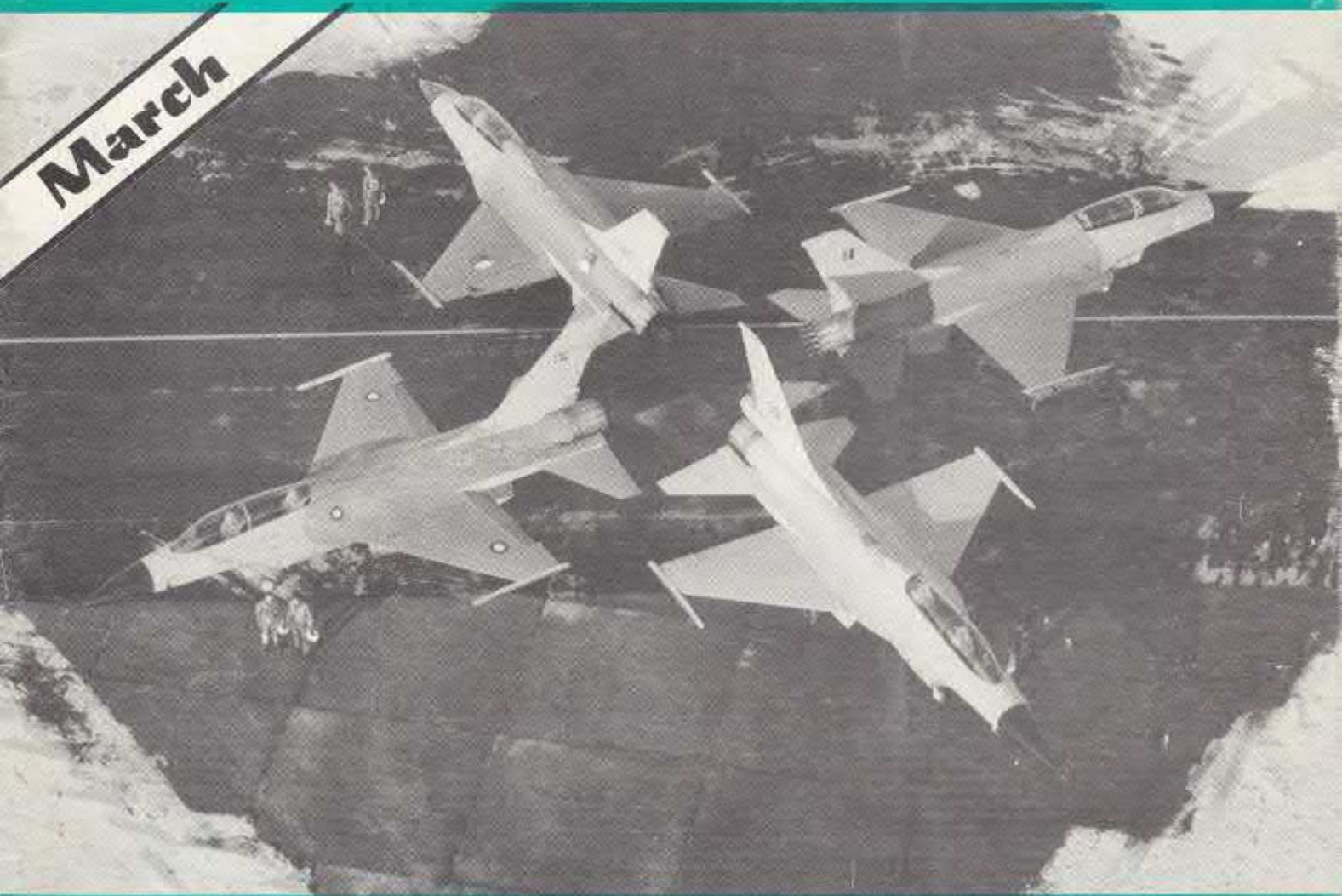




March



aviation



magazine

FLORIDA

JACKSONVILLE

AIR NATIONAL GUARD

PHOTOS BY B. ULLINGS/API



COVER PHOTO: FOUR F-16s DURING A PHOTO SESSION AT SKRYDSTRUP, DENMARK. (GD)



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EDITORIAL

SPACE SHUTTLE OPERATIONS

'PanAm flight 974, destination Stansted. Clear to land on runway 06. Report over TACAN at 10.40 and proceed with automatic landing system'. Commander Lawkins enters a new direction in the computer in order to pick up the airport's automatic landing system. A hard day's work has just come to an end as technology took over the landing procedures for him. In the old days this used to be the most difficult part for a pilot, Commander Lawkins remembered.

PanAm flight 974 returned from space, having delivered some new instruments aboard Skylab 336 and on its return flight to earth it took passengers from Salyut space center to Stansted airport, U.K. On approach to Stansted an interesting discussion starts between the Commander and his Flight Lieutenant. An interesting discussion as accordingly, one of the readers of this editorial will become a flight Lieutenant on one of PanAm's space shuttles.

'I just remember that in the early days of the Space Transport System, the space shuttle was referred to as a 'space craft', Flt.Lt. Quetin addressed to his commander.

'Funny, I always thought space shuttle has been Space Travel Aviation'.

'No, in the early days when it all started, in the 1980s, everything to do with the space shuttle was considered to be space technology. The first time I read something about this rather strange subdivision was in an editorial in FLASH Aviation magazine. In a discussion of two pilots on a space shuttle, the mission was analysed and evidently the mission was purely aviation'.

'How did it analyze the mission as surely it could not have comprehended the commercial influences on the Space Transport System with daily launches at Kennedy Space Center and Baikonur Space Center and daily landings at New York, Stansted and Sheremetshevo airports?' Commander Lawkins interrupted.

'No, it did not comprehend that but it started to acknowledge the fact that space shuttle operations were on the boundary lines of aviation and compared it to a hovercraft for shipping. Media of those days discussed these boats as a special kind of ship. The editorial subscribed to that opinion as designers had conceived a special boat using air to lift it out of the water reducing the drag encountered by conventional boats.

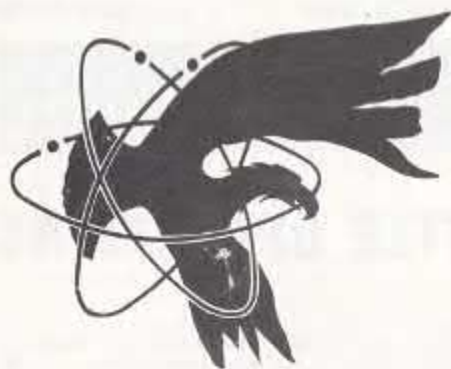
A space shuttle could be considered more or less the same according to the editorial. Designers conceived an aircraft which had some unconventional items as it had to deliver cargo to a destination just inside outerspace. The vertical launch and flying out of earth's atmosphere required integration of space and aviation technology in the shuttle.

Confusing, however, was that initially Space Shuttles stayed in space for some time and tests were conducted from the space shuttles itself. When more stations had been built, the task for space shuttle flights was only to transport goods and persons from earth to the stations or reverse'.

'Very interesting. Then recognition for space shuttles to be considered as aviation must have found introduction when the operations became scheduled flights and conventional airline companies showed interests?'

'Yes, Commander. Ten years ago, around 1997, space laboratories became of essential importance to new technology and gave a boom in the space Transport System. Sorry, Commander, but we have just landed at Stansted. Shall I ask permission to dock at terminal 104? There's a very nice lady at the reception who makes excellent coffee!'

Picked up from outerspace by Jac van Tuyn



MILITARY NEWS

HOLLAND

• The first European F-16 was lost on March 10, when the Dutch air force F-16A J-216 crashed into the IJsselmeer. Capt. Kropman was second in a two-ship formation and had just made a gunnery run on the Vlieland range. Coming in for the second run, the aircraft went into Instrument Meteorological Conditions due to bad visibility and low cloud base. Without radio transmission the aircraft crashed into the sea, killing the pilot. Four hours later the first parts of the wreckage were located 5 kms west-north-west of Stavoren.

The history of F-16A J-216 was short but eventful. On September 18, the aircraft made its first flight, suffered a lightning strike and delivery to the Klu was delayed (see FLASH 02.80 p.4). Upon arrival at Leeuwarden on February 29, the aircraft was modified by the *bewapenings- en Elektronica Squadron* and J-216 was applied with an Orpheus reconnaissance pod. On March 5, test pilot Ton Bakker made a reconnaissance sortie with this pod.

