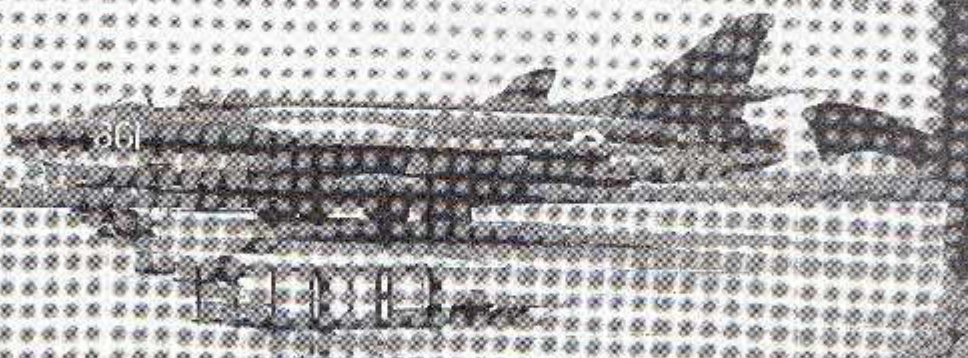


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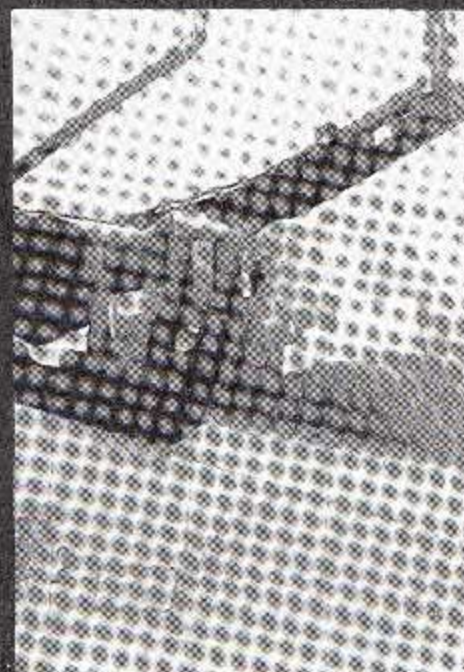
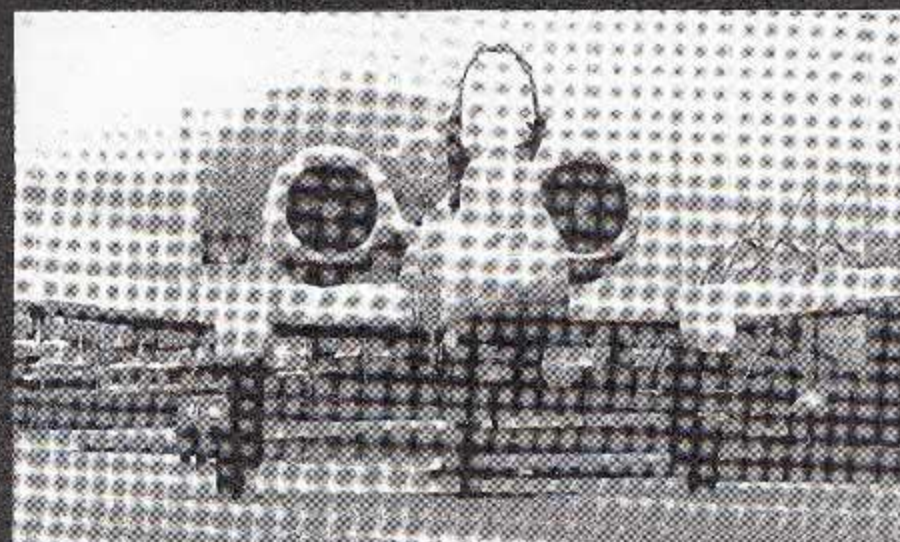
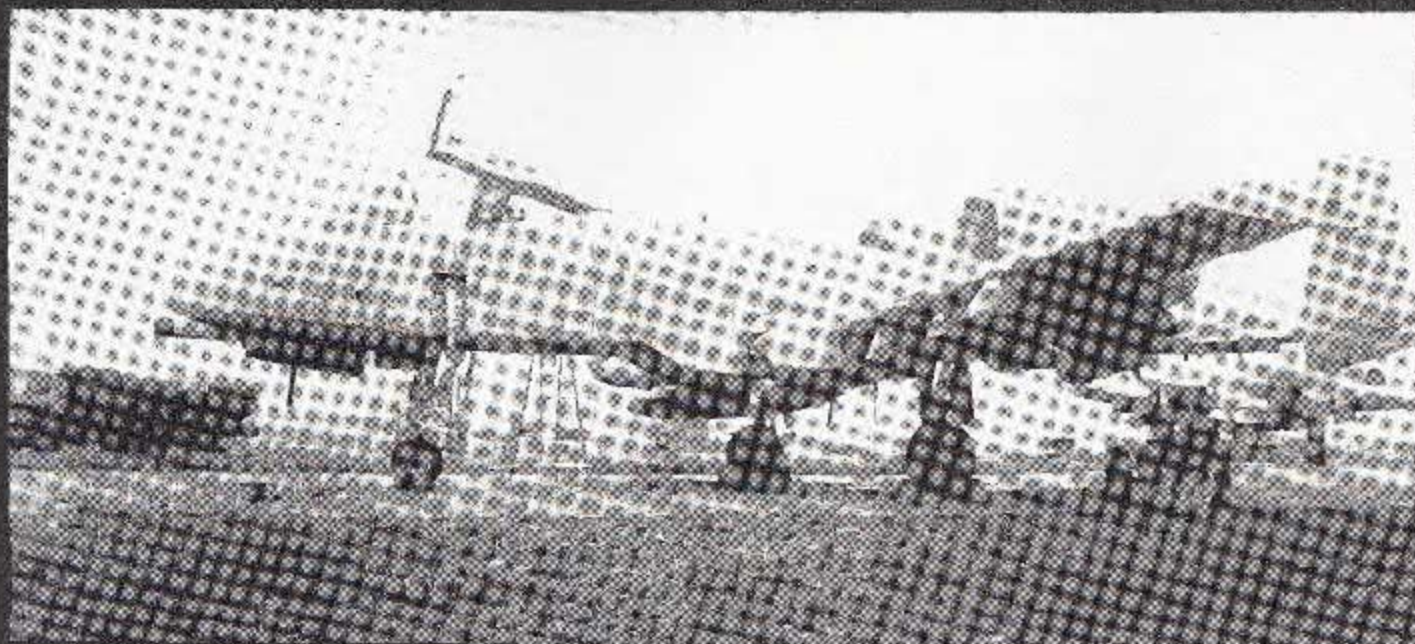
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aviation



magazine



"WATCH OUT FOR THE WINDING BEAST"

PICTORIAL BENTWATERS





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EDITORIAL

AIRCRAFT AND PUBLICITY

Generally speaking, aviation has not yet taken roots in society. Normally people are only involved with aviation when flying with a charter on a summer-vacation. Otherwise aviation is only a producer of much noise, and a consumer of enormous amounts of fuel.

Big headlines whenever there are problems on the aviation scene and articles lacking all substantial information, feeds the idea aviation is only a luxury.

There's no denying the DC-10 was involved in a series of four accidents. That over 200 German F-104s have crashed. The F-16 has no all-weather capability. The Tornado is very expensive. The Pratt & Whitney F.100 engine faces flame-out problems. NATO air forces face a pilot shortage. Many Harriers have been lost. Concorde was a financial catastrophe.

So what? What does this all mean? Nice headlines for an article as it guarantees for the reader's attention. However, often the accompanying articles fail to produce a proper picture of the complete affair. More accidents will take place involving the fleet of 330 DC-10s. With +200 w/o's the Luftwaffe lost 'only' 25% out of 828 F-104s. An expensive Mercedes-Benz doesn't guarantee a trouble-free drive in rough terrain - same goes for the F-16. What has been done to solve the flame-out problems with the P&W F.100 engine. IS NATO's pilot shortage structural? Did so many Harriers crash because of technical failures or incorrect pilot's handling. The Trans-Atlantic flights by Concorde have a passenger-seat occupation of 70%.

All right, just like all readers of FLASH, I must admit to have an affection for everything that flies (except for gnats and Condors). Such an affection tends to look at aviation from the bright side only and to forget about noise-complaints, enormous fuel consumption and over-armorment. It doesn't seem possible to be PRO civil aviation and ANTI noise, or to be PRO military aircraft but ANTI over-armorment.

This underlies the absurd publications in news-papers and TV-items concerning certain aspects in aviation. In a large campaign against noise-annoyance it is easy to condemn aircraft but aircraft have become an essential part in today's society. In a large campaign against over-armorment it is easy to condemn military aircraft but these aircraft have become one of the most essential part in defending a country's independency whether one likes it or not.

Living in Eindhoven, it is a damn nuisance when phoning and a bloody NF-5 is doing engine-tests at the same time. But this doesn't mean I'm against military aircraft. It only indicates the Koninklijke Luchtmacht should take in consideration the noise-levels produced by new fighter aircraft.

When I see big fuel-trucks refuelling a Jumbo-Jet, it seems ridiculous to put down the Central Heating one hour before going to sleep. But the re-engined B.707 is a nice example of the aviation's contribution to be economical with energy.

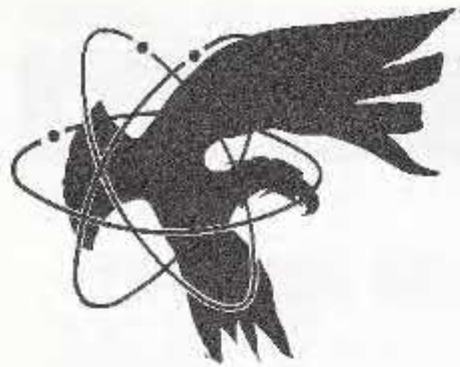
Is the DC-10 a bad aircraft? No, it is the reactions from airline companies and McDonnell/Douglas against FAA and journalists, that gave the public an incorrect idea about the real problems.

Was the F-16 purchase a bad choice? No, it was the fault to produce a picture of the F-16 as it would be world's best fighter aircraft, whereas it was only the best aircraft for NATO countries to purchase looking at their budgets.

Is the Starfighter an unsafe aircraft? No, it is perfectly normal for a military fighter aircraft that 25% of the aircraft are written off due to accidents.

Ect., etc., etc., etc., etc., etc. See future Editorials

Jac van Tuyn



MILITARY NEWS

HOLLAND

Over the last two months of 1979, the Klu received only two F-16s. On 02.11 J-215 was delivered to Leeuwarden and on 21.12 J-217. A third F-16 which should have been delivered is J-216. Although having made several approaches at Leeuwarden, the aircraft is reportedly to have suffered engine problems. From October 20 till 27, F-16B J-250 went on a demonstration tour to Spain. Flown by GD test pilot Neil Anderson, the aircraft left Leeuwarden with 4 Sidewinders and 2 fuel-tanks. On return at Leeuwarden test pilot Neil Anderson stayed a few weeks as guest.

FROM A FACILE PEN.....

NORTHROP vs MCDONNELL-DOUGLAS

Ongoing negotiations with the Canadian authorities for the possible sale of F-18A Hornets, McDonnell-Douglas seems to have offered to share production with the Canadian aviation industries. Several offers were made, some parts of the F-18 presently produced under the authorization of Northrop. Additionally McDonnell-Douglas is competing with their F-18B against Northrop's F-18B in Israel. When McDonnell-Douglas took over the F-17 design for adoption to naval requirements, a contract was signed by this company and the designer Northrop. Both companies seem to have different interpretations of this contract. Northrop subsequently charged McDonnell-Douglas to appear in court. A judge has set a hearing for April.

U.S. OBSERVATION

The U.S. Marine Corps intends to convert 21 F-4E Phantom II aircraft to a two-seat target-destroying and forward air control version, designated OASU. A prototype is now being evaluated by NASM-33 at Cherry Point MCAS. Upated with A-1H systems the aircraft included a number of systems specific to the F-4C role.

HEARS FOR LASHER OPERATIONAL BUDGET

Over 1977, the USAF cancelled all squadron-exchanges, participation was dropped in nearly all NATO exercises, weapon training for F-111 and F-15 were eliminated. The Operational & Maintenance Budget of 4.500 million was not sufficient for the USAF to meet all NATO operational requirements. If the O & M budget for 1980 will not be raised from 4.500 million to 6.000 million, USAF will be forced to take drastic steps to reduce costs according to Gen. J. Pally, commander USAF.

AVIATION SCHEDULE (part 2)

THE 33	Hannover	April 24 - May 1
Open House Day	Wierseke/Flieger	June 21 & 22
Tactical Air Meet	Winnick	
Hullington	Koksijde	July 17 - 19
GENC	Ypenburg	September 1 - 7
Open Day	De Peel	September 20

The annual Dutch air force open day will be at De Peel. Traditionally the open day should have been at Volkel. Due to not yet specified reasons, this was not possible and an alternative was found in this war-time diversion air base for Volkel. De Peel will be open to the public on September 20.

Only a few Starfighters have left Leeuwarden so far. D-8293, 8311 and 5817 went to Volkel during 1978. D-8105 went to Volkel last year while D-8331, 8061 and 8308 left for Ypenburg. Both Starfighters involved in the accident on the runway at Wildenrath on 21.11.78, are definitely written off. D-8098 is presently at Leeuwarden as an instructional airframe while D-8341 has been reported at Volkel for similar purposes. The fate of Klu's remaining Starfighters is not yet officially known. All Fiat-built (6600-series) will be returned to the USAF. Just like Belgium and Germany, the Dutch air force is looking for a customer to buy some of the Starfighters. During the NATO conference in Brussels early December, the Dutch delegation officially offered their Turkish colleague's to buy second-hand Starfighters. Presently delivery-conditions and prices are being worked-out.

