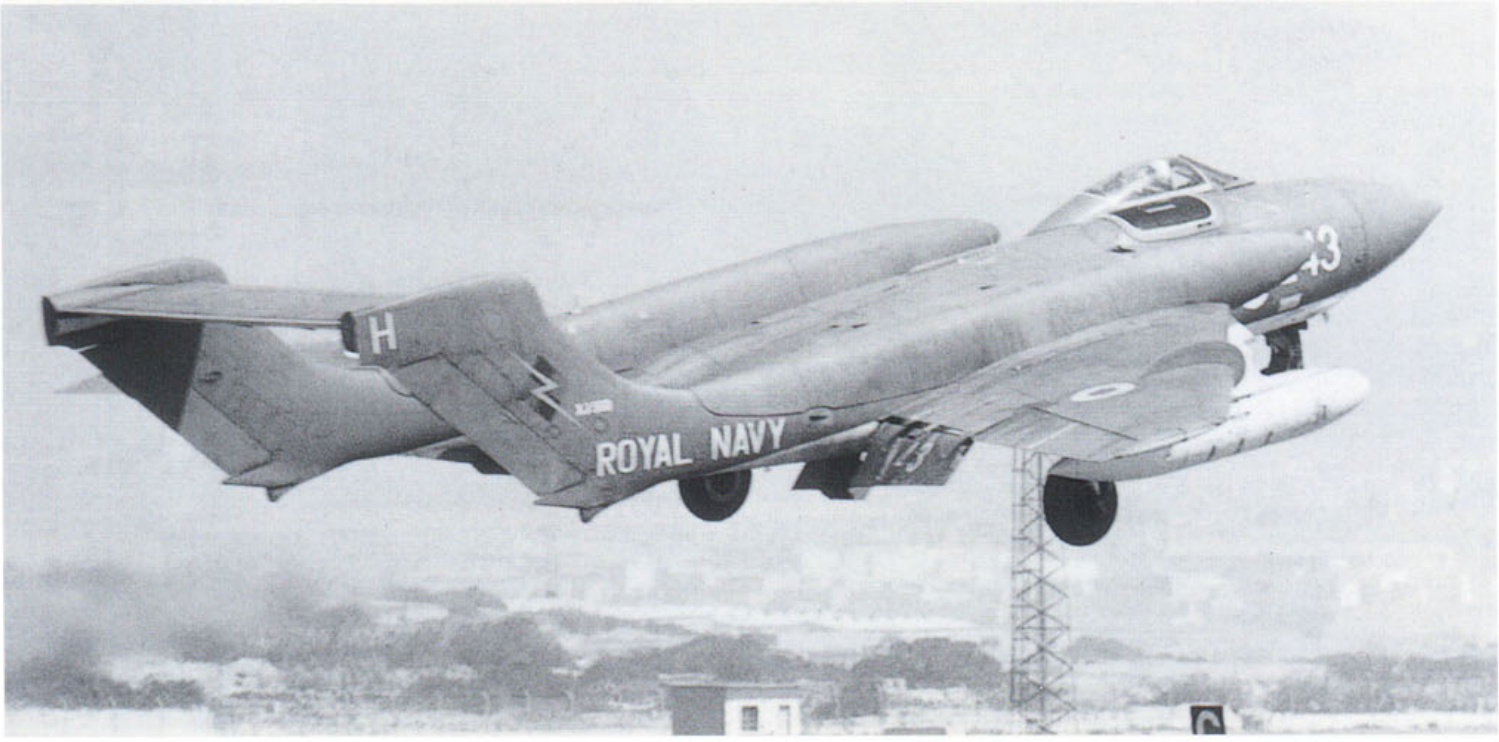
the necessary airframe fittings to permit catapult launching, but did not have folding wings. Neither did it have any provision for armament, nor, to begin with, any radar equipment.

Company trials continued from Hurn airport then, in 1956, full sea trials were conducted aboard *HMS Ark Royal*. On 5 April 1956 Lt Cdr S. Orr carried out the type's first arrested landing and catapult launch and thereafter all aspects of the Mk. 20X's performance and handling were tested, even unassisted take-offs, something unlikely to be repeated operationally!

But XF828 was never anything more than a semi-navalised prototype so once the company's test programme was complete it was passed on to the Royal Aircraft Establishment at Bedford. Here it undertook various trials with Naval Air Department, some utilising Bedford's dummy flight deck facilities, until 28 November 1960 when it left to become a ground instructional airframe. It was eventually burned at RNAS Culdrose.

SEA VIXEN PRODUCTION

Towards the end of 1954 de Havilland was given clearance to start work on the first naval DH. 110 and to the company's great



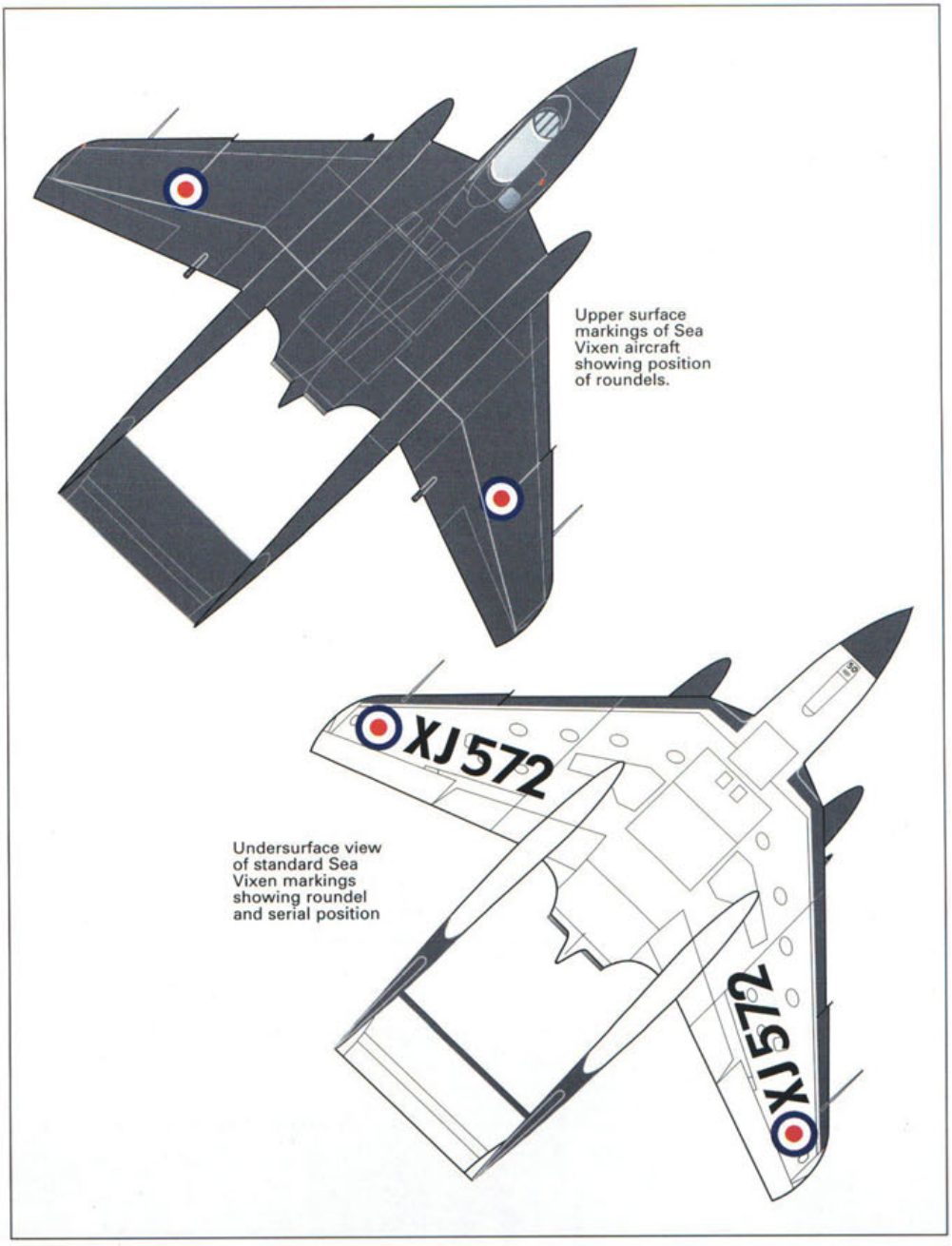
Sea Vixen FAW. 2 XJ560:243-H of 893 Squadron in April 1970. As was often the case, the abbreviated code number was repeated in white above the flaps of this aircraft, only showing when the flaps were extended. (G. Mangion)

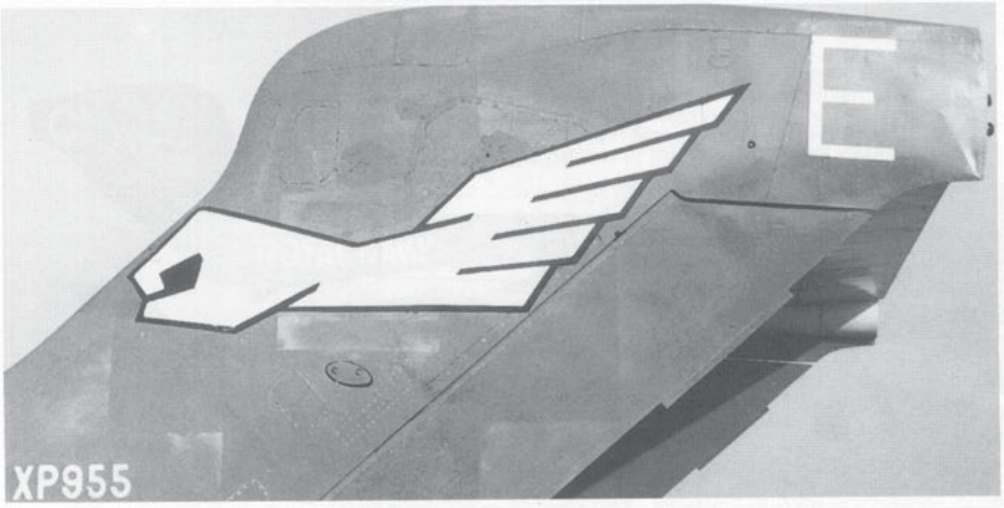
XJ604 and the aircrew of 892 Squadron which flew with 'Simon's Sircus' during the summer of 1968. Since the aircraft's fuselage code has been freshly painted out and the old 766 Squadron code is still evident on the nosewheel door, the aircraft has yet to receive its full squadron markings. (RNAS Yeovilton)

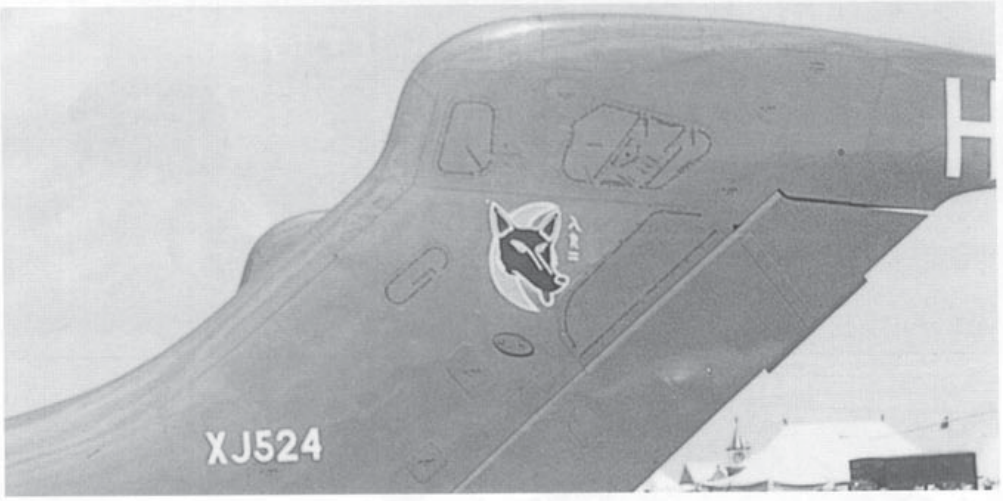
relief the much needed first production order followed in January 1955. This was for 78 aircraft designated DH. 110 FAW. 20, covered by Specification N.139P which had largely been written round the planned production version of the DH. 110. By this stage the FAW. 20 version had undergone about 80 per cent re-design since the original DH. 110 prototypes.

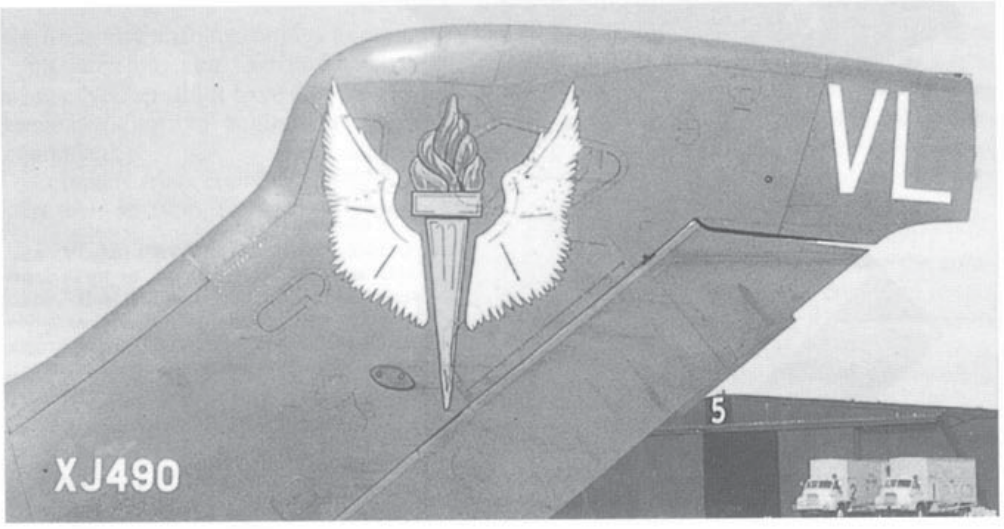
The DH. 110 FAW. 20 would be powered by a pair of Avon 208 engines which were now accessible through the upper side of the fuselage rather than the underside as had previously been the case. This would greatly simplify maintenance and engine changes aboard ship. The airframe would have all the necessary fittings to permit catapult launches and arrested landings and with the aircraft's increased weight the undercarriage was to be further strengthened and given an increased stroke to absorb the high sink rates associated with carrier landings. Nosewheel steering was also specified. To reduce further risk of tail damage from impact with the flight deck the tail booms would now be canted up slightly.

Because the DH. 110 FAW. 20 was a large aircraft, to enable it to fit the flight deck lifts it had hydraulic wing folding at a point just outboard of the booms and the rear ends of the fintips were slightly clipped. The di-electric nose radome was hinged to fold back to starboard but this was for maintenance rather than ease of stowage because when folded it exposed the delicate radar antenna to the elements. Other new features of the FAW. 20 were a V-shaped windscreen for better rain and spray dispersion, a large airbrake below









Sea Vixen squadron markings: Left: The attractive black and white tail markings introduced by 899 Squadron in January 1967. XP955 was one of the first aircraft to appear with the winged-fist and initially retained the upright code letter for *HMS Eagle* at the fin tip. By mid-1967 this had been repainted sloping aft to give an impression of speed. (A.W.Hall) Lower left: The tail emblem used by 892 Squadron on its Sea Vixen FAW. 2s from 1965 to 1967. In front of the fox's face is the squadron number in Chinese characters. (Author)

the fuselage and an extra pylon below the inner end of each folding wing panel plumbed to take an external 150 Imp. gallon (682 litre) fuel tank.

Armament had been finalised as four air-to-air guided missiles carried on the two inboard wing pylons together with 28 two inch folding-fin airborne rockets carried in two retractable trays located each side of the nosewheel bay.

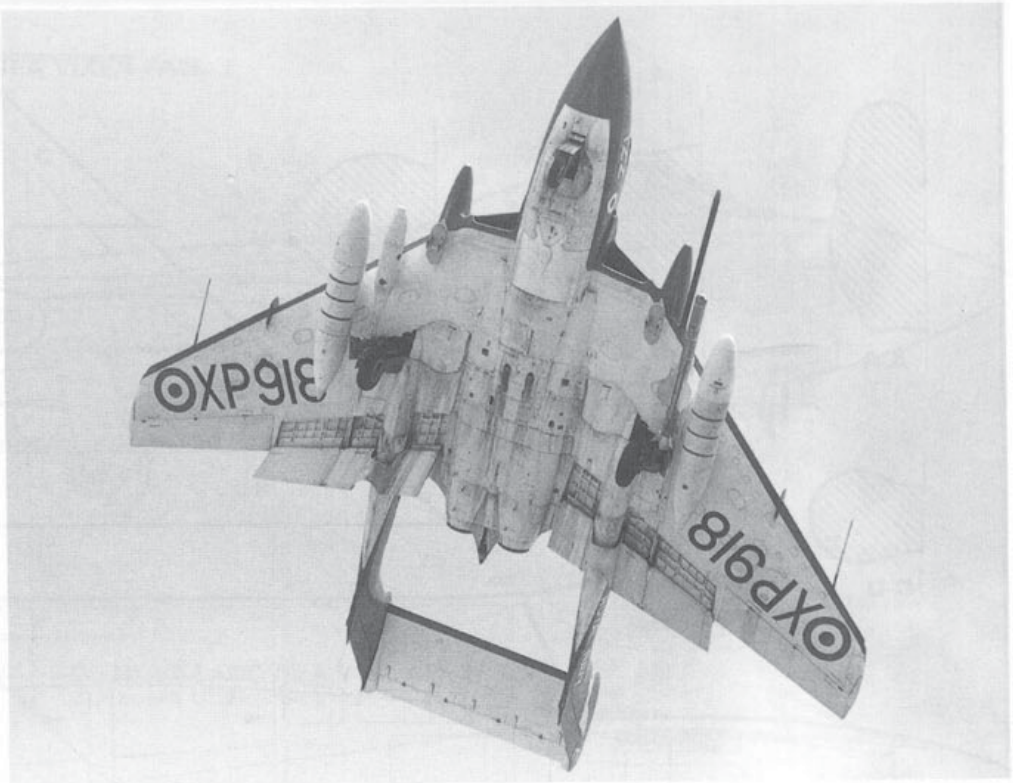
These rockets were a close-range back-up to the guided missiles as well as a useful ground attack weapon. Because the aircraft had a secondary role of ground attack it also had to be capable of carrying 500 lb or 1,000 lb bombs, napalm tanks or pods of two inch or three inch rockets on the two inboard underwing pylons. To begin with the four internal 30-mm Aden cannon remained in the specification but with internal space at a premium and with missile development trials progressing well, the decision was taken to delete the guns and to rely solely upon the missiles and rockets. This made the DH. 110 the first British jet fighter to dispense with an integral gun armament. The first half dozen or so aircraft on the production line had already had gun bays fitted so these were panelled over, then subsequent airframes had the bays deleted.

