

MF

(MiG-21M, MF, MFN in Czechoslovak, Czech and Slovak service)
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INTRODUCTION

The summer of 1969 saw the slow resolution of the difficulties brought on by the interruption of training and the redistribution of assets that resulted from the August, 1968 invasion of Czechoslovakia. The number of operational units had stabilized and there were no requirements for further activation or disbandment of units for the foreseeable future. Units within the structure of the State Air Defense (PVOS) were by now re-equipped with MiG-21PF (39 aircraft) and PFM (50 aircraft) interceptors. These were complemented within the units by MiG-21F fighters. Specifically, the units that this all pertains to were the 1st slp at Ceske Budejovice, the 8th slp at Mosnov and the 11th slp at Zatec. The slp was the local designation for a fighter regiment.

The situation was different with the 10th Air Army, within the structure of Tactical Air Force. Its units had to make do with the MiG-21F, complemented by the MiG-19S and PM. It was only with the 9th slp at Bechyne that twelve MiG-21PFM aircraft served, representing Mach 2 radar equipped assets. Their allotment to the unit was only temporary, and after the delivery of the MiG-21MF they were returned to the PVOS. The 47th pzl received the first of twenty five MiG-21R aircraft. At the time, the requirement for MiG-21F fighters was satisfied by domestic production and by the time the end of 1969 rolled around, there were 121 of them in service. Another 33 would be delivered after the resumption of production between 1969 and 1972.

(Pg.3 - PHOTO CAPTIONS)

Top: The last of the MiG-21Fs retired from the training regiment in 1991 were replaced by the MiG-21M and MF.

Above: A flypast of ten MiG-21MFs from the 6th sbolp out of Prerov. The MiG-21 in the Czechoslovak Air Force demonstrated a phenomenal massiveness that was reminiscent of the preceding MiG-15.

Below : MiG-21MFs formed the basis of the formation of the Air Force of the Slovak Army. This is an aircraft of the 81st sslt pictured at Sliac in 1992.

(Pg.4 PHOTO CAPTIONS)

Gun camera still of MiG-21MFs in formation.

MiG-21 Cockpit

(Pg.6)

MiG-21M

In the summer of 1969, Pardubice's 4th slp took delivery of fourteen Series 11 and 12 MiG-21Ms. This regiment belonged to the 10th Air Army of Tactical Air Force. New aircraft replaced the aging MiG-19PM of the 3rd Squadron and the unit already had some experience with the MiG-21 as the 1st and 2nd Squadrons operated the MiG-21F. In 1970, a second delivery followed with ten MiG-21M Series 26 and 27 aircraft. The Pardubice regiment became the exclusive operator of the type for the next twenty years.

(Pg.6 - PHOTO CAPTIONS)

Top: MiG-21M '2706' took part in a military parade in May, 1975. For improved visual orientation among the tens of aircraft taking part, some received a light blue stripe using washable paint. The antenna at the top of the fin sports two yellow arrowheads, probably designating the 2nd Squadron. This aircraft, contrary to the specified norm, had a black border to the national markings and an unusually wide green stripe along the leading edge of the flaps. Contribution of the several tens of MiG-21, among other aircraft, was ensured by the 4th slp based at Pardubice. For this parade, and to mark the 30th anniversary of the SNP (the Slovak National Uprising), this unit received the honorary title of 'Unit of the SNP'. The parade was also documented on film, and was titled, translated, 'Conduct a Flypast'. It should be noted that 1975 was the apex of MiG-21 service in Czechoslovakia, and was never surpassed since.

(Pg.6 - PROFILE)

MiG-21M '2706', 4th slp, 2nd Squadron, Pardubice, May 9th, 1975.

(Pg.7 - PHOTO CAPTIONS)

MiG-21M as it appeared at the beginning of its service life in the Czechoslovak Air Force. Aircraft of this type were powered by the R-11 rated at 38.3kN (56.4kN with afterburner). This was replaced by the 39.7/64.7kN R-13 powerplant over the course of midlife overhauls. Series 11 and 12 aircraft didn't have the fences by the auxiliary intake doors, and they were not added until the 1980s during overhauls. The canopy also lacked the rear view periscope,

and only a couple of rearview mirrors were fitted to the inside of the canopy frame. The overhauls provided the opportunity for this upgrade as well. The almost imperceptibly different cannon fairings and speed brakes taken from the MiG-21PFM and R versions served on these aircraft through to their retirement. The same can be said for their KM-1 (the MiG-21MF was equipped with the KM-1M) ejection seats. The squared off, unsegmented numbers were characteristic of the MiG-21M and MiG-21MFs delivered in a natural metal scheme. These were carried until their midlife overhauls.

The significance of the small red star on the nose is not known. It's possible that it is a result of a socialist competition for the 'most motivated performance' or a record of a live fire exercise. In the background is an Avia Av.14.

(Pg.7, bottom photo)

In the fall of 1974, the 47th pZlp of the 4th slp received seven MiG-21Ms, acquiring one more in November, 1979. Here, they served in the training role for which the MiG-21R was not required. In this photograph from 1975, the vertical tail of MiG-21R '1704' is clearly visible, the only one that carried a white base to the checkerboard pattern clearly visible on the rudder. Unfortunately, the MiG-21Ms never received these striking markings, and even on the MiG-21Rs they were removed during overhauls shortly after this photo was snapped. Again, note the small red star on the nose.

(Pg.8)

MiG-21MF

The first twelve modernized MiG-21MF fighters came to the 4th slp at Pardubice in 1971. These hailed from the 43rd and 44th series and all were delivered in natural metal. These were followed in 1972 by another dozen to the same unit, this time from the 52nd and 53rd series, and again, uncamouflaged. These were formally allocated to the 4th slp, but only for as long as it took to transition their 5th slp colleagues flying out of Line to the type. The 5th slp was also subordinate to the 10th Air Army, and so was the sister unit of the 4th. In 1972, all three Squadrons of the 5th slp flew large numbers of MiG-19S and PM fighters. These aircraft were withdrawn from all the other units to the 5th, and so it became the last user of the type.

Two changes in the use of the MiG-21MF came about in 1973. The first was the transfer of all MiG-21MFs from the 4th slp to Bechyne and the 3rd Squadron of the 9th slp. This was due to the transfer of Bechyne's MiG-21PFMs of the 9th slp to the 1st slp located at Ceske Budejovice. With that, the interceptor PF and PFM aircraft were handed over to, and to become exclusively used by, the PVOS. The 4th then used the older MiG-21M alongside the MiG-21F.

(Continue - Pg.9)

The second change was the delivery of 24 MiG-21MF Series 76, 77, 78 and 82 aircraft to the 6th sbolp ('stihaci-bombardovaci letecky pluk' - fighter-bomber air regiment) based at Prerov. This unit, up until this delivery, used the attack optimized MiG-15bisSB. For the personnel of the 6th sbolp, the re-equipment proved to be a surprise. Along with the 20th sbolp at Namest and the 28th sbolp (both equipped with the Su-7BM and BKL), the 6th sbolp made up the 34th Fighter-Bomber Division, with the 6th being the only one not having supersonic equipment at its disposal. While other units, namely with fighter regiments, the MiG-21MFs were tasked with a variety of duties, from interception to bombing, Prerov's MiG-21MFs were used exclusively for ground attack. In fact, the unit never even had any guided air to air weapons for their aircraft. It can also be argued weather or not a MiG-21MF with a payload capability of 1,000kg, incapable of carrying a guided air-ground weapon and with limited range was a useful asset to fulfill this role. In 1974, the Polish Air Force had at its disposal the Su-20, which was more suited to the task.

All of these aircraft arrived in a camouflage scheme composed of brown and green on the upper and side surfaces with blue-grey undersurfaces. The motivation for this scheme came from the harsh experiences of the Arab-Israeli conflicts, and also that the Prerov unit's main task was that of a fighter bomber element.

The final 33 camouflaged Series 94, 95, 97, 98 and 99 aircraft delivered raised the total of MiG-21MFs in Czechoslovakia to 82 (not including the 24 MiG-21M). This final group was divided among the 6th sbolp in Prerov (16 aircraft), 4th slp in Pardubice (13 aircraft) and the 5th slp at Line (with four aircraft plus '7611' which was initially allocated to the 5th slp in 1973). Deliveries of the classic MiG-21MF ended in 1974.

The Prerov bomber unit then at the time possessed three squadrons equipped with a total of 40 MiG-21MFs. The unit operated for the next fourteen years with no movement of assets from or to other units.

The delivery of new MiG-21MFs to Pardubice's 4th slp allowed the transfer of seven older MiG-21Ms to the 47th Reconnaissance Regiment. At the time, this unit was also stationed at Pardubice and used the MiG-21Ms for training for which the optimized MiG-21R was not necessary. Within the 4th slp, the 1st Squadron operated thirteen MiG-21MFs, the 2nd Flight fifteen MiG-21Ms. The 3rd Flight flew MiG-21Fs. The other two regiments, the 5th and the 9th slp, MiG-21MFs equipped each of their single Squadrons consisting of 13 and 15 aircraft. The remaining Squadrons within the last two mentioned units flew MiG-21Fs.

(Pg.8 - PHOTO CAPTIONS)

Top: The first 24 MiG-21MF Series 43, 44, 52 and 53 aircraft came to Czechoslovakia in natural metal, and only received a protective clear coat. Up to their midlife overhauls, black, squared fuselage codes with unsegmented numbers were applied. The 5th slp alone at Line displayed a lack of respect for orders issued on August 20th, specifically forbidding unit insignia, and utilized such symbols on the newly delivered aircraft. Under socialism, this was the only instance when unit or squadron markings were seen on the MiG-21MF. The new MiG-21MF was equipped with the more powerful R-13 engine, a new cannon fairing, differently shaped front speed brakes and a rearview periscope mounted on the canopy.