The F-16 J-216 is reportedly to have been modified following gun firing problems by two F-16s in September last year. The gun vibrations of these U.S. F-16s had affected the accelerometers which fed false information to the control computer which caused the aircraft to start yawing. Subsequently the accelerometers in all F-16s were insulated from the gun vibrations.

• Late July, seven F-16s of the Multi-national Operational Test & Evaluation unit from Hill AFB, U.S.A., will arrive at Leeuwarden. Two Dutch, two Belgian, two U.S. and one reserve F-16 will operate from Leeuwarden for six weeks. The European tour has been prepared thoroughly over the past seven months and after Leeuwarden the detachment will go to Belgium, Denmark and Norway as well.

• More F-16 news. To compensate the losses during peace-time operations of the present 102 F-16s on order, the Minister of Defence Scholten announced the Dutch air force would need 30 additional F-16s. During the last week of March, the Minister of Defence published the report on the NF-5 replacement. In this document the Dutch air force strongly advises the purchase of 81 F-16s.

Next month FLASH will analyse this document and the purchase of 111 additional F-16s.

BELGIUM

• Ex-Belgian air force T-33s are being disposed all over Europe. T-33A FT-03 was transported under an US Army Chinook via Kleine-Brogel and Pinthen to Vilsech, W. Germany on April 12, 1979. T-33As FT-09 and FT-26 were sold to a German scrap-dealer for DM.500,-, who broke up the aircraft at Brustum on June 12, 1979.

Another destination for ex-Belgian T-33As was Ogma-Alverna, Portugal. On October 15, 1979 T-33As FT-21, FT-28 and FT-30 were flown over to Portugal.

The most recent disposal was T-33A FT-37 which was carried to Alconbury, U.K. by an US Army Chinook where it will be used to train USAF maintenance crews.

Without a final destination are T-33A FT-24, FT-34 which is stored at Koksijde and FT-38 which is stored at Brustum and is likely to become a gate-guard at this base.

CANADA

• Eighth Canadian CP-5s of 433 Escadrille from CFB Bagotville, participated in Anorak Express exercise. The CP-5s were part of a Canadian contingent

For one day F-16A J-216 flew in the markings of 208 Squadron because of trials with the Orpheus recon pod. Five days later the aircraft crashed in the IJsselmeer. (Vliegbase Leeuwarden)





Four days prior delivery to the Danish AF, P-16B ET-204 taxis out at Gosselies for a test ride. (SABCA)

with 1000 personnel training in this exercise in Northern Norway from February 28 to March 27. Included in the Canadian Battalion Group were also helicopters of 437 Tactical Helicopter Squadron. Air support for the deployment required 79 Hercules & B.707 flights. Hercules were drawn from 429, 435 and 436 Transport Squadrons at Winnipeg, Edmonton and Trenton resp., the B.707s from 437 Transport Squadron at Trenton. In-flight refuelling for the CF-5s on their transoceanic trip were carried out by a B.707 tanker of 437 Squadron.

INTERNATIONAL

• The first production strike Tornado made its first flight on March 14 at BAe Warton aerodrome. Chief Test Pilot Jerry Lee and Chief Navigator Ray Woollett kept BS.001/ZA321 airborne for 1 hour and 25 minutes, during which the speed of sound was exceeded at medium altitude. Preceding production Tornados were dual control trainers BT.001/ZA319, BT.002/ZA320 and GT.001/43-01. Apart from dual controls and minor differences in the navigator's equipment, the trainer Tornados are identical to the strike aircraft. In July the Tri-national Tornado Training Establishment will be formed at Cottesmore, U.K. The first Tornado for the unit to receive is BT.002/ZA320. RAF's A&AEE at Boscombe Down operates P.12/XZ630 P.15/XZ631 and BT.001/ZA319. Luftwaffe's ES-61at Manching operates P.11/98-01 and will receive GT.001/43-01 soon and P.12/98-02 later this year. At the end of this year AMI's Reparto Sperimentale at Pratica di Mare will operate P.14.

• The German and French Ministries of Defence signed a Memorandum of Understanding to define an anti-armour helicopter for the second generation. Aerospatiale and MBB are both to be involved in the definition phase of the requirement which must have been completed in six months. In this period all four parties will investigate the mission requirement for this kind of helicopter and select the systems to perform the mission. This definition phase will be followed by the development and construction of prototypes. MBB will be responsible for the rotorsystems, middle fuselage, controls, hydraulics, fuel systems,

installation of the engine, automatic flying systems and the responsibility for the design. Aerospatiale will manufacture the tailrotor, front fuselage and is responsible for the integration of the avionics and weapon systems. The Heeresflieger has a requirement for 212 PAH-2s and the ALAT for 120 HACs.

Sweden

• The last SF-37 Viggen was delivered to F.21 at Lulea on February 7. For SAAB this concluded the production of the first Viggen generation. At the SAAB-SCANIA plant at Linköping, the aircraft was officially handed over to the Flygvapnet. Presently in production with SAAB is the JA.37 fighter version. This second Viggen generation has completely new avionics, weapons, a built-in gun and a modified engine. The Flygvapnet planned a total Viggen fleet of 329.

A JA.37 Viggen over a true Swedish landscape. (SAAB)





PIONEER HUNTER - NO LONGER IN HOLLAND

The National Aerospace Laboratory (NLR) was in the unique opportunity to use a Hawker Hunter for non-military purposes. Where NLR did need the Hawker Hunter for is described in this article.

During its 14 years service with NLR, this dual-version Hunter was e.g. used as a 'pacer'. A pacer flies along with another aircraft and checks whether the air pressure indicators in the other aircraft are correct. But PH-NLH did more and was often used for experimental tests.

Noteworthy in the long list of these tests were the observation of characteristics of an aircraft during acceleration, the development of the Orpheus pod which is a reconnaissance system now used by the Dutch and Italian air forces, and testing of behaviours of fluid materials during 'zero-G-flights'.

These zero-G-flights were the most recent activities for Hunter PH-NLH and were also an excellent example of the aircraft's functioning as a laboratory aircraft for NLR.

Zero-G-flight theoretically

A zero-G-flight is a flight manoeuvre in the vertical plane during which the gravity force is completely neutralized by a parabolitary force produced by the aircraft. This situation comes close to the conditions in space and this is the reason why these kinds of flights were made.

One of the activities of NLR is to develop an experimental installation in Spacelab, which will make its first flight in 1981. In this experiment the behaviour of certain liquids in weightlessness will be investigated.

Weightlessness on earth can only be simulated in two ways. One way is to drop an object in a vacuum tower. However, this is very impractical because of the short time of the object's fall.

The other way is to fly an aircraft in a parabolic trajectory known as a zero-G-flight. The Hawker Hunter of NLR was extremely suitable to perform such a flight. The aircraft was highly manoeuvrable, could fly supersonic under certain circumstances and could resist forces from $-3 \frac{3}{4}$ up to $+7G$. A disadvantage of the Hunter was the lack of space for the experimental equipment. Within the pilot's field of view only 2 dm² could be used. The newly delivered Swearingen Metro offers much more space and NLR is trying to use this Metro to fly the zero-G-flight. However, the much lower speed of this Metro reduces the period of simulated weightlessness considerably, whereas the Hunter could maintain this condition up to 20 seconds.

Zero-G-flight practically

A zero-G-flight needs much practice for a pilot to perform. Illustrative were the 8 flights during 1978 with six successful zero-G manoeuvres per flight within the requirements for optimum test conditions. During each flight the operation level was 10,000-20,000 feet where the Hunter's engine and control characteristics were optimum. The difficulties in flying this trajectory were:

- CONTROL: Reaching and maintaining weightlessness

Military news

UNITED KINGDOM

● British Aerospace signed a contract with McDonnell-Douglas to co-operate in future work connected with the USN's VTX-TS programme. The USNavy requires a new training aircraft for USN pilot's advanced training into the 21st century.

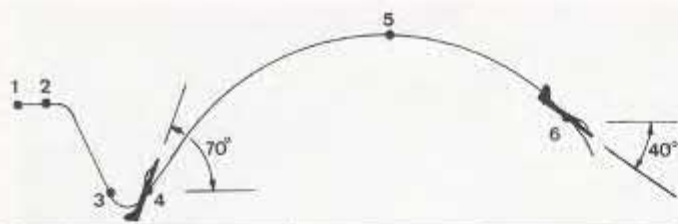
In the partnership contract both Douglas Aircraft Corporation and Kingston-Bough Division both companies agreed the following major points:

- British Aerospace is prime contractor on Hawk in the initial stage of VTX-TS bidding.
- Douglas becomes prime contractor should the Hawk be selected by the USNavy.
- Technical co-operation on Hawk in future VTX submissions.