The DH. 110 FAW. 20s were allotted serial numbers in the range XJ474 to XJ611 with the first 21 being designated pre-production aircraft. It was the first de Havilland type to be developed as part of an integrated weapons system so not only the aircraft had to be tested but also its AI radar and guided missiles. Accordingly, in order to speed up the DH. 110's introduction into service many of these pre-production aircraft were assigned to the development work, then once the trials were completed most of these airframes would be brought up to production standard and issued to squadrons.

Most DH. 110s were built at Christchurch but used some sections manufactured elsewhere. The nose radomes came from Hatfield and the undercarriage units from de Havilland Propellers, whilst the wings were supplied either by de Havilland's Portsmouth factory or by Folland Aircraft at Hamble. The completed aircraft then undertook their test and acceptance flights from Bournemouth-Hurn airport, close to Christchurch, where de Havilland had flight test facilities and which was better suited to

Above left: The final version of 766 Squadron's tail emblem is shown here on Sea Vixen FAW. 2 XJ490 in July 1967. The beacon is yellow with yellow and red flames and white wings, all with a black outline and detail. Left: The 899 Squadron tail emblem worn by XS578 in September 1966. It consists of a black and silver-grey armoured gauntlet on a white disc outlined in black. (Author)

XP918:122-E of 899 Squadron in March 1971. It carried standard 150 gallon drop tanks on the outer pylons and twin practice bomb carriers on the inboard ones, whilst on the port centre pylon is a Red Top training round and on the starboard centre pylon a baggage pod for the aircrew's overnight bags. (G. Mangion)



handling high performance jets.

DEVELOPMENT AIRCRAFT

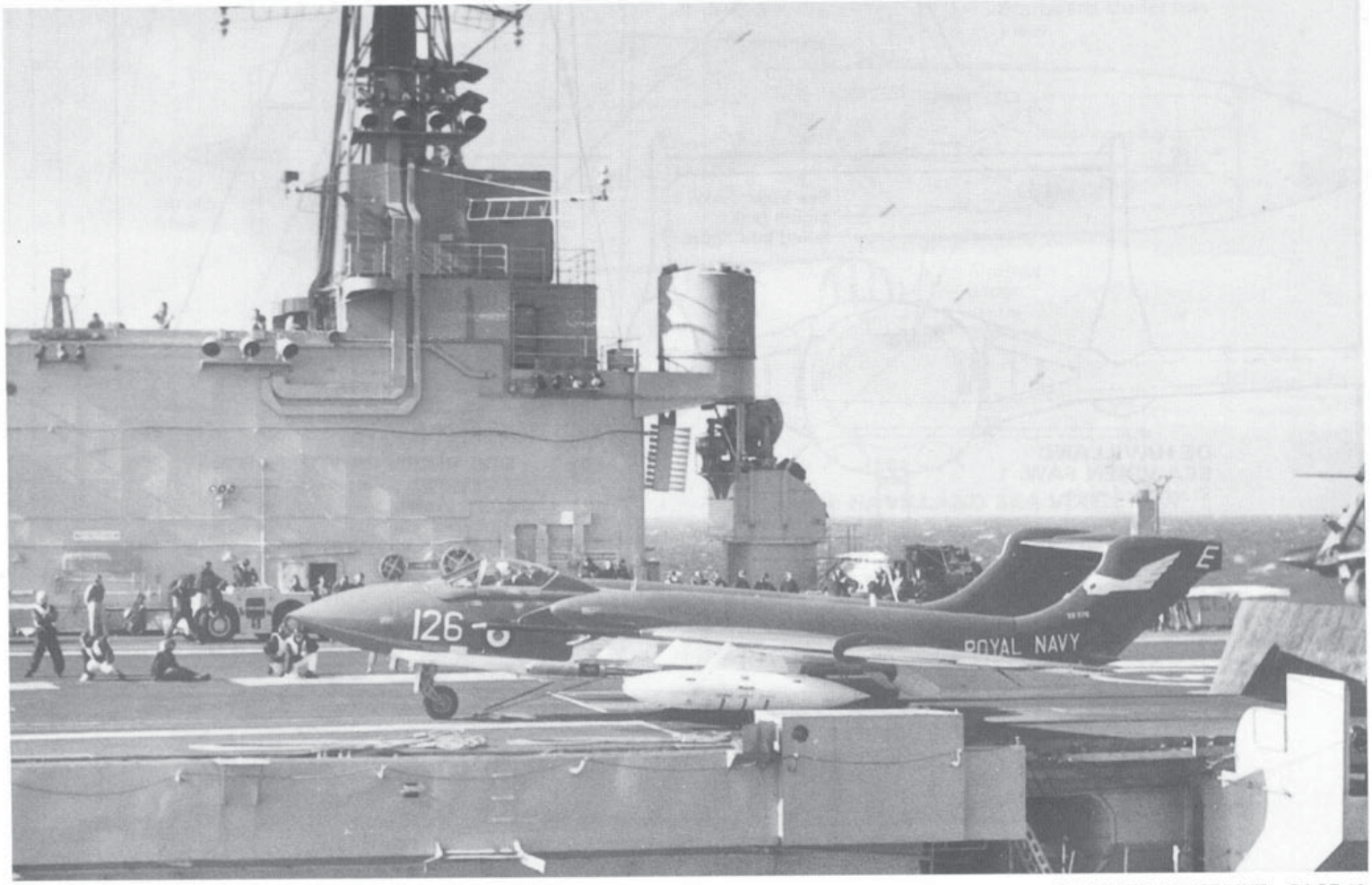
The first of the pre-production aircraft, XJ474, was rolled out at Christchurch in February 1957 and was officially named the Sea Vixen FAW. 20 on 5 March. It made its first flight on 20 March recovering to Hurn on completion, then, once company trials were finished, the aircraft went to Boscombe Down for official service handling trials. Later that year it embarked in *HMS Ark Royal* for carrier compatibility trials and the evaluation of its performance and handling characteristics under the more demanding conditions at sea. These completed XJ474 spent the rest of its active life on development flying, eventually ending its career at RAE Bedford where it was used for steam catapult and arrester gear development work.

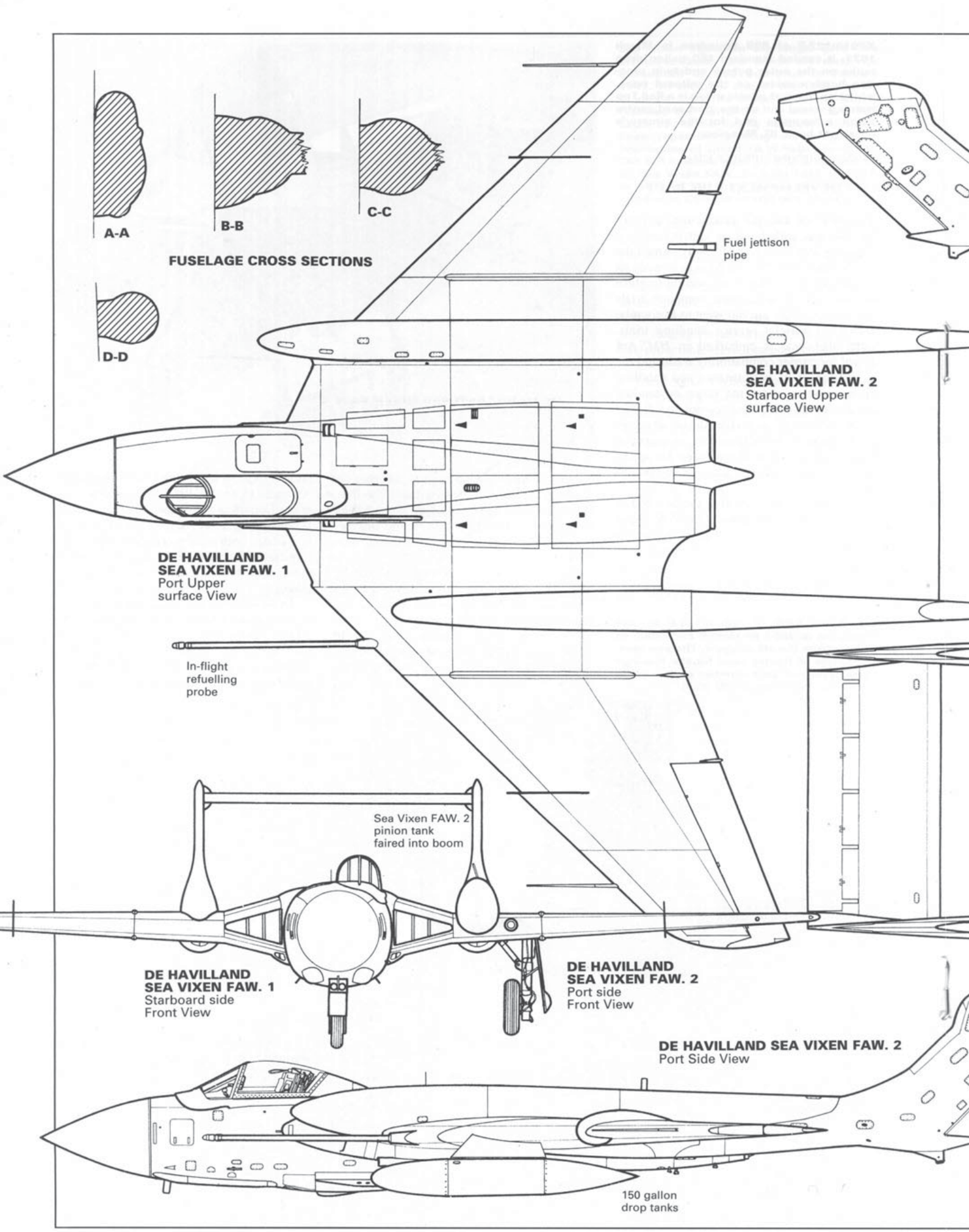
It was around 1959 that the Sea Vixen FAW. 20 was re-designated the FAW. 1 and this was soon followed by an order for 40 more Sea Vixen FAW. 1s with serial numbers in the range XN647 to XN710. In early 1961 a further order was placed for 15 aircraft with serials XP918 to XP925 and XP953 to XP959 to be built at the Hawker Siddeley factory at Hawarden, Cheshire. However, only the first of these had been completed in October 1962 before production switched to the improved Sea Vixen FAW. 2.

All manner of trials were carried out by other pre-production Sea Vixens and by some later production aircraft as well. The second aircraft XJ475, spent much of its career on weapons research work but in 1964 was used to evaluate a light-weight cockpit canopy with less prominent framing which was later adopted as standard. Two aircraft, XJ476 and XJ481 were shipped to Australia in March 1960 for weapons trials at the Long Range Weapons Establishment, Woomera, and when they returned some years later both went to Hatfield for further Firestreak, then Red Top, missile development work, before moving on to Boscombe Down.

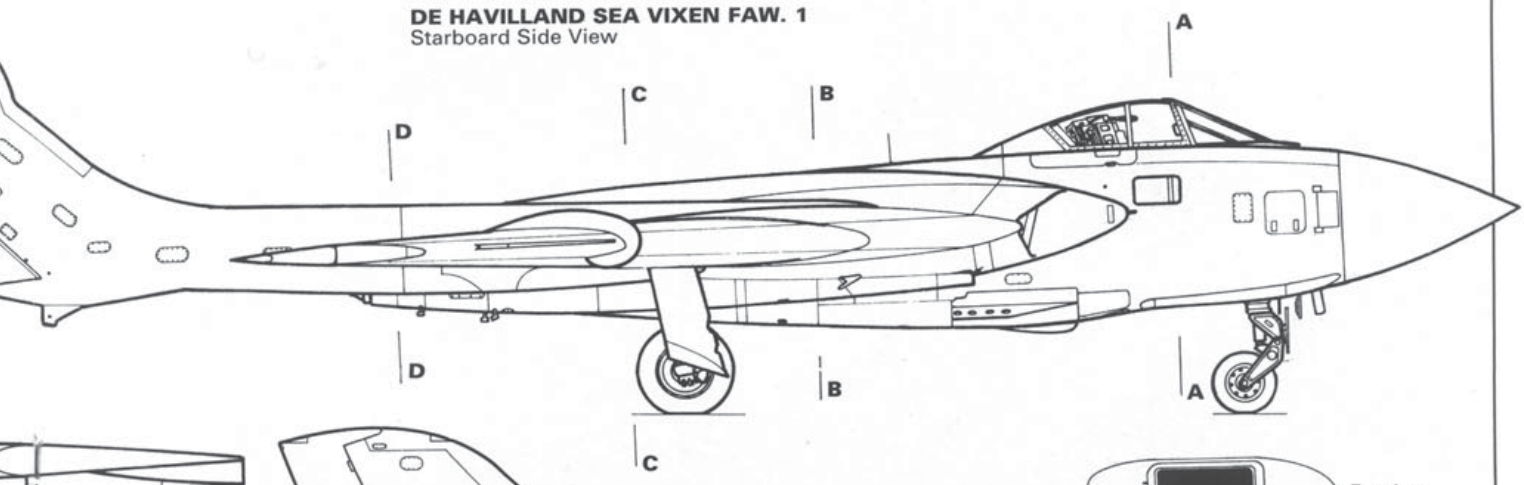
Trials with the two inch rocket batteries, including salvo firings, were undertaken by XJ477, whilst XJ478 was another aircraft used in the Firestreak missile programme. XJ494 was used from 1959 to 1962 for work perfecting the type's Low Altitude Bombing

Sea Vixen FAW. 2 XS576:126-E of 899 Squadron in 1967 tensioned and ready to launch from the aft catapult. The non-standard style of figures used for the fuselage code appeared on a number of the unit's aircraft at this time. (A. W. Hall)