(Pg.8 - PROFILE)

MiG-21MF '5213', 5th slp 1st Squadron, Line, 1972 to about 1981.

(Pg.9 - PROFILE)

MiG-21MF '7611', 5th slp, 1st Squadron, Line, 1973 to about 1982.

(Pg.9 - PHOTO CAPTIONS)

'7611' was the first of the camouflaged MiG-21MFs delivered to Czechoslovakia. The colors are beginning to show signs of wear and tear. The colors on the front are still fairly dense, with increasing bleaching towards the rear of the airplane. The reason for this variation is obvious – the aircraft were not usually in a hangar and while the front of the aircraft was always tarp covered, and the centre section usually, the tail was rarely so covered. The leading edges of the wings and fin are worn down to the metal.

(Pg.10 - PHOTO CAPTIONS)

Technicians rearming the cannon of Prerov MiG-21MF '7703'

A photograph of a Prerov MiG-21MF during live-fire exercises at Malacky Air Base, Slovakia, showing off the camouflage pattern used at the beginning of their service lives. The aircraft have several metal details worth noting, such as the stabilizer tips, cooling intakes over the engine, pylons, cannon fairings, some engine access covers on the lower fuselage and likely also some panels on the upper sides of the wings associated with the SPS blown flaps. The national markings on the wings are somewhat larger than the standard used on the aircraft that would have undergone overhauls.

(Pg.12 - PHOTO CAPTIONS)

MiG-21MF '9812' was delivered in September, 1974 to the 5th slp at Line. For nine years, it was only one of four camouflaged MiG-21MFs in the unit. The camouflaged aircraft turned out to not be an exception to the unit's practice of placing their regimental marking on the nose. This marking lasted all the way through to its midlife overhaul. These overhauls also provided the opportunity to respray the aircraft including national markings, fuselage codes and Russian stencil data. This MiG was destroyed on December 19th, 1985. Maj. Stanislav Pecho disregarded an order to abort a landing and circle the field for another attempt when he crashed in thick fog 2900m from the runway and 250m off its axis. The same order was given to Capt. Dolezal, who ultimately landed at Zatec.

(Pg.12 - PROFILE)

MiG-21MF '9812', 5th slp, 1st Squadron, Line, 1974 to about 1983.

(Pg.13 - PHOTO CAPTIONS)

Previous page bottom and this page: Still sporting that 'new plane smell', new MiG-21MFs were flown to Prerov by Soviet pilots with no markings whatsoever, which back then was a fairly standard practice. From the earlier unpainted deliveries, these aircraft differed only in their paint schemes, otherwise being virtually identical. In the background can be seen MiG-15bisSB aircraft of the 6th sbolp that were approaching retirement.

(Pg.14)

Roman Hadas

Born: 1964

Joined Air Force: 1983

Units: VVLS Kosice, 9th slp

A Day in the Life of a Ground Crewman

Memoir literature abounds with the adventures of aircraft from the point of view of the pilots who fly them, so let's take a gander at the day in the life of an aircraft through the eyes of a ground crew member.

In the year 1986, I was assigned as a MiG-21PF technician with the 2nd Squadron, 9th slp at Bechyne. To stay fresh, I sometimes serviced the soon-to-be-retired, but much loved by its pilots, MiG-21F. In the transition to the more modern MiG-21MF, I was assigned and became responsible for an aircraft with the fuselage code '9712'. It was on this aircraft that I ended the Bechyne chapter of my military career.

Flying at the time was the main duty of the regiment and the planned protocol called for two days of flying with two days of ground maintenance. That meant flying two to three times a week. However, daily practice was most often dictated by the weather, and so it was possible that over the winter months, weeks could go by with no flying, and the personnel would hone their skills playing a form of volleyball using only feet, or road hockey using a tennis ball.

Flying could be either daytime affairs, or night, and, if necessary, two-shift events. Both day and night flying took a total time of some five hours. Preparing the airplane generally began about four hours prior to the flight, with the actual flight lasting one to two hours, give or take. A typical flight would employ about fifteen people, sometimes more. Double shift flying took up around eight hours, but with the mid shift change, tended to be shorter, and favored.

So, what was the typical day like? A look out the accu-weather window indicating gentle, favorable weather suggested that there would be flying on that day. A bike ride, as with the majority of my colleagues, would get us to the apron. On arrival, I was notified that '9712' would participate in the day's workload and who my mechanic would be, along with some other bits of pertinent information. The mechanic was typically a university educated member of the military or a technician colleague, and either way work progressed with a friendly air of co-operation. The mechanic was the technician's 'right hand man' and fulfilled such duties as assisting the technician and fuelling the aircraft, among many others. After obtaining the proper keys, we headed out to the hardened aircraft shelter. This was followed by unsealing and unlocking of the rear doors, through which exhaust gases would be exiting shortly. This was followed by the opening of the front concrete doors, which are opened by a winch and steel cable system. In cases of emergency, when the doors need to be opened in a hurry, they use the force of gravity.

After that, we turned our attention to the actual aircraft. The mechanic would remove the metal guards from around the wheels which prevented rodents from making a feast of the various cable lines on the gear and dissuading them from building nests in areas that would cause problems. In the event that the aircraft was assigned alert duties, we would wait for the armourer and assist him in hanging missiles under the aircraft. On this particular day, this was not a factor, and we could begin with the necessary preparations. The fuel level in the spine of the aircraft was checked. Unlike the 'F' version, the 'MF' has a gravity fed central refueling point. This was followed by an oil level check. Those who are familiar with Soviet technology will appreciate the 'ease' of access to certain systems, which in this case involved removing the cover, using your wildly twisting arm to unravel the steel wire, unscrewing the cap, check the levels, add whatever needs topping up, replace the cap, rewind the wire and replace the cover. No less entertaining was the extraction process of a fuel sample from the purge valve out of the lowest section of the fuel system into a glass, roughly three litre, bottle. There couldn't be a single spec of debris in the sample, and was taken until it was absolutely clear. It was also necessary to get the air pressure to what it was supposed to be, check the tire pressure, check the surface of the airplane, the wheel wells, the exhaust nozzle, the control surfaces and other critical places that could have developed a crack or have been otherwise damaged, and to make sure that the control systems were functioning correctly, among many other things. During this whole process, there was an exchange of specialists that brought in their own expertise, such as the electricians changing batteries, verifying electrical systems, lighting and refilled oxygen bottles. Radar specialists plied their trade to the covers under the front of the aircraft, and then there were the armourers.

Once all of these elements were completed, we checked out the cockpit, making sure all the switches were correctly selected, dials and instruments were OK, zeroed the altimeter, synchronized the fuel gages with the fuel, and checked the bang seat. It was also required that on completion of all this work, it was verified that not a single tool was unaccounted for. Something missing was taken very seriously, and the airplane did not fly until the missing item was located. The Squadron Technician then would show up, confirm the work, and added his signature to the aircraft's logbook. This was all followed by a moment of calm before the pilot arrived.

On this particular day, the aircraft was to start out directly from the shelter. Usually, it was towed out to the apron. The pilot would arrive in an all-terrain UAZ. After a friendly welcome, I reported the aircraft as ready for flight. This was finished off by a joint final preflight inspection. This was basically a 'walkaround', where the pilot inspected the surface of the airplane, moved the rudder, checked the exhaust and kicked the tires. Then he signed for the aircraft, and climbed aboard. With the umbilical starting connections already in place, I helped the pilot strap into the seat and plugged him into the oxygen system. Once everything was connected and plugged in, the pilot started the engine. Once the prescribed RPMs were reached, the mechanic disconnected the umbilicals, and with me on one side, and the mechanic on the other, we confirmed proper control surface movement, operation of the landing flaps, and through hand signals we confirmed airflow through the SPS system. This was airflow diverted from the compressor stage of the engine through a slot over the landing flap which increased its efficiency. After a short engine test, I removed the safeties from the bang seat, closed the canopy, locked it from the outside, removed the auxiliary intake covers, removed the access ladder and together with the mechanic, removed the wheel chocks. With a thumbs up, we gave the pilot the all clear to go.

This was followed by a loading up of all necessary items onto a waiting Tatra 815 truck and a short trip back to the apron. After unloading the tools, the protective maintenance covers, buckets and everything else that was used, we waited around for the return of our airplane. After about a forty minute wait, which was typical for a flight with no drop tanks (with drop tanks, flight times could double, and to the contrary, without them, when acrobatics with extended afterburner were called for, they could be as little as twenty minutes), '9712' put down on the runway, spit out its brake chute, and taxied back to the apron. Our break was over. We guided the aircraft back to its designated spot, placed the chocks, attached the boarding ladder, and placed the necessary protective covers. While the mechanic took care of refueling the aircraft, I helped the pilot. The first, and most important, of this job was to ensure the safeties were all plugged back into the bang seat. After that, a quick look into the cockpit ensured switches were all properly set, and then the pilot got out of the aircraft. After a quick discussion regarding how things went 'up there', another log book signature was added, along with any necessary remarks.

We were then faced with a turnaround for another flight, a simplified and shortened preflight, involving the refueling, reinstallation of the brake chute, cleaning of the windscreen, and so on. Depending on the type of mission that was now to be flown, there could also be drop tanks placed on the aircraft, along with inert or live weapons. While fueling the aircraft, it was always a good idea to rock the airplane, and this could allow several tens of litres of additional fuel to be loaded. The reinstallation of the break chute was an interesting exercise in and of itself. In the wintertime, a person on a ladder, despite the awkward position, could warm himself up working over the exhaust, but in the summertime heat, this was a pretty tiring affair. Also in the summertime, the aircraft tended to accumulate a lot of flies on the glass. Amateur naturalists should note that pilots reported splattering these as high up as a kilometer.