- Technical co-operation to ensure the Hawk is carrier compatible.

Last year British Aerospace submitted the USNavy a study over the Hawk in configuration for carrier operations. The changes included were appropriate avionics fit, a strengthened landing gear (incl. a new nose gear for catapult launch) and an arrestor hook.

The VTX-TS requirement is the first test on America's willingness in the 'two-way-street'. An extensive order can be expected for this USNavy requirement and British Aerospace is eager to get this contract. Another European contender is Dornier Breguet with their Alpha Jet. Lately the American industry started releasing new designs of a similar



- 1). INITIAL HEIGHT
- 2). DIVE TO INCREASE SPEED (1000km/h)
- 3). REACH MAX. SPEED AND PULL UP WITH 4-5G
- 4). START ZERO-G-FLIGHT, PUSH THE AIRCRAFT NOSE OVER AND REDUCE ENGINE-POWER
- 5). HIGHEST POINT IN FLOWN TRAJECTORY
- 6). END ZERO-G-FLIGHT

was difficult. Special acceleration indicators were built in. Still the pilot's feelings remained an important factor in the success of the flight

● **FLAME-OUT:** The air within the fuel tanks under weightless condition can move freely and could reach the engine which could cause a flame-out. This was prevented by making the fuel tank air free.

● **ENGINE OILING:** In weightless condition the oiling of the engine is uncertain. Due to relatively low engine power, no problems occurred despite the long period of bad oiling.

During the zero-G-flights one crew-member controlled the rudder to neutralize the gravity by the aircraft's lift force. The other crew-member controlled the engine power to neutralize the drag of the aircraft.

Meanwhile a 35-mm film camera recorded the currents in the liquid which were made visible with special light effects. Simultaneously the height, speeds, and accelerations of the Hunter both longitudinal and axial were recorded.

History of PH-NLH

In total 20 Hunter T.7s served with the Dutch air force. All were directly ordered with Hawker of which the last 10 T.7s were originally intended for delivery to the Royal Air Force. Subsequently PH-NLH was allocated XM126, but in late May 1959 the Klu applied N-320 as registration on this aircraft. In March 1964, it was struck off charge and parked at Soesterberg till July 1964. For conversion to a laboratory aircraft it went to Avio Diepen at Ypenburg.

Early 1966, N-320 was handed over to the NLR together with N-315. The latter was used for spare parts.

On January 27, PH-NLH officially entered the Dutch Civil Register and ever since it has been operated by NLR as an experimental aircraft.

On January 22, PH-NLH was flown to Exeter, U.K., for delivery to Staravia, which intends to sell the Hunter again. According to an advertisement in Flight International recently, PH-NLH is 'to be believed to be one of the most superb condition Hunter aircraft available throughout the world'.

Again, these zero-G-flights were only a few out of the many flights Hunter PH-NLH made for NLR. Going into detail on all the experimental tests involving this aircraft could continue this article for pages. The description of the zero-G-flights is a very good example of the use of this laboratory aircraft for NLR.

Hunter PH-NLH was unique in two ways. In providing facilities for certain experimental tests and changing its original mission in military aviation to a mission in civil aviation.

But one day all good things end. The operation of Hunter PH-NLH became too expensive for NLR and decided to sell the aircraft. Hopefully the aircraft gets a dignified new designation. □

HEAD PHOTO: Hawker Hunter T.7 PH-NLH in white/orange & blue at Soesterberg. (Aviation Photos Intern.)
BELOW: Hunter PH-NLH as a 'pacer' during a flight with an DC-8. Note extended cone attached to the tail tip. (NLR)



Military news

light weight training aircraft. It might be to back up the possibility that the 'two-way-street' turns out to be blocked in one direction.

● The RAF Buccaneer that crashed on the Nellis range, U.S.A., on February 7, was part of a four ship formation. When attacked by defending forces, the aircraft made a hard break in the same sector from which the attack was made. Whether the aircraft had hit the ground or broke up prior impact was still being investigated. Upon inspection of the entire Buccaneer fleet of the RAF, several were found to have minor cracks

in the wings. The inspection staff at Farnborough did not conclude these cracks to be responsible for an aircraft to crash. Meanwhile the Buccaneer operations were kept to a minimum.

In May, Maple Flag V will be conducted at CFB Cold Lake, Canada. Following RAF participation of Buccaneers in Maple Flag III, Jaguars in Maple Flag IV, Harriers are to participate in Maple Flag V. In preparation of this exercise, Harrier pilots could gain experiences in low flying during two 'work-up' sessions during late March and early April. During the first 'work-up' session, a Harrier GR.3 of 3 squadron suffered a birdstrike two miles south of Lompeter, Wales on March 12. The pilot ejected safely.



Stripped of its squadron markings, P-3A Orion 150606 ex LT-7 of VP-62, was seen at NAS Jacksonville on 11 October 1979. What will be the aircraft's new destination: Davis Monthan? (B.Ullings/API)

UNITED STATES OF AMERICA

● Within one week, 36TFW at Bitburg AB lost two F-15A Eagles. On March 4, an F-15 crashed 15 km south of Baden-Baden, W.Germany. The aircraft was participating in air tactics training at the time of the crash. The pilot Lt.Col.Olson was killed in the accident.

On March 6, an F-15 crashed out of a four-ship formation, some 12 kms north of Bitburg AB. The aircraft had just taken off when the crash occurred and killed pilot Capt.Barr. Although taking place within a very short period, both accident didn't seem to have any connections and Eagle operations continued as normal.

● By mid 1981, the 50th Tactical Fighter Wing at Hahn AB, W.Germany, will be the first wing of the USAF to receive GD F-16s. Eventually 72 F-16s will replace the F-4E Phantoms presently operated by the 50TFW. 24 F-4Es will be distributed among other USAF units and 48 will return to the U.S.

● Since delivery started in 1962, Lockheed built 500 P-3 Orions. The 500th aircraft, a P-3C update II, went to the USNavy recently.

Five main version have been built of the Orion so far. 157 P-3As, 144 P-3Bs, 190 P-3Cs, 3 P-3Ds and 6 P-3Fs. Deliveries at the moment of Orions, are to the USNavy which buys 12 P-3C per year till Fiscal Year 1986. Eventually the USNavy will bring its active fleet to 275.

The early P-3A and P-3B models are being transferred to the USNavy Reserve squadrons, and two P-3Bs will be sold to Norway and three P-3As to Spain. Deliveries of the 18 CP.140 Auroras (Canadian version of the Orion) is scheduled to start in May. Next year deliveries will commence of the 13 Dutch and 45 Japanese aircraft.

● Egypt receives considerable military aid from the U.S., following the Camp David Israeli-Egyptian peace agreements. Peace Pharaoh was the first programme including a batch of 35 F-4E Phantoms of which by February 20 had been delivered. All F-4Es are ex-31TFW machines of which recent deliveries were staging through Europe. Noted at Ramstein on March 5 were F-4E 60337, 70289 and 70309 coming directly from Loring AFB. On March 26 a batch of seven F-4Es passed through Ramstein coming from Seymour Johnson, incl. 60353, 70213, 70220, 70231 and 70388.

On delivery the Egyptian markings were covered by the American roundels which had been applied in washable paint. Serials of the other F-4Es to be delivered to Egypt, are:

66-0340, 0341, 0343, 0349, 0358, 0360, 0362, 0364
66-0366, 0375
67-0211, 0212, 0236, 0238, 0239, 0242, 0264, 0278
67-0305, 0307, 0313, 0317, 0322, 0341, 0355, 0371
67-0373.

WEST GERMANY

● Despite the diminishing amount of Starfighter operated by the Luftwaffe, a series of accidents involving the 1-o-4 over the past few months.

On March 4, an F-104G of JABOG-31 crashed near Genk, Belgium. The pilot ejected and suffered slight injuries. As a result of the accident a minor fire had been caused in a nearby car-assembly plant.