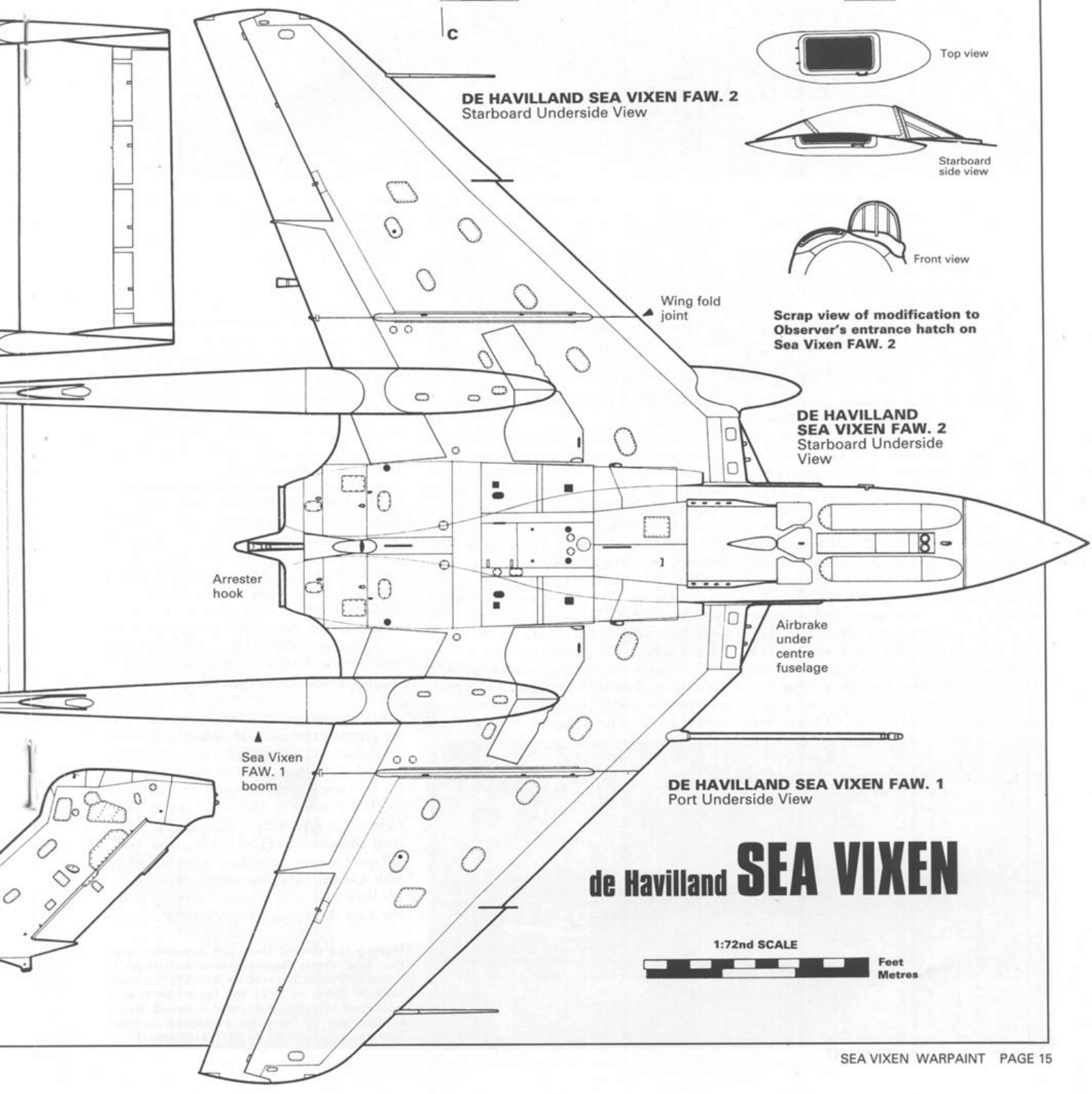

A-A
B-B
C-C
FUSELAGE CROSS SECTIONS
D-D
Fuel jettison pipe
DE HAVILLAND SEA VIXEN FAW. 2
Starboard Upper surface View
DE HAVILLAND SEA VIXEN FAW. 1
Port Upper surface View
In-flight refuelling probe
Sea Vixen FAW. 2 pinion tank faired into boom
DE HAVILLAND SEA VIXEN FAW. 1
Starboard side Front View
DE HAVILLAND SEA VIXEN FAW. 2
Port side Front View
DE HAVILLAND SEA VIXEN FAW. 2
Port Side View
150 gallon drop tanks

DE HAVILLAND SEA VIXEN FAW. 1
Starboard Side View



DE HAVILLAND SEA VIXEN FAW. 2
Starboard Underside View

Scrap view of modification to Observer's entrance hatch on Sea Vixen FAW. 2



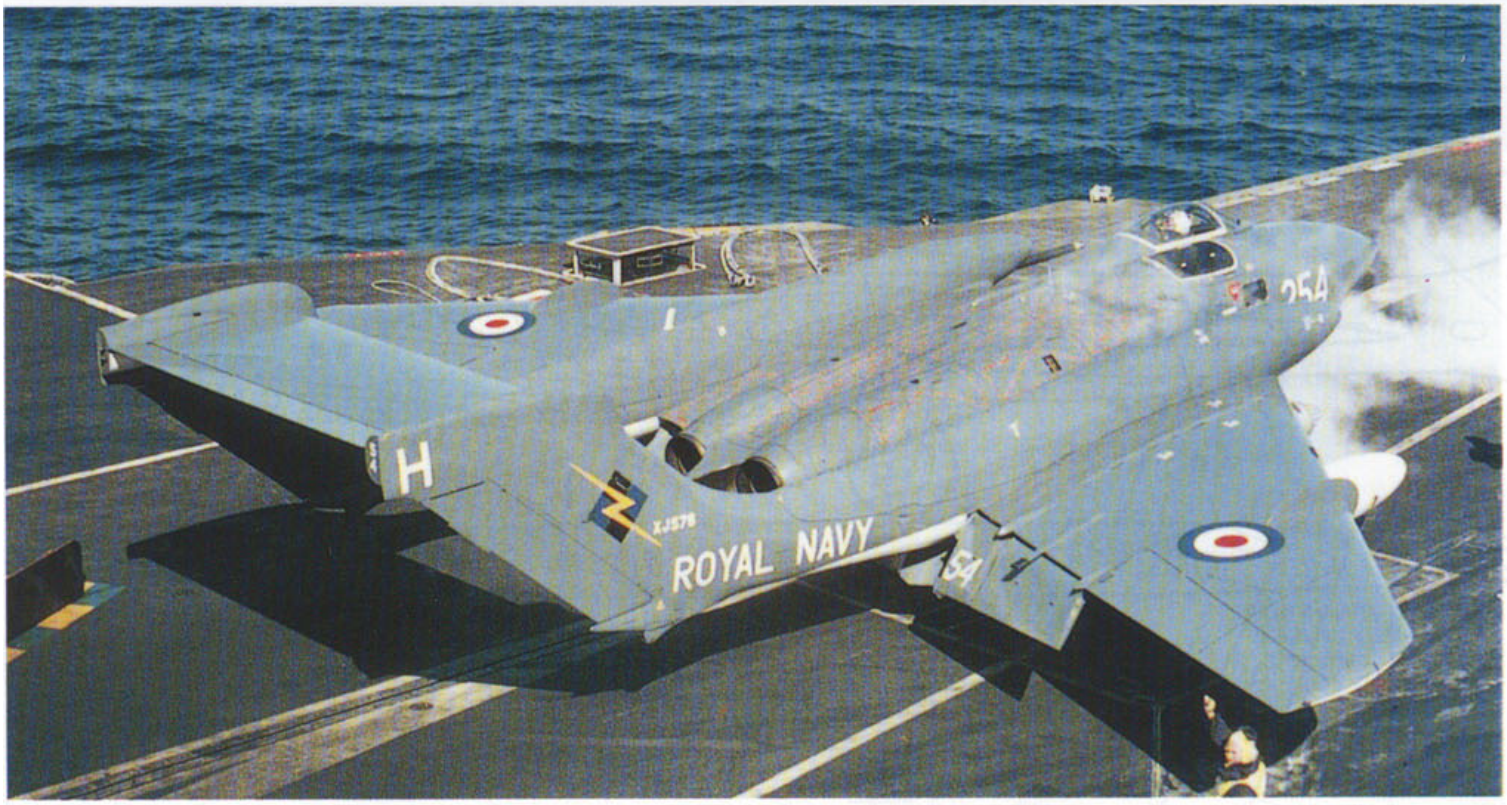
DE HAVILLAND SEA VIXEN FAW. 2
Starboard Underside View

DE HAVILLAND SEA VIXEN FAW. 1
Port Underside View

de Havilland SEA VIXEN

1:72nd SCALE

Feet
Metres



XJ578:254-H, a Sea Vixen FAW. 2 of 893 Squadron about to be launched from *HMS Hermes* in June 1968. This shows to good effect the abbreviated code marked on the upper surface of the Fowler flaps. (Author)

System (LABS) used for the ground attack role. Also used for ground attack was the Martin Bullpup air-to-surface missile which was evaluated on XJ482 and XJ488 during 1965, with the aircraft carrying one missile on each outboard pylon and the control pod on the starboard centre pylon.

Testing of the aircraft under more extreme conditions was undertaken by XJ479 and XJ482. During 1958 XJ479 went to Tripoli, Libya, for hot weather trials, but on 28 October it crashed after hitting a vulture and XJ485 had to complete the trials the following summer. The Sea Vixen's cold weather trials were undertaken by XJ482 in July 1958, not in cold climes but in a special climatic chamber at Weybridge, Surrey. XJ582 also did work at Boscombe Down testing an underwing reconnaissance pod for the Sea Vixen, a task it shared with XN700 in 1963.

Like several other early development aircraft XJ488 was one which spent all its working life on trials, mainly with the manufacturers or at Boscombe Down. From about 1960 it conducted in-flight refuelling trials for which it was fitted with an IFR probe on the port wing outboard of the boom, a modification later incorporated on all front-line aircraft. It was also one of several Sea Vixens used at Hatfield from 1960 to 1961 to perfect the 'buddy' system of air-to-air refuelling equipment and techniques. This permitted a Sea Vixen to refuel another aircraft using a Flight Refuelling Ltd Mk. 20 hose and drogue pod carried on the starboard outer pylon. Two further aircraft which played an important part in the type's development were XN684 and XN685 which were used by de Havilland in developing the Sea Vixen FAW. 2.

SQUADRON DELIVERIES BEGIN

With the Sea Vixen's acceptance trials well under way the first deliveries began to the Royal Navy on 3 November 1958. XJ482 was delivered to RNAS Yeovilton to become the first aircraft for 700Y Squadron which formed there the following day under the command of Cdr M. H. J. Petrie. This was the Sea Vixen Intensive Flying Trials Unit tasked with carrying out a full service evaluation of the type, something which continued until 30 June 1959 when the squadron disbanded to reform as the nucleus of 892 Squadron the following day.

This squadron was initially tasked with continuing the Sea Vixen's intensive trials programme under sea-going conditions as part of an integrated air group on board *HMS Ark Royal* and for this it had a complement of 12 aircraft. Following deck landing practice aboard *HMS Victorious* during October 1959 the squadron divided into two separate flights. Two-thirds of its aircraft formed 'B' Flight which remained with the *Ark Royal* Air Group whilst the remaining four aircraft constituted 892 'A' Flight, which became the navy's Firestreak IFTU tasked with evaluating this new missile which was to be the Sea Vixen's main weapon.

Both Flights were based at Yeovilton until March 1960 when 892 'B' Flight embarked in *HMS Ark Royal* for a short deployment to the Mediterranean leaving 'A' Flight behind to pursue its missile trials. These completed, 892 'B' Flight joined the rest of the squadron aboard *Ark Royal* in August 1960 for the remainder of the deployment. The whole squadron then disembarked to Yeovilton on 30 September 1960 and the following month transfered to *HMS Victorious,* leaving for a lengthy cruise to the Far East in January 1961.

In order to give the ships' companies and air groups experience of operating the new jet fighter 892 Squadron continued to move around the various Carrier Air Groups for the next few years. The squadron transferred to *HMS Hermes* in May 1962 and to *HMS Centaur* in December 1963 for that ship's final commission. Final it may have been, but quiet it most certainly was not, for whilst with *Centaur* 892 Squadron's Sea Vixens got their first taste of active service. In the Far East the squadron was involved in the

During the period that 890 Squadron was the Sea Vixen Headquarters Squadron it operated such aircraft as XN658:750 seen here in 1969. In 1971 the fin emblem was enlarged slightly and given a broad white outline but by then this particular aircraft had been passed on to ADTU. (Author)

Indonesian Confrontation flying mainly air defence and surface search missions around southern Malaysia, then on the way home it flew ground attack sorties in the Radfan during the Aden crisis. *Centaur* also formed part of the British presence off East Africa during the unrest in Dar-es-Salaam. After this eventful cruise the squadron returned to Yeovilton in July 1965 and re-equipped with the improved Sea Vixen FAW. 2 at the end of the year.

FRONT-LINE FIGHTER

With the formation of 892 Squadron the emphasis shifted to training crews for further units and in October 1959 Sea Vixen FAW. 1s began to be delivered to 766 Squadron at Yeovilton the navy's All-Weather Fighter Training Squadron. At the time this was equipped with the Sea Venom FAW. 21 and so as not to disrupt training the Sea Vixens went to equip 766B Squadron, an arrangement that lasted for a year. By then sufficient Sea Vixens had been received and sufficient staff instructors converted to the type to permit the Sea Venoms to be withdrawn on 24 October 1960. Thereafter 766 Squadron trained all the Royal Navy's Sea Vixen crews, initially using Sea Vixen FAW. 1s, and during 1962 it fielded the 'Fred's Five' aerobatic team. From July 1965 Sea Vixen FAW. 2s began to join the squadron and in May 1968 the last of the FAW. 1s left.

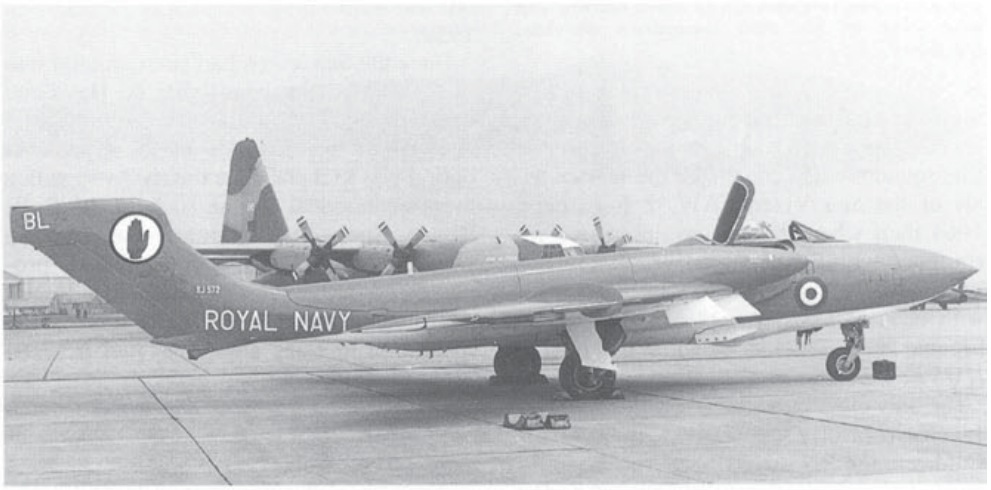
Sea Vixen FAW. 2 XN691:131-E of 899 Squadron aboard *HMS Eagle* probably during 1967. Crew names are marked in white above the observer's window, and the red stripe below the starboard aileron was used during buddy in-flight refuelling operations as an alignment mark by pilots of Vixens receiving fuel.

The next operational unit to form at Yeovilton was 890 Squadron on 1 February 1960 commanded by Lt Cdr W. R. Hart. The squadron operated ten Sea Vixen FAW. 1s as part of *HMS Hermes'* air group and embarked in July for a work-up before departing for the Far East that November. After the squadron returned to Yeovilton in September 1961 it transfered to *HMS Ark Royal* and undertook several more Far East deployments, including periods of service on the Beira Patrol in 1966 to maintain sanctions against Rhodesia. The squadron eventually disbanded atYeovilton on 7 October 1966.

The final front-line unit to operate the Sea Vixen FAW. 1 was 893 Squadron which formed at Yeovilton on 9 September 1960 with six aircraft under the command of Lt Cdr F. D. Stanley. Initially it was assigned to *HMS Ark Royal* for various exercises and ten days of cold-weather flight deck operations in the Davis Straits, but with these completed the unit transferred to *HMS Centaur*. It embarked for the Indian Ocean in April 1961 and was soon involved in the British show of strength in the Persian Gulf during the first Kuwait Crisis. For the next three years the squadron remained with *HMS Centaur* for further cruises to the Far East, Indian Ocean and Mediterranean before transferring to *HMS Victorious* in 1964 for yet another Far East deployment. This time-however, when the ship returned home the following year, 893 was disbanded on 29 July 1965.

Once the Royal Navy had formed all its front-line Sea Vixen units it established 899 Squadron at Yeovilton on 1 February 1961 to act as the type's Headquarters Squadron. As such it was essentially a shore-based unit tasked with developing training and operational procedures for the Sea Vixen FAW. 1,

RNAY Belfast used two Sea Vixen FAW. 2s, one of which was XJ572, operated from 1970 until the yard closed in 1973. The unofficial tail code had previously been used by *HMS Blake*. (MAP)



890 Squadron Sea Vixen FAW. 2 XN651: 705-VL in July 1971. It was one of the ex-766 Squadron aircraft taken over when that squadron disbanded and shows the conspicuous tail markings used during the last year of its 890 Squadron service. (Author)

as well as carrying out trials on new weapons and maintaining a pool of experienced Vixen crews as a front-line reserve. The squadron also conducted the service trials of the Sea Vixen FAW. 2 from early 1964 then when these were completed re-equipped with the new type. It relinquished its Headquarters Squadron status together with its FAW. 1s in September 1964 and became an operational squadron assigned to *HMS Eagle*.

The only other user of the Sea Vixen FAW. 1, albeit briefly, was 831 Squadron at Culdrose, the RN's electronic warfare training and trials unit. For a short period during the middle of 1963 the squadron is known to have used at least XJ518 for a series of trials before the aircraft was released for front-line service.

DESIGN IMPROVEMENTS

Even as de Havilland was working on the DH. 110 Mk. 20X for the Royal Navy it was working on improving the design with an eye to potential RAF orders. When Specification F.153D was issued the company proposed an up-dated DH. 110 with a completely new, thin section wing and more powerful engines promising a maximum speed of Mach 1.4. Once again it lost out to a rival Gloster design but as things turned out the whole programme was cancelled in 1956.

Once the Sea Vixen had been ordered into production in the late 1950s de Havilland began to study ways of improving the range and overall performance of the type. One option was to replace the thirsty Avon with a more economical engine such as the Rolls Royce Spey. An alternative suggestion which was eventually adopted for the proposed fighter-bomber DH. 110 Mk. 21 was to install reheat to boost the aircraft's top speed and to carry additional fuel in fixed 250 gallon wing tip fuel tanks similar to the Sea Venom, and an extra 850 gallon tank ahead of the engine bay in an extended fuselage.

These modifications would have significantly increased the weight of the Mk. 21 which would therefore have had blown flaps to lower its approach speed and generally improve low speed handling. However, the Mk. 21 would have been a larger, more expensive aircraft requiring drastic re-design work, so eventually it was decided that the best option was to try for more modest improvements in performance while keeping structural modifications to a minimum.