With that, the turnaround was complete and the aircraft was ready for its next flight, everything being checked and signed for. The hectic nature of such turnarounds often meant that within a short period of time, a majority of aircraft would take off to fulfill their

assigned tasks, be in the air at the same time, and come in to land virtually simultaneously. In a single shift event, such production could be repeated around five times, typically.

The time while our plane was in the air was usually spent assisting our colleagues as required, taking turns in the cafeteria, and drinking coffee, perhaps some card playing or grouped together by the apron grass areas.

After this carousel ride came the final landing and briefing. It resembled the preflights, and was grounded in the inspection of the engine compressor. This involved the removal of its cover in the right wheel well and, preferably by someone with a somewhat thinner build, inspecting the blades visually. The only thing left after that was to connect the tow bar, place all necessary items on the wing, get in the cockpit, and wait for the tow. There always had to be someone in the cockpit during towing, because the relatively heavy aircraft could only be braked from the cockpit. At times of poor visibility, the position lights would also be lit. The aircraft would be towed back to the shelter, and pushed into its place by the tow vehicle. All the items that remained were put away, the 'rodent cages' were put in place, closed up the shelter using the cables for that purpose, and, as was the custom in the military, sealed off all lockable components with plasticine, except in the summer months, when the stuff would liquefy. In those cases, we used Semtex, a plastic explosive.

The end of the shift was a wait for all of those involved, and a meeting at one of the many Bechyne bars.

(Pg.16)

The Greys

In 1975, twenty MiG-21MFs were delivered to a new standard that were dubbed, roughly translated, 'the Greys'. As the name suggests, these aircraft were painted in an overall grey scheme consistent with the Soviet State Air Defence. All were destined for PVOS (State Air Defence) units, specifically the 1st slp, 3rd Squadron, in Ceske Budejovice. The number of aircraft actually exceeded prescribed requirements, and as a result, four Greys ('2205', '2410', '2500', and '3008') were diverted to the 4th slp at Pardubice and one ('4003') went to the 5th slp in Line. Barely having any time to settle into their new homes, the four ended up moving on to the 9th slp in Bechyne the following year.

The number of MiG-21M/MF delivered to Czechoslovakia climbed to 126. In 1975, this was cut by four aircraft due to their destruction in accidents. This accounted for two MiG-21Ms and two MiG-21MFs. Despite this fact, 1975 became the year in which the highest number of MiG-21s of all variants were operational in Czechoslovakia, totaling 391 aircraft!

(Pg.16 - PHOTO CAPTIONS)

Top: Grey '4008' based at Ceske Budejovice with an underfuselage PTB 490 drop tank. The inboard weapons pylons carry APU-7 launch rails for RS-2US beam riding missiles, while the

outboard pylons carry APU-13 rails for R-3S heat seeking missiles. Later, it became possible to use these rails for the carriage of the updated R-13M missile.

(Pg.17 - PHOTO CAPTIONS)

Grey '4307' of the 1st slp is unique among all MiG-21s by virtue of having had its fuselage code changed. This occurred on November 13th, 1985, after ten years of service. This aircraft from Ceske Budejovice crossed paths with a standard MiG-21MF '4307' from Bechyne while both were at LOK undergoing overhauls. As things turned out, this aircraft was recoded '9307' and after repairs was diverted to Bechyne. After the disbandment of the Bechyne Regiment, Grey '9307' served not quite four months with the 82nd sslt at Mosnov, after which it was stored at Line and subsequently sold to a buyer in the United States, where it flew with the civil registration 'N9307' in its original colors, including unit and national markings. It also gained Delta Team markings, and later tiger motifs inspired by aircraft '2500'. On July 12, 2012, this aircraft was damaged beyond repair in a landing accident in Minneapolis. Thanks to an accident at the beginning of 1985, caused by brake failure, a photograph exists of the aircraft with its original fuselage code.

Previous page, bottom: One of the twenty Greys of the last batch supplied, coming to Czechoslovakia in 1975 from the plant at Gorky, which was already producing the MiG-21bis. Although these MiG-21MFs carried the same designation as earlier aircraft (built at the plant in Moscow), they did contain some differences, and represented a bit of a hybrid between the MiG-21MF and MiG-21bis. Among the personnel associated with them, they were known as 'the Greys' for their paint scheme, and even though there were several different schemes applied to MiG-21s as time went on, the name stuck with these twenty aircraft. The name can be thus considered more variant specific than scheme specific. They also differed from the classic MiG-21MF with their rear view periscope, changes in the cockpit, they lacked the large oval access panels on the wing (used in the mounting of external wing tanks), differed slightly in the gun arming door shape and location, and there were also variations in access covers at the base of the fin. There were some differences made in the gun cover and the three pronged IFF antenna under the nose ahead of the front wheel well. These changes are all indicative of the miG-21bis.

Standard MiG-21MF '4307' flew its lifetime in natural metal. In this photograph taken during live fire exercises at the Polish base of Slupsk, the aircraft is shown carrying photoflash bombs that served as targets for R-3S missiles. Later, '4307' served in 'Stress Squadron', a test centre role, and was displayed often at air shows. It was retired in 1999.

(Pg.18 - PHOTO CAPTIONS)

Another photograph of '4307' taken during live fire exercises in which the 11th slp took part at Slupsk, Poland. In the background is aircraft '8206'.

Not long after the integration of the Greys into the Czechoslovak unit, a mishap occurred on January 9th, 1976 caused by a right landing gear extension problem. Major Jan Oberfalzer attempted several times to get the gear down. His fuel levels were depleted due to the flight that took him to 19,000m at speeds of Mach 2.1, forcing him to retract the gear and give up on a conventional landing. All MiG-21s allowed for the lowering of the nose gear mechanically from the cockpit, which he did. On landing on an adjacent emergency grass strip, the airplane was virtually undamaged. The larger, original national markings are visible on the wings and the fin.

(Pg.19 - PHOTO CAPTIONS)

A striking posed photograph of Grey '5512' on the ramp at Ceske Budejovice.

Pilots Miroslav Chocholacek and Emil Horinek fulfilled aggressor roles during Stit ('Shield') 1984 exercises. Miroslav Chocholacek, on the left, is wearing a new type of flightsuit that was introduced in 1984 and was in use until 2000, when they were replaced by new, green flightsuits.

Service in the Socialist Era

A Quiet Decade

All of the noted MiG-21M/MF bases remained virtually unchanged for around ten years. The purchase of the MiG-23 had essentially no impact on the distribution of the MiG-21MFs. There was the odd aircraft exchange between the 9th, 4th and 5th slp which formed the 1st Fighter Air Division. However, these exchanges of individual aircraft can be counted on one hand.

As with all other versions of the MiG-21, the MF was to undergo a midlife overhaul, followed eventually by a general overhaul. The midlife overhaul was scheduled to occur at 600 flight hours or eight years. The same interval was specified between the midlife overhaul and the general overhaul, and eventual retirement. Later, these spans were increased to ten years or 800 hours. The oldest MiG-21MFs began to make their way to repair facilities in Kbely in 1977, where the majority of Czechoslovak MiG-21s received their TLC. The exception was a quartet of aircraft coded '7713', '8208', '9311', '9713' that went through the required maintenance in Dresden. After midlife overhauls, natural metal aircraft remained in natural metal, had their national markings removed and replaced, and also had their stencil data and codes redone. Camouflaged planes were repainted without the complete removal of the original. The newer top layer of paint tended to peel off the old, and these aircraft often acquired an interesting mix of patterns and colors.

(Pg.20 - TABLE)

MiG-21MF Order of Battle at the end of 1975

Unit and Base	MiG-21M	MiG-21MF Unpainted	MiG-21MF Camouflaged	MiG-21MF Grey
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Latter Half of the Eighties

The second half of the eighties saw a period of tension that was the final battle of the Cold War that saw both sides of the fence spending more resources on weaponry. For the Czechoslovak Air Force, that meant the purchase of more modern aircraft, and some changes to the deployment of supersonic assets, namely the MiG-21. By that time, the MiG-21MF was not attaining the standard of newer western and eastern designs, but their presence within frontline units was supported by the delay in MiG-29 production. (continued on page 34)

(Pg.34)

New Su-22s began arriving at the 47th pzl. This allowed the unit to return seven of eight borrowed MiG-21Ms back to the 4th slp between 1984 and 1987. The eighth, coded '1202', was written off in an accident in 1982. After the return of these aircraft to the 4th slp, it became possible to transfer four MiG-21MFs to the 9th slp at Bechyne and five others to the 5th slp at Line.

At this time there was also an exchange of aircraft between the 5th and 6th sbolp. These initially somewhat perplexing exchanges were the result of maintaining optimal numbers of aircraft in unit service that were wired to carry ECM pods as others went through their required overhaul schedules. This explains why two camouflaged MiG-21MFs appeared among grey aircraft at the 1st slp in Ceske Budejovice in 1988. The unit subordinate to the PVOS acquired aircraft from the Tactical Air Force in this way. To balance things out, two 'Greys', coded '4017' and '4175', were delivered to the 9th slp at Bechyne and followed the transfer of Grey '9307' three years earlier.

In 1985, three MiG-21MFs were transferred ('9706', '9708', '9709') from the 6th sbolp in Prerov to the 5th slp in Line. The unit at Prerov was undergoing re-equipment. Instead of the originally planned Su-24, the unit began acquiring the Su-22M-4 and so in 1988 transferred eleven of its MiG-21MFs to the 9th slp at Bechyne. Camouflaged MiG-21MFs slowly began leaving the services of Pardubice's 4th slp in 1985-1986, and headed over to the 5th slp in Line (three aircraft), the 9th slp at Bechyne (two) and the 6th sbolp at Prerov (one).