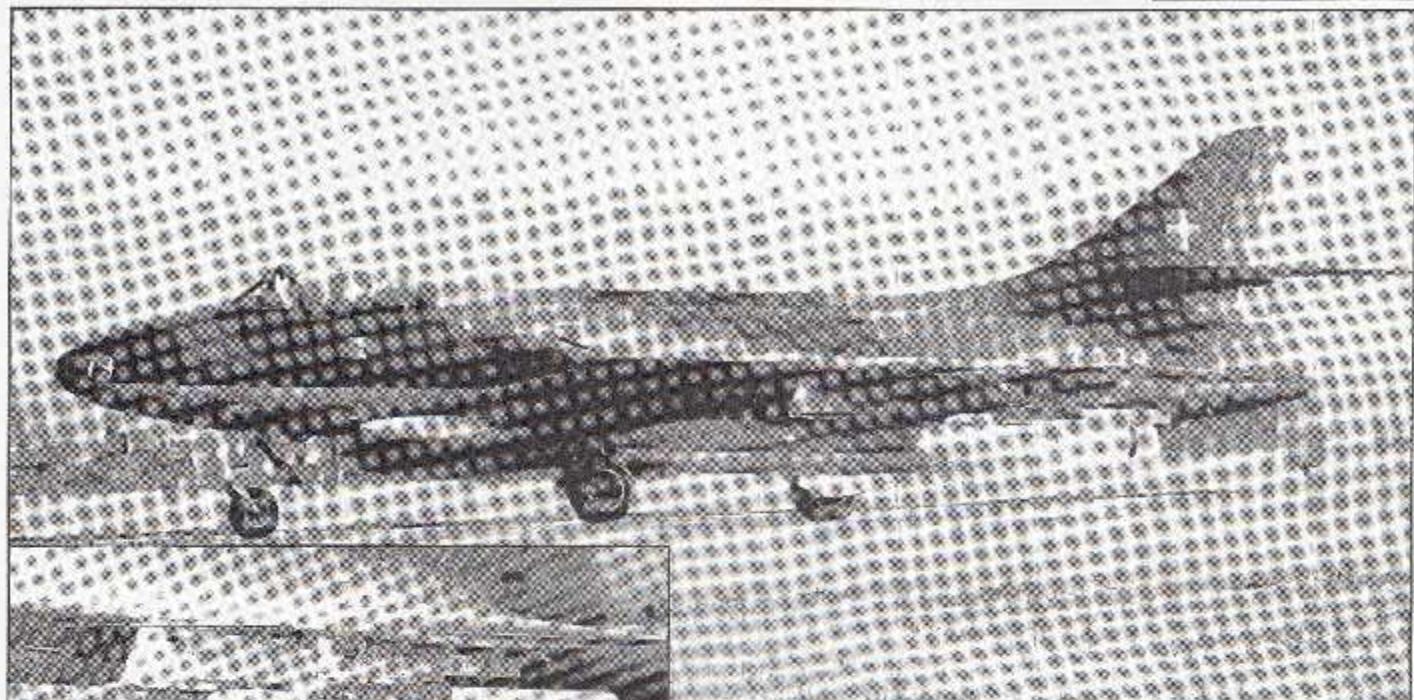
In December an NF-5 was seriously damaged while taking off from Eindhoven. Blocking the runway, six airborne NF-5s had to divert to Gilze-Rijen. With three NF-5s having landed at Gilze, the runway was cleared again and the remaining three could return to Eindhoven for a normal landing. The damaged NF-5 had its engines burned out. Although heavily damaged the aircraft will be repaired. Sticking to 314sqn. The squadron is in the process of arranging an squadron-exchange with Esc.201 at Monte Real, Portugal. According to plans 314sqn will go to Portugal in June but no Portuguese aircraft will come to Holland.

BELGIUM

From July 17 till 19, Koksijde will host SAR helicopters from various NATO countries. In a SAR-competition it has been foreseen to pick up the old Hell-meet spirit, which for the last time took place a couple of years ago. Throughout the stay at Koksijde, the helicopters will demonstrate operations with and from Belgian naval vessels just off the coast in front of the well-populated seaside resorts. Also an open day has been foreseen.

FRANCE

The flying test programme of the Super Mirage 4000 will enter a new stage this spring when external wing loads will be attached to the prototype. Included in this programme is the aircraft's ability to launch the Matra Magic 550 air-to-air missile. So far the Super Mirage 4000 prototype logged 72hrs in 52 test-flights. The three Mirage 2000 prototypes are presently engaged in a gun and missiles carrying test programme. All flying tests are made from Istres and performances carrying Super Matra 530 and Matra 550 air-to-air missiles are described as excellent. Prototype 01 will shortly detach to Cazaux for live firing and in-flight refuelling evaluations.



● On December 22, the first of two prototypes Aerospatiale TB.30 Epsilon, made its first flight. Flown by chief test pilot Marc Yoh, the aircraft (VD/01) made its maiden flight from Tarbes, Pyrenees. This tandem two-seater will be used by the Armee de l'Air in the initial flying training stage of future fighter pilots.



● Later this year, the Schweizerische Flugwaffe is expected to withdraw its Pilatus P.2 from service. Already 15 machines are reportedly to have been reduced to scrap. Since 1947, approx. 50 aircraft have serviced but lack of spare parts made this withdrawal inevitable.

INTERNATIONAL

● Two European aerospace exhibitions will take place in 1980.

● From April 24th till May 1st, ILA 80 - Internationale Luftfahrt Ausstellung - will be held at Hannover airport, Germany. ILA 80 will not differ much from the latest exhibition in 1978. The organizers gave this year's event the slogan 'Aerospace in the next decade' which implies a series of special conferences on this subject. Extra attention has been given to an increased participation of general aviation and even more as in 1978, the possibility for demonstration flights. As a result there will be flying activities during ILA 80 all day. On Sunday April 27, the Rote Baron Fliegerclub has taken the organization for an Oldtime-Rallye. On Thursday May 1, Karo-As Red Arrows and Partouille de France are scheduled to take part in the 'Grosse Flugtag'.

● From September 1st till 7th, Farnborough will be the meeting place for many aviation minded people. The organizers have not yet released much of the activities to be seen during the trade. So far only the programme has been released which mentions the public days to be on Sept. 5, 6 & 7.

TOP: Swiss AF Hunter F.58 at Emmen on December 22th during flying tests with the TV-guided Maverick missiles. (S.Kuna)

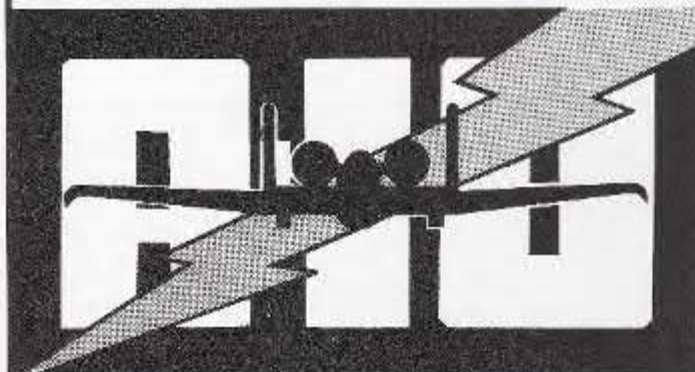
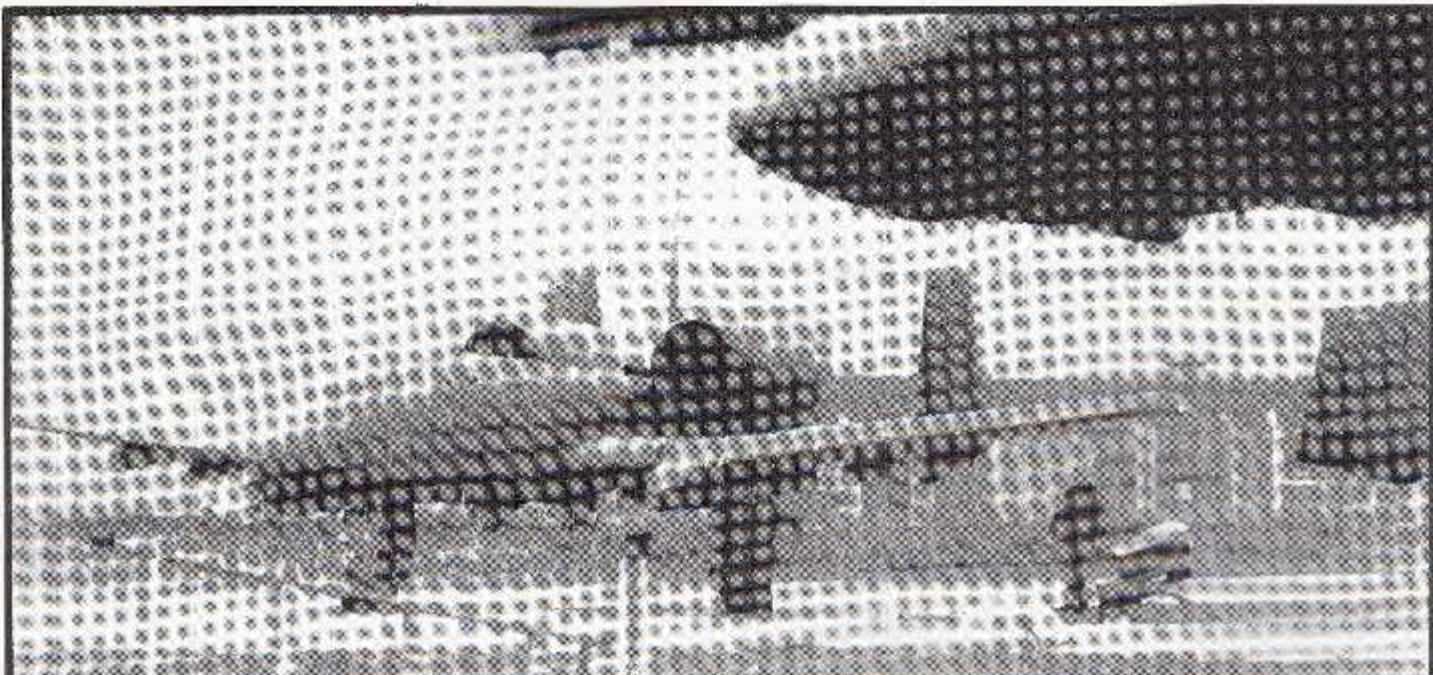
ABOVE: Landing at Emmen in May 1978, Pilatus P.2 U-132. (S.Kuna)

BELOW: Dakota C-53 RR-03/MM61765 has been delivered to 8 Gruppo/14 Stormo. The aircraft still wears the old code of 3^o RVR. (Aviaphotos)



SWITZERLAND

● The Flugwaffe intends to remain operating the Hawker Hunter for a while to come. This can be concluded as recently plans were announced to equip all 150 a/c with TV-guided Maverick missiles. Flying tests were done at Emmen with Hunter F.58 J-4079 in December (see photo).



Introduction of the A-10A Thunderbolt has led to a great many new expressions such as GAS & GO, FORWARD OPERATION LOCATION, ANTI-TANK, JAAT. In fact the A-10 mission envelope is a completely new one and presently still many evaluations are conducted to introduce even more new tactics. There's a lot to tell about the A-10, especially where the mission envelope is concerned. To give the reader an impression of the many evaluation/exercises involving A-10s over the past six months, a summary has been made from Fairchild's new-releases concerning the Warthog.

• A-10s of 354TFW participated in Solid Shield. This joint training exercise by the U.S. Atlantic Command was conducted at Fort Bragg, Camp Lejeune, Fort Campbell, North Field and in the Atlantic Ocean. The scenario simulated military action between opposing land, sea and air force and including an airborne assault, naval mine warfare harbour control, tactical runway repair exercise and tactical air operations in support of ground forces.

• Two Cobras, one OH-1H and one OH-58 of the U.S. Army dropped in at RAF Bentwaters to provide the pilots of 81TFW with a demonstration of their air tactics and anti-tank capabilities. Some of the A-10 pilots had the opportunity to fly in the Cobra and sight simulated targets through the Cobra's TOW missile system. Maj. Henderson, the Army Ground Liaison Officer at Bentwaters: 'The Cobra may be slow, but it's deadly with its TOW missile system, similar to the A-10 with the tank-killing GAU-8 gun'.

• 8 A-10s of 354TFW/356TFS participated in 'Brave Shield 20'. This joint US Army-Air Force readiness exercise conducted at Fort Lewis and Yakima Firing Center, involved 23,000 soldiers and as planned and designed to evaluate the effectiveness of tactics, techniques and procedures of multi-service units.

• In a week's period 800 sorties were launched from Myrtle Beach during exercise 'Thunderhog One'. Spotlight was turned on the operational capabilities of the A-10 and conditions were as close as could be encountered overseas. Hot pit refuelling, combat turns, scramble starts, 'bombed' flight-line areas, terrorist attacks, air raids, aircraft accidents were all part of the exercise's scenario.

• 354TFW/355TFS participated in Red Flag 79-9 at Nellis AFB, Nevada and flew 233 sorties. The squadron was engaged in close air support of mechanized infantry and tank units from Fort Hood, Texas. Missions were flown in the Nellis AFB range complex and included simulated warfare training. All Maverick missiles fired, scored direct hits on their targets.

• 'Radio silence' was the motto during a 'turkey shoot' competition by 92TFS from RAF Bentwaters. An entire squadron dropped bombs, departed in precise timing, proceeded to another range and performed their strafing tactics with minimum communications. Continuous presence over two British gunnery ranges were maintained for an hour.

• Repeated attacks by A-10s working closely with Scout helicopters and Cobra-TOW choppers, eliminated the vast majority of 70 armoured vehicles using tree-studded hills for cover. Operations were part of the long-running Tactical Aircraft Effectiveness and Survivability in Close Air Support Anti-Armor Operations series (TASVAL techniques) being conducted at Fort Hunter Liggett, California.

TASVAL is worked out by Combat Development Experimentation Command. Each exercise involves 100 'players' with each weapon system equipped with lasers and sensors linked to a massive computer setup which eventually summarized what happened in the more than 100 battles. If an A-10 fires a laser simulating a Maverick missile, the aircraft must remain in position long enough to watch the actual firing process.

• 8 A-10s of 354TFW/355TFS deployed to Tyndall AFB to participate in Bold Eagle. This large-scale joint exercise sponsored by the U.S. Readiness Command, took place at Eglin AFB and conducted all air warfare against an incorporated and sophisticated air defence system.

Over 156 A-10 sorties were flown including more than 60 from Hurlburt Field which was designed as the Forward Operation Location.

UNITED STATES OF AMERICA

• Out of the total of 11 development F-18 Hornets on order, eight have been delivered to the U.S. Naval Air Test Centre (NATC) at Patuxent River. The latest acceptance was an TF-18 which will be evaluated to test the changes in the aircraft's ability when a back-seat pilot operates all elements of the Hornet's weapon system. U.S. Marines and U.S. Navy officials are still divided amongst themselves about a single-seat/two-seat fighter aircraft.

Five days on trials aboard aircraft-carrier USS America were successfully completed by F-18A prototype No.3. 32 catapults launches and 32 arrested landings without any bolters (Navy expression for missing the arrestor wire). On return at Ocean NAS, the pilot lost directional control of the left main landing gear and the aircraft ended up alongside the runway. Damage was not severe but the test programme was stopped to inspect all F-18s.

• On a 30-minute flight on December 13, Sikorsky test pilots John Dixon and Richard Mills were at the controls during the maiden flight of SH-60B Sea Hawk prototype No.1/Bu.no.161169.