One such proposal was to fit in-flight refuelling equipment to the Sea Vixen so that aircraft could take on additional fuel whilst airborne. This consisted of a long probe fitted to the port wing leading edge just outboard of the boom, together with the necesary internal plumbing, and following trials this was eventually fitted as an in-service modification to all operational FAW. 1s. Another suggestion was to increase internal fuel capacity by adding an extra fuel tank to the wing leading edge as a forward extension to each boom. These conformal tanks were relatively cheap and simple to install and were later adopted in a modified form for the Sea Vixen FAW. 2.

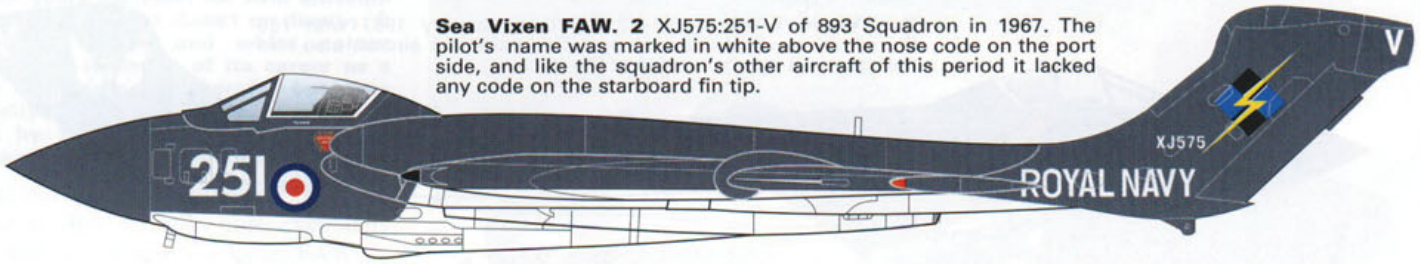
As far as armament was concerned the Sea Vixen radar was already the subject of a continuous modification programme but a replacement was needed for the Firestreak which was strictly a rear hemisphere weapon which homed onto engine exhaust heat. De Havilland was already working on the Red Top missile which besides having a greater range than the Firestreak had the major advantage of also being able to engage a high speed target from ahead due to a more sensitive infra red seeker head. Accordingly Red Top was nominated as the main weapon for the improved Sea Vixen.

SEA VIXEN FAW. 2

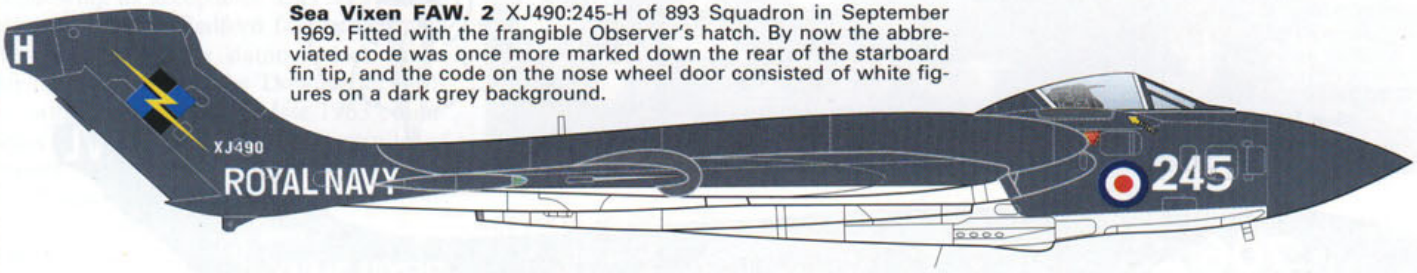
By 1960 plans for an improved Sea Vixen had been finalised with Red Top infra-red homing missiles, IFR capability and the boom conformal tanks fitted as standard. The latter had now become saddle tanks faired into the upper portion of the boom and projecting ahead of the wing leading edge. The ventral two inch Microcell rocket packs were deleted and a revised clear pilot's canopy was planned, but this was not initially available so the first Sea Vixen FAW. 2s had the older style of cockpit canopy.

Some newly-built aircraft were planned but it was the intention to convert most Sea Vixen FAW. 1s to this new standard. In 1961 two aircraft fresh off the Christchurch production line, XN684 and XN685, were flown to Hatfield to be partially converted into interim prototypes for the planned Sea Vixen FAW. 2 and to establish the procedures for the conversion programme. Both aircraft first flew in their new guise from

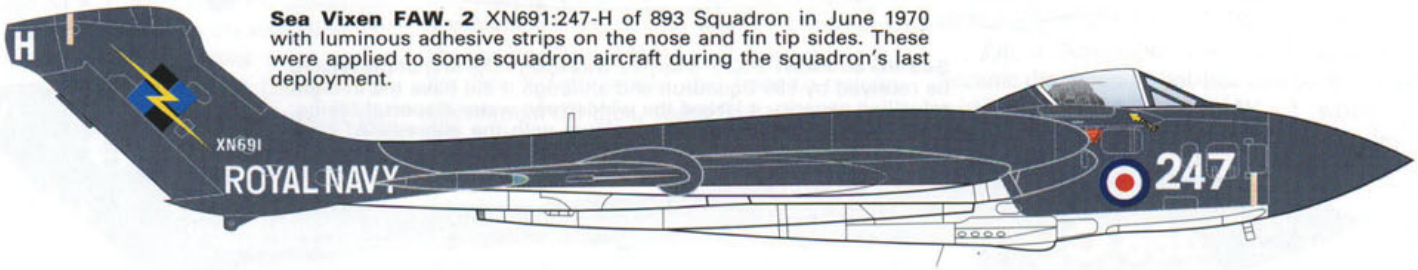
899 Squadron Sea Vixen FAW. 2 XP959:122-E seen at Yeovilton in September 1969. (M.G.Young)



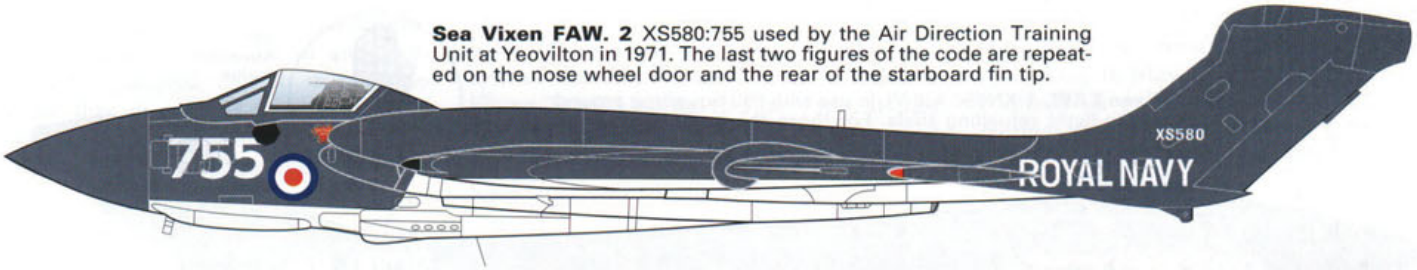
Sea Vixen FAW. 2 XJ575:251-V of 893 Squadron in 1967. The pilot's name was marked in white above the nose code on the port side, and like the squadron's other aircraft of this period it lacked any code on the starboard fin tip.



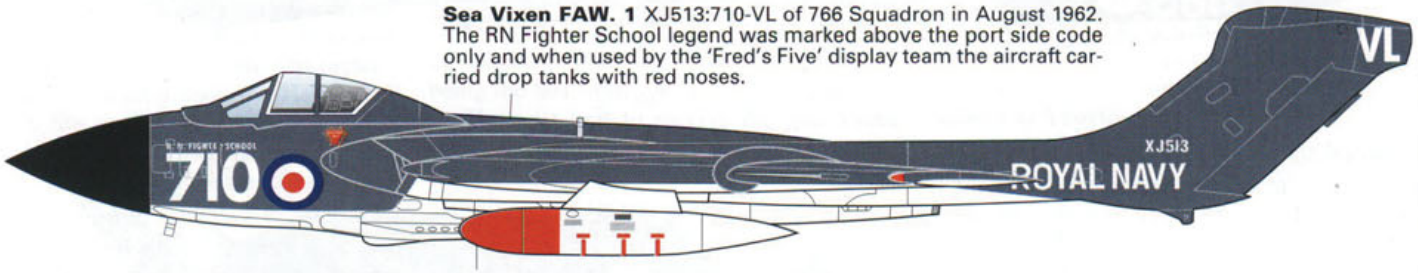
Sea Vixen FAW. 2 XJ490:245-H of 893 Squadron in September 1969. Fitted with the frangible Observer's hatch. By now the abbreviated code was once more marked down the rear of the starboard fin tip, and the code on the nose wheel door consisted of white figures on a dark grey background.



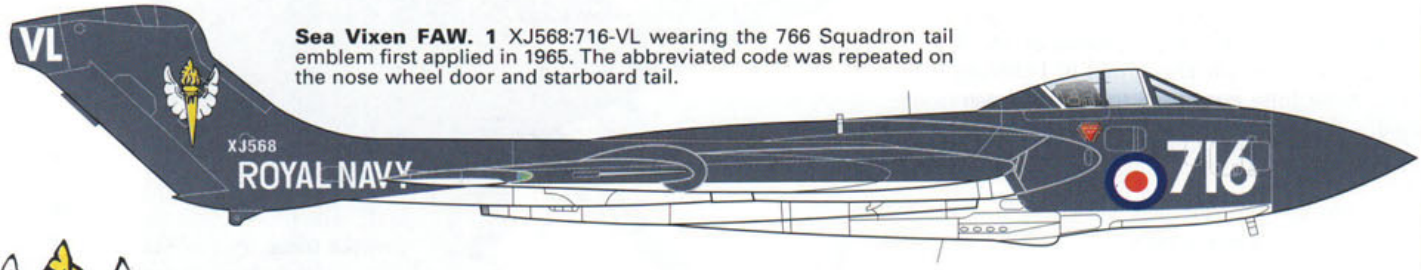
Sea Vixen FAW. 2 XN691:247-H of 893 Squadron in June 1970 with luminous adhesive strips on the nose and fin tip sides. These were applied to some squadron aircraft during the squadron's last deployment.



Sea Vixen FAW. 2 XS580:755 used by the Air Direction Training Unit at Yeovilton in 1971. The last two figures of the code are repeated on the nose wheel door and the rear of the starboard fin tip.

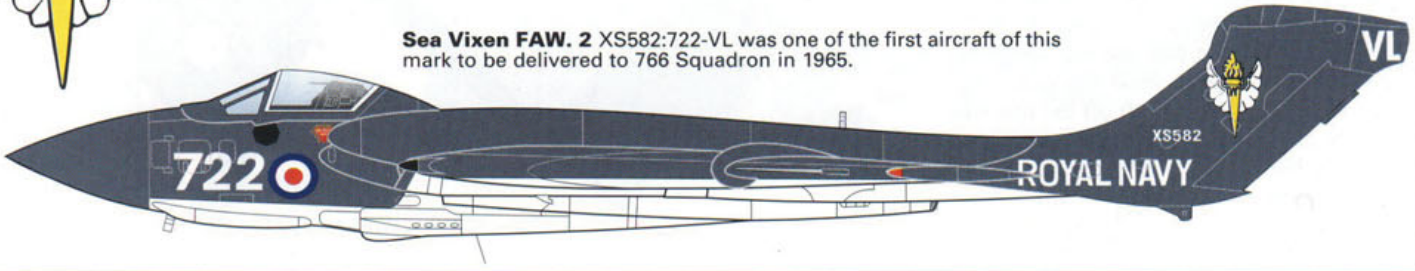


Sea Vixen FAW. 1 XJ513:710-VL of 766 Squadron in August 1962. The RN Fighter School legend was marked above the port side code only and when used by the 'Fred's Five' display team the aircraft carried drop tanks with red noses.



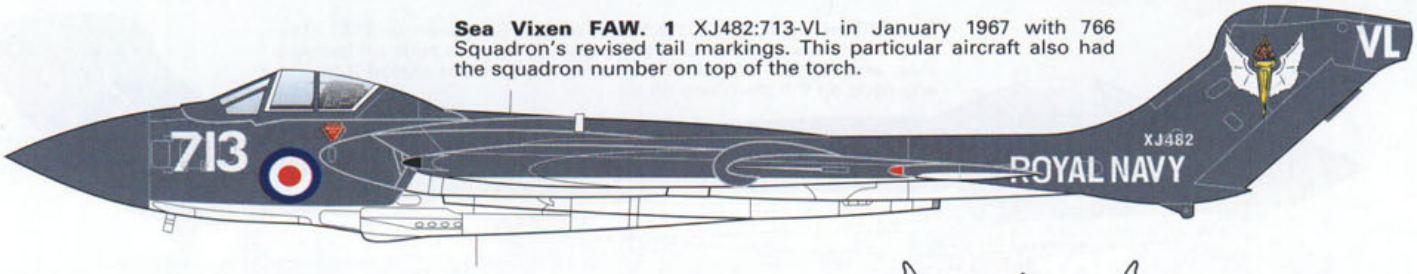
Sea Vixen FAW. 1 XJ568:716-VL wearing the 766 Squadron tail emblem first applied in 1965. The abbreviated code was repeated on the nose wheel door and starboard tail.

Unit badge of 766 Squadron



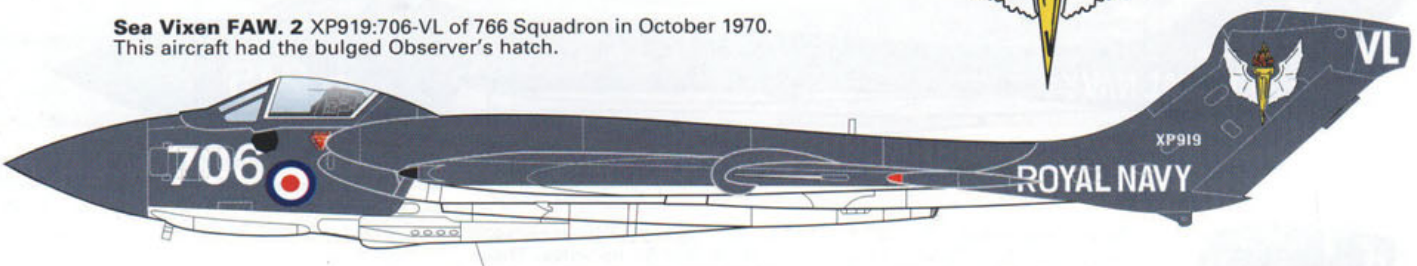
Sea Vixen FAW. 2 XS582:722-VL was one of the first aircraft of this mark to be delivered to 766 Squadron in 1965.

Sea Vixen FAW. 1 XJ482:713-VL in January 1967 with 766 Squadron's revised tail markings. This particular aircraft also had the squadron number on top of the torch.

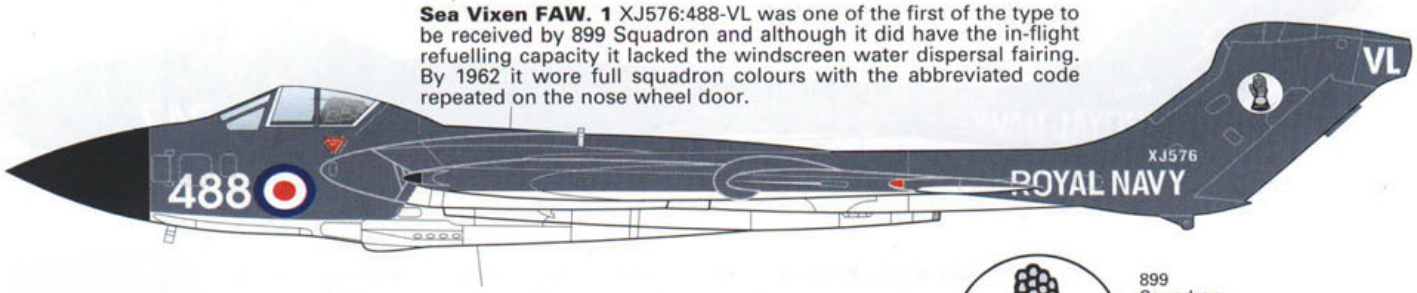


766 Squadron badge

Sea Vixen FAW. 2 XP919:706-VL of 766 Squadron in October 1970. This aircraft had the bulged Observer's hatch.

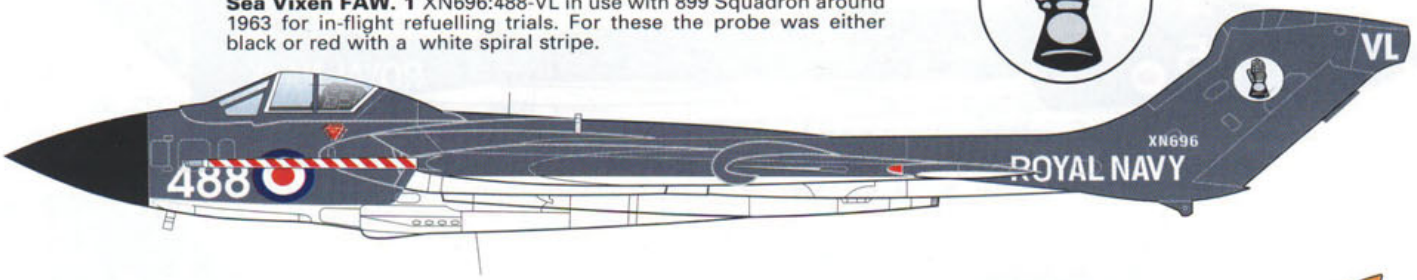


Sea Vixen FAW. 1 XJ576:488-VL was one of the first of the type to be received by 899 Squadron and although it did have the in-flight refuelling capacity it lacked the windscreen water dispersal fairing. By 1962 it wore full squadron colours with the abbreviated code repeated on the nose wheel door.