Significant changes would manifest themselves in 1989, beginning with the purchase of the MiG-29. The first phase of this acquisition was planned to equip the 11th slp at Zatec, the 8th slp at Brno and the 9th slp at Bechyne. In the end, these units were to be equipped

with two Squadrons of MiG-29s, and a third training Squadron would get new L-39MS aircraft (L-59) after the retirement of the MiG-21s.

The Czechoslovak Air Force could not, however, afford to re-equip all of its units with new aircraft. For this reason, the 4th slp at Pardubice was disbanded in the spring of 1989. For the first time since 1969, over a span of twenty years, an air force unit was disbanded. This choice was likely swayed by the fact that the unit shared its field with the 30th Bomber Regiment (bilp) flying the Su-25. They handed over their thirteen MiG-21Ms to the 5th slp and another six to the 9th slp at Bechyne. With the exception of the lending of aircraft to the 47th pzp, this is the only time that the MiG-21M found its way out of the services of the 4th slp. Out of the camouflaged MiG-21MFs based at Pardubice up to disbandment of the 4th slp, two were given to the 8th slp, active from 1984 out of Brno, and the unit at Bechyne could look forward to another two.

Through the course of the year, the new and modern MiG-29 began flying out of Zatec with the 11th slp, bringing about the return of the MiG-23MFs back to the 1st slp at Ceske Budejovice. In turn, MiG-21MFs, mostly Greys with two ECM capable camouflaged aircraft, had to make room for them. One Grey was assigned to the 9th slp at Bechyne and the remaining ten Greys and the two camouflaged MiG-21MFs went to the 8th slp in Brno. Their MiG-21PFs through 1989 were at the end of their airframe lives, and the MiG-21PFMs were either sent to the 11th slp at Zatec or scrapped on the spot. Besides the Ceske Budejovice MiG-21MFs, the 8th slp also received a quartet of MiG-21MFs from Prerov's 6th sbolp.

(Pg.34 - TABLE)

MiG-21MF Distribution 1989/1990

Unit and Base	MiG-21M	MiG-21MF Unpainted	MiG-21MF Camouflaged	MiG-21MF Grey
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Note: Unpainted aircraft are Series 43 to 53, camouflaged aircraft are Series 76 to 99. After going through midlife and general overhauls, a small number of aircraft went from camouflaged to unpainted and vice versa.

(Pg.20 – PHOTO CAPTIONS)

Top: MiG-21MF '9815' of the 4th slp on the ramp on alert readiness at the east end of Pardubice's strip.

(Pg.21 - PHOTO CAPTIONS)

The relaxing of the political strictness through 1989, along with the disbandment of Pardubice's 4th slp, gave rise to something as yet unheard of. Two more or less clothed ladies graced the noses of a MiG-21M. Greater scorn was provoked by the markings denoting 'Pardubice' and '4.slp' (translator's note: typically, the period behind the number is the equivalent to the English 'st', 'th' or 'nd', so that the 4. is equivalent to 4th, the 1. to the 1st, and so on), since these bits of information were still strictly classified. The artist was aircraft technician Petr Burian, who later adorned MiG-21MF '9501' with a rendition of Donald Duck, the Coat of Arms of the city of Prerov and the Czech lion. The inspiration for the artwork on '1113' and '1114' were American aircraft from the Second World War.

In the case of '1114', the drawing was made on a large piece of paper. After being cut out, they were attached to the aircraft with thin layer of Vaseline. The aircraft was thus photographed for posterity, and documented on both sides of the nose. The drawings were then removed, the adhesive was washed off, and the aircraft was returned to its original state.

With '1113', the image was projected and transferred onto the aircraft with the use of a Meotar apparatus, and unlike '1114', this aircraft made it into the air at least once with the pin-up in place.

These aircraft were updated to MF standard likely during their general overhaul in 1987. They were given the rear view periscope mounted in the canopy and had the small wing fences added adjacent to the auxiliary air intake doors. The R-13 power egg was added already during the midlife upgrade. The only difference was the retainment of the older front speed brake designs that differed slightly, the same going for the cannon cover. Both aircraft, after general overhauls in April, 1986 ('1113') and April, 1987 ('1114'), retained their original look without paint, the wheel wells were a grey-green color, and the air brake interiors were painted their usual dense yellow color.

(Pg.22 - PHOTO CAPTIONS)

MiG-21M '1113', 4th slp, 1st Squadron, Pardubice, 1989

(Pg.23 - PHOTO CAPTIONS)

MiG-21M '1114', 4th slp, 1st Squadron, Pardubice, June, 1989

(Pg.24 - PHOTO CAPTIONS)

Training, a part of which included flying off of highways, was undertaken by two groups of four Pardubice MiG-21Ms. Aircraft '2705' had already undergone its midlife upgrade and

flew with the R-13 engine, but retained its older canopy style minus the periscope. The fences adjacent to the auxiliary intake doors were on Series 26 and 27 aircraft from the point of manufacture.

This camouflage scheme arose as an experiment under the code name LERAN. The purpose of the program was to develop a new camouflage system for the Czechoslovak Air Force. One of its perks was to be a reduced infrared signature. The research began in 1972, and in time, nine MiG-21Fs, two MiG-21Rs, five initially bare metal MiG-21MFs ('4306', '4315', '4401', '4402' and '5302') and even an L-29 were painted experimentally. These colors were also applied to Mi-4 and Mi-8 helicopters and were produced in limited quantities by a paint and lacquer research facility. These finishes were to go into production in 1980 at the State Paint and Lacquer Production Plant in Kralupy, but this did not manifest itself and the use of the paints was discontinued. Aircraft '5302' served in this scheme with the 5th slp in Line in the period between midlife and general overhauls, between 1979 and 1989. During the general overhaul, the paint was stripped off the airplane, and it was resprayed in silver on all surfaces. After that, it was returned to the 5th slp for a short period of time, and on disbandment in May, 1991, was sent to the 11th slp in Zatec. After the disbandment of that unit as well, in September, 1993, it became a member of the 28th sbolp at Caslav. As of December, 1994, it flew with the 43rd Squadron, and was stricken off charge in 1999.

(Pg.24 - PROFILE)

MiG-21MF '5302', 5th slp, 1st Squadron, Line, Spring, 1990.

(Pg.25 - PHOTO CAPTIONS)

During exercise Stit '84 (Shield '84) between August 20th and September 14th, 1984, 'enemy' forces were simulated by Miroslav Chocholacek and Emil Horinek flying Greys '5512' and '4175'. For this purpose, the aircraft received two yellow bands around the rear fuselage and extending onto the wings. They flew out of Malacky against 'unfriendly' Su-7s.

The service career of '7702' began pretty much normally. It was manufactured on June 13th, 1973, and in the summer of that year it was accepted by the 6th sbolp at Prerov. On February 23rd, 1979, it was the first camouflaged MF to make its way to Kbely for its midlife physical. At that time, it was stripped down to eliminate its camouflage and national markings. Up to that time, this procedure represented the norm for aircraft that were in natural metal. At the completion of the midlife overhaul, on December 11th, 1979, the aircraft was sprayed in a unique scheme consisting of matt mid to dark grey and a semi-matt green. The lower surfaces received a coat of aluminum powder dispersed in a clear lacquer (the so-called LERAN scheme). These paints were picky in terms of the proper application being used to spray them. This was evident on '7702', and the paint began to peel off in a lot of spots. This lasted until October 19th, 1985, when the aircraft was repainted in a brown-green scheme in Prerov at a facility known as POL-4. The photographs here were taken on the occasion of Sit '84 (Shield '84) exercises when the 6th sbolp flew from Malacky Air Base. The colors of the

peeling paint in black and white photographs are difficult to discern due to a lack of contrast. Compared to the more common scheme, this one certainly comes across as quite dark.

(Pg.26 - PHOTO CAPTIONS)

Another shot of the same aircraft at Malacky during the Shield exercise in September, 1984. Under the aircraft in the background, far right, is an SPS-141 ECM pod.

(Pg.26 - PROFILE)

MiG-21MF, '7702', Flown by Maj. Pavel Strubl, CO of the 6th sbolp, 1st Squadron, Prerov-Bochor, September, 1984.

(Pg.27 - PHOTO CAPTIONS)

Landing mishap of Prerov MiG-21MF '7708' at Malacky ended with a broken nose gear strut. This event happened on June 3rd, 1982 to Jiri Kubal, future CO of the 32nd zTL located at Namest. The aircraft is carrying bomb shackles that were used in live fire exercises on an adjacent firing range. The camouflage colors are faded, particularly to the rear of the aircraft, and the older, larger national markings are visible. After going through the subsequent overhaul in October, 1983, the aircraft was resprayed in a pattern that seriously began to peel giving it a very worn look and leading to the nickname 'Vrakous' ('Physical Wreck') in 1991.

Over the first half of the eighties, four MiG-21MFs went through their midlife overhauls in Dresden in the former GDR. They were repainted according to specs of the East German Air Force. That process didn't specify exact color fields or their sizes, and these ended up being very individual. These photographs illustrate the significantly darker tones than the Soviet ones on the aircraft in the background, or on the droptanks of the aircraft in question. Also, with respect to the re-applied fuselage codes, the font was East German, was more rounded, and had wider segments and wider stencil bridging that kept the stencil together. Stencil data applied in Germany was in Russian. As mentioned earlier, the tones of the East German applied camouflage were quite a bit darker, varied considerably, and the bottom side color was a lighter blue. The wheel wells remained in their yellow zinc chromate and the inside color of the covers were light blue. The keel antenna was green, and the green leading edge strips on the flaps were missing.