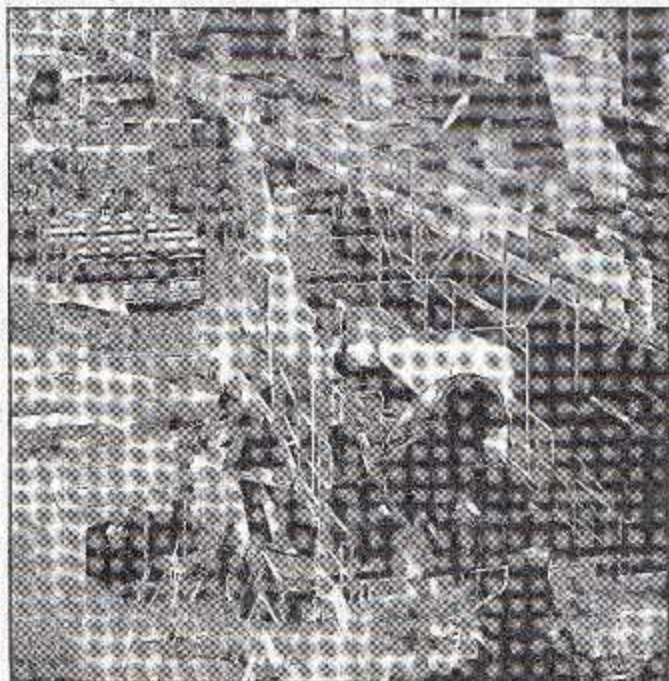
In February 1978, Sikorsky received authorization by the U.S. Navy for a development programme including 5 prototypes. The Navy has a requirement for 200 SH-60B helicopters of which delivery has been scheduled to commence in 1983.

In service with the US Navy, this helicopter will replace Sikorsky SH-2F Sea Sprite aboard destroyers, frigates and cruisers in performing its rôle in the LAMPS mission which is detecting, classifying locating and destroying hostile submarines and surface vessels over extended ranges. Secondary mission for the helicopter included search and rescue, medical evacuation and general fleet support.

The first SH-60B flight was made from the company's Flight Development Center at West Palm Beach. No.1 prototype will be used for structural vibration and performance testing and will undergo its first Navy evaluation in June/July. No.2 has been scheduled to fly in February at Sikorsky's Stratford and will be used to investigate handling qualities.

No.2, 3, 4 & 5 are scheduled for various evaluations at NAS Patuxent River from June 1980 through March 1981. In 1981, No.3, 4 & 5 will be delivered to VX-1sqn for operational evaluation, including shipboard trials.

A photograph of the Tornado assembly-hall at Manching. In November 1979, the assembly of GF.010/40-10 had started. (MBB)

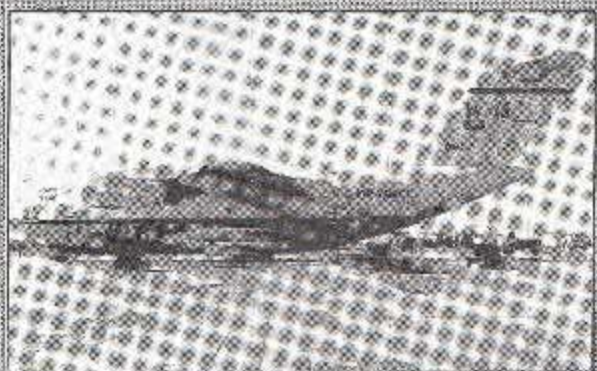
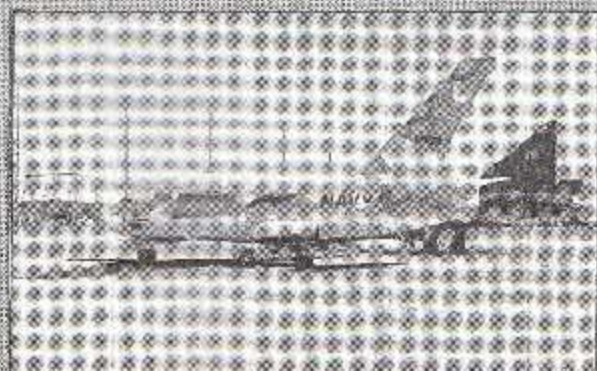


NASDC - DAVIS MONTHAN AFB

Generally the USAF's NASDC storage center at Davis Monthan is known to house old aircraft types. These two pictures illustrate that it is not always true:

- F-1A Viking 154194 on the ramp at 13.10.79 being prepared for long-term storage
- Lockheed's YC-45 7201275 on the ramp on 28.07.79 being prepared for long-term storage. Since the cancellation of the AWST (Advanced Weapon Support Aircraft) Lockheed started concentrating on unarmoured Hercules variants in steel.

All photos by Flight Lt. Kirkendall via J. Hewlett.



WEST GERMANY

• Late 1979, MBB completed the repairs on RF-4C Phantom 2R58-553. It took MBB one year and six months to work on the heavily damaged aircraft. Initially the work faced complex problems and large sections had to be renewed completely. Capt. Wilson, USAF, accepted the aircraft at Manching and returned the aircraft for operational service.

• In a simulated combat mission, test pilot Fred Rammersee flew Tornado prototype 07, 98-06, from MBB Fliegerprobungszentrum at Manching to the North Sea and back. During this flight, the terrain following radar directed the aircraft at low level over the German mountains and hills. Also the navigation systems were checked and led the aircraft to a fixed target in Ostfriesland with great accuracy.

98-06 is the test aircraft for avionics equipment.

• All Luftwaffe Phantoms will undergo improvement programmes with MBB. The 82 RF-4Es will be added with tactical bombing capabilities by installation of a weapon system computer and release control panels.

The F-4F fleet will undergo an improvement programme which enables operations into the late eighties.



All photos: Fokker-VFW

FOKKER TAKES F-16 ON TEST-RIDES

Accepting the production of 174 F-16s also included the responsibility for a product that meets all requirements. Before delivery to the Dutch and Norwegian air forces, all F-16s produced by Fokker are therefore first submitted to a test programme. From May 1979 till June 1984, all F-16s are subject to a basic flying programme as described below.

After completion of an F-16, the aircraft leaves the brandnew assembly-hall at Schiphol-Gest. In a separate building, all the avionic systems are checked and gauged. On completion the aircraft goes back to the assembly-hall where in a separate area the Operations Center is situated. Here the aircraft is prepared for the test flights. After initial engine tests the aircraft is ready to be airborne.

TEST-FLIGHT

For every F-16, three test flights are envisioned. Two being flown by Fokker test pilots and one by an air force pilot. On its first flight the F-16 is airborne for 1½ hrs. to check all aspects of this ball of technology - engine, flying characteristics and avionics.

On return the test pilot reports everything that needs adjustment. Completing the requests on the checklist, the test pilot takes out the aircraft for a second time and goes over the same checks again. If the results are satisfactorily according to the requirements, the job is completed as far as Fokker is concerned. Subsequently the aircraft is handed over to General Dynamics.

In fact this happens only on paper as the aircraft is taken airborne again for an acceptance-flight by an USAF pilot. If the third test flight is sa-



tisfactorily the F-16 is turned over to Lt.Col. Singleton, who is responsible for all F-16 acceptances by USAF from Fokker. A Dutch or Norwegian air force pilot delivers the F-16 to Leeuwarden x Rygge.

Fokker's test pilot Henk Themmen doesn't approve referring to his job as a very dangerous one: "I don't take any extra risks. Crazy flying with jet aircraft is not possible anymore. Test flying is accurate and conscientious work. In your mind you must be one step in advance of handling the aircraft".

"Testing the F-16 beyond its flying limits would be very dangerous. This kind of test flights have been performed by my American colleague's. Such dangerous flights were necessary to test the F-16's handling characteristics during extreme flying conditions". Test pilot Henk Themmen was responsible for all the initial test-flying. By October, a second test-pilot, Jaap Hofstra, completed the conversion at GD and was authorized to assist Henk Themmen.

AIRBORNE

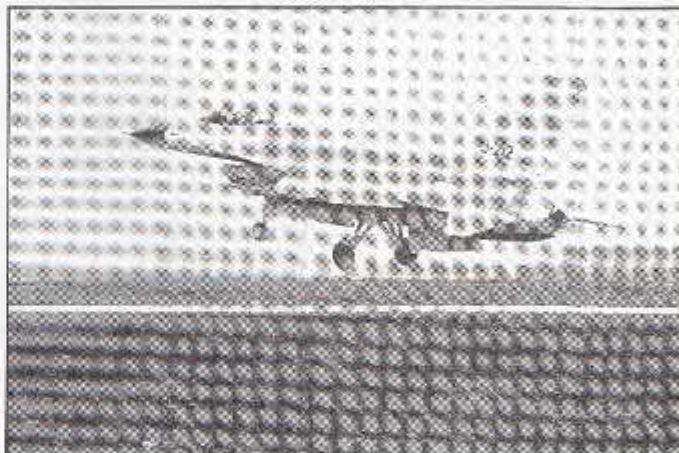
After take-off from Schiphol's runway 06-24, the F-16 has to follow the same procedures as all outbound airliners. The test-pilot takes the fighter nearly vertical up to 15,000 ft. This vertical climb has a double advantage. The noise levels are kept to a minimum and over the fences of the airport the noise has nearly vanished. Another advantage is being fast at safe level in case of an engine starvation. If something necessitates to stop the engine, it will be possible to return to Schiphol safely.

Checking out at the initial point, the F-16, heading for Leeuwarden, is accompanied by a chase plane that observes the external items during the flight. Currently F-104s from Leeuwarden are charged with this task which, up to recently has been taken care of by NF-5s from Eindhoven. Meanwhile the F-16 is tested on the engine, fuel system and pressurization system, jet fuel starter and landing gear. The F-16 climbs to 30,000ft and all engine tests are repeated. ... is abandoned for 30,000ft. and all engine tests are repeated.

Fuel supply shrinks and the pilot heads for Schiphol. An approach is made principally on runway 27-09. During this approach the pilot checks the flaps, airbrakes, trim flaps, undercarriage and rudder. Prior a full-stop, the F-16 first makes an overshoot with full A/B.

Immediately after return to the Operations Center the test pilot ventilates the bulk of information gathered over the past 1½ hrs.

Henk Thammen acknowledges immediately: 'Hard work it sure is. An F-16 is easy to fly, much better than a Starfighter and safer. But using the capabilities the aircraft poses, puts torture to the pilot - a violent ill-treatment of the human body'

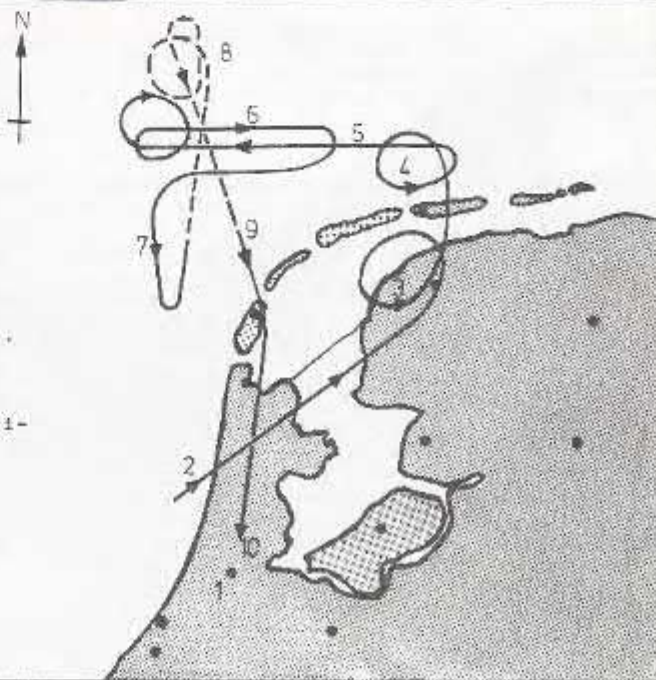


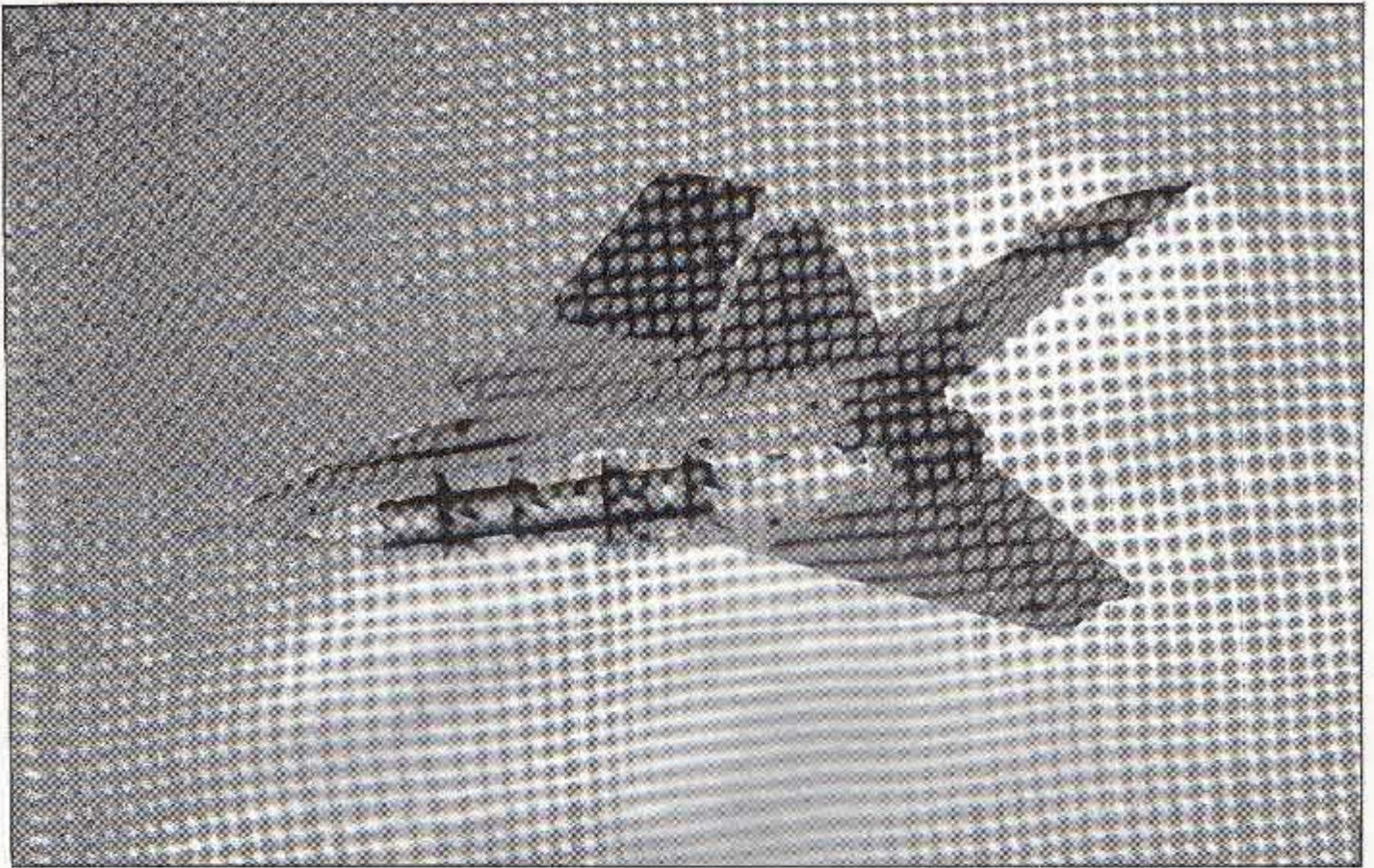
HIGHER AND FASTER

The aircraft has ended up over Friesland and sets course for Ameland. Again the engine is tested but this time in thin air at 40,000 ft. On completion of these tests the aircraft heads due west. The speed is increased to Mach 1.5 and the NF-5 chase-plane is no match for the F-16. Henk Thammen: 'Faster is not necessary, as the engine behaves identical as at higher speeds. But these higher speeds require a considerable amount of extra fuel'. Over the North Sea the throttle goes back to neutral and the manoeuvrability of the aircraft is tested. Dropping speed a 360°-turn at 4G is performed. Immediately followed by a 180°-turn to the opposite side. The speed drops to subsonic speed. If all goes well this occurs without any shock effects.