On March 13, an F-104G of JABOG-34 hit a high-tension cable and crashed near Kaisheim, W.Germany. Bad visibility and snow prevented the pilot to see the cables during a low-level flight. The pilot was killed.

F-4E Phantom 70309 on delivery to Egypt at Ramstein on March 5. USAF roundels are applied in washable paint covering Egyptian markings. In a batch of three, the aircraft flew over from Loring AFB.





PHOTOS: SABCA

SABCA AT GOSSELIES

Just north of Charloi, Southern Belgium, Gosselies airfield is situated. Apart from the local aero club and some charter flights, all activities at this airfield are conducted by SABCA. In the large plant of SABCA Alpha Jets and F-16s are assembled, Mirages and Starfighters overhauled.

Activities at the plant of Société Anonyme Belge de Constructions Aéronautiques (SABCA) at Gosselies are presently at its height. The assembly of the 174 F-16s for the Belgian and Danish air force has started up. The assembly of 32 Alpha Jets for the Belgian air force is at full swing. All Mirage 5s are going through an ECM modification programme. Starfighter, Mirage and Alouette overhauls are continuing as normal.

The post-war history of SABCA started in 1952 with the reconstruction of the plant at Haren for the production of 200 Hawker Hunters. One year later the establishment at Gosselies was set up and assembly overhaul and test flying programmes were transferred to Gosselies. Ever since SABCA Gosselies has been involved in assembly and overhaul programmes for the Belgian air force.

SABCA grew up to become Belgium's largest aircraft company. In 1960 it got an order for the assembly and test flying of 200 F-104Gs for the Belgian and German air forces. In 1969 SABCA established close contacts with Dassault-Breguet for the assembly and test flying of 103 Mirage 5s for the Belgian air force. In 1976 two new programmes started with the F-16 and Alpha Jet assemblies.

Apart from these major programmes, SABCA produced small parts for numerous type of aircraft, such as the engine-nacelles for the Br.1150 Atlantic, tail

parts for the Mirage F.1, landing flaps for the VFW-614, landing flaps for the Airbus, and even parts for space craft.



Mirage 5 Overhaul

USINES DE GOSSELIES

In 1968 the Belgian air force ordered 106 Mirage 5s. Only a few months later Dassault bought 50% of the shares of SABCA and it was agreed the final assembly and test flying of 103 Mirage 5s would take place at Gosselies.

Another compensation order by Dassault for the purchase of the Mirage 5, was the production of the exhaust cone for all Mirage 5s. This production has slowed down over the years but will increase again as Dassault recently received an order for 50 Mirage 5s.

The overhaul of the Mirage 5s for the Belgian air force has just completed the 1st phase after seven years of service. Aircraft presently coming in for overhaul are for the 2nd major overhaul phase which lasts another 7 years.

On initiative of the Belgian air force, SABCA installed a prototype Mirage 5 with a LORAL ECM

SABCA

installation last year. Subsequent flights with the prototype were successful and SABCA was ordered to refit all Mirage 5s with this ECM system. For every aircraft this modification programme takes about three months. In the tail section an emitting and receiving antenna are built in. The lay-out of the cockpit panels are changed completely. An complete ECM package is fitted in the avionics bay just aft of the cockpit. In the nose-cone special sensors are installed.



Alpha Jet assembly

USINES DE GOSSELIES

In September 1975, the Belgian air force signed a contract for 33 Alpha Jet 1Bs. Dornier and Brequet agreed that assembly and test flying would be done by SABCA for 32 aircraft.

The outer wings, tail units, rear fuselage, landing gear doors are received from Germany and forward fuselage, center fuselage come from France. SABCA itself manufactures the fuselage nose-cone and wing flaps.

The assembly of the first Alpha Jet by SABCA started late 1978 and recently the fuselage of the last Alpha Jet appeared on the assembly line. According to plan the last Alpha Jet will leave Gosselies for Brustum in June.



F-16 assembly & test flying

USINES DE GOSSELIES

In 1976 SABCA started preparations for the assembly and test flying of 174 F-16s for the Belgian and Danish air forces. Additionally SABCA manufactures the wings for all F-16s. These are produced in SABCA's plant in Haren-Brussels.

Involvement of the Belgian's aircraft industry in the F-16 project has been divided over three companies. Fabrique Nationale is responsible for the Pratt & Whitney F.100 engine. SONACA, formerly known as Fairey, manufactures the aft fuselage and the vertical fin box. Additionally SONACA assembles the F-16 up to its primary state. With SONACA having complete their work on the F-16, the aircraft goes to SABCA which completes the final assembly and is responsible for delivery to the Belgian air force. Distribution in the F-16 project over the three companies, similar to the co-production in the Multi-national F-104 Starfighter project.

SABCA's involvement in the F-16 production starts when SONACA, which is also situated at Gosselies, has completed their work and the aircraft is towed to SABCA. Here it remains for five months until it is delivered. SABCA installs the various black boxes, Head-Up-Display and the engine. On completion, all electrical and hydraulic systems are checked. The following five days are spent in the paint shop where the F-16 gets a new two-tone grey coat. When the paint has dried up, the preparations commence for the test flights. SABCA's onliest test pilot Serge Martin takes out all F-16s twice. Part of these test flights are the supersonic tests which are flown over the remotely parts of the Belgian Ardennes. The acceptance flights are all made by the Belgian air force including the machines destined for the Danish air force.

The procedures followed by SABCA are identical to the ones at FORTH WORTH and Schiphol. Mr. Bontemps, the director of the Gosselies plant, is very happy with the American procedures: 'Having experienced the French way of organising, it must be concluded that the American way is much more professional. General Dynamics prepared everything in the finest details and everything has been written down'. About the deliveries of the F-16s, Mr. Bontemps commented that the deliveries are slightly behind of schedule. The weather conditions during December prevented test pilot Serge Martin to make enough test flights. Subsequently many F-16s are ready



SABCA F-16 PRODUCTION: Wing manufacturing at Haren-Brussels -- installation of black boxes at Gosselies of 6H5/FA05, 6H8/FA08, 6J4/FB-04 and 6H4/FA04 -- the end product.

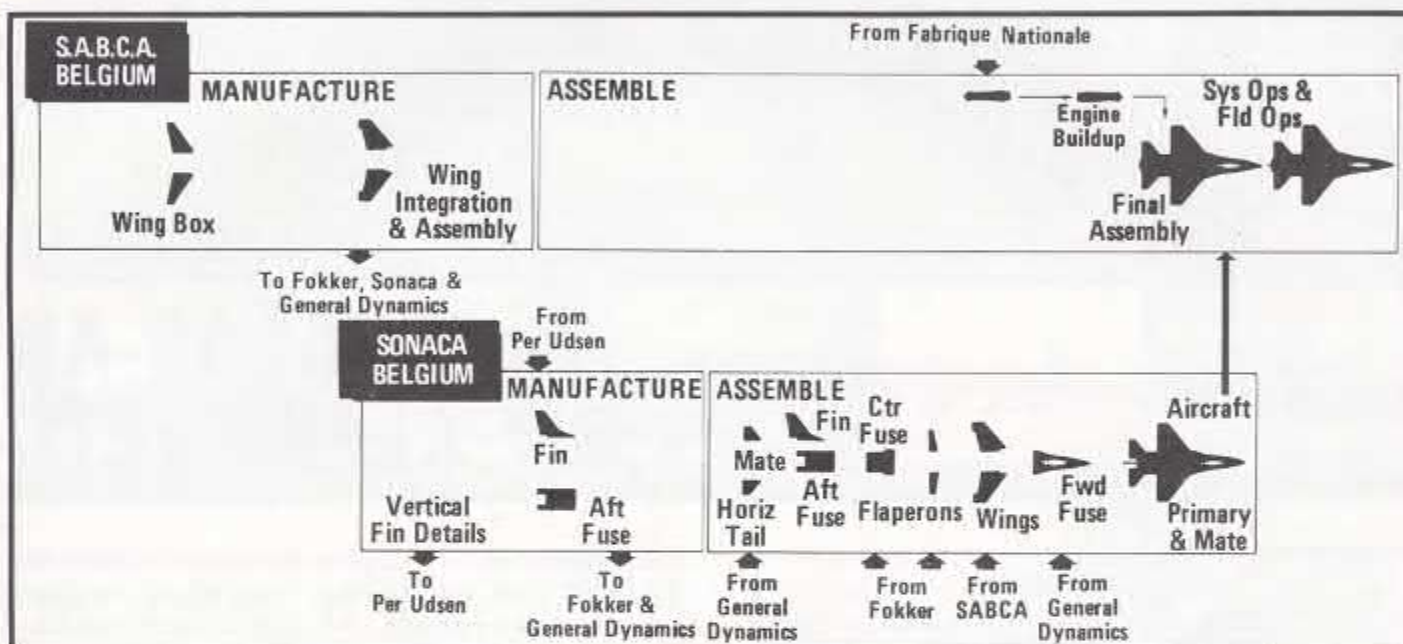
for delivery once the weather allows it. Another symptom which caused some trouble is the lack of spare parts for SABCA. When a system failure is discovered and a broken part has to be replaced, SABCA has to call on SONACA to deliver a spare part. In practise this means, parts are taken from other F-16s on the assembly line in favour of the one which is about to fly.