Aircraft '7713' first served with the 6th sbolp and then with the 8th slp. During its general overhaul at LOK in 1991, this camouflage scheme was removed, after which the aircraft served with the 81st sslt at Sliac, where it was retired in 2001.

The black and white photo at right was snapped during flying off of a highway, showing '7713' in its original 'Soviet' camouflage scheme.

(Pg.28 - PHOTO CAPTIONS)

An interesting tactical training exercise took place at Merin involving the taking off from a highway. Between kilometer markers 136 and 139, built in 1977, several such exercises took place. A color film was made to document the first of these in 1980. Preparations for the exercise took place over two days between September 19th and 21st, 1980. September 22nd and 23rd then saw the actual flying from the roadway by 10th LA and 7th PVOS personnel. On the 24th, a rehearsal and display were organized, including the participation of MiG-23BNs of the 28th sbolp and eight MiG-21Ms from the 6th sbolp, with eight Pardubice 4th slp MiG-21Ms. Technical support was provided by two Il-14T aircraft. The role of enemy attack elements were courtesy of some 26 Su-7s. The training exercise naturally brought out the curious rubber-neckers and the detour route put in place over the course of the military's use of the highway was pretty much useless. Such training exercises in subsequent years would include the 1st slp from Ceske Budejovice with their Greys, along with other units. This type of flying was, for the pilots, complicated by the narrow strips and the absence of nearby emergency facilities.

The 1st slp's Miroslav Chocholacek looked back at the exercise: 'The Merin highway; that was an amazing event. But I have nothing to document it. Aircraft of both armies, the 7th and the 10th, naturally selected individual and not all assets at once to take part. From a pilot point of view, things went off without a hitch. We experienced flying from narrow 'field' strips, who's width were about half of the fifty to sixty meters we were used to. The attraction for the general public and the numbers that showed up to watch was a special thing, while there was a certain amount of discomfort provided by the local physical conditions. Off the westward landing approach to the right was a rise that was full of spectators while the other side was sloped downwards. This would present a bit of a problem in a case where, for example, there was a tire blowout, which did actually happen, but thankfully, at a regular field. In such a case, the aircraft would veer off to the side, and in either case would require pilot ejection, and also in the case of veering to the right, unpredictable circumstances facing the spectators. Personally, I landed on Merin twice, once with a Grey, and again a couple of years later with a MiG-23ML.

(Pg.29 - PHOTO CAPTIONS)

The only known color photograph of '8208' in the East German scheme. The exact color distribution is not completely known. In trying to piece this reconstruction together, existing photographs of '8208', together with East German Air Force MiG-21F-13 coded '623', were used. The F-13 had a very similar scheme. Some differences are evident from careful observation of the photographs. The landing gear strut covers are painted light blue with no green section, silver mass balances on the elevators, and the extension of the camouflage paint to include the intake ring. In the background, aircraft '9412' can be seen in its original scheme from date of manufacture, whose green has faded to a pea shade.

(Pg.29 - PROFILE)

MiG-21MF '8208', 6th sbolp, 2nd Squadron, Pribram – Dlouha Lhota, September, 1986.

(Pg.29 - PHOTO CAPTIONS, spodni)

Between the 8th and 12th of September, 1986, Czechoslovakia hosted the large Druzba ('Friendship') '86 Warsaw Pact exercises that involved some 25,000 military personnel. One Squadron of the 6th sbolp took part, sporting a wide white band on the fin and fuselage for the occasion. The stripe on this specific aircraft was not a straight white, but was slightly yellowed. One memoir likened the color of the stripe to that of Edam cheese.

One training unit operated from a reserve field located at Dlouha-Lhota near Pribram. On the last day of the exercise, Friday, September 12th, the aircraft was adorned with a sharkmouth, painted in washable latex paint. The Squadron CO, LtCol. Milan Jiricka took off in the aircraft, sharkmouth and all, with his Squadron on their return to Prerov. This return flight included taking part in a so-called 'forced river crossing' exercise near Vlineves close to Melnik. In the following week, Prerov was switching over to winter operations, and it was during this time that '8208' lost its colorful markings. MiG-21MF '8208' flew from its delivery in 1973 with the 6th sbolp to 1990, when it was reassigned to the 81st sslt. During general overhaul at LOK in 1992, it received a standard camouflage, and was later allocated to the Slovak Air Force. It was retired at Sliac in 1996.

(Pg.30 - PHOTO CAPTIONS)

Aircraft '8208' during a test flight at LOK on February 11th, 1992 after general overhaul. Some parts of the aircraft carried its original camouflage. After the test flight, the camouflage was completed and the aircraft was returned to its unit.

A photograph dated June 1st, 1980, showing Prerov's '9404' in the camouflage scheme that it was delivered in. The somewhat faded rear fuselage has received new fields of green, as did worn leading edges.

While construction of hardened shelters at other fields began at the beginning of the seventies, Prerov didn't have them until 1978-79 for one Squadron, and 1980-82 for another. The third waited until 1986, at a time when they were transitioning onto the Su-22. The paint repairs conducted on '9404', in conjunction with peeling, yielded some bizarre coloring. After the disbandment of the 6th sbolp, this aircraft was assigned to the Slovak 81st sslt. The scheduled general overhaul for 1995 was never conducted, and the aircraft never flew again.

(Pg.31 - PHOTO CAPTIONS)

This photograph shows the final preflight prior to take-off at Prerov of MiG-21MF '9412' in the summer of 1980. The shot illustrates not only the wearing of the original paint, but its subsequent repair work, notably along leading edges, the yellow chromate wheel wells and the original green antenna on the bottom rear keel.

(Pg.32 - PHOTO CAPTIONS)

Druzba (Friendship) '86 included the participation of a number of MiG-21MFs sporting a white band around the rear fuselage. Besides Prerov's '8207', '8208', '8209' and '9412', this included Plzen MiG-21MFs '9802' and '9902'. The first signs of wear and tear on the camouflage paint applied during midlife overhaul in 1984 are visible.

Aircraft '9902' was destroyed on May 4th, 1988 in a collision with '9803' while rehearsing ground attacks. '9802' went into a snow barrier on January 23, 1997, causing the collapse of the right landing gear leg, and although the aircraft was deemed repairable, it was scrapped.

(Pg.33 - PHOTO CAPTIONS)

MiG-21MF '9815' of the 4th slp. On the ramp during live fire exercises at the east end of Pardubice field. The classic weapons combination of a PTB500 and pairs of R-3S and RS-2US missiles are hung in a fairly uncommon manner. A much more common practice was to hang the R-3S missiles on the outboard pylons and the RS-2US units on the inner.

In a scramble, either one aircraft on standby took off, or both did simultaneously, depending on the proximity of the intruder. The aircraft would be guided to the target by any number of stations, depending on the specific momentary situation. The pair of supersonic fighters on the ramp and ready to go were supplemented typically by pairs of MiG-15bis aircraft, later L-39ZAs, to deal with slower intruders.

The aircraft depicted in these photographs illustrates the original scheme, and the tail section is showing signs of fading, including the laminated antenna cover at the top of the vertical tail. During the course of the aircraft's 1984 midlife general overhaul, it was formally handed over to the 6th sbolp at Prerov. From 1985 to 1991, it served with the 5th slp at Line, it went to the 1st slp at Prerov. After the split of the state, it was transferred to Slovakia's 81st ssIt and its successor units of the ASR (Army of the Slovak Republic). The general overhaul slated for 1995 did not go through, and the aircraft was retired. The photograph on the following page is also of this aircraft.

(Pg.35)

THE LAST TWO YEARS OF THE UNIFIED STATE

The changes up to this point were but a precursor to what was to come in the following several years. At the beginning of February, 1990, the 8th slp was based at Namest nad Oslavou. Brno's airfield at the time was undergoing a major upgrade, including the building of hardened aircraft shelters intended to serve the planned MiG-29 fleet, which ultimately didn't materialize. The return of the 8th slp to Brno proved to be a problem, and the local population was categorically against the return of the unit to the point where the unit was moved to Malacky. The stay here also ended up being only temporary. On May 1st, 1991, the 8th slp was split into the 81st sslt (samostatna stihaci letka – Independent Fighter Squadron) and the 82nd sslt. The latter moved to a base at Mosnov, which was from where the 8th slp moved to Brno in 1983-84. The 81st sslt moved to Sliac which was just vacated by the Soviets. This movement was to satisfy the requirement of a more even distribution of assets throughout the country, and also laid the foundations for the future Slovak Air Force.

By June, 1990, the 1st Fighter Air Division was decommissioned as the senior level of command for the 4th slp, 5th slp, and the 9th slp. At the time, though, the 4th was already disbanded, and the 5th was reassigned under the 3rd PVOS (the same unit that the 11th slp at Zatec fell under) and the 9th slp became the 9th sbolp (a fighter bomber unit) subordinate to the 34th Fighter Bomber Division in Caslav. This ended the role of the fighter units within Frontal Aviation and MiG-21s served as fighters only within the units of the PVOS.

The spring of 1991 did not prove to be particularly favorable for the 5th slp in Line, because an accident on April 22nd of that year served to expedite its disbandment. The collision of two MiG-21Ms ended training operations and the remaining assets were distributed as follows: one MiG-21M and fourteen MiG-21MFs went to the 11th slp while twelve MiG-21Ms and eight MiG-21MFs went to the 1st lsp (letecky skolni pluk – Air Training Regiment) at Prerov. This unit ensured the transition of pilots from the L-39 to combat units and after the retirement of the MiG-21F under the CFE Treaty had nothing fast to fly. The MiG-21M and MF were not as suited to the training role as the MiG-21F. Another two MiG-21Ms were delivered to the 9th slp at Prerov from Bechyne.