899 Squadron badge

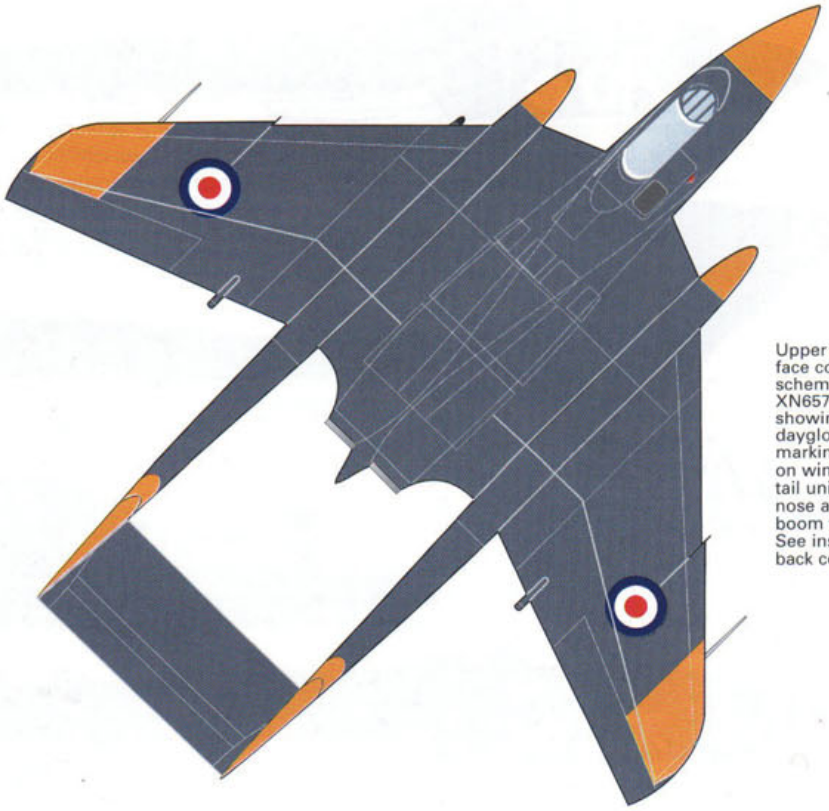
Sea Vixen FAW. 1 XN696:488-VL in use with 899 Squadron around 1963 for in-flight refuelling trials. For these the probe was either black or red with a white spiral stripe.



Hatfield during the summer of 1962 and thereafter carried out development flying until April 1964 when they moved to No. 13 Joint Service Trials Unit at Boscombe Down. There they remained for the next two years carrying out development work with the Red Top missile, on completion of which both aircraft left for Hawarden in February 1966 to be fully converted to FAW. 2 standard.

PRODUCTION MOVES TO HAWARDEN

In 1962 Sea Vixen FAW. 1 production at Christchurch ended and the line was transfered to Hawarden. The first batch of aircraft built there was originally to have been 15 FAW. 1s as well, but with the success of the FAW. 2 and Red Top trials the order was ammended. The first aircraft off the line was still to be an FAW. 1 but all subsequent ones were to be built as FAW. 2s. The sole FAW. 1, XP918, made its first flight from Hawarden on 19 October 1962 then, after an interval XP919, the first production FAW. 2,



Upper surface colour scheme for XN657 showing dayglo markings on wings, tail unit, nose and boom tips See inside back cover.

For some years the Fleet Air Arm Museum had Sea Vixen FAW. 1 XJ481 on display. It retained the black and white colour scheme worn for most of its career as a missile development aircraft, but was eventually re-sprayed in operational colours by 1981 even though it was an early un-modified pre-production airframe.

came off the line and flew for the first time on 8 March 1963. A further order eventually brought the total of new Sea Vixen FAW. 2s built at Hawarden to 29, with deliveries being completed in 1966.

Following its acceptance tests XP919 was delivered to RAE Bedford for catapult and arrester trials on the dummy deck there, moving on to Boscombe Down afterwards for further service trials in late 1963 culminating in the issue of the type's Controller of Aircraft (CA) Release. It then spent a number of years carrying out various weapons trials before being finally released for operational service.

The second and third production aircraft, XP920 and XP921, were used for armament trials at various establishments including the A&AEE, after which the latter went to the Naval Aircraft Support unit (NASU) at Brawdy in August 1963 to be prepared for issue to a naval air squadron. XP920 however, remained on development flying a little longer and it was on this aircraft that de Havilland tested the improved observer's hatch which from about 1968 was fitted to all remaining operational Sea Vixen FAW. 2s. The original metal hatch would have prevented the observer's escape in an emergency had it jammed shut so in order to overcome this, as well as to speed up the ejection sequence, a frangible hatch was developed which permitted ejection through the hatch if necessary. This new hatch was also bulged slightly to give extra cabin headroom.

The programme to convert most of the remaining FAW. 1s to the new standard began in August 1963. The work was undertaken by both Hawker Siddeley at Hawarden and by the navy at the Royal Naval Aircraft Yard, Sydenham, with the last of 67 such conversions being completed in June 1968. Following the conversion many of these aircraft passed through the Aircraft Handling Unit (later Aircraft Production Unit), part of NASU at RNAS Brawdy, where all necessary modifications were embodied before the aircraft were cleared for squadron srvice.

OPERATIONAL USE

As originally planned the Sea Vixen FAW. 2 was to have remained the navy's all-weather fighter until its replacement by a naval version of the Hawker P.1154 V/STOL strike fighter from the late 1960s. Changes in defence policy and then a complete change of government meant that this was not to be.

Firstly the P.1154 was cancelled in favour of buying the McDonnell Phantom FG. 1, then all of the Royal Navy's strike carriers were to be withdrawn together with their fixed-wing squadrons. *HMS Ark Royal* would be given a refit to permit her to operate the Phantom until the late 1970s but the other carriers would be progressively paid off, ending with *HMS Eagle* in 1972 once she had covered Britain's withdrawal from the Far East and Persian Gulf. Consequently her Sea Vixens would also need to remain operational till then, some five years longer than originally planned.

The first Sea Vixen FAW. 2 delivered to the Fleet Air Arm was XP921 which went to 899 Squadron at Yeovilton in February 1964. At the time this was the Sea Vixen Headquarters Squadron equipped with the FAW. 1 but once sufficient new aircraft had been delivered the squadron assumed the role of the Sea Vixen FAW. 2 Intensive Flying Trials Unit on 15 June 1964. Its last Sea Vixen FAW. 1s left in September and with the operational trials completed 899 Squadron was declared operational that December and assigned to *HMS Eagle*. The squadron was destined to remain part of *Eagle's* Air Group until the ship was finally paid off, the squadron itself disbanding on 26 January 1972 with the distinction of being the last front-line Sea Vixen unit.

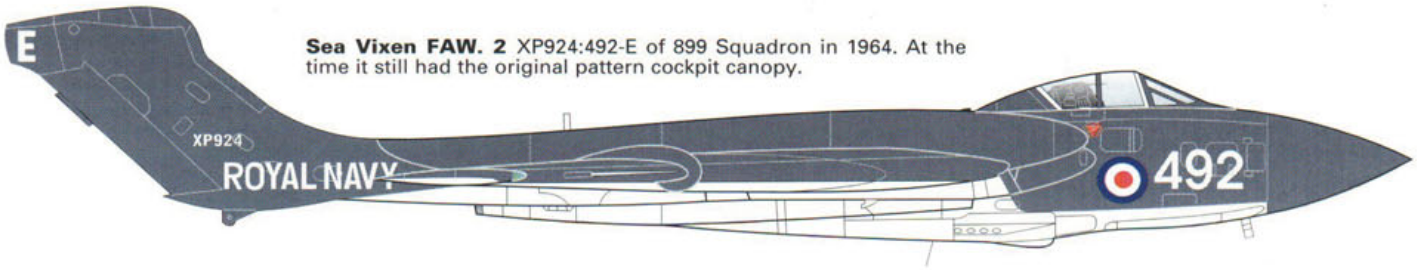
The next unit to receive the Sea Vixen FAW. 2 was 766 Squadron whose first aircraft, XS582, was delivered in July 1965. The change-over was slow because new aircraft were also being supplied to front-line squadrons and sufficient FAW. 1s had to be kept active to continue the training programme un-interupted. The squadron became fully equipped with the FAW. 2 in May 1968 and thereafter continued its training task in support of an ever dwindling number of squadrons until it was itself disbanded at Yeovilton on 10 December 1970, its training role passing to 890 Squadron.

On 4 November 1965 893 Squadron became the second front-line unit to re-equip with the Sea Vixen FAW. 2 when it reformed at Yeovilton with 11 aircraft destined for *HMS Victorious*. The squadron embarked the following year for a Far East cruise which lasted until 1967, but whilst *Victorious* was undergoing dockyard maintenance that November she suffered a fire and was prematurely retired. The squadron was therefore reassigned to *HMS Hermes* embarking in May 1968 for the ship's final commission as a strike carrier. That year *Hermes* deployed east of Suez, followed by a Mediterranean cruise in 1970 after which she was withdrawn to be converted into a Commando Carrier. 893 Squadron was disbanded on 14 July 1970.

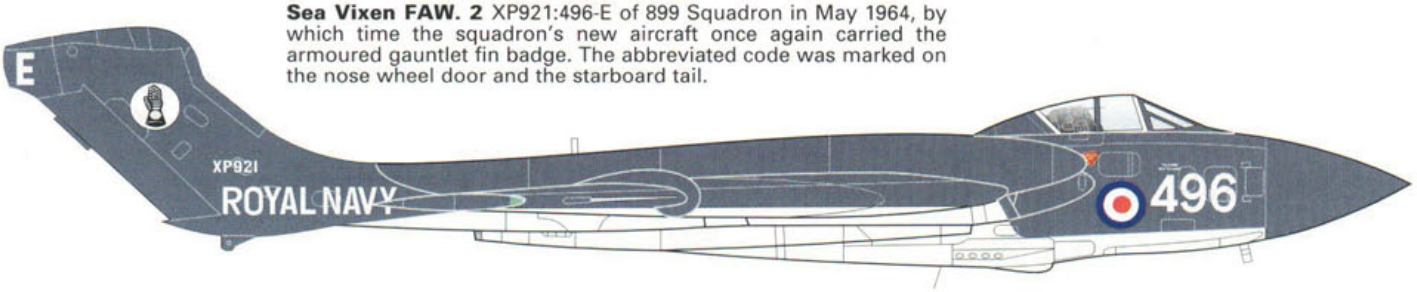
The final sea-going unit to commission with the Sea Vixen FAW. 2 was 892 Squadron which re-equipped with the type in December 1965 during a lengthy spell ashore at Yeovilton. It took its 12 aircraft to sea in *HMS Hermes* in 1966 and completed one deployment to the Mediterranean and Far East before returning to Yeovilton. During its final summer with Sea Vixens the squadron formed 'Simon's Sircus' aerobatic display team, so named after the CO, Lt Cdr Simon Idiens, with which it toured the air display circuit before disbanding on 4

XP954:753 one of the small number of Sea Vixen FAW. 2s operated by FRADU from Yeovilton for exercise work during the early 1970s. This particular aircraft was written off on 6 November 1973. (Author)

Sea Vixen FAW. 2 XP924:492-E of 899 Squadron in 1964. At the time it still had the original pattern cockpit canopy.

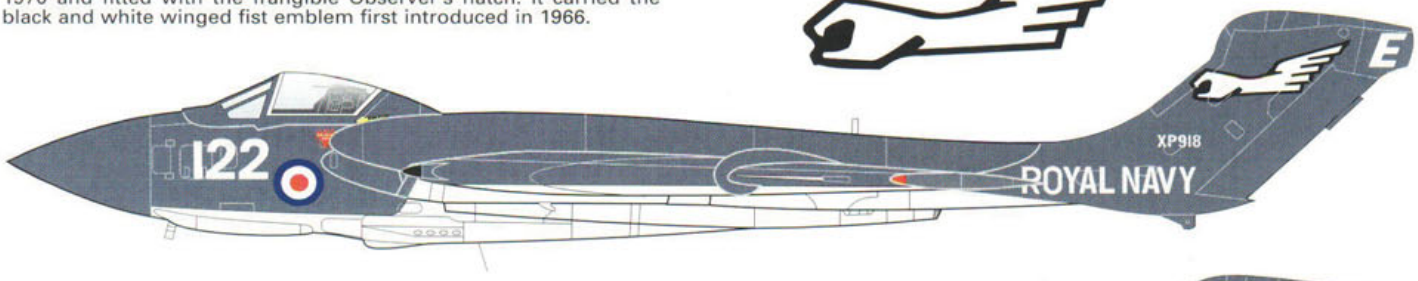


Sea Vixen FAW. 2 XP921:496-E of 899 Squadron in May 1964, by which time the squadron's new aircraft once again carried the armoured gauntlet fin badge. The abbreviated code was marked on the nose wheel door and the starboard tail.

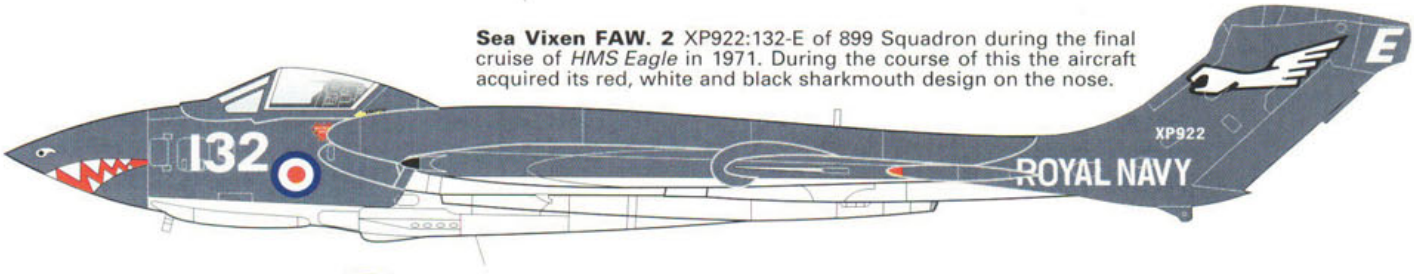


Sea Vixen FAW. 2 XP918:122-E of 899 Squadron during October 1970 and fitted with the frangible Observer's hatch. It carried the black and white winged fist emblem first introduced in 1966.

899 Squadron badge.

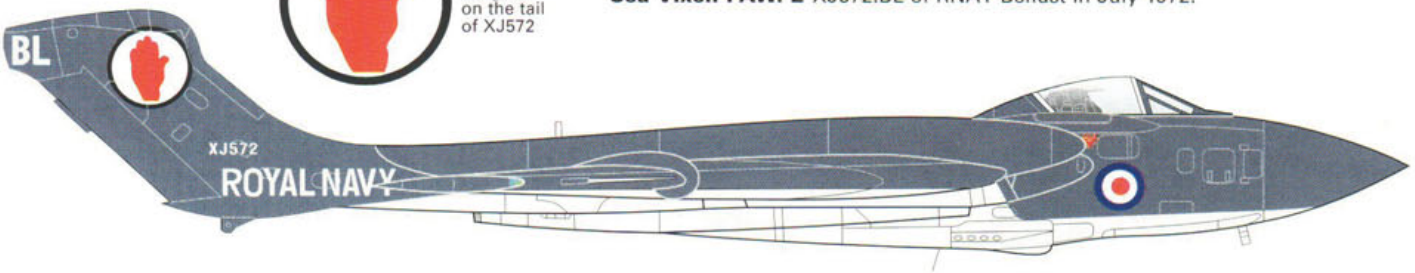


Sea Vixen FAW. 2 XP922:132-E of 899 Squadron during the final cruise of *HMS Eagle* in 1971. During the course of this the aircraft acquired its red, white and black sharkmouth design on the nose.