Descending to 30,000 ft., the radar- and weapons systems call attention. Also a chase-plane joins again providing target facilities. First the air-to-air mode is checked. Ending up near Den Helder, the air-to-ground mode is checked on moving targets against the background of coastline, roads and villages.

- 1). Take off from Schiphol, unrestricted climb to F150-F170.
- 2). Climb to F300 inbound Leeuwarden.
- 3). Engine tests F300.
- 4). Engine tests F400.
- 5). Supersonic run to M 1.6: Engine tests, yasmic stability, flight control tests, leading edge flap checks, transsonic characteristics.
- 6). Radar tests against F-104 target (high altitude).
- 7). Radar tests against F-104 target (low altitude).
- 8). Aircraft system tests, flight characteristics: autopilot, FCS limiters, dynamic and static stability, manoeuvring capability
- 9). Return to Schiphol
- 10). Touch and go landing: Leading edge flap schedule, auto trim function.
- 11). Go around (NO A/B) and full stop landing.





All photo's: British Aerospace.

TORNADO IN BRITAIN'S AIR DEFENCE

It had to be able to loiter on patrol for hours on end, using in-flight refuelling when necessary, far out over Europe's surroundings northern & western ocean.....

It had to be able to detect, identify and destroy enemy aircraft approaching at supersonic speeds at high, medium and low altitudes.....

It had to be able to resist to extensive enemy ECM-jamming and operate with minimum assistance from ground early warning systems.....

It had to be able to operate from damaged airfields, which calls for good short-field performances but also for good maintainability & reliability.....

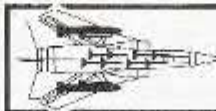
**TORNADO
ADV**



Spitfires, Hurricanes, Blenheims defended Britain against an invasion of the Luftwaffe on August 8, 1940. Well-known as 'Battle of Britain', it was decisive in preventing Hitler's intentions to occupy Britain.

Today, Britain is still very much aware of the importanceness of the RAF. Every year the Battle of Britain Memorial Days at RAF stations confirm this.

Not only the population, but also the Ministry of Defence Operational Requirements Branch is very much aware of the need for a good Air Defence force within the RAF. Discussing the replacement of the Lightnings and Phantoms in the early 80s, it was concluded the RAF needed a 'new concept' of interceptor. Based on the requirements mentioned above the new concept interceptor was selected in March 1976. Full go-ahead was given to develop an Air Defence Version of the Panavia Tornado. Seven Phantom units (19,23,29,43,56,92 & 111) and two Lightning units (5 & 11) had to be re-equipped and a total of 165 ADV Tornados were ordered. The RAF designation being F.Mk.2.



AIR DEFENCE - RAF's TOP PRIORITY

Being an island, the air defence coverage is of crucial importance in the overall defence policy of Britain's independency. In close co-operation with Royal Navy's fleet, the air defence force can protect Britain's mainland against all enemy actions. No ground forces can come ashore with cruisers eliminating the amphibious element of the enemy force. No air force can attack targets when air defence aircraft can eliminate the air-attack element of the enemy force.

This lesson was learned during World War II and played an important rôle throughout the post-war history of the RAF. The Hawker Hunter was initially intended to be an interceptor but it's successors the Sabre and Javelin entered service to take care of the interceptor rôle. In 1956 the world-wide policy changed as it was envisioned the ballistic missiles would make all interceptors surplus. This

tendency disappeared as suddenly as it had loomed up and in 1960 the Lightning entered service. This aircraft was a true revolution in aviation history and was the re-birth for the classic fighter interceptor. The revolutionary elements in the Lightning are still being proven today by the fact it still operates. Actually the Phantom should have replaced all Lightnings but the 20-years old Lightning still performs square loadings in operational services today.

Replacing the Lightnings and Phantoms will be the Tornado F.2. However, this aircraft will not enter service earlier as 1984. Soldiering on with the current Lightning/Phantom fleet would create a considerable weakness in the air defence force up to service entry of the Tornado.

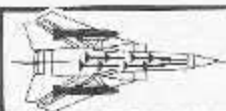
Speculations started last year, that the RAF would lease USAF F-15 Eagles to fill their fighter gap. But RAF denied any such rumours and announced to form an additional Lightning unit at RAF Binbrook. Negotiations with the USAF are presently taking place about 'considerable augmentation by the USAF of UK military strength in a period of tension'.

Recently Air Chief Marshall Sir Michael Beetham stated: 'To strengthen the air defence of the United Kingdom, an improvement package had already been planned - more tankers - a squadron of VC-10 specially converted; Airborne Early Warning Nimrod Mk.3s to replace the Shackletons; and on the ground new radars and improved airfield protection. Also already planned, too, is to replace the Lightnings and eventually the Phantoms with the Air Defence version of the Tornado.'

All these measures, though, are not due to come fruition until the early to mid-1980s. In the short term the key issue is the number of fighters. We need more, and we need them quickly. But unfortunately even if the additional money were forthcoming, new aircraft are not immediately available off the shelf, nor, with our previous outflows, would we find it easy to man them if they were, given the training lead time of some three years for a pilot from entry through to productive service.

As an immediate measure we shall arm many of our Hawk trainers with Sidewinder missiles to augment the short-range air defence in an emergency. We have examined also replacing Lightnings earlier than currently planned with new high calibre fighters to obtain a qualitative increase in capability early, but we have reluctantly concluded that the likely cost, in present circumstances, would be disproportionate to the time we should gain. What we will do is to bring in an additional

squadron of Lightnings as quickly as we can too boost numbers, and this will result in a 10% increase with what is still a very useful fighter. In the medium term we propose to run-on Phantom with the introduction of Tornado, and in the longer term to procure an additional three fighter squadrons'.



REQUIREMENT ASR.395

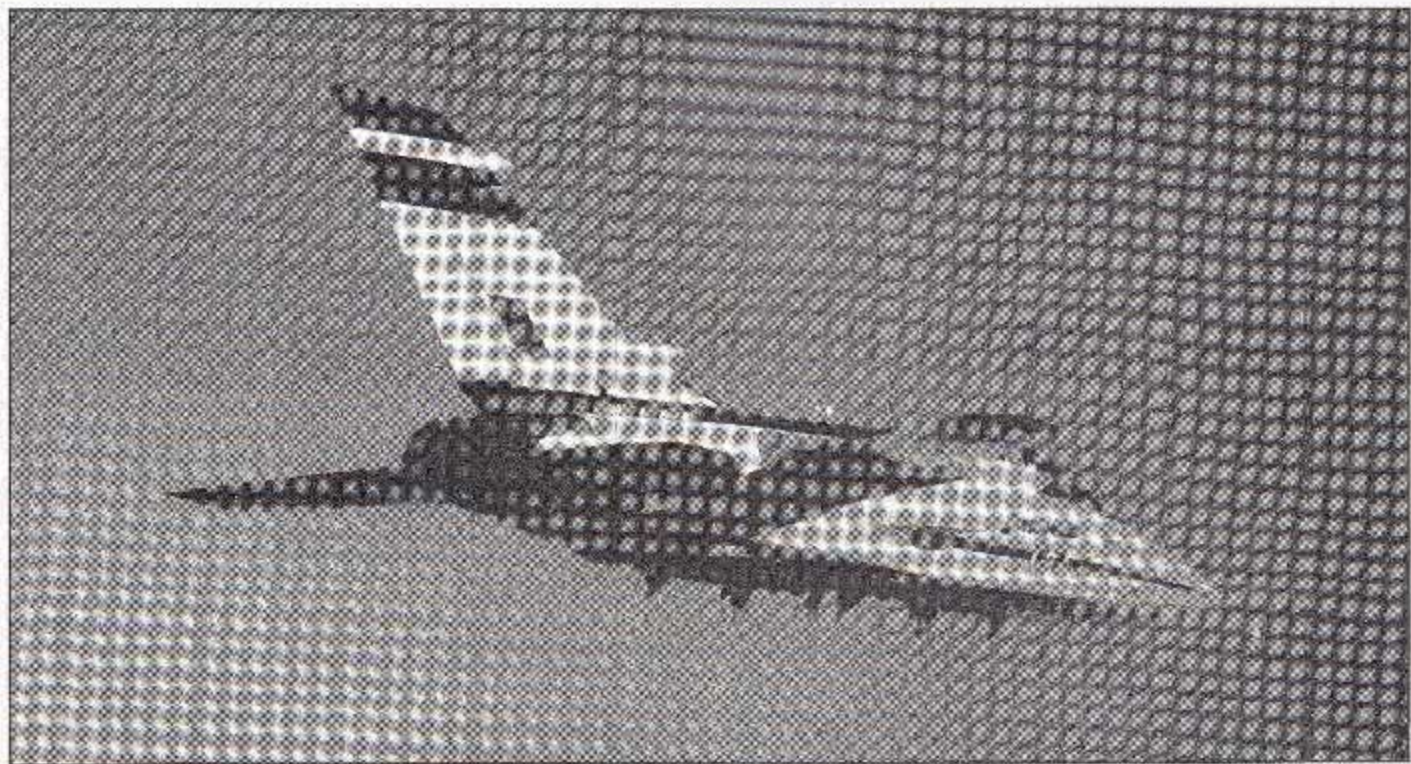
Back to March 1976 when RAF's Operational Requirements Branch announced the selection of the Tornado ADV. The choice for a Lightning/Phantom replacement had three alternatives: F-14, F-15 and F-16. The F-14 Tomcat was soon ruled out as it was twice as expensive as the Tornado. The F-16 didn't meet up to the extreme high capabilities, the RAF demanded in their requirement. The F-15 Eagle remained and was a very serious contender to the Tornado. Aerodynamical the aircraft impressed the RAF's evaluation team but this was not of high priority for the UK requirement. The Eagle was unable to hold up against the Tornado on three aspects:

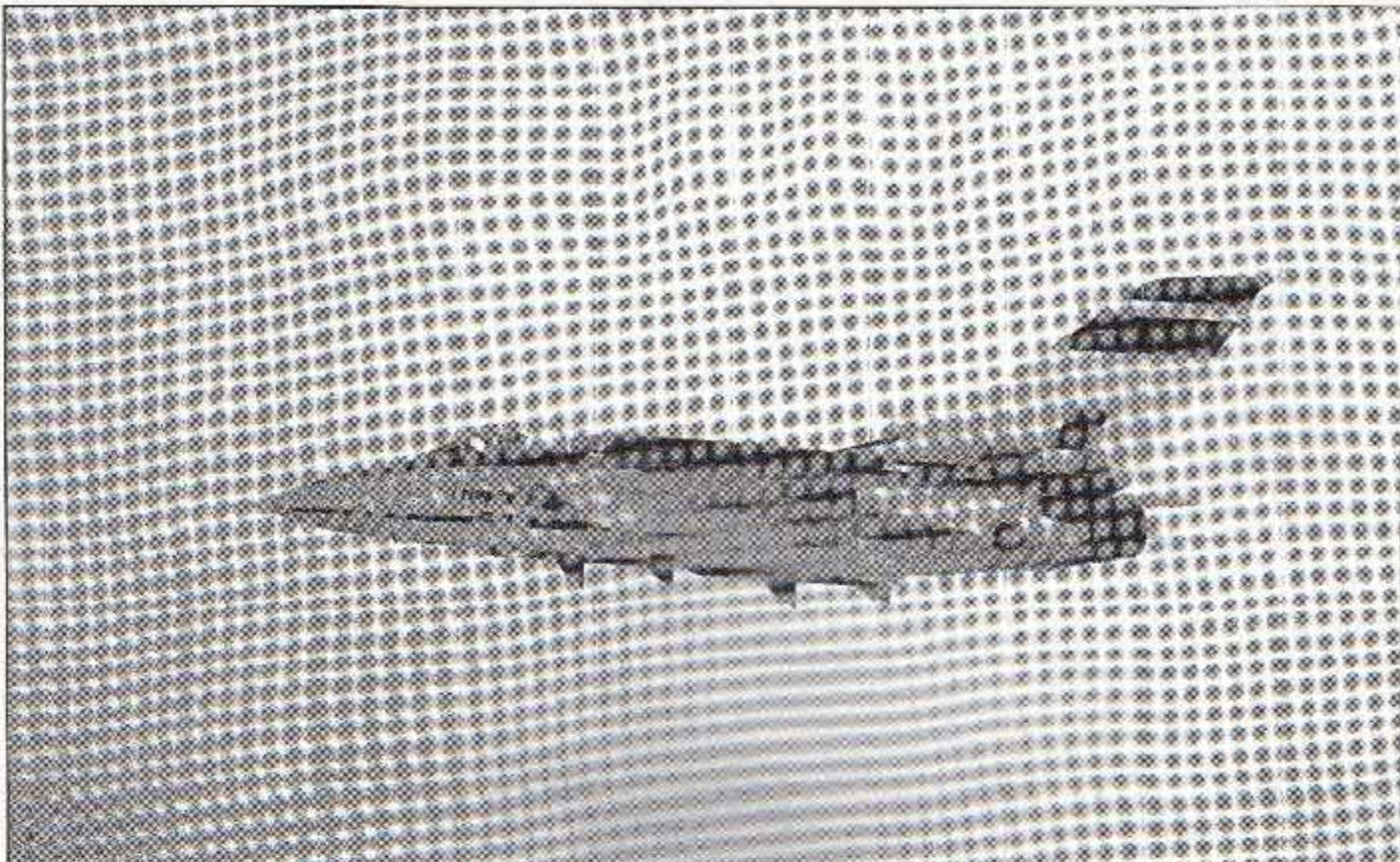
- Operating a long way from the mainland in heavy ECM jamming and at night and/or in adverse weather conditions, required a two-man crew.
- Avionics had identical capabilities.
- The Tornado could be produced in the U.K. and meant standardization within the RAF.