The treaty did not cost only the training regiment its MiG-21s, but also the 11th slp at Zatec. This unit gave up its MiG-21PFMs in the spring of 1991. For this reason, fourteen MiG-21MFs and one M came from the 5th slp and so these versions of the MiG-21 became equipment used at the Zatec field for the first time, specifically with its 2nd Squadron. As quickly as the 5th slp was disbanded, the same surprise met the 6th sbolp on the 31st of July, 1991 at Prerov. Su-22s out of the inventory of the 1st Squadron were moved to Namest's 20th sbolp. The MiG-21MFs were distributed thusly: twelve aircraft went to the 81st sslt at Sliac (the Squadron had only four MiG-21MFs from the original 8th slp), and six MiG-21MFs went to the 1st lsp at Prerov (giving the training regiment 26 MiG-21M/MF aircraft). *(Continued on page 47)*

(Pg.35 - PHOTO CAPTIONS)

A MiG-21MF in front of a hardened aircraft shelter with typical Bechyne camouflage. The aircraft carries what were still at the time seldom used missiles, the R-60. In front of the aircraft is a multiple rack for four bombs, UB-16 rocket pods and an SPS-141 ECM pod. This could not be carried by the Greys, but is here just for show and effect.

(Pg.36 - PHOTO CAPTIONS)

An example of ordnance under MiG-21MF '2410'. Bechyne's regiment received the R-60 by 1989, and live fire exercises with them were conducted by the end of the summer of that year at Astrakhan. Eight MiG-21MFs of the 9th slp took part along with four from Plzen's 5th slp. It was the first and last time that Czechoslovak MiG-21MFs flew over the Soviet Union.

Grey '2410' during regular service at Bechyne. This was one of the few aircraft at the time to sport a smooth wheel hub as opposed to the spoked unit. These newer items were purchases of spare parts that lasted to the end of the MiG-21MF's career.

(Pg.37 - PHOTO CAPTIONS)

MiG-21MF during engine tests using prefabricated components that were a fixture of the hardened aircraft shelters.

(Pg.37 - PROFILE)

MiG-21MF '2410', 9th slp, 1st Squadron, Bechyne, September, 1993.

(Pg.38 - PHOTO CAPTIONS)

Grey '2500', shortly after beginning its career with the 1st slp and the 4th slp, flew with the 9th from December, 1975 out of Bechyne. After midlife overhaul in October, 1984, its look changed only in some details, such as the national insignia being decreased to 50cm diameter, but the fuselage code remained unchanged. The photographs taken in June, 1991 show the shadowed code which it by then carried. The Bechyne unit marking didn't appear until 1992, with the same going for the majority of the unit's other 1st Squadron MiG-21MFs.

Very rare 500kg bomb under Grey '2500' during live fire exercises in Malacky in July 1992.

(Pg.39 - PHOTO CAPTIONS)

Take-off of MiG-21MF '2500' on its way from the 9th sbolp to the 82nd ssIt at Mosnov. There, it did not do much flying, and by September was in storage at LOZ Line. There were not enough funds released to conduct general overhauls, a fate that befell other Greys.

(Pg.39 - PROFILE)

MiG-21MF '2500', 9th sbolp, 1st Squadron, Bechyne, April, 1993.

(Pg.40 - PROFILE)

MiG-21M '2707', 9th sbolp, 2nd Squadron, Bechyne, October, 1992.

(Pg.40 - PHOTO CAPTIONS)

The Bechyne City Crest was not only applied to all of the unit's MiG-21MFs, but also to their MiG-21Fs, PFs, UMs and L-29s belonging to the 2nd Squadron, 9th slp. The shadowing in the code was a common fixture but was not applied to all the aircraft of this Squadron. The unit marking was applied as early as the fall of 1989. Crewchief Vlastimil Kolar went beyond, and painted 'his' MiG-21M '2707' with wide red bands on the fin and rudder, the extremities of the stabs and on the pitot tube. MiG-21PF '1212' was also his responsibility and also was nicely decorated with a pair of stripes on the fin and keel. After the split of Czechoslovakia, the aircraft was assigned to Slovakia.

(Pg.41 - PHOTO CAPTIONS)

Grey '4003' had a very similar fate to that of '2500'. Here it is photographed at Bechyne, so far with only a decorated intake ring.

In the summer of 1992, '4003' had some colorful visual additions placed upon it – yellow shadowing to the fuselage code, a unit marking, and the MiG bureau logo.

Departure for Mosnov in April, 1993. '4003' was stored at Line in September of that year to be upgraded in 2000 to MFN standard, and to fly out of Caslav up to 2004.

(Pg.41 - PROFILE)

MiG-21MF '4003', 9th sbolp, 1st Squadron, Bechyne, April, 1993.

(Pg. 42 - PHOTO CAPTIONS)

For a short period of time, the 9th sbolp flew out of Ceske Budejovice in June, 1991. At the time, the appearance of the future 'Vrakous' ('Physical Wreck') did not differ much from other peeling MiG-21s after their midlife overhauls. The remnants of the old code are becoming visible under the standard, box type one seen here.

'Vrakous' with chalk applied name, can and bombs.

Prior to handing over to the Slovak side, the inscription on the nose had to be sprayed over.

(Pg.42)

'7708' Technician Robert Subr on the History of 'Vrakous' ('Physical Wreck')

From mid-1991, when I was assigned to the 2nd Technical Squadron, 9th sbolp, I was the crew chief for '7708'.

A series of repairs were conducted in sequence. The first of these was the removal of the camouflage paint in the area of the codes, which did not adhere well on the original Soviet paint. This was most easily done during rainfall, but naturally, this took a bit of time. Due to the repositioning of the code between the old and new schemes, the aircraft actually flew with the code '77708' (with original rounded and new angular '7's). Subsequently, I also added shadows to the original rounded codes in yellow. During the conversion from winter to summer flying in the spring of 1992, I added horizontal stripes to the fin, to the wingtips and the stabilizer counterweights. I am not sure why I chose yellow anymore, but perhaps the pacifistic feelings in the country at the time had something to do with it. Yellow was typically reserved for training aircraft and contrasted with the camouflage scheme.

The history of the 'VRAKOUS' inscription goes back to firing exercises in Malacky in July, 1992. The first thing drawn were the bomb drop tallies, in chalk used for the centering of the wheels. About a day or two later, discussion regarding the rather worn state of the camouflage paint of the airplane led to the addition of the inscription, again rendered in chalk. The tin can was added the following day.

The aircraft returned to Bechyne, where it flew with these markings for some time.

After its return, I painted over the inscription with three shades of synthetic paint. The tin can was not painted over, and should not be confused with the notion that the plane was canned, as it did fly.

The aircraft flew with the markings up to the point of being assigned to the Slovak Air Force. Complaints on the part of the Slovaks regarding the state of the transferred equipment (weather clever in nature or downright poisonous inscriptions on individual aircraft) brought about orders to immediately remove all inscriptions so as not to provoke the new owners. For this reason, the entire inscription was covered with brown paint. The transfer of the airplane to Slovakia ended my association with it.

(Pg.43 - PHOTO CAPTIONS)

Top: Photographs showing 'Vrakous' flying out of Bechyne. The camouflage scheme peeled off not only from the upper surfaces, but also the bottom.

'Vrakous' at Bechyne in the fall of 1992.

Crew chief Robert Subr with 'Vrakous' in the fall of 1992.

(Pg.44 - PROFILE)

MiG-21MF '7708', 9th sbolp, 1st Squadron, Bechyne, July, 1992

(Pg.45 - PHOTO CAPTIONS)

Group photograph of Czech and Slovak ground crew during the transfer of 'Vrakous' in October, 1992.

'Vrakous' during its short stint in its original camouflage scheme with the Slovak Air Force.

(Pg.46 - PHOTO CAPTIONS)

Frantisek Hlavnicka, former member of the 1st sld (9th slp) demonstrated the MiG-21 in solo acrobatics as early as 1988. As Technical Inspector within the air force leadership, he organized what was known as the Delta Team for display purposes during airshows. The 9th sbolp had camouflaged '7709' and Greys '2410' and '2205' painted up with special arrow motifs in the national colors for this purpose, along with the Delta Team logo. The '9' on the rudder denoted the 9th Regiment. Three aircraft were chosen, so that one could fly the display, one was for static display, and the third was a reserve for repair work. Other pilots of the display team included Jiri Moutvicka and Frantisek Bittner, also members of the 9th sbolp.

The end of Delta Team coincided with several events. The first was an accident involving '7709' on August 28, 1992 in Ceske Budejovice. After that came the split of Czechoslovakia and the disbandment of the Bechyne Regiment. Grey '2205' went in for its general overhaul in November, 1992. After its completion, it was assigned to the 82nd sslt, later was moved to Caslav, and flew, rebuilt to MFN standard, through to the final retirement of the MiG-21 in the Czech Air Force. The second Grey had a short career from April to September, 1993, with the 82nd sslt at Mosnov. Due to inadequate funding for its general overhaul, the aircraft was handed over to the museum at Kbely.

In the spring of 1992, at an air show at Namest, the aircraft had not had all of its colorful markings. Taxi out for its aerial display took place under its own power from out of the static

display apron among crowds of spectators. This was a rarity, and would never be repeated during an air show again.

'7709' as it appeared when the aircraft was written off in an accident. The inscription beneath the cockpit read 'TATINKOVO OSOBNÍ KOCAR' (Daddy's personal buggy).

(Pg. 47 - PHOTO CAPTIONS)

The yellow triangles on the nose indicated that the fuel had an admixture 'Additive I' mixed with it (an aircraft with this fuel mixture could stand only for thirty days). The same triangles appear on the Tatra 148 fuel truck. The aircraft carries CCP-70-50 cement practice bombs.