Due to the involvement in the co-production of the F-16, SABCA could introduce some new technology in its company. The electronic department was completely revised and now includes a sophisticated center to check all the black boxes prior installation in the F-16. Also a very modern paint-shop was specially built for the F-16.

Over the last decade, SABCA has become the industrial part of the Belgian air force. To keep in contact with other companies and to gain technology on all kind of fields, SABCA managed to collect a wide variety of orders to produce parts for all kind of aircraft and space craft. The future of SABCA looks soundly. As long as the Belgian air force keeps existing, SABCA keeps existing. □

*** MAJOR BELGIAN SUPPLIERS IN THE F-16 PROJECT ***

Radar Computer	MBLE	Brussels
Airframe	SONACA	Gosselies
Airframe, Integrated Servo		
Actuator	SABCA	Brussels
Engine Fan, Core, Assembly	Fabrique Nationale	Herstal





JABOG-49 MIT ALPHA JETS

History of JABOG-49

Feb. 1, 1958	Formation of Waffenschule der Luftwaffe 50 (WaSlw-50) at Erding as a reconnaissance training unit.
Mar. 17, 1958	Delivery of the first two RF-84F Thunderflashes at Erding.
May 10, 1958	First flight of a German instructor on the RF-84F.
Jun. 16, 1958	Start first training course.
Oct. 1960	Delivery of the first two Fiat G-91Rs, Maj. Kahtz and Maj. Gröndal flew the aircraft from Turin, Italy to Erding.
Nov. 17, 1960	Start first training course on the Fiat G-91.
Jan. 1, 1962	WS-50 conducted only training courses on the G-91.
Oct. 9, 1962	10,000th flying hour on the G-91.
Early 1964	WS-50 moved to Fürstenfeldbruck. Based here was FFS-B with T-33s which was integrated into WS-50. Future Luftwaffe pilots started their course on the CM-170R of FSS-A at Landsberg, then on T-33As of WS-50 at Erding and finally on G-91s of WS-50 also at Erding.
Autumn 1967	Pilot training was partly transferred to the U.S. and WS-50 ends its T-33 training courses.
Jul. 15, 1970	100,000th flying hour on the G-91.
April 1973	Taken on strength with WS-50 was the Piaggio P.149D for initial flying training.
Jan. 24, 1975	Last flight of T-33 with WS-50. Over 18 years in service 196,555 flying hours were logged on this aircraft.
Oct. 1, 1978	WS-50 was re-designated JABOG-49.
Dec. 9, 1979	Delivery of the last G-91R to Luftwaffeschleuse 61 at Oldenburg.
Jan. 8, 1980	Delivery of the first 4 Alpha Jets

A line-up of 34 Alpha Jets of JABOG-49 marked the official service entry of this aircraft in the Luftwaffe. A third Luftwaffe aircraft generation started at Fürstenfeldbruck on March 20.

Over two years the Luftwaffe will have withdrawn its last Fiat G-91 and a few years later the last F-104 Starfighter. For the next ten years the Luftwaffe's front-line aircraft will then be F-4 Phantoms, Tornados and Alpha Jets. The F-4 Phantoms are being modified for longer service. The Tornados are about to be delivered. Delivery of the Alpha Jet is well on its way. One year of extensive trials by the Erprobung Kommando at Leipheim and the recent operational debut with JABOG-49, has given the Luftwaffe much confidence in the Alpha Jet as a supplementary light fighter attack aircraft to serve alongside the Tornado.



Alpha Jet at Leipheim

Luftwaffe's first aircraft generation were the F-84F Thunderstreaks and F-86K Sabres. Second generation was introduced in 1960 with the Fiat G-91 and F-104 Starfighter. The third generation was introduced recently and brought along a new terminology in the Luftwaffe. The aircraft has become a part of a weapon system, subsequently the Luftwaffe talks about the Alpha Jet system. An aircraft system is the integration of a certain type into the concept and existing procedures of an air force.

For developing the Alpha Jet system two unique units were formed at Leipheim in February 1979: Technische



Gruppe 31 as a maintenance units, and Erprobungsko mmando as an operational unit. Integrated trials checked out the Alpha Jet for its fitness for service following full integration in the Luftwaffe. Items in the trials programme included:

- Learn how to handle the technology of the Alpha Jet.
- Settle the training procedures.
- Establish the new maintenance concept.
- Check the routine maintenance process in regard to actual spares requirements.
- Put the finishing touches to the technical manuals and operating instructions, including possible additional safety regulations.

Ten pilots of JABOG-49 started a trials programme on the Alpha Jet in March 1979. By mid-November approx. 1500 hours had been flown without accidents in more than 1300 sorties. The average operational readiness rate was 60% which is relatively high for initial flight operations of a new aircraft.

On completion of the trials programme, the Luftwaffe announced the following results: "The Alpha Jet, jointly developed by France and Germany, is an excellent aircraft which fully meets air force expectations. Its excellent flight characteristics allow to use the aircraft in all roles for which it has been designed (also air support, battle-field reconnaissance, helicopter attack and pilot training) as required".



Alpha Jet: small and advanced

Looking at the Alpha Jet does not quite give one the idea to look at a real competent fighter aircraft. A huge aircraft with a high positioned cockpit is 'THE' fighter but looking down into the cockpit tends to degrade an aircraft to a simple training aircraft.

Strangely enough this cannot be applied to the





Alpha Jet. The design is uncomplicated and small which gives the aircraft excellent aerodynamical characteristics. The installation of a compact low-consumption GRTS Larzac 04 turbofan, ensures a long range. The strong and modern wing design gives the aircraft a high weapon load capacity. The avionics put into the Alpha Jet are very advanced. A ground-independent navigation and fire control system has been selected for the Alpha Jet of the Luftwaffe. The combination of a dual gyroscope platform, Doppler unit, navigation computer and Head-Up-Display, makes the Alpha Jet an all-weather aircraft. At night or in adverse weather it can make instrument flights to the target and return. For flying in the target area at low minimum and cloud bases, the avionics includes a navigation system and a precision weapons delivery system.

It is highly remarkable that whereas the all-weather capabilities of the Alpha Jet are concerned, the aircraft can compete with the Tornado. The Luftwaffe is very far ahead on all other NATO countries. NATO is emphasizing air forces to buy all-weather aircraft but at the time this new requirement gets a hearing in Europe's capital cities, the Luftwaffe has already 400 such aircraft in service (175 Alpha Jets and 212 Tornados).

Introduction of the Alpha Jet for the Luftwaffe was not completely trouble free. Luftwaffe Inspector, Lt.Gen.F.Obesler, declared on the inauguration ceremony at Fürstenfeldbrück, that no problems had occurred during operations. Engine problems and cockpit glass fragmentation had been anticipated by industrial and air force experts in advance. According to Lt.Gen.Obesler all problems have been solved and illustrated the value of an Erprobungskommando.

- Alpha Jet Weapon System training course
- Alpha Jet pilot training course
- Alpha Jet/G-91 conversion course
- Pilot remainder course
- Pilot training for special missions

The operational part of the unit has been divided in three Staffeln (squadrons). No.1 Jagdbomberstaffel with Alpha Jets emphasizes the training of navigators. No.2 Jagdbomberstaffel also with Alpha Jets emphasizes the training of pilot in weapon systems. In the Fliegenden Staffel (Flying Squadron) all pupils are subject to a selection whether to become a fighter pilot, helicopter pilot, navigator, etc.). Fliegenden Staffel operates the DO-28D and Piaggio P.149D.