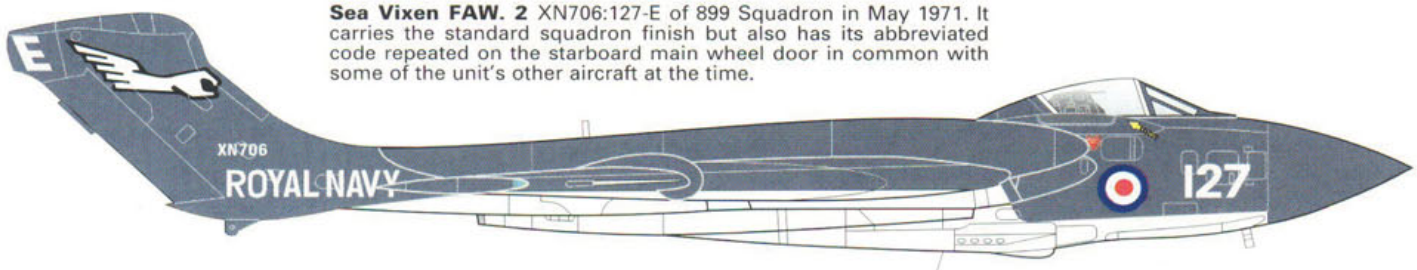


RNAY Belfast insignia on the tail of XJ572

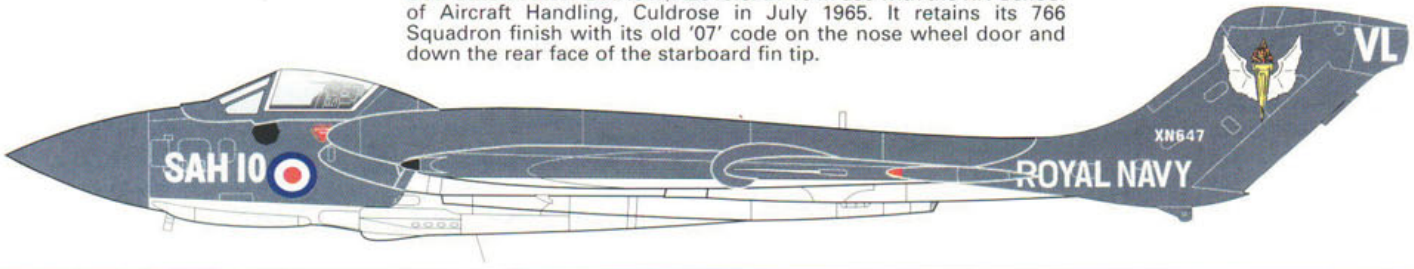
Sea Vixen FAW. 2 XJ572:BL of RNAY Belfast in July 1972.



Sea Vixen FAW. 2 XN706:127-E of 899 Squadron in May 1971. It carries the standard squadron finish but also has its abbreviated code repeated on the starboard main wheel door in common with some of the unit's other aircraft at the time.



Sea Vixen FAW. 2 XN647/A2610:SAH-10 in use with the RN School of Aircraft Handling, Culdrose in July 1965. It retains its 766 Squadron finish with its old '07' code on the nose wheel door and down the rear face of the starboard fin tip.



Sea Vixen FAW. 2 8144M:37 of No. 1 School of Technical Training, RAF Halton. It had previously been XN707:701-VL of 766 Squadron until withdrawn from service in 1971 and transfered to the RAF. All naval markings were removed and the school's fleet number marked on the nose sides in white, together with a white serial on the tail. (MAP)

October 1968.

When the original Sea Vixen Headquarters Squadron was made a front-line unit in 1964 the role lapsed until 890 Squadron reformed at Yeovilton on 14 August 1967. In addition to the usual tasks assigned to a Headquarters Squadron 890 Squadron also had to provide aircraft for the Royal Naval Air Direction School (ADS) so that trainee Direction Officers could get actual experience of controlling Sea Vixens rather than just the Sea Venoms which were normally used by the School.

Initially 890 Squadron was equipped with a mixture of Sea Vixen FAW. 1s and FAW.2s but it finally dispensed with the older mark of aircraft in July 1969. In December 1970 the squadron's aircraft were all withdrawn to be passed on to the Air Direction Training Unit which also assumed the squadron's ADS tasks. However, replacement aircraft soon arrived, coming from the recently disbanded 766 Squadron. This shuffle of aircraft was necessary primarily because the ex-766 Squadron aircraft were fully modified to front-line standard and as long as 899 Squadron was still operational 890 Squadron was responsible for providing it with replacement aircraft when required. But time was running out for the Sea Vixen by now and once it was decided that no further new crews needed to be trained 890 Squadron began to run down, finally disbanding on 6 August 1971.

Sea Vixen FAW. 2s XJ602 and XN697 in storage at Hurn for the drone conversion programme. Following cancellation of the whole project both aircraft were scrapped in 1984.

THE LAST YEARS

The withdrawal of *HMS Eagle* did not immediately signify the end of the Sea Vixen's career with the Royal Navy. As there were plenty of surplus aircraft around, Sea Vixen FAW. 2s were issued to the civilian-run Air Direction Training Unit at Yeovilton in January 1971. There they replaced Sea Venoms and augmented the Hunters already used in support of the Royal Navy Air Direction School, and continued in use until finally withdrawn in February 1974.

On 1 December 1972 the ADTU was renamed the Fleet Requirements and Air Direction Training Unit (FRADTU), reflecting the merger between these two previously separate units, but soon afterwards its title was shortened to the Fleet Requirements and Air Direction Unit (FRADU). This unit then provided aircraft for most of the navy's training needs as well as joint RN/RAF exercises.

Besides FRADU another Sea Vixen operator was the Royal Naval Air Yard at Sydenham, Belfast. The yard had long provided engineering support for the Sea Vixen and had even participated in the FAW. 2 conversion programme, and accordingly for a number of years maintained a single example for use by the resident Maintenance Test Pilots. The last one used, XJ572, eventually left when the yard closed in July 1973.

Throughout its career the Sea Vixen had been extensively used by various research organisations notably the A&AEE Boscombe Down and the Royal Aircraft Establishment. Once the initial period of testing was over, for both the Sea Vixen FAW. 1 and later the FAW. 2, most of the aircraft involved went on to serve with active squadrons but some were destined to spend their entire flying careers on research and development work. The trio which had been used for the de Havilland Firestreak and Red Top programmes, XJ476, XJ481 and XJ488, found their way to Boscombe Down on completion of the trials. Of these XJ481 was the last to be withdrawn from service in February 1974 on completion of Martel missile trials. Probably the last Sea Vixen to fly from RAE Bedford was XN653 which had been with the Flight Systems Squadron since 1969. It was used for a variety of trials until about 1979 when it went to Farnborough for drone conversion together with XN652 which had also been at Bedford for some years.

GROUND INSTRUCTIONAL DUTIES

Because most of the remaining Sea Vixen FAW. 1s had been required for the FAW. 2

DH. 110 SEA VIXEN PRODUCTION

DE HAVILLAND DH. 110 PROTOTYPES
WG236 and WG240
WG247, WG249 and WG252 were all cancelled

(2 aircraft)

DE HAVILLAND DH. 110 MK.20X PROTOTYPE
XF828

(1 aircraft)

DE HAVILLAND SEA VIXEN FAW.1 (initially designated FAW.20)
XJ474-XJ494 (c/n 110001-'021), XJ513-XJ528 (c/n 110022-'037), XJ556-XJ586 (c/n 110038-'068), XJ602-XJ611 (c/n 110069-'78), XN647-XN658 (c/n 110079-'090), XN683-XN710 (c/n 110091-'118), XP918 (c/n 110119).

(119 aircraft)

HAWKER SIDDELEY SEA VIXEN FAW. 2:
XP919-XP925 (c/n 110120-'126), XP953-XP959 (c/n 110127-'133), XS576-XS590 (c/n 110134-'148)

(29 aircraft)

SEA VIXEN FAW. 2 CONVERSIONS (in chronological order)
De Havilland Aircraft, Hatfield: Interim prototypes XN684 and XN685. Both later fully converted to production standard.
RNAY Sydenham: Between 16 August 1963 and 5 June 1968.
XJ576, XJ574, XN683, XJ584, XJ575, XN653, XJ610, XN689, XN686, XJ570, XJ560, XJ564, XN650, XN687, XN693, XJ609, XN652, XN705, XN700, XJ558, XJ579, XJ494, XN706, XJ604, XN707, XJ581, XN657, XN699, XJ559 and XJ608.

(30 aircraft)

HSA Hawarden: Between 18 December 1963 and 31 May 1968.
XJ580, XN649, XJ578, XJ602, XJ606, XJ524, XJ571, XJ561, XJ607, XJ572, XJ490, XN696, XJ582, XN691, XN694, XJ489, XN654, XN656, XN655, XJ565, XJ516, XJ491, XN647, XN702, XN690, XJ518, XN697, XN658, XN685, XP918, XN684, XJ517, XN688, XN692, XJ526, XJ521 and XN651. (37 aircraft)

SEA VIXEN FAW. 2 (TT) CONVERSIONS
Flight Refuelling Ltd. Tarrant Rushton/Bournemouth (Hurn)
XJ524 and XS587

(2 aircraft)

SEA VIXEN D.3 CONVERSIONS (initially designated U. 3)
Flight Refuelling Ltd. Tarrant Rushton/Bournemouth (Hurn)
XN652, XN657, XP924 and XS577. Of these XN652 was probably never fully fitted out.

(4 aircraft)

SUBSEQUENT GROUND INSTRUCTIONAL AIRFRAME IDENTITIES
Royal Navy airframes given a number with an 'A' prefix, RAF airframes given a number and an 'M' suffix.
XF828 (A2500), WG240 (A2481), XJ477 (A2601), XJ482 (A2598), XJ484 (A2535), XJ486 (A2599), XJ487 (A2544), XJ521 (A2612), XJ524 (8804M), XJ526 (8145M), XJ560 (8142M), XJ571 (8140M), XJ572 (8803M), XJ575 (A2611), XJ582 (8139M), XJ583 (A2507), XJ584 (A2621), XJ602 (A2622), XJ604 (8222M), XJ607 (8171M), XJ608 (8802M), XJ609 (8172M), XN647 (A2610), XN650 (A2612 but cancelled. A2620 then A2639), XN651 (A2616), XN652 (8817M), XN658 (8223M), XN685 (8173M), XN688 (8141M), XN691 (8143M), XN692 (A2624), XN697 (A2623), XN699 (8224M), XN700 (8138M), XN705 (8225M), XN706 (A2613), XN707 (8144M), XP918 (8190M), XP919 (8163M), XP921 (8226M), XS583 (8397M but not taken up) and XS587 (8828M).

SUBSEQUENT CIVIL IDENTITIES
XP924 TO G-CVIX and XS587 TO G-VIXN

XJ575 ended its naval career with the School of Aircraft Handling at Culdrose. It retained 766 Squadron finish with the addition of an SAH nose code as shown here in 1978. (M. G. Young)

conversion programme few remained on naval charge by 1968 and those that did were placed in storage at Yeovilton or Sydenham. From 1969 a growing number of Sea Vixen FAW. 2s also began to accumulate at RNAY Sydenham and these were put into storage pending a decision on their future. The older FAW. 1s were scrapped in 1970 and from 1970 to 1973 many FAW. 2s were also broken up, but rather than scrap them all the Ministry of Defence considered other uses for them.

One was obvious, to utilise the airframes as ground training aids, but the other was more unusual. This involved the conversion of the former two-seater fighters into unmanned target drones for use in weapons development work and live firing exercises.

A small number of early aircraft had already been in use as ground instructional airframes since 1961 at various naval establishments such as Lee-on-Solent and Arbroath. Redundant FAW. 2s were now also used in ground training notably at Yeovilton, but also with the Air Engineering School at Lee-on-Solent from 1970 to 1974. Aircraft were also made available to the RAF which used a number of Sea Vixen FAW. 2s at No. 1 School of Technical Training, RAF Halton, and No. 2 SoTT at RAF Cosford to give apprentice technicians first-hand experience of the structure and systems used in modern, radar-equipped aircraft. The Royal Air Force College, Cranwell, was another recipient and used three as instructional airframes for specialist Engineer Officers. Redundant airframes also appeared at various RAF airfields for fire fighting training, or at the MoD(PE) establishments such as Bedford for use as spares sources or for destructive testing, before they too were burned.

From 1971 up to eight Sea Vixens were also used by the RN School of Aircraft Handling at Culdrose to train personnel how to manoeuvre aircraft in confined spaces. The Sea Vixen proved a good, if awkward training aid because of its size and shape, and gave good service until replaced by surplus RAF Gnats.

Most of these aircraft were disposed of to preservation groups but others, including XF828, the sole DH. 110 Mk. 20X, were relegated to fire fighting training and burned. Of the remainder two actually flew again when XJ602 and XN697 went to Tarrant Rushton in 1978 for use in the drone conversion programme. The last Sea Vixen at Culdrose was XN692 which remained active until October 1983 albeit as a means of clearing ice off the runway with its jet exhaust.

DRONES AND TARGET TUGS

The more radical suggestion to utilise redundant Sea Vixens as targets to succeed the dwindling numbers of Meteor drones then in use on the Aberporth range in Cardigan Bay was proposed by RAE Farnborough. The Establishment undertook the feasibility

Flight Refuelling's hybrid Sea Vixen FAW. 2 target tug XJ524 used for company trials at Hurn. It was eventually disposed of to RAF Catterick in March 1984 to be used as a fire training hulk. (M. G. Young)

study for the drone, initially referred to as the Sea Vixen U.3 but later as the D.3, and once the project was approved was also responsible for preparing the aircraft for conversion. This involved the removal of all unnecessary operational equipment, including the radar and armament, after which the airframes would be delivered to Flight Refuelling Limited at Tarrant Rushton for fitting out. Following that, conversion test flying would be carried out from Bournemouth/Hurn airport.

Fight Refuelling had considerable experience of this type of work because it had already been responsible for producing the RAE's Meteor drones. Full remote controls were to be fitted allowing the drone to be controlled either from the ground or from another aircraft, but it also still had to be capable of being flown by its own live pilot. In addition it had to carry the necessary measuring and recording devices to assess weapon 'miss distances'. Most of this new equipment was fitted in the old observer's compartment.

From early 1972 Sea Vixen FAW. 2s began arriving at RAE Farnborough for preparation or storage until required. A composite airframe referred to as 'XJ482' was later also delivered to FRL at Wimborne Minster for use as a test rig with work beginning during 1975. Drone conversions then began at Tarrant Rushton but only XN657 had been completed before the faciltiy was closed in 1980 and work transferred to Hurn.

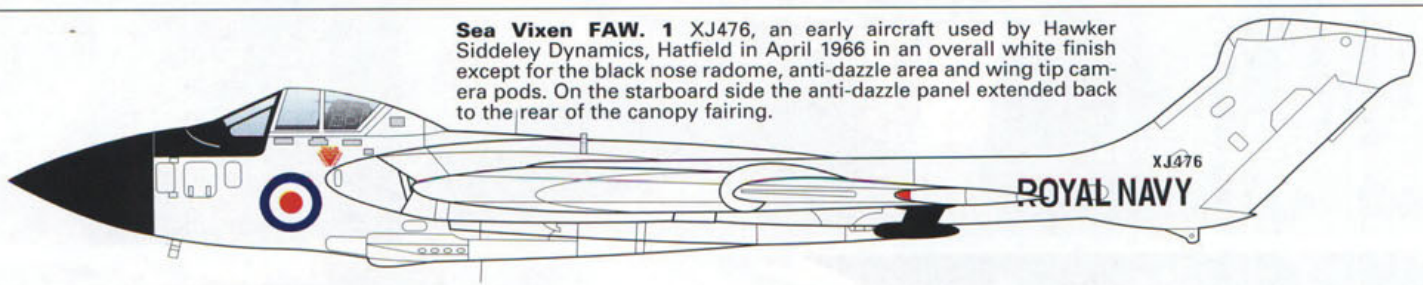
No official Specification was ever issued for the drone project and from the beginning the programme was under-funded, then not long after conversion work started the MoD began to have second thoughts. Because of growing concerns about the cost of the programme and indeed having such sophisticated targets at all, the programme was firstly suspended in 1983 and then cancelled the following year. Consequently the remaining Sea Vixens held at Farnborough were disposed of during 1983-84 as were those which had gone to Llanbedr for use as maintenance airframes.

By the time the project was cancelled three Sea Vixen D. 3 prototypes had been produced and XN657, XP924 and XS577 were eventually delivered to RAE Llanbedr and flown in connection with the development of a Universal Drone Pack and later an Advanced Target Aircraft Control System. The first production D.3, XN652, remained with the company at Hurn until it was scrapped there around 1992.

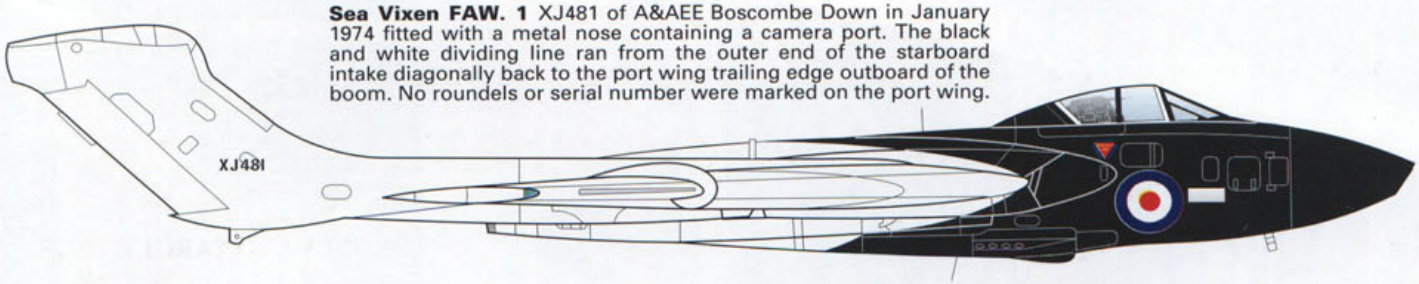
Besides producing Sea Vixen D. 3s Flight Refuelling Ltd also adapted two other Sea Vixens as target tugs unofficially designated FAW. 2 (TT). One was XJ524 converted at Tarrant Rushton from June 1977 and then used at Hurn from 1979-80 in the development of a new high speed towed-target system. It was eventually disposed of in March 1984. The other aircraft was XS587 which was flying from Hurn in the early 1980s and was used at Llanbedr from at least 1983, for radio ranging trials. By August 1984 it was back at Hurn for disposal, subsequently becoming G-VIXN. FRL also used the FAW. 2 XJ580 during 1982-83 for developing the new Mk. 32/2800 refuelling pod destined for the RAF's VC10 tankers.