Adopting the Tornado for air defence missions, changed the aircraft for only 20%. Main change was the replacement of the Ground Mapping Radar by an Airborne Interceptor Radar.

The scan of this air defence radar is much more compact compared to the double scan of the ground mapping and terrain-following radars in the Tornado IDS. What was gained breathwise was lost lengthwise and subsequently the nose-section was lengthened. Just aft of the cockpit the fuselage was stretched as well to accommodate the Sky-Flash air-to-air missiles which provided space to install an additional fuelcell.

The Airborne Interceptor Radar is the heart of the ADV avionics system and makes the Tornado F.2 comparable to the F-14 Tomcat. Its primary rôle is air-to-search, detection and acquisition of airborne targets but the radar also has capabilities in air-to-ground ranging and in ground mapping.





The primary feature of the radar system, however, is its ability to detect and track airborne targets. In the interceptor search phase, the navigator in the back-seat, can scan his patrol area and detect targets up to 100 n.mls. Targets selected by the navigator are automatically tracked and their trajectory parameters continuously updated for display or feeded to the weapon system.

For stand-off weapon releases the system is developed for two men operations and the aircraft can launch four Sky-Flash air-to-air missiles. The Sky-Flash has a range of 27 n.mls. (= 50kms) and flies at its target at Mach 4.

For close range air defence, the pilot can take control of the radar to allow snap acquisition of targets and quick operations. For this purpose two AIM-9L Sidewinders are installed on the inboard sides of the wing pylons.

In a comprehensive mockup and rig programme, the cockpit lay-out has been adjusted for the air defence mission. The task sharing in pilot and navigator work has been optimized throughout navigation and attack manoeuvres.

As a result the pilot is basically responsible for:

- Flying the aircraft.
- Control of weapons.
- Attack and weapon delivery.

Whilst the navigator/back-seater is responsible for:

- Target detection.
- Communication with the main computer.
- Operation of radar and other sensors.
- Evaluation of the tactical situation.

In the first Tornado ADV Bulletin some questions were answered by Chief test pilot David Eagles on the experiences during this first week. Below are some citations from that interview.

"The initial impressions were that differences between the handling of the IDS and ADV are very, very small indeed. In spite of the CG being further forward due to the length of the nose, handling on the ground is indistinguishable from that of the IDS (Interdictor/Strike) version.

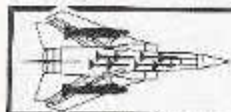
The stick forces are very slightly higher but A.01's feel-unit is not a standard, production unit and when it is fitted, forces will be reduced.

The two other areas where there are notable differences are: co-ordination in the turn is better because the lateral computer has been modified for various reasons. One effect of this is that, in the circuit, the aeroplane has a better co-ordination of yaw with roll control with flaps down.

The other big improvement is in supersonic acceleration. The long fuselage and slimmer nose are certainly giving the aeroplane a much faster acceleration once you get above Mach.1".

"The fact that the first flight was a long one, is quite significant. It means two things: that there's plenty of fuel onboard the aircraft and the increased fuel load is very welcome, particularly in respect of the ADV's role - showing off and doing a long CAP. It also meant that we had lots of fuel aboard for the flight, and this, combined with the fact that the decreased supersonic drag allowed us to get up to Mach 1.2, just to look briefly at the supersonic handling, with less use of reheat than we've needed with the IDS - enabled us to do more with the fuel we had. It's a great pity to bring an aircraft back on its first flight before it's absolutely necessary if it's fully serviceable and you're enjoying it!".

"The major plus point emerged so far is the realization that the drag is down at supersonic speed. The minus point so far included adjustment to the fuel system indicator change. The addition of another call which adds more fuel to the aeroplane has necessitated a new fuel distribution indication



ONE WEEK TEST-FLYING ZA254

On October 27th, Chief test pilot David Eagles was the first to fly the Tornado F.2. During the first week A.01/ZA254 made five flights totalling 8 1/2 hrs. On the maiden flight Mach 1.2 was achieved, on the second one Mach 1.6 and on the third Mach 1.75. ZA254 performed a night flight and refuelled in the air with an RAF Victor



FRADU - TARGET FOR THE FLEET

Not only the aircraft fleet is unique, The organization and operational status are unique too. Based at Yeovilton, FRADU a civil company, operates 25-years-old Hunters & Canberras which a.o. provide anti-aircraft training facilities to the Royal Navy fleet.

In 1972, the departure of 892sqn Phantoms from Yeovilton, to their northern base at RAF Leuchars, released valuable hangar and operational space. At this time two separate units were being operated on the Royal Navy's behalf by a civilian company named Airwork Services Ltd. The first was the Fleet Requirements Unit (FRU) at Bournemouth/Hurn, while the other was the Air Direction School (ADS) at Yeovilton. Cramped space at Hurn, and spare space at Yeovilton caused the obvious decision - that of moving all operations to one base, under one title - Fleet Requirements and Air Direction Training Unit (FRADTU), this latter becoming the now familiar, Fleet Requirements and Air Direction Unit (FRADU).

The FRU came into being in June 1952 at Hurn, its main purpose being that of supplementing the duties of No.771 sqn FRU by providing target aircraft for HMS Boxer which was the Royal Navy radar operators training ship. Over the years a vast variety of aircraft types were used in its work, some good some bad, and others like the Scimitar, or 'hydraulic nightmare' as it was colloquially known, which were just plain difficult.

The ADS was established in 1941 at Yeovilton where it remained throughout the war. It then moved to RNAS St.Davids (satellite of RNAS Brawdy) for a period, but in 1961 returned to Yeovilton, using its own aircraft which were operated on their behalf by Airwork Services.

The amalgamation of the units under one umbrella at Yeovilton was accomplished in October/November 1972, and at the same time took under its wing the Royal Navy Flying Standards Flight, that band of men who ensure that Royal Navy piloting is up to standard - the 'trappers'.

ADS - AIR DIRECTION SCHOOL 1941 - 1972

Did not operate its own aircraft until its move back to Yeovilton in 1961.

D.M. Sea Vampire

D.M. Sea Venom

D.M. Sea King 01.61 - 11.73 (at Yeovilton)

The latter of course continued in use with FRADU after amalgamation.

FRU - FLEET REQUIREMENTS UNIT 1952 & 1972

D.M. Sea Mustang GA.19 & TR.33 1952 - 53

D.M. Sea Hornet F.10 1953 - 19.54

Hawker Sea Fury TR.11 1955 - 05.56

Supermarine Attacker FR.1 11.56 - 01.57

Hawker Sea Hawk F.10, FR.5 & FR.6 11.56 - 02.59

Palmyre Pigeon TR.4 02.57 - 11.58

Gloster Meteor T.7 & TR.20 04.58 - 03.71

Hawker Sea King 05.58 - 01.61

Supermarine Seafire FR.1 08.58 - 02.71

Sea Canberras TR.15 & TR.14 09.68 - curr.

Hawker Hunter GA.11 & TR.30 03.59 - curr.



FRADU'S CONTRACTUAL COMMITMENTS

Basically FRADU activities can be split into six areas.

● **FLEET GUNNERY, TRACKING & RADIO/RADAR TRIALS**
Aircraft are provided as targets for the fleet. This might just be a case of flying in such a way as to give practise in target tracking, but of course also providing actual targets for live firing from naval vessels. Encompassed in this is a certain amount of trials work with the ship's radar and radio, to give the fellows at sea plenty of practice in intercepting likely airborne targets.

● **SHIPS TRIALS & OPERATIONAL DEFENCE EXERCISES**
When working-up a ship, all equipment and crew has to be checked and well triad. FRADU provides aircraft for the airborne parts of this. As far as operational defence exercises are concerned, FRADU joins in whether in a defensive or attacking rôle using their well practised techniques to good effect.

● **TRAINING OF FIGHTER CONTROLLERS**
At any one time a course of four to six trainee Direction Officers are undergoing schooling with FRADU, at what is known as 'D' School. Their rôle in a active situation would be to direct the aircraft under their control to the best advantage, while taking into account the war in the air, as well as on and below the sea. To help a fuller appreciation of the fighter pilot's problems a large number of interception exercises are flown in FRADU's Hunter T.8Cs.

● **ROYAL NAVY FLYING STANDARDS FLIGHT**
Standards of naval airmanship has to be kept to the highest degree, so there is a need for a team to be constantly testing and checking pilots. FRADU aircraft are used in this task, and even the FRADU crews who are all civilians have to undergo the eyes of the 'trappers'.

● **U.K. CIVILIAN ESTABLISHMENTS**
A very small proportion of FRADU's time is taken in checking out equipment at various civilian establishments in the U.K.

● **THE BLUE HERONS**
The Blue Herons aerobatic display team was formed in July 1975 by Airworks Services Ltd. pilots of FRADU. Flying a formation of four Hunter GA.11, they were the first civilian team in the world to fly military jet fighter aircraft. The Blue Herons name was derived from the fact that the pilots are all ex-service, either RAF or RN, namely light blue and dark blue (uniforms), and based at HMS Heron, Yeovilton.

Originally the team was purely an unofficial affair, with no time allocated to practice; team practices are done at the end of normal FRADU sorties when possible. It is now written into the Royal Navy's contract with Airwork Services, to provide the team. Such is the achievement of the team in the short time that it has existed, that twice it has been awarded prizes at the International Air Tattoo, Greenham Common. The team was awarded 2nd prize in the Shell Trophy Competition in 1976 followed by an outright win of the trophy in 1977. All this from a team that does not have time set aside to practice.



AEROBATIC TEAM 'BLUE HERONS'

FRADU, although a Naval unit, is run by civilians completely i.e. Airworks Services Ltd. The Royal Navy supply everything except aircrew and maintenance crews, and pay for it all on the basis of annual contracts. The main reason for this is purely cost efficiency. A civilian company can provide this service as efficiently but at less cost than the military. Thirty-eight pilots are employed, all being ex-military aircrew, and the company can boast a 70% availability/serviceability, with an average of 10,000 flying hours per year.



TARGET & ELECTRONICAL TRAINING FACILITIES

In 1963 Flight Refuelling Ltd. acquired manufacturing rights to the American Hayes TA.7 target system, using a Del Mar winch. The company developed this into the well-known Rushon High-Speed target currently used by the Canberra TT.18. This sophisticated dart shaped metal target is equipped with all sorts of 'goodies' which just say, 'come-and-get-me' in the same way as a normal aircraft target. Sleeve targets have been in use for some time now, and the ordinary 'banner' target is just being introduced. During 1980 a new low-level height keeping target will be introduced also, but that is all we can say about that for the moment. Of



FRADU



TOP: Rushton High-speed target carried by the Canberra TT.18.
 ABOVE: The large nose-section of the Canberra T.22 containing ECM equipment.

course, when live aramunitions are not being used, the aircraft themselves act as targets. The Hunter GA.11s having been specially fitted with Harley Lights, which for visual tracking can be seen for up to eight miles.

Currently five aircraft types make up the FRADU inventory of 34 aircraft. Proportions are as follows - Hunter GA.11 (12), Hunter T.8C (9), Canberra T.4 (2), Canberra TT.18 (6) & Canberra T.22 (5). Perhaps a little explanation of the latter two types might be appropriate. The Canberra TT.18 was developed from the B.2 version to carry two Rushton High-Speed targets, which are trailed on cables 18-20,000ft. behind the aircraft (the same type is used by No.7 Sqn RAF), and in the days of the FRU took over duties from the old Meteor TT.20. The Canberra T.22 is a very special bird indeed, seven having been converted from the PR.7 version. It is equipped with 'Blue Parrot' radar, the same as the Buccaneer, and is packed with all sorts of electronic gadgetry so that it can act as an Electronic Counter Measures (ECM) trainer. Having been a PR.7, it also has exceptionally long range and duration.

The main areas of activity for FRADU are around the British coast, in the Portsmouth, Plymouth and Portland Sea Areas, as well as the North-West and South-West sectors when on 'D' School work. Some work is carried out while ships are in harbour, but for this a altitude of 2,500 ft. is the lowest limit. The fact this occurs regularly can be concluded as these activities are referred to as 'Thursday war'.

Detachment throughout the U.K. are made on a daily or weekly basis working with vessels on joint maritime exercises, not only the Royal Navy, but those of foreign powers also. Occasionally detachments overseas are made, mainly to Gibraltar, but also as far afield as the USA and Singapore - in fact in theory, wherever the task group happens to be.

While working once with the Iranians, FRADU had a problem. The Iranians not only hit their targets, but blasted them clean-off the end of their tow cables!

Where to from here? The Hunter is envisaged as continuing in service until after the year 2000 while the Canberra TT.18s are currently undergoing a refurbishment programme with BAe at Warton, to give them an equal longevity.

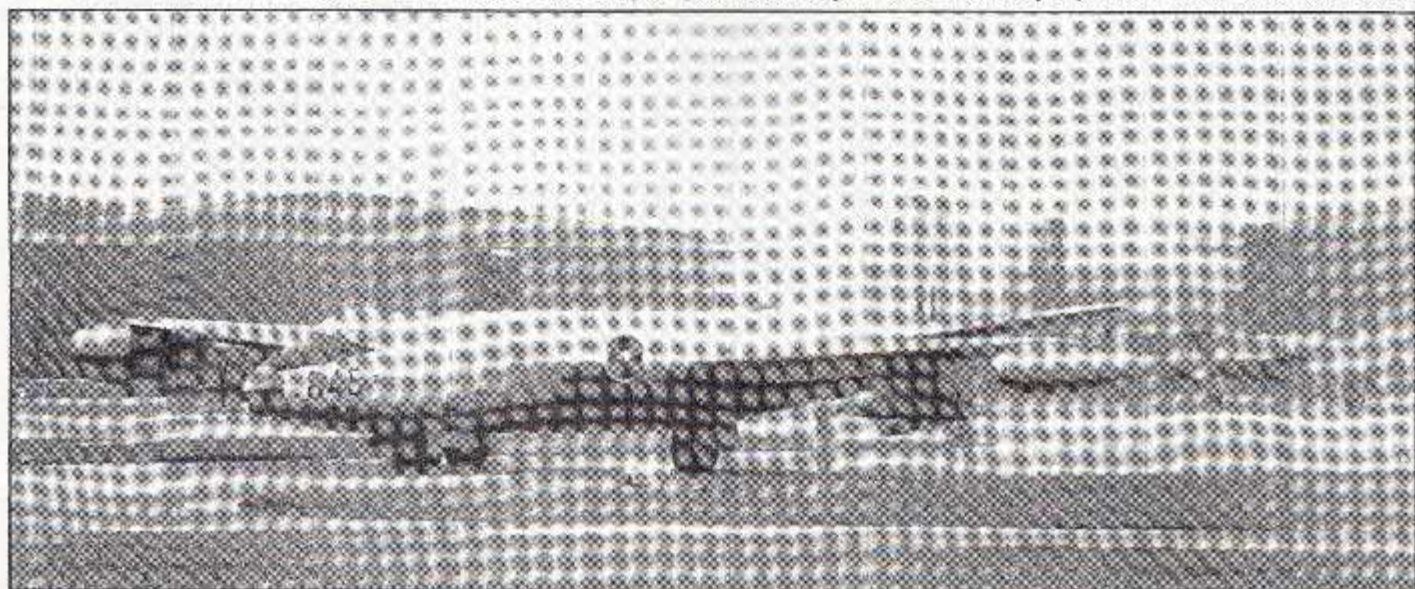
Re-equipment? FRADU had hoped to get its hands on the 809sqn Buccaneers released when HMS Ark Royal de-commissioned, but they went to the RAF. When the RAF receives the Tornado though, FRADU is still earmarked for the 'Bucc'. There is also a probability that some BAe Hawks might come their way, although this is still some time off, if in fact it ever happens.