All training courses having to do with flying, are organized within the Lufttaktische Lehr- und Versuchgruppe (Air Tactical Training and Test Group). In six study groups, the future airmen are taught the theoretical aspects of aviation. Training flights are expensive and subsequently more use is made of flight simulators. JABOG-49 has two such simulators, one of the F-4 Phantom and one of the Alpha Jet.

In all aspects the Alpha Jet has double capabilities over the G-91. Requirements by the Luftwaffe stand for 175 aircraft which means a considerable upgrading of Luftwaffe's front-line force. Additionally the Luftwaffe will possess a very flexible weapon system.

The present configuration of the Alpha Jet easily allows introduction of new devices e.g. the Maverick TV-guided missile is very likely to become a standard weapon on the Alpha Jet. New devices may also be needed to become a true anti-helicopter attack aircraft. We'll see. □



Alpha Jet with JABOG-49

Jagdbombergeschwader 49 is based at Fürstenfeldbrück, approx. 15 miles west of München, and has a double commitment. Just like all NATO air force fighter units, JABOG-49 has to maintain a tactical readiness status. But additional the unit runs annually about 100 courses for 1000 future airmen for Luftwaffe, Marine and Heer services. Mentioning a few of the courses conducted by JABOG-49:

- Navigator/battle-field observer training course

***** ALPHA JET A *****

The Alpha Jet A (Appui - Attack) differs from the Alpha Jet E (Ecole - Training) as follows:

- Different nose section
- Arrestor hook
- Steerable nose wheel
- More efficient wheel brake system
- Yaw damper
- Avionics fit with radar altimeter, gyroscope, HUD, Doppler unit and navigation computer
- Double fuel system
- Mauser gun pod instead of the DEFA gun
- Stencil Type IIIIS ejection seats instead of Martin Baker Mk.IV.



RED FLAG



THE ONLY REAL FLYING

For a third time RAF Germany participated in RED FLAG exercise. For a third time RAFG pilots could fly down to 100 feet and fly the aircraft to its limits. Participating in RED FLAG brings them a step further towards real combat competency.

Nine RAF Jaguars of 54 squadron and eight RAF Buccaneers of 15/16 squadrons participated in Red Flag 80-2. Pilots of 2, 14, 15, 16, 41, 54, 208 squadrons and 226OCU could prove their skills, their cool thinking in the heat of the battle, and their knowledge of air tactics.

Red Flag air force exercise simulates war-time conditions. Operations are flown in conditions as could occur during an East-West conflict. Enemy radar jamming, ground-to-air artillery, enemy fighter aircraft are all part of the scenarios. In these scenarios the Blue Forces are tasked to execute their mission order and are threatened by Red Forces.

RF80-2

Red Flag

During December 1975, Tactical Air Command (TAC) conducted its first Red Flag exercise at Nellis AFB, Nevada. 41 planes flew 552 sorties against realistic Warsaw Pact targets over a 22-day period. Ever since its short history Red Flag has become a phenomenon in the world of fighter pilots. The pivot of the whole exercise is the Nellis range complex. It occupies about 3 million acres and is surrounded by air space reserved for military operations only. Totally the range complex covers

approx. 10 million acres which is about the size of Switzerland. On this range a wide variety of tactical targets has been built up over the years. Additionally an extensive system has been installed to monitor all the air activities over the range. The tactical targets are very realistic copies of ones which can presently be found in Eastern Europe. One of the airfields on the range complex is a true copy of Jüterborg, a large East German airfield south of Berlin. What makes Red Flag so realistic are the enemy threats surrounding the main tactical targets. SAM sites, communication jamming equipment are 'active' operated which means Blue Force pilots are handicapped in fulfilling their mission as they would be in real war-time conditions. On top of these handicaps, Nellis AFB also houses a squadron of F-5E aggressors. Acting as Red Forces, they provide air coverage over the tactical targets. Another important feature of the Red Flag exercise is the accurate monitoring of all aircraft activities over the range. Within a few hours after a massive air battle, normally involving 80 aircraft, TV-cameras can show whether the targets would have been hit when carrying live-ammunition, whether the pilots were successful in avoiding the aggressors and would have returned safely in case it would have been a real dogfight.

During Red Flag the daily activities commence with a complete briefing on 'today's battle' with all participants present. Blue Forces are tasked to attack enemy targets while the Red Forces are

NELLIS RANGE CONTROL CENTER

Management of the entire range complex is the responsibility of the Range Control Center (RCC). Its job is to assure radar sites are manned, range equipment is working properly, military aircraft are on schedule and within range boundaries, and bombs are not being dropped on manned targets.

The Range Control Center also has two other important functions. It provides command and control for Red Forces. And it provides quality control services by telling aircrews how to perform and by collecting/correlating performance information over a period of time for use in developing and evaluating combat tactics.

The heart of the Range Control Center is a computerized system to collect, process, store and display information about events in the range area. The capabilities of the RCC have evolved along with the mission of Nellis AFB.

The Range Control Center includes a large color display that shows a plan view of the entire range. This view identifies aircraft by number and shows their geographic locations. The display also can show a plan view of a smaller area, such as a sub-range.

The RCC uses aircraft beacon data from four Federal Aviation Agency (FAA) ground radar sites, along with data from threat radar sites and other instruments located on the range.

When an aircrew returns from a mission, the Range Control Center provides computer plots of the mission and videotapes of the plan view during the mission. Crews also can view videotapes of their aircraft in the sights of enemy surface-to-air missiles (SAMs) or anti-aircraft artillery (AAA).

The RCC's centralized command and control of Red Forces is patterned after the Soviet Union's Integrated Air Defense System (IADS). Soviet trained pilots are very closely controlled from the ground. Pilots manning ground radar sites tell aircrews the altitude to fly, airspeed, when to turn, when to release weapons, etc.

The Range Control Center's IADS operates in two modes. One, used to evaluate the Soviet system, duplicates Soviet capabilities as closely as possible. Under this mode, some of the unique monitoring capabilities of the RCC are not available to the Red controllers.

The second mode, used for training aircrews, allows controllers to take full advantage of all the information available in the RCC.

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supposed to withhold Blue Forces from doing so. The only flying limitations to fulfil this mission are a minimum flight level of 100 feet and not to exceed the aircraft's limits.

RF80-2

Red Flag 80-2

From January 5 till February 16, the second Red Flag exercise in Fiscal Year 1980 was conducted at Nellis AFB. The only foreign participants were Buccaneers and Jaguars of the RAF.

From the list of participants it can be concluded that Red Flag is becoming a routine matter. Standard aircraft as F-15 Eagles, F-4 Phantoms, F-111s and F-5E Tigers are the normal appearances on the ramp at Nellis. Only two aspects of Red Flag 80-2 were new.

For the first time the operational version of the F-16 participated. A detachment of the MOT&E from Hill AFB conducted the F-16 under real war-time conditions. MOT&E is testing the F-16 on seven capabilities: all-weather, interceptor, ground support, maritime operations, combined interceptor & ground support, tactical reconnaissance nuclear mission.

PAGE 16: U.S. Marine Corps are also frequently participating in Red Flag exercises. Illustrated is F-4N Phantom 150628/VW-10 of VMFA-314.

BELOW: Tracking the SAM-sites and suppress their ability to destroy heat generating targets. That was the mission for this F-105G Thunderchief GA62-446 of 35TFW.

MIDDLE: Ohio ANG with A-7D Corsair 70-004 on the Nellis ramp.

BOTTOM: 'shoot down' everything that comes in the gun sight. Aggressors of 87FWW at Nellis AFB play the enemy air defence force with F-5E Tigers.

All photos were made at Nellis in Oct. 78. (A.Booy)



The other new aspect was the use of AWACS for ground support aircraft. For several exercises operators aboard E-3A sentries provided information to air defence fighters about enemy aircraft concentrations. During Red Flag 80-2 also information was passed on to ground support aircraft. On several occasions strike aircraft formations could be informed in time to avoid enemy air defence formations. Strike pilots were extremely happy with this new source of information. With AWACS and clouds they consider themselves invisible to enemy air defence fighters.

Nine Jaguars of No.54 squadron flew direct to Nellis AFB. The Atlantic-cross started at RAF Lossiemouth on January 17 and air-to-air refuelling was provided by Victors of the RAF. For a change the Buccaneers of 15 & 16 squadrons flew without in-flight refuelling. Via Lajes, Azores and Gander, Canada, the Buccaneers had enough range to do without RAF's Victors.