The last active Sea Vixens were the Aberporth drones of which XN657 was not much used and by March 1985 was in storage, later being scrapped. XS577 was active until 1990 but by 1991 was being used as a spares source for XP924 which continued flying until the latter part of 1991. When this too was grounded, the Sea Vixen's service flying career finally came to an end. Fortunately XP924 was saved from the breaker's yard and is being restored to flying condition at Swansea airport, registered G-CVIX.

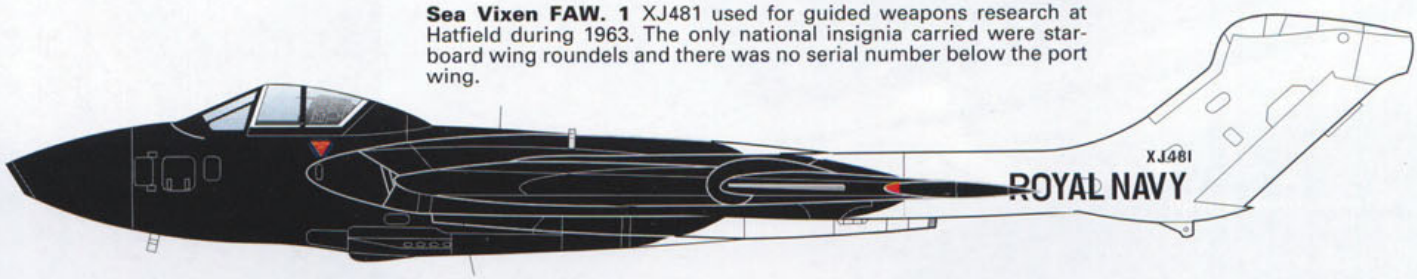
Sea Vixen FAW. 1 XJ476, an early aircraft used by Hawker Siddeley Dynamics, Hatfield in April 1966 in an overall white finish except for the black nose radome, anti-dazzle area and wing tip camera pods. On the starboard side the anti-dazzle panel extended back to the rear of the canopy fairing.

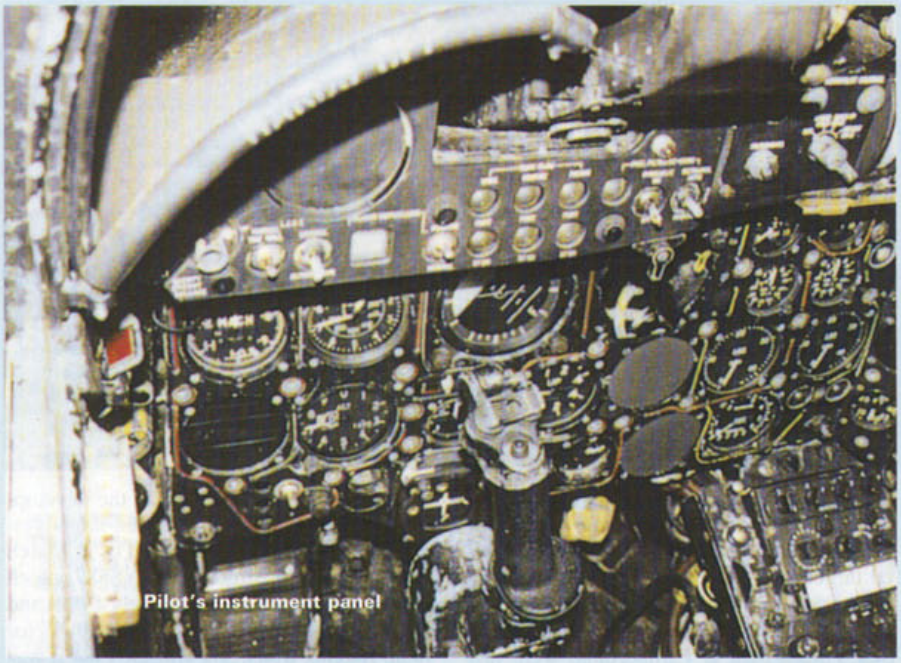


Sea Vixen FAW. 1 XJ481 of A&AEE Boscombe Down in January 1974 fitted with a metal nose containing a camera port. The black and white dividing line ran from the outer end of the starboard intake diagonally back to the port wing trailing edge outboard of the boom. No roundels or serial number were marked on the port wing.



Sea Vixen FAW. 1 XJ481 used for guided weapons research at Hatfield during 1963. The only national insignia carried were starboard wing roundels and there was no serial number below the port wing.



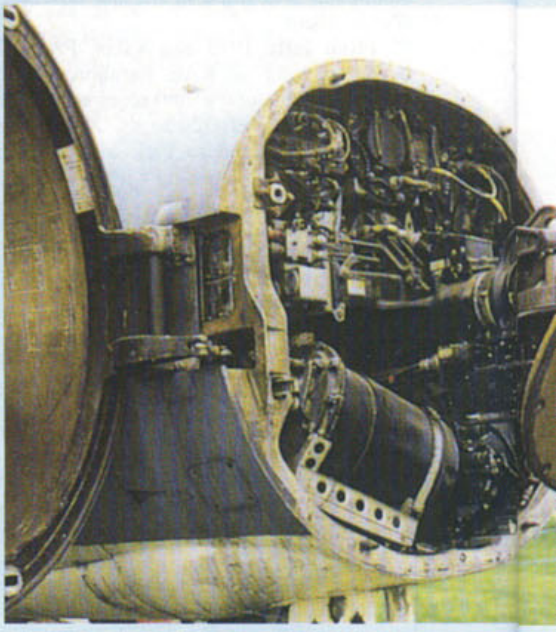


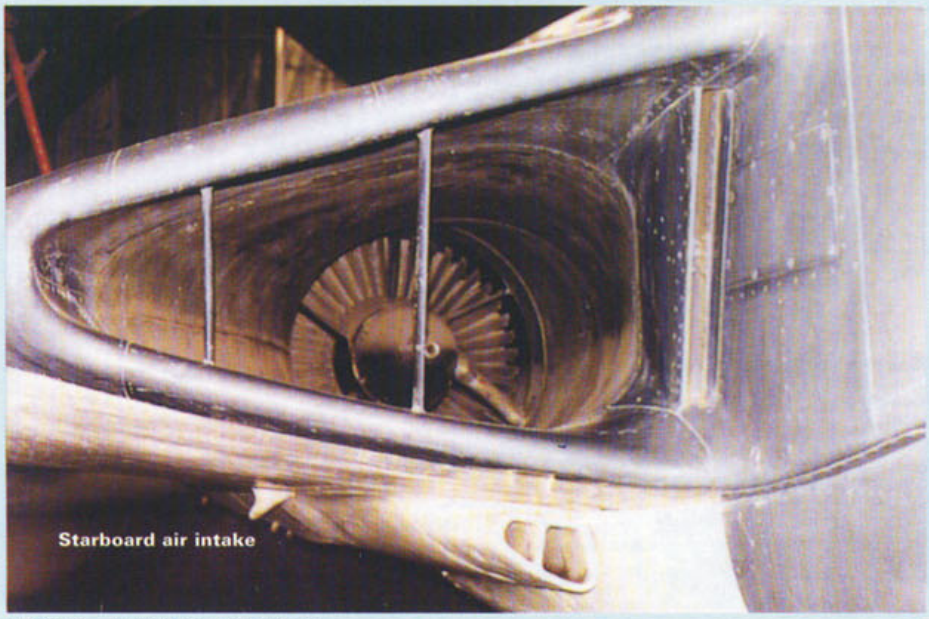
Pilot's instrument panel

Main undercarriage leg

SEA VIXEN IN DET

Starboard wing fold mechanism





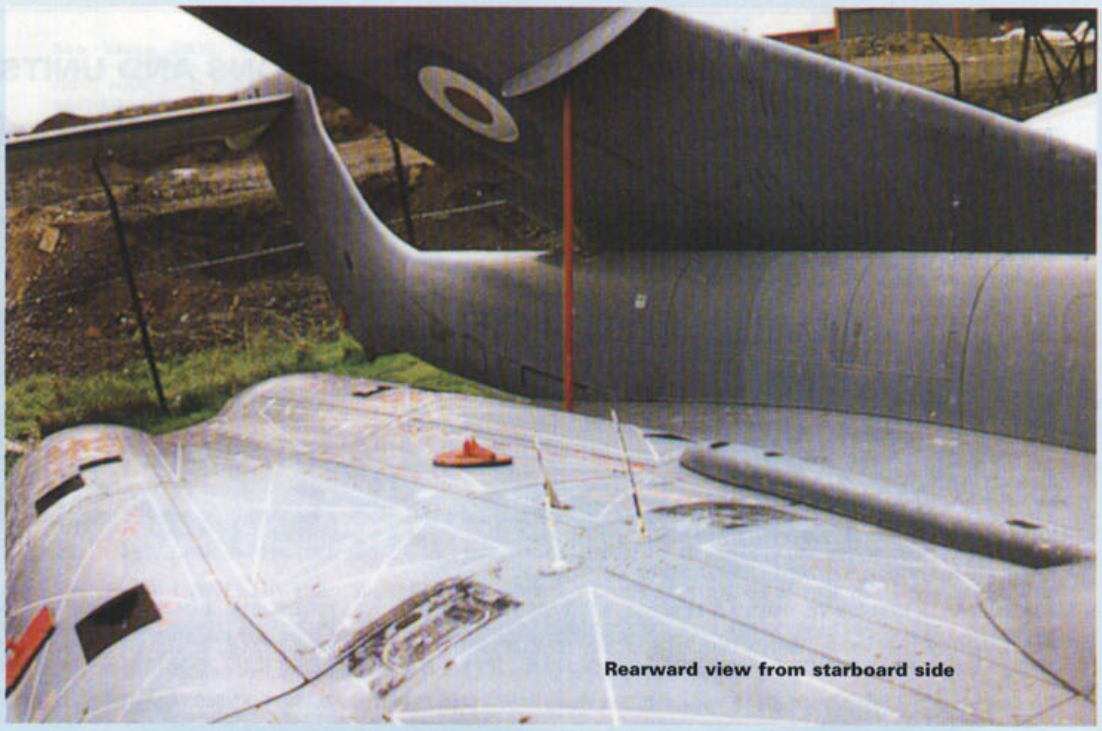
Starboard air intake

Observer's side window

Nose wheel

DETAIL

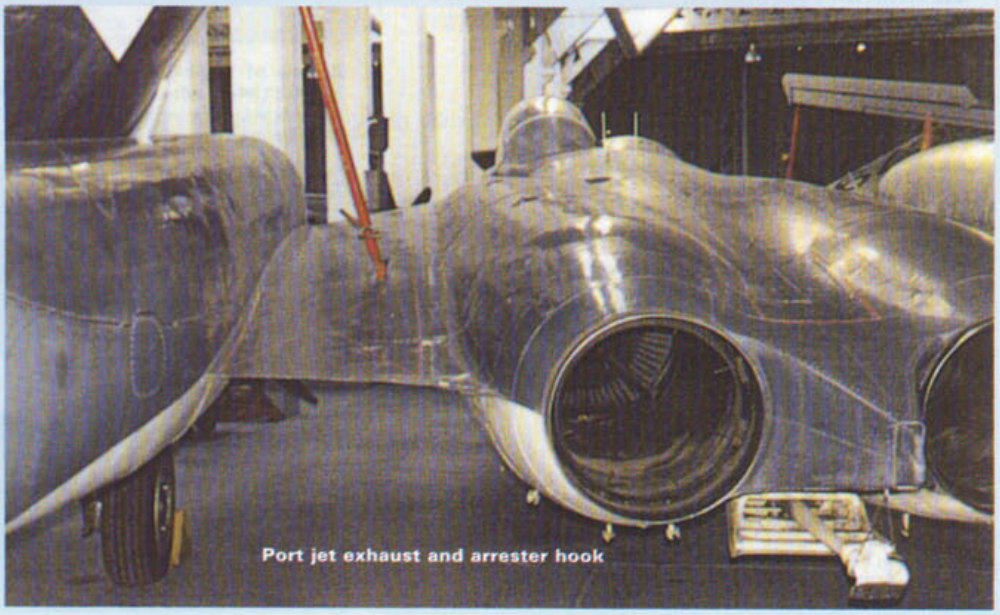
Pictures by Mark Robson, IPMS New Zealand via Jim Howard



Rearward view from starboard side

Radar aerial and radome interior

Under fuselage air brake



Port jet exhaust and arrester hook

DE HAVILLAND SEA VIXEN SQUADRONS AND UNITS

700Y Squadron 4 Nov 1958 to 1 Jul 1959. RNAS Yeovilton. Sea Vixen FAW.1 1958 XJ482, XJ484. 1959 XJ486, XJ487, XJ489, XJ490, XJ491, XJ493
766B Squadron 22 Oct 1959 to 24 Oct 1960. RNAS Yeovilton. Sea Vixen FAW.1 XJ482, XJ485, XJ520:711-VL.
766 Squadron 24 Oct 1960 to 10 Dec 1970. RNAS Yeovilton. Sea Vixen FAW. 1 (Oct 60 to May 68) 1961: XJ490, XJ492:715-VL,XJ514, 1962: XJ575:721-VL, XN648:716-VL, XN698:719-VL. 1963: XJ513:710-VL, XJ524:712-VL, XN697:714-VL. 1964: XJ478:711-VL, XJ485:720-VL, XN700:710-VL 1965: XJ558:722-VL, XN654:711-VL, XN658:720-VL, 1966: XJ492:715-VL, XJ568:716-VL, XJ586:717-VL. 1967: XJ482:713-VL, XJ513:710-VL. Sea Vixen FAW.2 (Jul 65 to Dec 70) 1965: XJ580:VL, XS582:722-VL. 1966: XJ490:726-VL, XJ582:721-VL, XS582:722-VL. 1967: XJ580:724-VL. XN689:723-VL, XS583:727-VL. 1968: XN682:723-VL, XN700:700-VL, XP923:706-VL. 1969: XN651:710-VL, XP919:706-VL, XS582:712-VL. 1970: XJ575:713-VL, XJ609:714-VL, XN647:707-VL.
831 Squadron: RNAS Culdrose then RAF Watton. Sea Vixen FAW.1 (1963) XJ518.
890 Squadron: 1 Feb 1960 to 7 Oct 1966. HMS Hermes and Ark Royal. Sea Vixen FAW.1 1960: XJ525, XJ527:242-H, 1961: XJ524:240-H, XN649:242-H, XN692:252-R. 1962: XJ528:243-R, XJ556:244-R, XJ577:247:R,. 1963: XJ521:243-R, XJ526:248-R. 1964: XJ483:249-R, XJ584:249-R, XN656:251-R. 1965 XJ520:014-R, XJ556:241-R. 1966: XJ521:004-R, XJ559:007-R, XN657:010-R. 14 Aug 1967 to 6 Aug 1971. RNAS Yeovilton. Sea Vixen FAW.1 (Aug 67 to Jul 69). 1967: XJ514:753-VL, XJ525:751-VL, XJ557:752-VL. Sea Vixen FAW.2. 1967: XN704:750, 1968: XP923:751, XN699:752. 1969: XN658:750, XP921:753. 1970: XJ575:755, XN705:751. 1971: XJ607:701-VL, XN687:704-VL, XP919:706-VL.
892 Squadron: 1 Jul 1959 to 4 Oct 1968. HMS Ark Royal, Victorious, Hermes, Centaur and Hermes in that order. Sea Vixen FAW.1 (Jul 59 to Dec 65). 1959: XJ484:208-R, XJ514:214-R, XJ519:219-R. 1960: XJ486:212-R, XJ515:218-R. 1961: XJ489:209-V, XJ583:216-V, XJ586:212-V. 1962: XN691:219-H, XN695:215-H. 1963 XJ490:210-C, XJ491:211-C, XJ518:209-C. 1964: XJ522:207-C, XJ605:215-C. 1965: XJ525:215-C, XN693:213-C. Sea Vixen FAW.2 (Dec 65 to Oct 68). 1966: XJ607:307-H, XN653:313-H, XS589:305-H. 1967: XN655:306-H. 1968: XJ604:303-VL, XN650:301-VL, XN694:305-VL.
893 Squadron: 9 Sep 1960 to 29 Jul 1965. HMS Ark Royal, Centaur and Victorious. Sea Vixen FAW.1. 1960: XJ572:462-R. 1961: XJ607:457-C, XJ609:459-C, XJ610:460-C. 1962: XJ585:455-C, XJ611:466-C, XN686:468-C, 1963: XJ523:462-C, XN650:456-C, XN651:461-C. 1964: XN652:461-V, XN694:463-V. 1965: XJ522:466-V. 4 Nov 1965 to 14 Jul 1970. HMS Victorious and Hermes. Sea Vixen FAW.2 1966: XJ576:244-V, XJ606:247-V, XS586:246-V. 1967: XJ602:245-V, XP954:247-V, XS580:253-V. 1968: XJ516:245-H, XJ571:255-H, XN657:251-H. 1969: XJ526:255-H, XN692:246-H, XP918:250-H. 1970: XJ575:246-H, XN691:247-H, XN702:254-H.
899 Squadron: 1 Feb 1961 to 26 Jan 1972. RNAS Yeovilton and HMS Eagle. Sea Vixen FAW.1 (Feb 61 to Sep 64). 1961: XJ576:488-VL, XJ602:485-VL, XJ606:486-VL. 1962: XJ571:489-VL, XN647:490-VL, XN694:487-VL. 1963: XJ518. 1964: XN696:488-VL. Sea Vixen FAW.2 (Feb 64 to Jan 72). 1964: XP921:496, XP924:492-E, XP925:485-E, 1965: XP924:124-E, XP955:495-E, XP958:498-E, XS577:488-E. 1966: XP925:125-E, XS578:137-E, XS579:130-E. 1967: XJ494:121-E, XJ565:127-E, XN691:131-E. 1968: XN652:124-E, XN656:134-E. 1969: XN696:123-E, XP959:122-E, XS580:127-E. 1970: XJ572:127-E, XN657:123-E, XP955:121-E. 1971: XJ610:134-E, XP918:122-E, XS583:133-E. 1972: XJ581:136-E, XN684:124-E, XP922:132-E.
Air Direction Training Unit: RNAS Yeovilton. Sea Vixen FAW.2 (Jan 71 to Nov 72). 1971: XN658:750, XN705:751, XP921:753. 1972 XP925:752, XS580:755, XS587:750.
Fleet Requirements and Air Direction Unit: RNAS Yeovilton. Sea Vixen FAW.2 (Dec 72 to Feb 74). 1973: XP954:753, XS580:755. 1974: XN696:751, XP925:752, XS587:750. Unit originally known as the Fleet Requirements and Air Direction Training Unit.
Royal Naval Aircraft Yard: Sydenham, Belfast. Sea Vixen FAW.2 (approx 1969 to 1973). XJ572:BL, XN650.
Aeroplane and Armaments Experimental Establishment: Boscombe Down. Sea Vixen FAW.1. XJ475, XJ476, XJ488, XJ481. Sea Vixen FAW.2. XN653, XP919.
De Havilland/Hawker Siddeley Dynamics: Hatfield. Sea Vixen FAW.1. XJ476, XJ481, XJ488. Sea Vixen FAW.2. XJ608.
Flight Refuelling Limited: Bournemouth (Hurn) and Tarrant Rushton. Sea Vixen FAW.2(TT). XJ524, XS587. Sea Vixen D.3. XN652, XN657, XP924, XS577. Sea Vixen FAW.2 XJ580.
Long Range Weapons Establishment: Woomera, Australia. Sea Vixen FAW.1. XJ476, XJ480.
Royal Aircraft Establishment: Bedford. Sea Vixen FAW.1. XJ474, XJ485. Sea Vixen FAW.2. XJ525, XN653, XP920. RAE Llanbedr: Sea Vixen FAW.2(TT). XS587. Sea Vixen D.3. XP924, XS577.