FRADU'S INVENTORY LIST

The following aircraft have been allocated codes within the FRADU ranges. Not all are currently in service, some undergoing servicing or under storage at St. Ricken or LMU Kemble, while some of the Canberra TT.18s are undergoing repair/overhaul at BAe Warton.

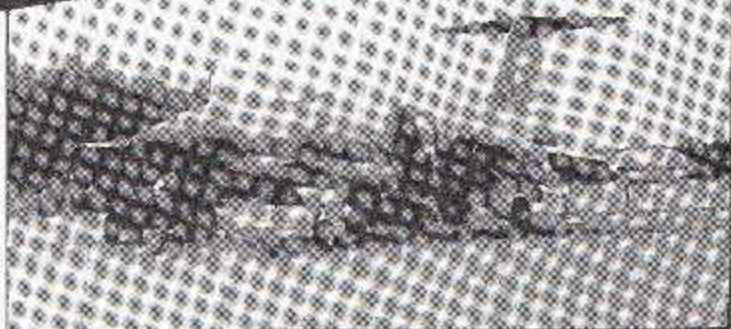
HUNTER GA.11	CANBERRA TT.18	CANBERRA T.4
820/WP182	845/WP117	
831/WP004	841/WP712	
832/WP068	842/WP035	858/WP174
833/WP054	843/WP125	859/WP066
834/WP118	844/WP074	
835/WP087	845/WP112	
836/WP107	846/WP014	HUNTER T.8C
837/WP111	847/WP088	
838/WP069	848/WP132	870/WP159
840/WP104		871/WP184
841/WP156	CANBERRA T.22	872/WP189
842/WP188	850/WP001	873/WP122
843/WP107	851/WP177	874/WP152
844/WP077	852/WP021	875/WP158
845/WP123	853/WP146	876/WP085
846/WP109	854/WP016	877/WP157
847/WP144	855/WP125	878/WP045
848/WP144		879/WP159

Canberra TT.18 WE188 taxiing out to provide target facilities for anti-aircraft gunmen aboard naval vessel





In alphabetical order, a retrospection on events at Dutch military airfields in 1979 which were noteworthy. Interesting visitors, sqn-exchanges, spotter affairs and local events have been included in this retrospection. Of course it is far from complete but the editorial staff has included as much as possible but also tried to keep it interesting enough for everybody to read it.



CAF CF-104G 104588 on exchange at Eindhoven.

1979 FOR DUTCH MILITARY AIRFIELDS

Vliegbasis EINDHOVEN

Ever since the withdrawal of the Thunderstreak ten years ago, this air base has gone very quite in two ways. All flying activities have been kept to a minimum as a result of the many noise-complaints. Subsequently not much worth mentioning has happened and 1979 was no exception.

In March, a detachment of 314sqn went to Bodø, Norway, fulfilling the squadron's AMF commitments. On return the squadron moved to Gilze-Rijen for three months. During this period, works had started for the construction of a complete new runway. At the end of the year, 900m had been completed and within the airfield's boundaries all construction work had been finished. Legal and financial procedures are presently being worked out by the Klu to get authorization to complete the next 1800mtr. outside the airfield's boundaries.

One of the four decoy F-84F Thunderstreaks received a well-deserved place at the gate and completed the trio of gate-guards presently at Eindhoven: F-84C TB-1, Spitfire H-15 and F-84F P-231.

The relationship between 314sqn and CFB Söilingen is extremely well. Although no Starfighters showed up during the Carnival festivities in February, 8 one-o-fours came on exchange in August. On Nov. 9 CF-104s 104706, 788, 839 & 893 attended Eindhoven as the pilots had to be present during the traditional preparations for the Carnival festivities of this year.

Vliegbasis GILZE-RIJEN

Simply due to absent of local spotters, it is not possible to give a report on interesting visitors at this air base. The only known interesting attenders were two Portuguese T-38A Talons on exchange with 316sqn. Although many spotters had hoped these T-38s would be two which had not yet been seen at Twente or Florennes, 10868 and 10915 were already familiar but remained an interesting feature at a Dutch air base.

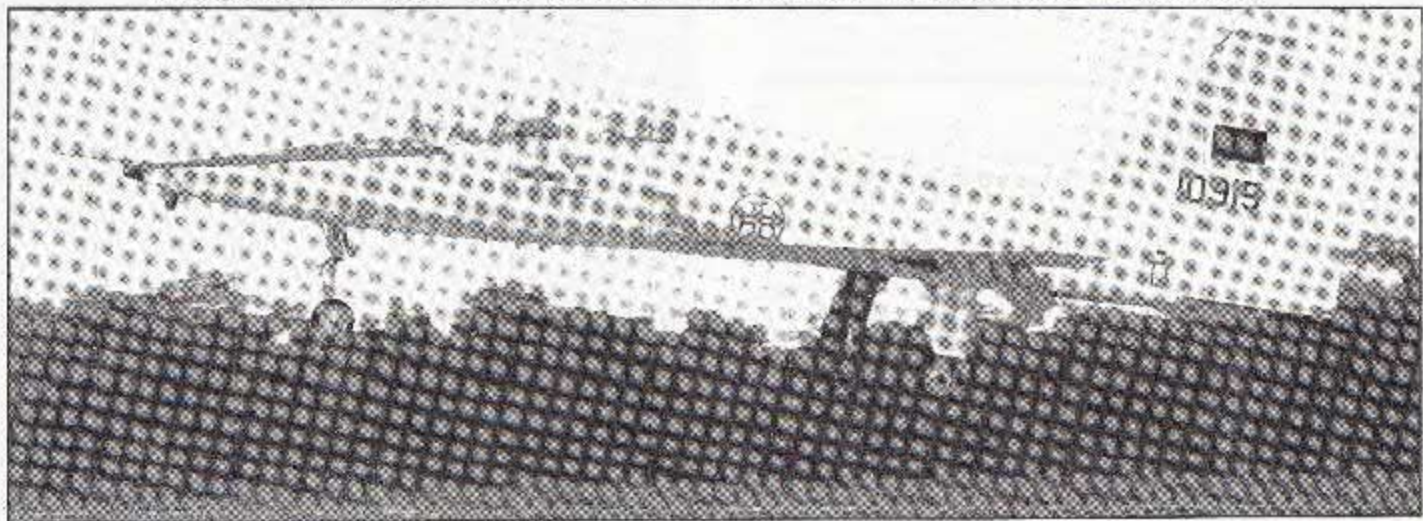
Acting as gate-guard since 1969 Hunter F.6 N-258 was replaced as such by F-84F Thunderstreak P-191 in November.

On Dec. 20, a flight of 10 NF-5s marked the fact that 316sqn had reached the required flying-hours. This had been achieved without a single safety-file being issued, not even for a busted tire.

Vliegbasis LEEUWARDEN

Till February, 323/323sqn flew a minimum of missions as snow and ice made it impossible to keep the runway open for normal operations. Instead many missions were flown by 17 Alouette IIIs which pro-

Portuguese T-38A Talon 10915 of Esc. 201 up on arrival at Gilze-Rijen. (G.v/d.Vaan)



Highlights 1979

vided live-supplies to remoted areas in Northern Holland which had been cut off by the snow.

In April the air base was closed due to runway repairs and 22 F-104s were temporarily based at De Peel, Volkel and Soesterberg. All returned on May 2.

On May 18, J-259 was the first F-16 (of the many come!) to appear at Leeuwarden. On June 7 it was this same aircraft which was the first to be delivered to the Klu.

Late June, Comet XV814 operated from Leeuwarden for three days. In co-operation with 316sqn NF-5As K-3031 and 3033, this aircraft of the Royal Aircraft Establishment conducted electronical warfare trials.

On July 27, Lt. Guy Putker took off with D-6667 dart-car. As if taking off an asymmetrical loaded 104 is not yet difficult enough, a bird disappeared into the left air-intake. With minimum change of the throttle position, Lt. Putker flew at high speed to the coast and just off the coast-line he dropped the fuel tanks and dart. With this incredible high speed he managed to put down the aircraft safely at Leeuwarden within ten minutes after airborne.

In the late afternoon of Sept. 4, four F-104s of 4th Stormo arrived from Bitburg. On exchange with 322sqn, 4-1/MM6822, 4-3/MM6869, 4-6/MM6936 and 4-11/MM6819 remained at Leeuwarden till Sept. 13 Dutch F-104Gs to Grosseto: D-6653, 8082, 8093, 8109, D-8115 and 8319.

In October a visit of a rare bird: VC-135B 24127 of 89MAW. High ranking officials attended Leeuwarden in connection with service entry of the F-16. The aircraft came from Ypenburg and went to Bardufoss, Norway.

Early November, the joint air defence training by 322/323sqn and 1 Wing (Beauvechain) brought daily seven Belgian Starfighters to Leeuwarden. Annually this kind of training takes place in March/April and October/November. On the morning mission, a Belgian 104 takes out with adart and acts as chase-plane. Dutch and Belgian 104s are tasked to attack it. On the afternoon mission, a Dutch 104 acts as chase-plane.

323sqn had an exchange with No.4sqn RAFG. Arriving on Nov. 6 were Harrier GR.3s XZ125/P, XV793/L, XV740/G, XV784/D, XW768/G. Dutch 104s to Gütersloh were D-5809, 6653, 8058, 8060, 8083 and 8304.

By the end of the year, 5 F-16s were being operated at Leeuwarden and only a few Starfighters had been repelled to Ypenburg or Volkel.



Italian F-104G 4-5/MM8888 on squadron-exchange at Leeuwarden. (B. Berkemeijer/MAPN)

Vliegbasis SOESTERBERG

The number of visitors was very disappointing over 1979. Whereas Soesterberg has always been leading in visiting Fiats and Phantoms, 1979 ended the good reputation of this air base. At the end of the year it became even worse as the taxi-tracks and visitors ramp were provided with a new surface. All visitors being directed to the American camp.

Amongst a few really interesting visitors was the light/dark grey camouflaged Luftwaffe 37-84 of JG-74. Another one was the Norwegian C-130H UN955 on service flight for the United Nations. In the summer months, the first pair of A-10s visited Soesterberg and, from what is known, to have been the only air base with A-10 visits in 1979.



C-130K XV220 at Soesterberg providing transport for the squadron-exchange between 32TFS and 432sqn/RAF on July 26. (??)

Mid-April, the group of local spotters had the opportunity to take photographs on the air base. Although during the deployment of FF-Eagles, there had also been an opportunity to take photographs, this was the first true 'spotterdag'.

Due to lack of visitors and flying activities, the spotters could not get enthusiastic about it. Although such an opportunity should be appreciated only by having such possibilities, the presence of one-o-fours from Leeuwarden had to make the day. Much has been going on about the spot for spotters along the fence for taking photographs. The air base authorities decided to plant little trees and let nature do its work. Over 1979 these trees grew to inconvenient heights and incidental activities by local spotters didn't solve this problem and was surely not according to nature. In contacts with the authorities it has been proposed to create another spot some 100mtrs down the road. Although the proposal has not been rejected, the new spot requires some trees to be cut down!

Vliegbasis TWENTHE

The first of interesting visitors appeared on Jan.11 when CC.115 Buffalo 115465/424sqn attended this air base.

Throughout June and July, many F-15 Eagles of 32TFS made full-stops and additionally during early June also several F-5E Tigers.

From July 17 till August 8, the air base was closed due to runway repairs.

No doubt the biggest highlight was the exchange of 315sqn with Esc.201 of the Portuguese air force. On Aug.21 three T-38A Talons arrived: 10915, 10868 and 10890. Without having flown a single flight the aircraft left again on August 28.

Taking-off from Twenthe, NF-5A K-3041 participated in the air show at Lelystad on Sept.1. A flame-out during the air display forced the pilot to make an emergency landing at Soesterberg.

On Sept.14 aircraft arrived for the open day which took place oneday latter. On Sunday after the open day, many of the aircraft left again and made an operational mission as part of Cold Fire exercise. On Sept.17, ten Luftwaffe F-104Gs attended Twenthe as part of the same exercise: 20-46, 22-46, 22-48 22-50, 22-67, 24-27 of JB-34 and 25-40, 25-45, 25-51, 26-31 of JB-32.

Returning were Portuguese T-38As 10868 and 10915 on Sept.21. On exchange at Gilze-Rijen, the pilots of Esc.201 brought stickers and T-shirts which they had promised to the personnel during their stay at Twenthe.

From Oct.30 till Nov.14, 16 F-4F Phantoms of JB-36 were temporarily based here due to runway repairs at Hopsten: 37-01, 37-12, 37-29, 37-37, 37-45 37-49, 37-53, 37-73, 37-77, 37-81, 37-89, 38-05 38-09, 38-21, 38-61 and 38-69.

Also worth mentioning were the visitors transporting VIPs for an meeting at Twenthe on Nov.13/14: CAF CT-133s 133450, 133393; RAF Nord 262 No.76 and Paris 41-AO/78; RAF Hunter T.7 XL613/91 4FTS.