Another of Prerov's aircraft '8205', that pretty much lost its camouflage from its midlife overhaul. The new scheme, except for a few isolated locations, peeled off.

(Pg.47)

As 1992 drew to a close, Czechoslovakia was being divided into two separate states. This involved the splitting of military assets, including the MiG-21MF.

Prerov's 1st slp handed over nine of its twelve MiG-21Ms to the 82nd sslt at Mosnov, in September, 1992. There, they did not get warmed up very much, and after two months, they were transferred to the Slovak Air Force. Out of the MiG-21Ms, only three stayed in the Czech Republic, one with the 11th slp in Zatec and two continued to soldier on with the Training Regiment in Prerov.

At the end of October, beginning of November, 1992, the 9th sbolp at Bechyne transferred twelve MiG-21MFs to the 81st sslt at Sliac, and two other MiG-21MFs went the other way. These somewhat illogical transfers were in an effort to split the assets of Czechoslovakia between the two resulting countries as fairly as possible. Not only the age of each specific aircraft was taken into consideration, but also their time remaining prior to going in for midlife or general overhauls as well. These overhauls were very resource intensive events, but after their completion, the aircraft came out as virtually new. Both sides were very well aware of the age of the aircraft with the Slovak side taking less interest in the MiG-21MF than the Czech side. Generally speaking, most of the MiG-21Ms ended up with the Slovak Air Force, while not a single Grey ended up there. On the other hand, the Greys had not yet entered into their general overhauls at the time.

In December, 1992, there was a reorganization of the Air Regiments whereby the 3rd Squadrons were disbanded. Their equipment and personnel were distributed among the other two Squadrons within the Regiment.

(Pg.48 - PHOTO CAPTIONS)

During the shutdown of the airfield at Brno in the fall of 1990, the 8th slp was moved to Namest nad Oslavou.

Removal of the original paint from the aircraft during midlife overhauls was a task that commanded quite a bit of displeasure in the members of the 6th sbolp. Besides aircraft '7702', '7701', '7703', '7704', '7707' and '7801' all received this treatment. All other aircraft were repainted by a procedure that dispensed with the removal of the original paint, and the new scheme was applied over the old. Although the colors were theoretically identical, weathering and bleaching caused there to be marked differences. The new paints always peeled...sometimes more, sometimes less. This made for some interesting schemes composed of four upper and two lower surface colors.

The service life of '8206' began in October, 1973 with the 6th sbolp at Prerov. It went through its midlife physical between September 22nd, 1983 and May 4th, 1984. Later, these overhauls increased the interval time between overhauls from eight to ten years. After the overhaul, the air plane was returned to the 6th sbolp. In January, 1990, the plane was reassigned to the 8th slp in Brno, which at the time was not stationed at its home field of Namest nad Oslavou. After the May 1st, 1991 disbandment of this unit, '8206' was moved to Zatec to the 2nd Squadron of the 11th slp. In September, 1993, two events came together that proved pivotal for this aircraft – the disbandment of the 11th slp, and the expiration of the ten year interval between overhauls. The scheduled general overhaul was not conducted due to lack of funding, a fate that befell other classic MiG-21MFs serving with the Army of the Czech Republic (ACR). The plane was ferried over to Line for storage, which translated to withdrawal from service.

(Pg.49 - PHOTO CAPTIONS)

Aircraft '8206' with cement practice bombs slung under the inboard pylons. This was the only bomb to be carried asymmetrically and only under one pylon. There was a dummy carried under the opposite wing.

Fueling of Aircraft '8206' during a flying event out of Zatec. Note the airplane's red logbook under the inner pylon, sitting on the APU adapter.

MiG-21MF '8206' serving with the 8th slp. The photograph was taken during the time when Brno-Turany was out of commission and the unit used Namest nad Oslavou instead. As can be seen here, many of the unit's aircraft had to be stored out on the open apron.

(Pg.50 - PHOTO CAPTIONS)

Newly arriving aircraft from the 8th slp in a hangar in Zatec. In the background are the last of the MiG-21PFMs that made up the equipment of the 2nd Squadron prior to transitioning on to the MiG-21MF.

'8206' during final preflight before taking off. Alert MiG-29s are visible in the background, along with Zatec L-39ZAs.

Zatec technicians preparing MiG-21MF '8206' for engine testing. There is an EZOP-4 electrical cart behind the aircraft to handle power conversion from the field's 380V network to 28.5 DC and 115V AC of the aircraft's system.

(Pg.51 - PHOTO CAPTIONS)

MiG-21MF '8206' during training exercises at the reserve field of Blatna. Behind '8206' stands '4315' which was destroyed in an accident a few months after this shot was taken.

Aircraft '8206' inside a hardened aircraft shelter awaiting its last flight to Line, fall, 1992.

(Pg.53)

Pplk. v. v. Vaclav Vebr

Born: 1941; Entered Air Force: September, 1959

Air Units: LU 1959-1961, 11th slp, 7th slp, 1st slp

Aircraft: C-105, C-11, MiG-15, MiG-19S, MiG-21F, PF, PFM, MF, U, US, UM, L-29, Z-142, Z-43, Z-256 AFS, L-60

Flight Time: Approximately 2200h, around 1500h in the MiG-21

Memories of the MiG-21MF

The MiG-21MF made itself significantly known through the rapid reaction of the airplane to throttle movement. During a flight in afterburner, and attaining a speed of M1.5, the second burner zone automatically kicks in. The pilot would get the distinct impression that the airplane got a kick in the ass, but, naturally, at the cost of a higher fuel consumption. It was possible to turn off the second zone by throttling back from full afterburner. The aircraft itself received an additional pylon under each wing to allow for other weapons to be carried, and it was possible to hang an auxiliary fuel tank (500l) under each wing. Under the fuselage, there was a twin-barrel GSh-23 23mm cannon. A marked improvement of this version was the installation of a new autopilot, that had two operational modes: the stabilization mode allowed for the maintaining of the aircraft's flight characteristics (inclination, climb or dive) on releasing the control stick, and in the guidance mode, which, again after releasing the stick, brought the aircraft back to horizontal level flight, or if already straight and level, to maintain altitude and course. In concert with the radio altimeter, it would prevent the aircraft from dropping below a preset 'dangerous' altitude. In the cockpit, above the instrument panel, there was a new gyroscopic gunsight. A shrouded screen displaying the fire control radar data was installed on the instrument panel to the right of the artificial horizon. At the top of the pilot's field of view, situational awareness was aided by the use of a rear-view periscope. A disadvantage was that the cockpit lost its radio compass tuning ability.

There was only a set of five buttons for chosen beacons that the groundcrew tuned into the system from outside the cockpit.

At the time when the United States was introducing 'flat trajectory' weapons, the question arose how best to confront this. The fighter air force was considered as part of the solution, who was to train pilots on their search and interception. The radar could not locate such rounds at around ground level, and so visual acquisition was seen as a viable alternative followed by their destruction by cannon fire, not unlike the destruction of German V-1s over Britain during the Second World War. This problem was the focus of several tactical training exercises. Our targets were usually provided by colleagues flying Su-7s flying at 100m altitude and at speeds of over 900km/h. We would visually acquire them in a given grid location and our goal was to get a simulated good shot through the gun camera. The new MFs were the first of the MiG-21s allowed supersonic flight at M1.05 at ground level. Of course, this was in combat scenarios. Under peacetime conditions, supersonic speeds were restricted to above 11km altitude in order to not cause damage in the wake of the resulting shock wave. If I was actually able to acquire a visual on the target, it was necessary to chase it down, and get within firing distance (about 300m) and press home the attack. I spotted my Su at a distance of about three kilometers, and went into pursuit mode. Such a ground hugging flight at over 1,000km/h is a pretty demanding task. Besides watching the terrain, it was necessary to maintain visual contact with your target, and maintain a higher speed than it, in order to hope to catch it. So, you're in full burner with a constant eye on the machmeter in an effort to not generate a sonic boom, constantly toggling between burner on and off, and also keeping a look out on the fuel gage. At this altitude and in burner, the fuel consumption is enormous. When I finally chased my target down, I received an emergency fuel reserve warning, and had to break off the pursuit, meaning my intercept led to nothing.

On one of my first flights in the MF, after taking off and a gentle climb to the north in full afterburner, I released the stick and focused on switching radar and compass channels. The aircraft was stabilized by the autopilot, the speed climbed to 950km/h, the flight was progressing well, up to the moment when I grabbed the stick again. The aircraft began to shake in waves of positive and negative overloads that were recorded by the flight recording system SARP within a couple of seconds. I immediately released the control stick again, and turned off the afterburner, throttled back to idle, and drastically reduced my speed using the speed brakes. At 500km/h the aircraft began to behave normally, and I realized what had just happened.

It was very important after takeoff and during increasing speed to monitor what we called the 'strong arm' signal until it turned off, and watched the ARU indicator, that was to move towards the 'small arm' zone. The ARU was an indicator that displayed the changing relationship between the control stick and stabilizer deflection depending on speed and altitude of flight. At a higher speed, the rudder tended to be more effective, leading to the possibility of exceeding dangerous load tolerances. In my case, 'strong arm' never turned off, the autopilot stabilized the flight parameters, and my failure to monitor gave rise to a very dangerous situation that thankfully turned out well. Under speeds of 500km/h, the 'strong arm' regime is the correct one, and prior to landing, it is necessary to monitor it's signal coming on. The landing was exactly as it should be. On the ground, technicians discovered a fault in the ARU in the electronic connections. It was certainly a lesson for me with regards to

the importance of procedures, and maintaining them, and failure to do so can be extremely expensive.