DE HAVILLAND SEA VIXEN GROUND INSTRUCTIONAL AIRFRAMES

RN AIR ELECTRICAL SCHOOL
RNAS Lee-on-Solent
Sea Vixen FAW.1 (1960 to 1970)
A2507, A2598. A2599

RN AIR ENGINEERING SCHOOL
RNAS Arbroath then Lee-on-Solent
DH110 A2481
Sea Vixen FAW.1 (1961 to 1970)
XJ493, A2535, A2544
Sea Vixen FAW.2 (1970 to 1974)
A2612, A2613, A2616

RN ENGINEERING COLLEGE
Manadon
DH 110 (1962 to 1965)
A2481

RN SCHOOL OF AIRCRAFT HANDLING
RNAS Culdrose
DH 110 Mk.20X (Nov 1960 to approx 1972)
A2500
Sea Vixen FAW.2 (1971 to approx 1978)
A2610, A2611:SAH-13, A2616, A2621:SAH-16, A2624:SAH-17.

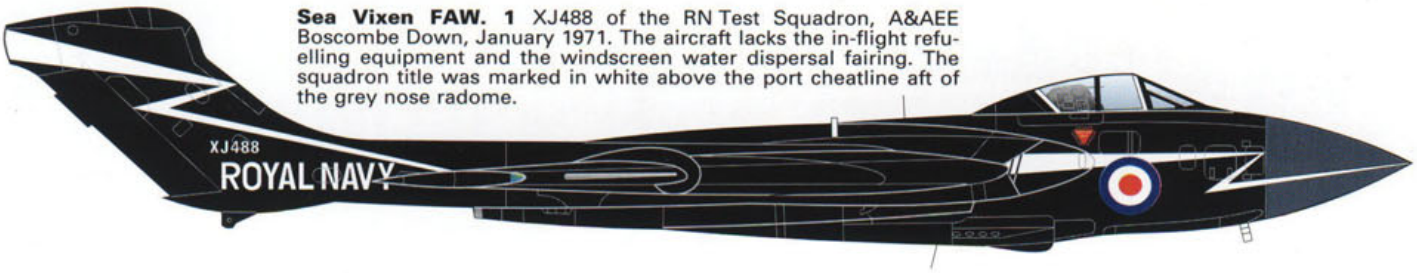
No. 1 SCHOOL OF TECHNICAL TRAINING
RAF Halton
Sea Vixen FAW.2 (1971 to 1985)
8139M:32, 8142M:35, 8145M:38.

No. 2 SCHOOL OF TECHNICAL TRAINING
RAF Cosford
Sea Vixen FAW.2 (1979 to approx 1988)
8140M:R, 8143M:N, 8171M:O, 8173M:P

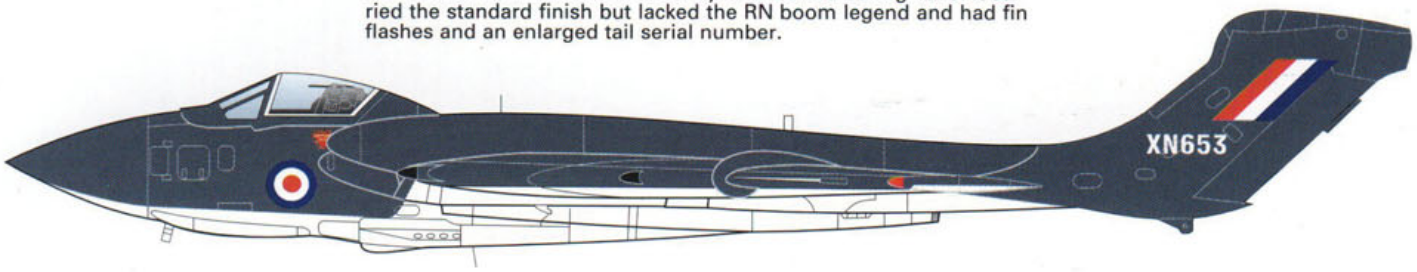
ROYAL AIR FORCE COLLEGE
RAF Cranwell
Sea Vixen FAW.2 (Aug 1971 to approx 1981)
8171M, 8172M, 8173M

A pair of typical in-service Sea Vixens. That above is an FAW. 2 XJ610:134-E when based on *HMS Eagle* and belonging to 899 Squadron. The aircraft below XJ609:702-VL comes from 892 Squadron. Both pictures were taken on the Yeovilton flight line.

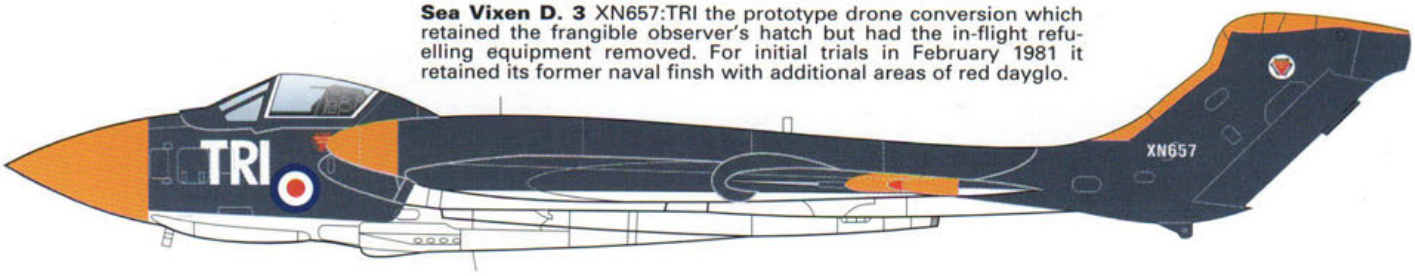
Sea Vixen FAW. 1 XJ488 of the RN Test Squadron, A&AEE Boscombe Down, January 1971. The aircraft lacks the in-flight refuelling equipment and the windscreen water dispersal fairing. The squadron title was marked in white above the port cheatline aft of the grey nose radome.



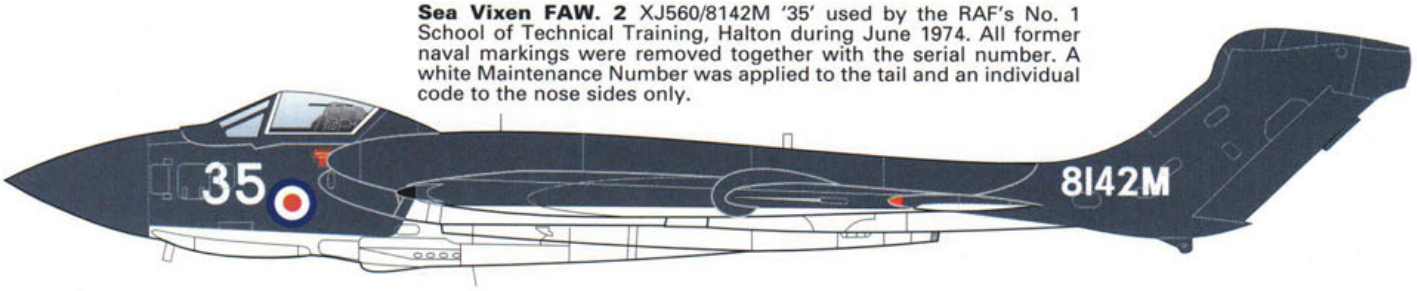
Sea Vixen FAW. 2 XN653 used by RAE Beford during 1975. It carried the standard finish but lacked the RN boom legend and had fin flashes and an enlarged tail serial number.



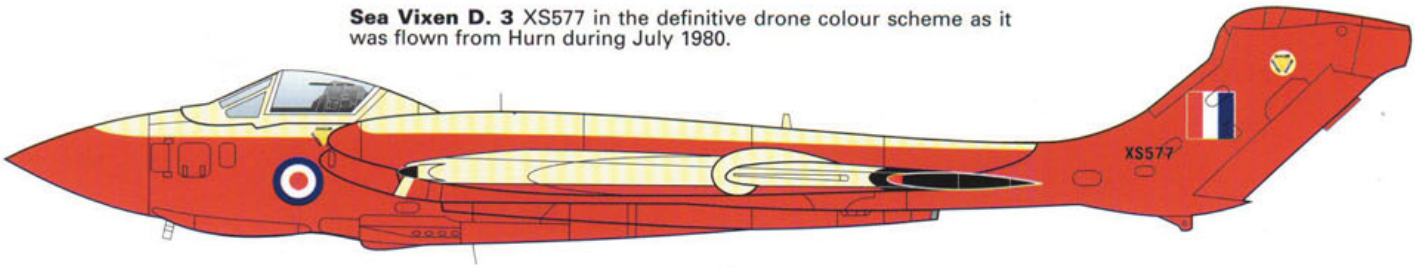
Sea Vixen D. 3 XN657:TRI the prototype drone conversion which retained the frangible observer's hatch but had the in-flight refuelling equipment removed. For initial trials in February 1981 it retained its former naval finsh with additional areas of red dayglo.



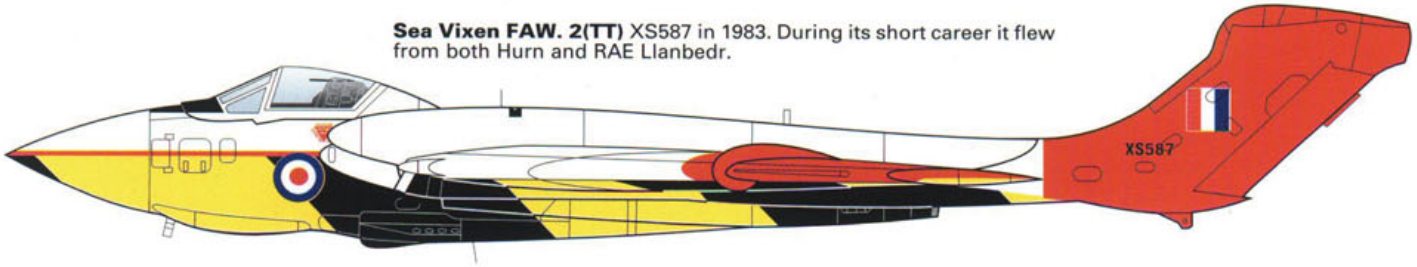
Sea Vixen FAW. 2 XJ560/8142M '35' used by the RAF's No. 1 School of Technical Training, Halton during June 1974. All former naval markings were removed together with the serial number. A white Maintenance Number was applied to the tail and an individual code to the nose sides only.



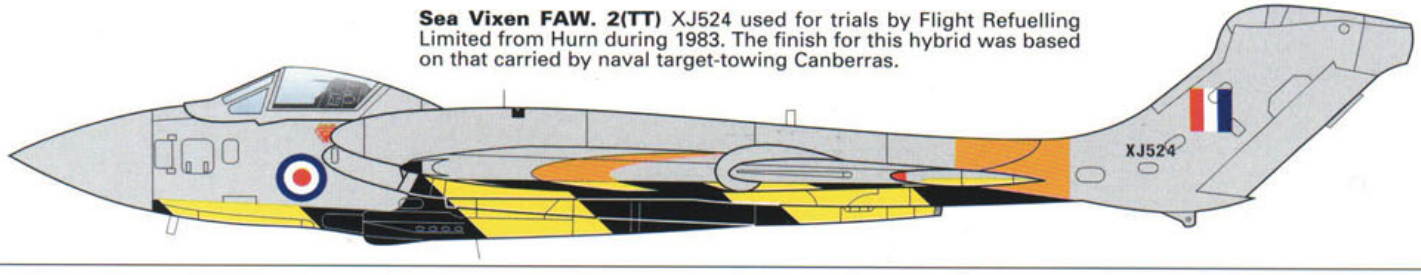
Sea Vixen D. 3 XS577 in the definitive drone colour scheme as it was flown from Hurn during July 1980.



Sea Vixen FAW. 2(TT) XS587 in 1983. During its short career it flew from both Hurn and RAE Llanbedr.



Sea Vixen FAW. 2(TT) XJ524 used for trials by Flight Refuelling Limited from Hurn during 1983. The finish for this hybrid was based on that carried by naval target-towing Canberras.



Above: A view of *HMS Eagle's* after flight deck during an exercise in the Moray Firth during July 1967. Sea Vixens ranged on deck include XJ579:122-E of 899 Squadron in the standard finish worn from that year until the squadron disbanded in 1972. (Author) Left: Sea Vixen FAW. 2 XJ565 which served with 899 Squadron and RAE Bedford, being re-assembled at the Mosquito Aircraft Museum, London Colney, in October 1976 after its final journey from Bedford. It has the original flat observer's hatch, and the conformal boom leading edge fuel tanks have yet to be fitted to the airframe. Lower left: The same aircraft in its final resting place at the museum together with other de Havilland aircraft. (A. W. Hall)

DE HAVILLAND SEA VIXEN TECHNICAL DATA

SEA VIXEN FAW. 1
Power plant: Two Rolls Royce Avon 208 turbojets each rated at 11,200 lb st.
Performance: Max speed 645 mph at 10,000 ft (3,048m) (Mach 0.92), 610 mph at 40,000ft.
Time to altitude approx 6 1/2 mins to 40,000 ft (12,192m).
Service ceiling: 48,000 ft (14,630m).
All-up weight: 35,000 lbs (15,876 kgs).
Dimensions: Span 50 ft (15.24m); Overall width with wings folded 22 ft 3 ins. Overall length: 55 ft 7 ins (16.94m); Overall length nose folded approx: 50 ft 3 ins; Height: 10 ft 9 ins (3.27m); Wing area: 648 sq.ft.
Armament: 28 x 2in, unguided rockets in two ventral retractable batteries. 4 x de Havilland Firestreak infra-red homing air-to-air missiles. Ground attack weapons on four underwing pylons included various combinations of up to 4 x 500 lb bombs, 4 pods of 24 x 2 in rocket projectiles and 4 x napalm tanks. 2 x 1,000 lb bombs. 2 x Martin AGM-12B Bullpup air-to-surface guided missiles together with the control pod. The aircraft could also carry 2 x 150 Imp gal. (682 ltr.) underwing drop tanks or one Flight Refuelling Ltd Mk. 20 hose and drogue in-flight refuelling pod below the starboard wing replacing the starboard drop tank.

SEA VIXEN FAW. 2
Power plant: Two Rolls Royce Avon 208 turbojets.
Performance: Max speed: 640 mph at 10,000 ft.
Time to altitude approx 8 1/2 mins to 40,000 ft.
Service ceiling: 48,000 ft.
All-up weight: 37,000 lbs (16,783 kgs)
Endurance: Three hours.
Dimensions: As for FAW. 1
Armament: 4 x de Havilland Red Top infra-red air-to-air missiles. Externally mounted ordnance as for FAW. 1.

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