Marinevliegkamp VALKENBURG

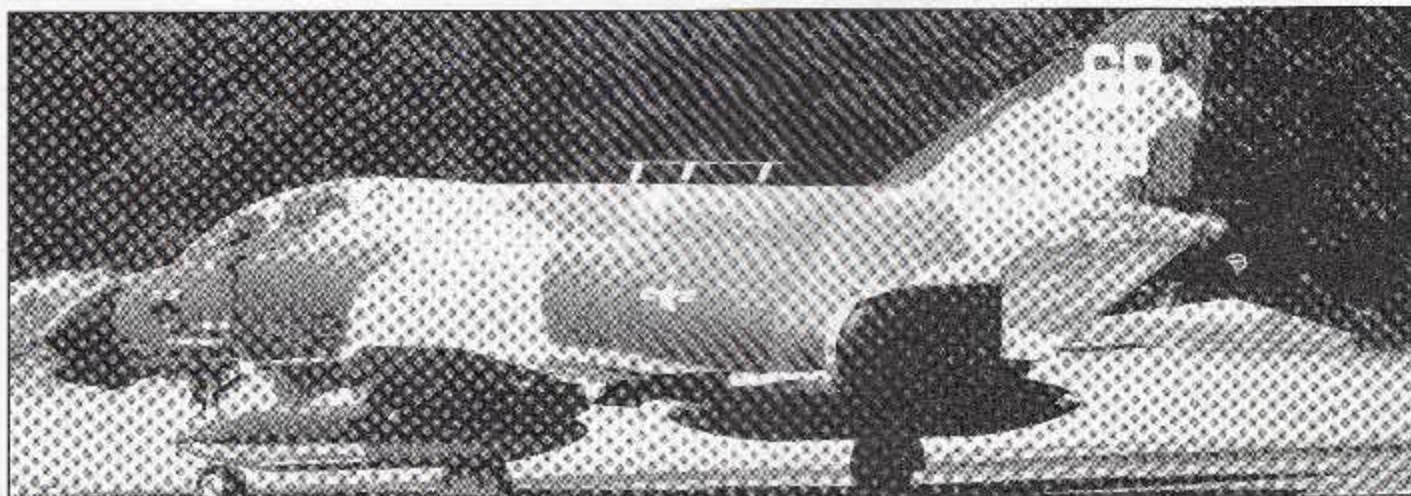
Only two visitors really worth mentioning. Late May Italian air force DC-9-32 31-13/MM62013 brought high ranking NATO officials to The Hague for an important NATO meeting (30years NATO). Although anticipated by the spotters at Valkenburg for a long time, the 100th P-3 Orion to visit arrived on Dec.24. Aircraft concerned was P-3C update II 160767/LJ-7 of VP-23 'Sea Wolves'. The first Orion noted at Valkenburg was P-3A 148889 of NATC in 1964. Preparations for the arrival of the Orion for the Dutch Navy are already evident at the air base in the shape of the construction of a large new ramp area. Also the foundations were laid for the construction of a new control tower.

Vliegbasis VOLKEL

The impressive daily flying activities at Volkel remained impressive during 1979. From August till November these activities took place from the

taxi-track alongside the main runway. Due to construction works on the main runway, the Starfighters took off and landed on this taxi-track. As a result of changed taxi-routes, the spotters got themselves a magnificent spot. Not always to the satisfaction of the military police. During the summer holidays, the group of Volkel spotters attached a banner to the fence, inscribed: 'Spotting Group Volkel wishes you a good flight'. Pilots seemed to appreciate this very much and shortly after D-8133 made an overshoot, Lt.v. Benmelen (pilot D-8133) presented the spotters an air-shot of their banner. The photo had been inscribed: 'Thanks on behalf of 306sqn'. Interesting visitors at Volkel were RF-4Cs J067-438 and J067-461 which were temporarily based at RAF Alconbury. Three days later, on Aug.3 RF-4Cs J067-438 and J067-476 made an overshoot. Two other interesting features attending Volkel were A-7D Corsair I269-208 and IA72-253 on Sept.7. These birds were temporarily based at RAF Waddington. Overheard conversations between pilots and control tower/GCA:
 • During wheels-up, approach of TF-104G D-5801: 'Mind your gear....mind your gear.....mind your gear'. Reply, 'while in a steep climb at the end of the runway: 'Thanks for the warning'.
 • A pilot of 311sqn just prior touch-down somewhere during the summer holidays: 'Bloody hell, down here in the approach it looks like a fair!'.

During the open day at Twente, a protest group threw bags containing paint on the Dutch F-16 which was on static display. Also USAF F-4D SP40-750 was subject to the group's activities. (B.Barkmeijer/MAPN)



FLASH BOOK SERVICE

Obtainable via FLASH are the following titles:

Observer's Book of Aircraft 1979	DFL. 9,25
British Civil Aircraft Register	DFL.15,95
German Military Aviation	DFL.15,95
Dutch Military Aviation	DFL.15,95
Belgian Military Aviation	DFL.15,95
Spanish & Portuguese Military Aviation	DFL.15,95
French Military Aviation	DFL.17,95
US Military A/c Designations &Serials	DFL.22,50
Vliegend voor de Vrede	DFL.32,50

Remittances to be made in advance by either IMO payable to the editorial address, to bank Acc.no. 44.46.20.370 (Amro bank, Eindhoven, Holland), or by giro to Acc.no.3126138 (P.v/d.Krommenacker, v.Gstadepad 9, Best, Holland). Prices include postage.

FLASH BACK ISSUES

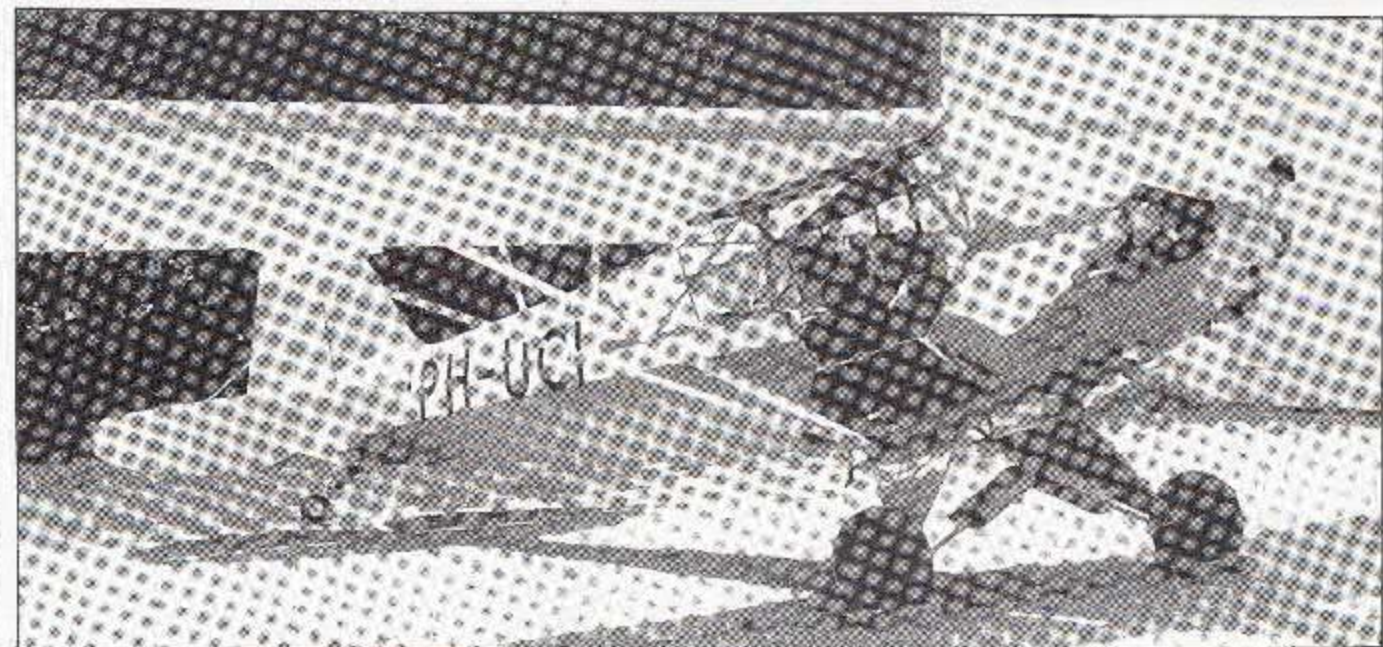
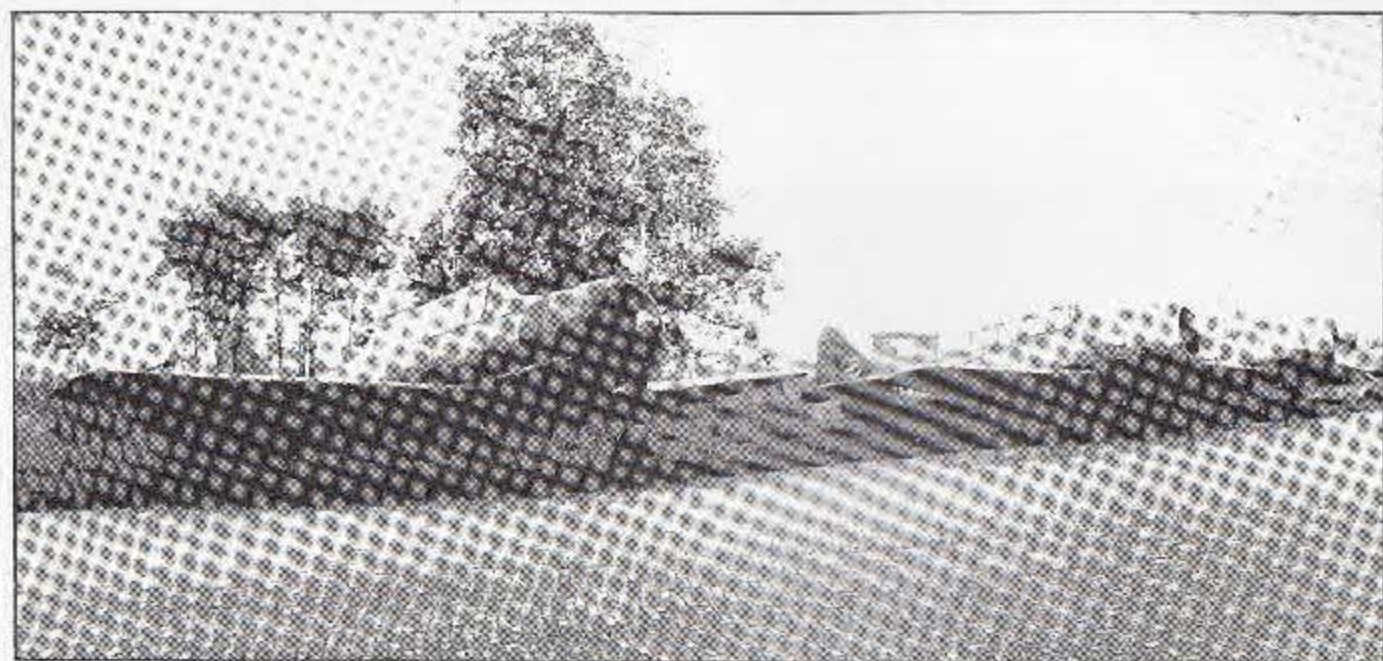
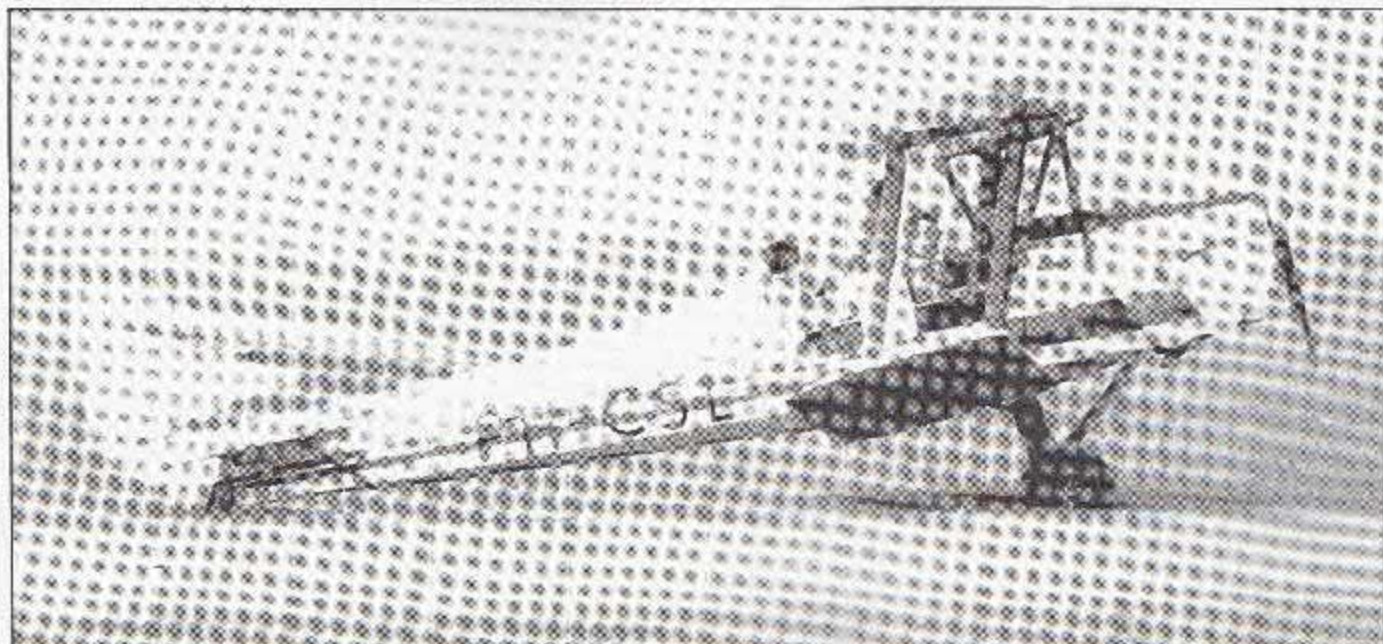
Available, though some in very small amounts are the following FLASH back-issues:

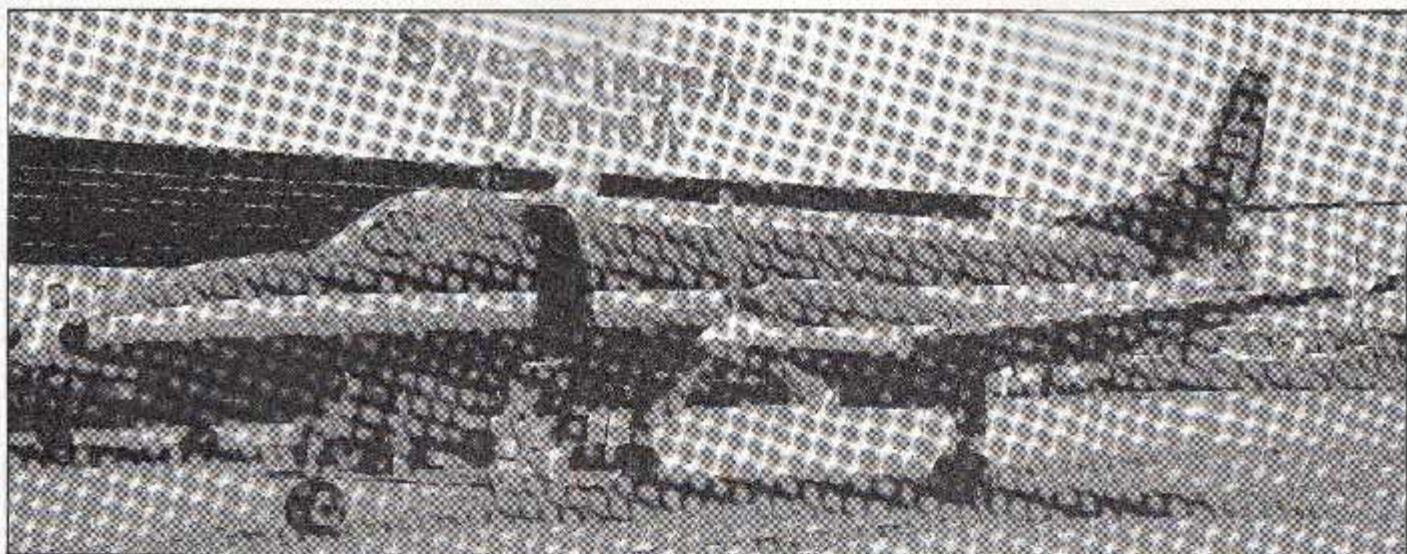
- 1977: April, May, June, July/August, September, October, November and December.
- 1978: January, March, May, July/August, September, October, November and December.
- 1979: February, March, April, May, July/August, September, October, November and December.