During the first part of the exercise Buccaneer crews of 15 & 16 sqn could practise in these unique conditions. The Jaguar crews were supplied by 41, 54 Sqns & 226OCU. Half way the exercise new crews were flown over to Nellis, 208 sqn on the Buccaneer and 2 & 14 sqns on the Jaguar. Flying solely ground support missions, the RAF aircraft were connected to the Tactical Optical Scoring System. An external TV-camera can record attacks on 5 kind of ground targets which can later be analysed whether to have been a hit or not.

RF80-2

RAFG Participation

Except for the USAF pilots that go to Nellis occasionally, the only other NATO fighter pilots to benefit from Red Flag are the British. It might be clear that the experiences gathered during such an exercise are enormous. FLASH spoke with two Squadron Leaders of RAFG about the real benefits from this kind of exercise.

'Flying at 100 feet at supersonic speed is an experience which cannot be gained anywhere else. Especially for a Jaguar pilot who is on his own, the experiences are immense'. The only place in Central Europe where can be flown at 100ft are two short corridors in the U.K. During the periods November 12 to December 21 and January 7 to 25, tightly controlled 'work-up' sessions enable the specially selected crews to prepare for Red Flag 80-2. Over North West Scotland and Central Wales could be flown at lower altitudes than normal and pilots could increase their operational expertise by flying at a level low enough to keep safely below 'enemy' radar cover and missile defences to carry out successful combat tactics deep in 'enemy' territory.

Differently from the USAF teams, the RAF prepares itself for the Red Flag exercises. These preparations allow the RAF to start with optimum mission flying from the first day. The USAF pilots are not prepared and subsequently are not allowed to fly flat out during the first days. For them the limits are slowly lowered during the first days and only when familiar with the area, all standard limits are abandoned.

'For optimum training, all pilots should at least be involved in Red Flag once' according to the same Squadron Leader. 'The experiences for the pilot to fly at 100 feet cannot be transferred to other pilots when back on the squadron'. Extensive debriefings all over the RAF at squadron levels, see to it that the information gathered at Nellis is passed through to maximum extent. On top of this all kind of lectures are being held by RAF officers who have been present to witness the exercise. Mentioning an exercise as Red Flag, subsequently leads to a similar exercise in Canada: Maple Flag. On the question whether RAFG prefers one of the exercises above the other, another Squadron Leader ruled out the possibility of a comparison. 'Red Flag has advantages in having much more realistic electronic equipment to support aircraft operations. Maple Flag is less sophisticated but the flying conditions are more realistic for European fighter pilots'. □

NELLIS RANGE COMPLEX

The range complex includes 50 different types of tactical targets. A battle-front is formed with 220 plywood or polyurethane replicas of Soviet T-62 tanks, arranged the way intelligence experts believe Warsaw Pact forces would be deployed in combat. The newer polyurethane models sustain less damage from live ordnance and are easier and less expensive to repair.

Two truck convoys -- one more than 17 miles long -- are protected by tracked anti-aircraft vehicles. Trucks in one of the convoys are separated by 1.3 kilometers, the spacing used by Warsaw Pact nations.

Airfields on range are patterned after those found in Eastern Europe. Aircraft hulks are located on the runways and in parking areas to simulate Soviet fighters.

An industrial complex is made up of outlines of buildings and railroad yards. It is protected by simulated anti-aircraft artillery. Ten miles of railroad tracks, with a ten-car train, lead away from the industrial site to a mountain tunnel.

The targets are defended by 27 threat simulators that are electronically and, in most cases, visually similar to the Soviet-built equipment they imitate. The number of threat simulators is expected to be increased to 108 by 1980 to duplicate the enemy radar threat density found in Eastern Europe.

The threat simulators are organized into two brigades. Early warning radars detect aircraft as far as 300 miles from the simulators. Data from the early warning radars is sent to a Red Force Filter Center at the Range Control Center. The Filter Center identifies hostile aircraft and reports their locations to the Red Force Brigade commanders who can order defensive operations. Unlike their American counterparts, Soviet missile site commanders are not permitted to take any action against an enemy aircraft unless specifically ordered to do so.

The threat radars operate at the same frequencies, pulse widths, pulse repetition rates, scan patterns and power levels as Soviet-built equipment. More than eight different types of radar units simulate those used by Warsaw Pact countries for early warning, ground controlled intercept, target acquisition, surface-to-air missile and anti-aircraft artillery defences, and missile guidance.

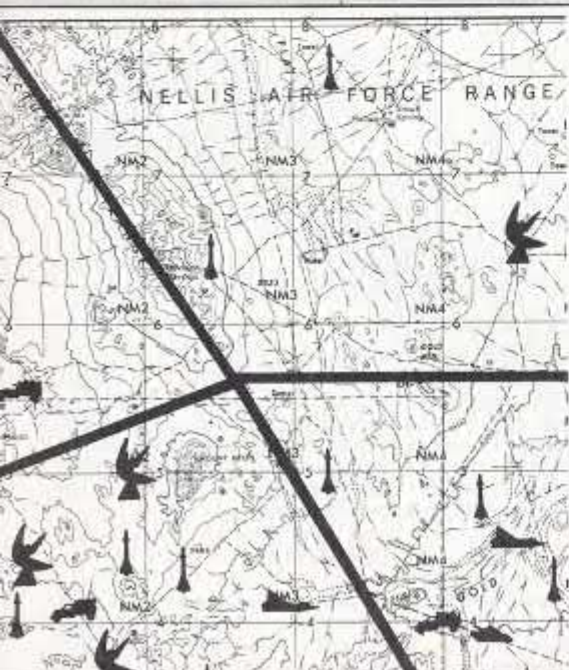
The range also includes radar and communications jamming equipment, including a J-band jammer designed to confuse F-111 terrain-following radar into directing the aircraft to pull up from the ground into anti-aircraft firing range.

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BELOW: Following the American example, the Canadian air force also formed an aggressor flight at CFB Cold Lake. Illustrated is CF-5B 116605 of 418sqn during Maple Flag III in May 1979.

PAGE 19: Massive line-ups at Nellis AFB during the Red Flag exercise. Illustrated resp. F-15A Eagle WA74-111 of 57FWW, F-4C Phantom 37407 and A-7D Corsair 69-222 of Ohio ANG. (A.Booy)





THE FIRST REAL TURBO THRUSH



Operating in Holland for some time is a Ayres S.2R Thrush with the predicate 'Turbo' on its fuselage. However, the aircraft, owned by Tom's Vliegbedrijf, is not an original Turbo Thrush. Originally it had a Pratt & Whitney R.1340 engine but last year this engine was replaced by a Garret Airesearch TPE.331 Turboprop. The only REAL Dutch registered Ayres Turbo Thrush is being operated by Mr. Bogaerds at Lelystad.

Two years ago Ayres Corporation obtained Rockwells' rights for manufacturing and marketing of the Thrush Commander 600 & 800. Whereafter the Turbo Thrush production was also taken over. The Turbo Thrush was developed by Servo Aero Engineering Inc., a company specialized in improved type versions of mainly agricultural aircraft. Thus on December 8, 1979, a Turbo Thrush came of the production-line with Ayres destined for Holland. The aircraft arrived on February 27 and was delivered to its owner Mr. Bogaerds. Harry Bogaerds bv. has been active in agricultural

aviation with two Piper PA-36-285 Pawnee Braves for several years. When expansion of the fleet was justified, an AgCat was tested. This G.164D was present on the Paris Air Show 1979 as N8103K as static-demonstration aircraft for Grumman. In the belief that one learns to know an aircraft when one has flown it for a while, Mr. Bogaerds operated this Turbo AgCat for two months following the Paris Air Show. Afterwards he also flew a Turbo Thrush to experience the behaviours of this aircraft and compare it to the ones of the AgCat. As a result a Turbo Thrush was procured. Compared

DUTCH CIVIL AVIATION

Air Service Holland

ASH recently bought five American-built Cessna's which were stationed at Darmstadt, W.Germany: two Cessna FRA.150Ms N81956 and N31059 (resp. PH-BER & PH-LOO), a Cessna F.172N N9899A (PH-WEB ntu, now PH-MEM) and a Cessna U.206G N7234N (PH-MER). A fifth Cessna F.150, N7608A did after all not come to Holland.