Prices per issue: DFL.2,50.

***** PHOTO COMMENT *****
 COVER: Hunter GA.11 XE685/861 at Yeovilton.
 BACK-PAGE: Four preserved ex-Armee de l'Air aircraft at the entrance of airstrip Blais/Le Breuil: C-45 Navigator No.133, RB-26B Invader 41-39162/3 and Duxigan No.208. Not illustrated is Flamant No.185/44-GI

DUTCH OLDIES





DUTCH REGISTER 1979 - 1980

Information published by the Rijksluchtvaartdienst (FAA/CAB) over 1979 concerning Dutch-registered aircraft, has been analyzed and summarized in this article. Added with prospects for 1980, the figures should give a clear impression of the civil aviation scene in Holland over 1979.

1979

ENGINED AIRCRAFT

The number of newly registered aircraft immediately draws the attention. Contrary to previous years, the increase of new entries declined. 1978 - 132 new aircraft, 1979 - 112 new aircraft.

As a result the proportional increase also declined. Where over 1978 the total number of engined aircraft raised 9,3%, this figure reduced to 6% over 1979. One of the main reasons is the fact that over 1978 many aircraft have been replaced by new types which could be concluded from the many cancellations that year. A second reason is a certain stabilization in this section.

From the number of cancellations over 1979 can be concluded the aspect of flying-safety came off very well. Seven aircraft were cancelled due to an accident which is only halve the figure over previous years.

Of the aircraft leaving Holland, England seems to be the favourite place to go to. Over 1979, 25 a/c (33%) left for the U.K. whereas the export to the other two neighbouring countries was only 6-7%.

Also worth mentioning are the three aircraft which have been saved from destruction and taken into the collection of private museums and Aviadome.

1979

GLIDERS AND BALLOONS

This section shows much similarity with the previous one as far as gliders is concerned. A great decline of proportional increase can be concluded. For 1978 this increase was 13,5%, for 1979 this increase reduced to 7% and the expected total of 400 registered gliders could not be reached.

People seem to enjoy balloon sailing and engined gliders. Especially the latter category increased enormously and at the end of 1979 there were three times as many engined gliders as at the end of 1978.

The number of registered balloons increased from six to 17.

	1964	1977	1978	1979
ENGINED AIRCRAFT	235	428	469	500
TURBOJETS	28	66	54	35
HELICOPTERS	8	21	24	27
ENGINED GLIDERS	-	2	3	9
GLIDERS	2	372	300	384
BALLOONS	1	7	11	17
total		665	661	1022

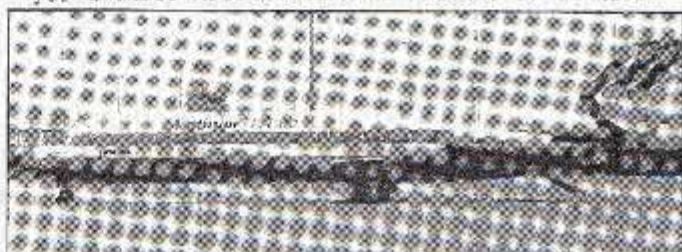
1979-1980

NEW TYPES

March 1979 saw the introduction of two new aircraft types: Robin 2160 PH-BLO of Limburg Reclame Bedrijf and Swearingen SA.226TC PH-NLZ of NLR. One month later Mooney M.20C PH-AMA was delivered to A.M.A. Sales. In fact this Mooney M.20 is not a complete new appearance in Holland as in the past a few others preceded this one.

In June a Piper Aerostar was delivered to Holland Automation which uses the aircraft for business purposes. The Aerostar seems to have too limited service capabilities for this company which is now looking for a new jet-type aircraft.

On 7 December PH-MAX, a DC-8 of Martinair left for a three months lease to A.L.M. (H. Geus)



Dutch register 1979-1980

Aviation Francaise was very active over 1979 and imported five Ralley's. The first Toboga found itself a customer in REN Stichting at Teuge. At least two more Tobogas are expected to be delivered via Aviation Francaise in 1980.

The Aerotek Pitts S-2A which was assembled at Seppe in August doubled the number of Dutch registered aerobatic aircraft. This Pitts S-2A, PH-PGP is the smallest aircraft currently being operated in Holland. The largest one is Rockwell 700 PH-ZUS which superceded the one-year-old PA-34 of Mr. Kapteyns.

Whereas introduction of new types is concerned, Philips will make a remarkable contribution in 1980: the Falcon 50. This aircraft should be in the States by now being provided with the interior, completing the aircraft for delivery.

A possible change in the aircraft fleet of Philips is the purchase of two Beech King Air 100s which will replace the King Air 90 and AB.206.

Although expected to be delivered in 1979, the Sikorsky S.76s for KLM helicopters and Schreiner will arrive this year. A hold-up in the production of this helicopter caused this delay.

Another helicopter type which will leave the Dutch aviation scene is the AB.206A. PH-FSW of Philips has already been sold in Germany. Although initially it was to be replaced by a Bell 222, the choice seems to have fallen on fixed-wing aircraft.

The arrival of KLM's Sikorsky S.76s means the withdrawal of both the S.58s.

More 'gone type' for 1980 will be the only Cessna-built 150 in Holland, PH-NAC, which recently crashed. HFB.320 Hansa Jet PH-HFC will be replaced by one of RLS's Cessna 500s due to high noise-levels and high fuel consumption.

Interesting as always is the Cessna-Piper comparison. Contrary to previous years, the total of Cessna aircraft stabilized in 1979 while the Piper share showed a healthy increase up to a total of 172 aircraft. Delusive is the fact that nine ex-Klu Super Cubs entered the register. In fact these nine aircraft should not be taken in account in this comparison as this concerns a batch of second hand aircraft.

Being 25 years of age, the entry of these aircraft had a great effect on the average age of the total Dutch civil aircraft fleet which happens to be 9 years.

Speaking of age, to conclude this article a top 5 of the oldest aircraft being registered in Holland on 01.01.80.

1979-1980

'GONE' TYPES

An unsuccessful type in Holland is the BN.2A Islander. In 1970 an aircraft of this type crashed only two months after delivery to Seaport Commuter. The sale of an Islander to Klusman in 1972 was cancelled. Last year, Propeller Flight Service sold their Islander PH-PFS in Germany. Despite all efforts, Holland seems to lack a demand for commuter airline services.

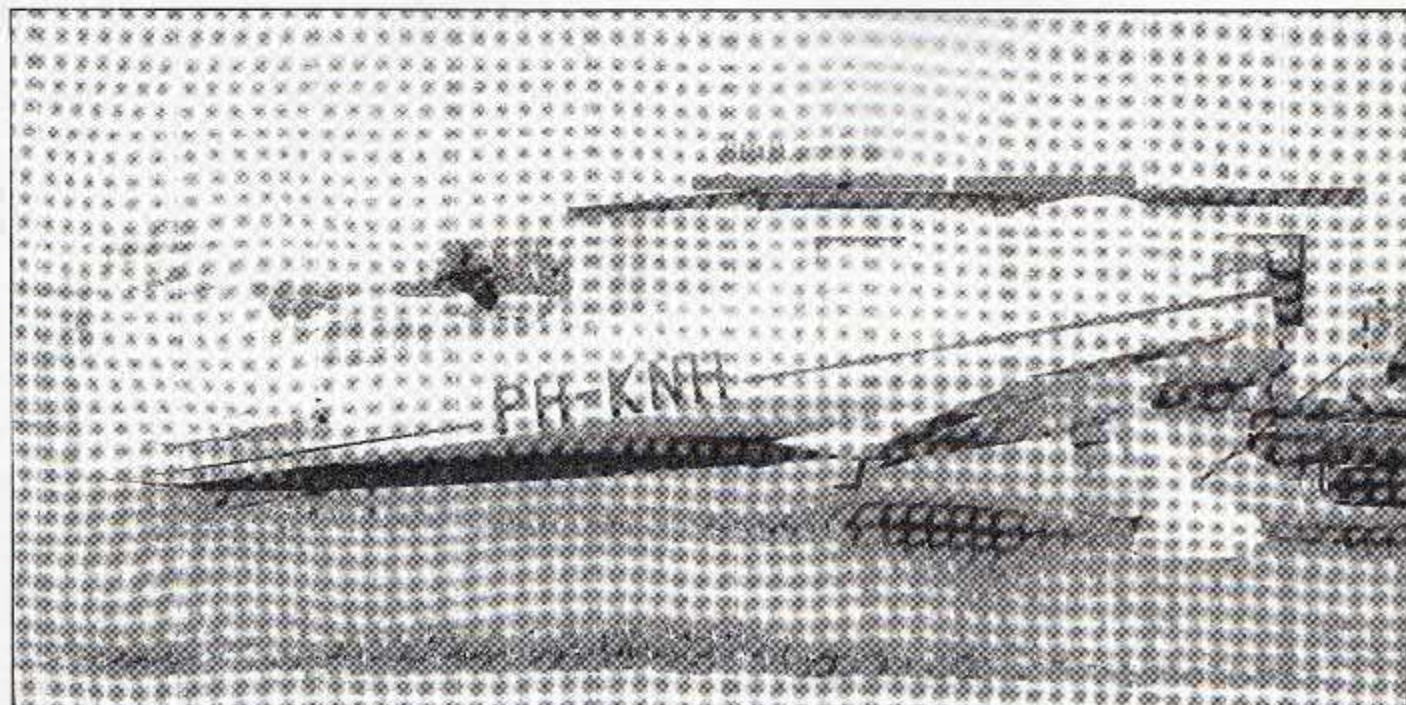
Also leaving for Germany is the Cessna 421. This Cessna version was probably too big for services in Holland and the other versions of Cessna, 310, 403 & 404 are far more popular.

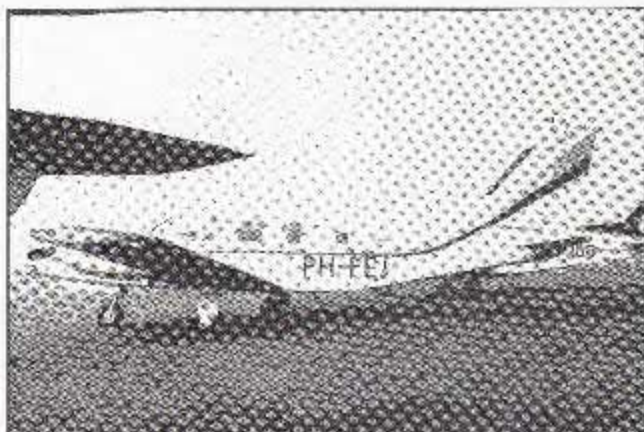
Although not having flown for a considerable time, two types were not deleted until August. The fate of the only Bo.207 is not known. The last of the remaining Austers ended up safely in the collection of a private museum in Oisterwijk.

Piper PA.30 PH-ATV of Mr.H.Lawson, will probably be re-registered in the U.K. The Alouette III of Schreiner left for the States but undoubtedly this company will register another Alouette III in due course.

***** DUTCH OLDS ***** TOP 5 *****			
No.1	PH-CGL	Tiger Moth	1934
No.2	PH-NKD	Harvard	1942
No.3	PH-BBT	Harvard	1943
	PH-IIS	Harvard	1943
	PH-KLU	Harvard	1943
No.4	PH-NLA	Super Cub	1945
	PH-UCG	Super Cub	1945
	PH-UCH	Super Cub	1945
	PH-UCI	Super Cub	1945
No.5	PH-NCE	Pitts	1947

*On page 10, Piper Moth PA-22, Harvard PA-340
PH-FAL - Super Cub PA-300 have been mentioned*





Reg.	Type	C/n	Remarks		
PH-AIR 2962	Thunder AX7-65 Bolt	236	A.J.M.Haarhuis e.a.	ex	(new)
PH-BBV 2637	Fokker F.28-4000 Fellowship	11127	Fokker-VFW	to	(out)
PH-DCO 2624	Douglas DC-8-53	45632	Koninklijke Luchtvaartmij	to	(out)
PH-FEJ 2796	Piper PA-34-200T	34-7870203	F.E.J. Pover	to Netherlands EAS	
PH-FEJ 2796	Piper PA-34-200T	34-7870203	Netherlands European A.S. bv	to	(out)
PH-KNJ 2954	Piper PA-18-135 Super Cub	18-3940	LSK Zweefvliegclub Gilze Rijen	ex 54-2440, R-150	(new)
PH-LEO 2348	Reims Cessna F.150M	1238	Air Service Holland b.v.	to	(out)
PH-PLW 2960	Cessna T.310Q	310Q-0039	Air Service Holland b.v.	ex	(new)
PH-RLA 683	Saab S.910	91367	Direktie Rijksluchtvaartschool	to	(out)
PH-RLS 687	Saab S.91D	91371	Direktie Rijksluchtvaartschool	to	(out)
PH-SVS 2959	Reims Cessna F.172N	1886	Air Service Holland b.v.	ex	(new)
PH-TGM 2957	Reims Cessna F.172N	1887	Noor Nederlandse Aero Club	ex	(new)
PH-635 2400	SF.28A	5772	Kon.Ned.Vereniging v. Luchtvaart	to	(out)
PH-678 2961	Scheibe SF.25C	44291	Twentsche Zweefvliegclub	ex	(new)

***** CORRECTIONS & ADDITIONS *****

FLASH no. 109 : p. 22, D-ECBL PA.150 to be PH-ECB
 D-IGMN C.340 22-8 was f/f
 PH-AXB FR.182RG c/n 0040
 PH-AXV FR.172K c/n 0644
 p. 23 PH-BIT is a Cessna F.152

FLASH no.110 : p. 20 F-AZBG is a SFCA Taup'lon
 F-AZAZ is not a replica .
 F-BLKH is the 'Siebel'Gipa

DUTCH REGISTER : PH-GNT to G-BGDU PH-AVD G-BGVD
 PH-BAG to N1047T PH-ECT G-SATC
 PH-FTS to 6W-STP PH-HVS G-BGV5
 PH-NKH to G-BBGC PH-NSM G-CGMM
 PH-VDW to CO-VDW PH-ZBU G-WWJS