In co-operation with Mittelhäuser, W.Germany, Air Service Holland will start activities in the jet aircraft selling business. There has been talk of an order for three Rockwell Sabres (delivery from February 1981) but also a Canadair Challenger has been mentioned to be on order.

Of course also Cessna Citations are expected to be sold by Air Service Holland. When this jet-aircraft selling business gets off the ground, the aircraft will be based at Rotterdam.

20

Transavia Holland owns 8 Boeing 737s and 1 Boeing 707 of which the B.737s are frequently leased to other companies. At the moment three B.737s of Transavia Holland are leased to British Airways in anticipation of the delivery of 19 B.737-236 on order by British Airways.

Austrian Airways also has to wait a little longer on an aircraft on order (DC-9-80). Anticipating a shortage in transport capacity, it leased a B.737 of Transavia Holland. Starting on April 1, PH-TVC is o.a. scheduled to fly Vienna-Schiphol-Vienna during the summer period.

Since March 18, a fifth B.737 is leased to Air Djibouti. For a two-years period, the aircraft will be used for domestic flights in Djibouti. Contrary to PH-TVC of Austrian Airlines, PH-TVD will be repainted in the colour-scheme of Air Djibouti. Later this year Transavia Holland will return two leased B.737s to Egyptair when two brandnew B.737 have been delivered to Transavia Holland by Boeing. Complicated? You're kidding!

Early Birds

As reported earlier, a CASA. 131 is presently at La Ferté-Alais, France, awaiting delivery to the Dutch aviation group Early Birds. The aircraft which is expected to arrive in Holland in May or

H IN HOLLAND

to the AgCat, a Turbo Thrush can operate from a shorter air strip. The official landing run for the AgCat is 170 mtrs, while the Turbo Thrush needs 150mtrs. The hopper of both aircraft are about the same (1,900 liters) but the Thrush has a considerable longer range.

The Time Before overhaul (TBO) of the PT-6A-34 Turboprop is over 3,000 flying hours which enables a long operational period till overhaul is necessary. The service for the engine and spare parts is very fast. Delivery time out of W.Germany is one week, and if the engine breaks down, a spare engine can be used till repairs on the original one have been completed.

A disadvantage in the flying characteristics, according to Mr. Bogaerds, is the stall speed which is 2 mls/h higher than that of the AgCat. Especially for crop-spraying flights (low flying) every extra mile means extra safety.

Furthermore the characteristics are excellent and even aerobatics are possible. A very appealing quality for Mr. Bogaerds, who once was the test pilot of the Aerobatic Fuji PA.200s built in Holland by GLM. The aircraft can resist turns from -1½G to +3G. The stall turns are shorter than those of a Super Cub as a result of the stronger engine: 750pk by the Turbo Thrush against 150pk by the Super Cub.

Amusing is the possibility of the aircraft to taxi backwards, which is possible due to the three bladed propeller with constant speed and reversible pitch. Also amusing to see is a demonstration take-off with the tail of the Turbo Thrush already in the air while the aircraft is still holding.

The Turbo Thrush has an American C.of A. certification and subsequently has an U.S. registration: N4017N. The Dutch RLD approval under the registration PH-AUB is about to be received.

Mr. Bogaerds has already made a crop-spraying flight over Oud Beyerland, south of Rotterdam. From departure from Lelystad till return at Lelystad took the Turbo Thrush slightly more than one hour during which 23 ha farmland had been sprayed. The flight was partly a quick service to a customer, but also a test flight. The results were very satisfactorily.

However, only later this year, after extensive flying during the summer months, it will appear whether the Turbo Thrush is worth DFL.600,000. □



ABOVE: PH-TOY with a self painted 'Turbo' just above winglevel.

BELOW: The large wingspan makes the Turbo Thrush a difficult aircraft to handle in hangars.



Dutch civil news

June, has been registered in the U.S. as entry in the Dutch Register would have given great problems. The Mooney M.20A of Mr. Jaap van Mesdag, one of the members of Early Bird, at Teuge, is unregistered at the moment. The last movements of the aircraft as N9382E were reported last year when it taxied around on the airfield.

Aviation Francaise

Aviation Francaise at Hilversum is reportedly not to operate any longer by this name. The activities of this company have been taken over by Gooiland Aero Center b.v. including the purchase of all Rallye's on order by Av. Francaise, taking over the large hangar of the bankrupt company Airborne Air Services, and the re-construction of the restaurant that burned out last year.

The true story of two Fuji's continued

In the July/August 1979 issue (Nr. 106/107) a story was published on the possibility of two Fuji PA.200 being built together as one aircraft: cockpit and wing of PH-GIN, and tail of PH-HBG. This 'gathering' has taken place and it was in the U.K. On 23 November 1979 it received a C of A. certification for a year. Late February the Fuji arrived at Lelystad via Schiphol. Anticipating on the questions in the previous article, it can be reported that the aircraft's colour scheme has been taken over from PH-GIN, the registration is also PH-GIN, and the construction plate on the tail is again of PH-GIN. Obviously, PH-HBG has completely sacrificed itself.

Rijksluchtvaartschool

RLS no longer uses the Saab Safirs for training flights, which are now flown on the Bonanza's. Four Safirs remain present at Eelde Airport at the moment and used for aerobatic flying. Of the repelled Safirs, one is destined for the Aviodome and another (PH-RLS) will remain at Eelde as a monument. According to Mr. v.d. Teije, Chief Operations RLS, negotiations are going on with Air Service Holland for the delivery of 8 Cessna F.152's to RLS. If a contract is signed the aircraft will be Reims-built and replace the 8-years old F.150Ls around May this year.

Various

- The construction at Lelystad of five hangars has almost been completed. Two joining hangars are on the west-side of the airstrip and three joining ones right of the control tower.
- At Beek airport the construction of a new control tower has been started. The work should be ready in two years.
- On the Agstrip at Numansdorp of Mr. Bogaards, one hangar will be built for the storage of goods and another for the crop-spraying aircraft.
- Since March 15, Martinair increased the frequency of DC-10 cargo-flights to the Middle East/Hongkong. The demand for cargo transport has increased and operations from Schiphol or Beek are now scheduled at seven per week.
- Delivery of the Falcon 50 to Philips, has been delayed and will not take place until the summer.



On 22 February Sikorsky S.58ET PH-POC flew from Schiphol to Prinses Margriethaven (Rotterdam) where it has been shipped for Singapore, together with PH-NZE.

PAGE 21 ;
Boeing B.737 already with Austrian titles before the lease had started.
BELOW LEFT ;
The brandnew Super Cub for Air Towing Air Services PH-AMA has been built in 1980 and will be used for advertisements-towing.
BELOW RIGHT ;
PH-ADB is an American built Cessna 152 and within its' two years existence it received no less than four registrations: N757AT, F-GBLM, D-EHUG and now at last (?) PH-ADB.



DUTCH REGISTER FEBRUARY 1980



Reg.	Type	C/n	Remarks
PH-ADB 2972	Cessna 152	152-79592	Air Service Holland BV ex N757AT, F-GBLM, D-EHUG (new)
PH-ALC 2979	Reims Cessna F.172N	1934	Air Service Holland BV ex PH-AXS (3) (new)
PH-AMA 2977	Piper PA-18-150 Super Cub	18-8009042	Netherlands European A.S. (new)
PH-CAR 2027	Fuji FA.200-160	FA200-210	A.C. Bakker stored Hilversum (out)
PH-FDM 2967	Pokker F.27-600 Friendship	10197	Pokker-VFW BV ex PH-FDM, JA8607, PK-PFT (new)
PH-HAI 2305	Reims Cessna FR.172E	0022	J.W. vander Vlies to G. Ende
PH-IRO 2971	Reims Cessna F.172M	1088	Air Service Holland BV ex D-EIOX (new)
PH-LAC 682	Cessna 172	46748	Air Service Holland BV to L.F. Canté
PH-LTN 2750	Reims Cessna FR.182	0008	Air Service Holland BV to Vliegclub Twente
PH-LUI 1931	Reims Cessna F.172L	0849	Air Service Holland BV to H.C.W. Verhaaren
PH-NZE 2269	Sikorsky S-58DT	58-1492	K.L.M. Helicopters BV to Singapore (out)
PH-POC 2230	Sikorsky S-58ET	58-721	K.L.M. Helicopters BV to Singapore (out)
PH-PWH 2978	Reims Cessna FR.172K	0658	Air Service Holland BV ex PH-AXT (3) (new)
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