(Pg.54 - PHOTO CAPTIONS)

This was what the ground crew did to their MiG-21MF at Sliac for its ferry flight to receive its general overhaul. Since this was at a time when the overhaul included the stripping of the original paint, there was no risk of incurring the wrath of the powers that be, and the crews were pretty much free to decorate their machines to their hearts' desire. Aircraft '8207' was delivered in October, 1973, to the 6th sbolp and served with the unit until disbandment. After that, it was reassigned to the 81st sslt at Sliac. The general overhaul was not completed until after the split of the state in 1993. It was stricken off charge at Sliac in 1997.

(Pg.54 - PROFILE)

MiG-21MF '8207', 81st sslt, Sliac, summer, 1992.

(Pg.55 - PROFILE)

MiG-21MF '8207', 81st sslt, Sliac, summer, 1992.

(Pg. 56 - PHOTO CAPTIONS)

Former Prerov MiG-21MFs in the summer of 1991 at the newly formed 81st sslt at Sliac. This unit later would form the basis of the Slovak Air Force. Accumulating years of service since its midlife overhaul are making their mark on the appearance of the aircraft.

(Pg.57 - PROFILE)

MiG-21MF '9413', 1st lshp, Prerov-Bochor, July, 1993.

(Pg.57 - PHOTO CAPTIONS)

After the disbandment of the 6th sbolp, MiG-21MF '9413' was transferred over to the lshp (Training Regiment) in April, 1991, located at the same airfield. In September, 1992, a fracture was discovered in the blown flap system precipitating the exchange of the one complete wing in June, 1993. This came from MiG-21M '1207' which collided with MiG-21M '1205' at Line, was repaired, and was subsequently damaged beyond repair in a landing incident with the 1st lshp at Prerov.

On July 28th, 1993, a landing gear malfunction kept it from being extended. The Slovak pilot, Milan Molent, was at Prerov completing his training, and landed only with the front gear extended on a grass strip. Only the keel under the rear fuselage was damaged. Although the aircraft was deemed repairable, it was also surplus, and was dismantled at the field's repair facility. The odd marking of the vertical tail surface was the result of several coats of paint. The original paint had significantly faded, and the faded green was partially overpainted with a darker tone. Later, the aircraft went through its midlife overhaul, during which a new coat of paint was applied over the existing. This began to peel, revealing the underlying paint, including the provisional camouflage repair work. At one point, this airplane exhibited three tones of green and two of brown.

(Pg. 58 - PHOTO CAPTIONS)

As was noted in the write-up on MiG-21Ms '1113' and '1114', Crew Chief Petr Burian did not sit on his laurels on his new assignment with the 6th sbolp at Prerov. As was the case in 1989 with the 4th slp, he was able to tastefully and attractively decorate the MiG-21MF assigned to him prior to its handing over to the 81st sslt. The starboard side received the inscription 'Prerov 1991' along with the city Coat of Arms. The camouflage pattern on the wings and elevators is not photographically documented.

(Pg.58 - PROFILE)

MiG-21MF '9501', 6th sbolp, Prerov-Bochor, July, 1991

(Pg.59 - PHOTO CAPTIONS)

MiG-21MF '9709' of the 1st Air Training Regiment from Prerov.

In 1990 the 8th slp flew from Namest nad Oslavou while their home field at Brno-Turany underwent maintenance. After only a few years after midlife overhaul conducted at Dresden, the look of the aircraft began to change. The camouflage paints did not peel, but they began to lose a lot of their density. The red in the national markings faded to essentially non-existence, and there was a marked decrease in the brown fields on the wings. The natural metal began to lightly expose itself on the access covers of the SPS blown flap system. Unpainted pylons, cannon fairing, and landing gear doors in the underside color of the airplane were all characteristics of East German camouflage.

Besides green repair work to the camouflage paint, the spraywork to the red segments of the national insignia on the right side of the tail using automotive paint can be seen.

(Pg.60 - PROFILE)

MiG-21MF '9711', 8th slp, 2nd Squadron, Namest (during maintenance at Brno-Turany), May, 1990.

(Pg.60 - PHOTO CAPTIONS)

The white code border was applied by the regiment ground crew.

MiG-21MF at its other operator, the 11th slp at Zatec in July, 1991, during transition of pilots from the MiG-21PFM onto the MF. After a short stint at Zatec, '9711' went into its general overhaul, after which it was assigned to the 4th sslt at Prerov, stripped of its camouflage paint and sprayed in silver on all surfaces. Its thirty year career ended at Caslav in 2004.

MiG-21MF in the Czech Republic

The Czech Republic, at the point of its existence, had in its inventory three MiG-21Ms, thirty-two MiG-21MFs and nineteen 'Greys' distributed among the following units and locations:

TABLE:

Quantities of MiG-21M/MFs in 1993

Unit/Airfield	MiG-21M	MiG-21MF Silver	MiG-21MF Camouflaged	MiG-21MF Grey

Note: Silver aircraft are Series 43 to 53, Camouflaged are Series 76 to 99. After midlife and general overhauls, a small number of aircraft went from camouflaged to silver, and vice versa.

Although initially the 9th slp at Bechyně was considered a prospective unit, the opposite ended up being true and the unit was disbanded altogether on May 31st, 1993. Four 'classic' MiG-21MFs were reassigned and handed over to the 11th slp at Zatec and eight Greys were accepted by the 82nd Independent Fighter Squadron in Mosnov.

The fall of the same year meant the end for another fighter unit, the 11th slp when the order came down September 15th on the unit's disbandment by December 31st, 1993. Their MiG-21MFs were flown to Caslav, where they were integrated into the 28th sbolp, specifically to its 2nd Squadron, where they complemented the MiG-21Rs taken over from the 47th pzlp (Reconnaissance Regiment). Later, in 1994, this Squadron was re-designated as the 43rd Squadron. The remaining two silver and four camouflaged MiG-21MFs from the 11th slp were transferred to the 82nd sslt at Mosnov. *(continued on page 92)*

(Pg.61 - PHOTO CAPTIONS)

Top: '2614' was the second of three MiG-21Ms that remained in the Czech Republic. On the 13th of June, 1970, it was accepted by the 4th slp at Pardubice. There, it remained until the disbandment of the unit in the summer of 1989, when it was transferred to the 3rd Squadron of the 5th slp at Line. At its new home, it received the Squadron marking, a crest with the head of a dog, on its silver finish. After the disbandment of that unit, the plane was reassigned to the 1st slp at Prerov as a training aid after the retirement of the MiG-21F. With the training unit, the aircraft survived the split of Czechoslovakia and in December, 1993 was reassigned yet again, this time to the 28th sbolp at Caslav. As a result of the rivalry between Squadrons, the aircraft had a marking with a jackal added beside the unit emblem with the dog. On January 1st, 1995, it entered the inventory of the 43rd Squadron.

(Pg.62 - PHOTO CAPTIONS)

'2614' at the Training Regiment in Prerov. The large inscription on the spine reads, translated, 'During Refueling, Gently Rock the Aircraft' initially was exclusively seen on aircraft of the 4th slp at Pardubice and later, the practice was taken up by Bechyne as well. Aircraft that came to Bechyne from other units received the stencil with a slight grammatical variation that doesn't change the English translation. The MiG-21 was the last of the MiGs that didn't have a pressure refueling point and the instruction noted above was necessary for the proper de-airing of the fuel tanks. A canvass was typically placed on the left wing during refueling and is shown here with the aircraft's red logbook placed on it.

MiG-21M '2614' in an alert configuration with one PTB-490, and pairs of RS-2US and R-13M missiles.

(Pg.63 - PHOTO CAPTIONS)

'2614' at Caslav's 'sheet metal apron' with a training acquisition round under the outboard pylon. There is a rendering of a jackal head beside the dog head unit insignia. Behind the nose gear well there is an antenna for the Bendix King KXP 756 ATC transponder. '2614' was the only MiG-21M with a white bordered fuselage code.

While the airfield at Caslav was undergoing work in the spring and summer of 1996, its assets were moved to Ceske Budejovice. Aircraft Technician and an authority on the history of Czechoslovak MiG-21s, Stanislav Rogl, removed both of the head insignias from the nose of the aircraft in May, 1996 and replaced them with the inscription seen here, translated as 'I am the longest serving MiG in the Czechoslovak Air Force'. On the unit's return to Caslav, the aircraft recovered its jackal head insignia, this time on the right side of the nose. After being retired in December, 1997, it became part of the inventory of the VHU (Military History Institute) and is at the Caslav airfield. As one of the last three Czech MiG-21Ms, it was not dismantled and became a component of the military museum.

(Pg.63 - PROFILE)

MiG-21M '2614', 4th zsl, 43rd Squadron, Ceske Budejovice (while home field was undergoing maintenance), June 1st, 1996.

(Pg.64 - PHOTO CAPTIONS)

MiG-21M '2701' also had a fairly interesting story behind it. After being delivered in June 1970, it served with the 4th slp, as did all MiG-21Ms, at Pardubice. After a landing incident in October, 1985, it was transferred to Presov as a teaching aid in training mechanics. In June, 1989, a group of technicians conducted the necessary work to allow the aircraft to be flown to the 5th slp at Line. The aircraft received the insignia of the 3rd Squadron on the nose. The author of the marking, a dog's head, was Technician Petr Fejk. As the only aircraft in the Squadron, it also carried the unfinished rendering of the city crest. After the 5th was disbanded, this aircraft did not go to the Training Regiment as did all other MiG-21Ms, but rather was reassigned to the 11th slp in Zatec. After the split of Czechoslovakia, the Slovak side received virtually all of the MiG-21Ms. However, since '2701' had a blemish in the way of the hard landing, and because Slovakia demanded equipment in perfect condition, '2701' remained with the Czech side. After the disbandment of the 11th slp, it became a training aid at the Military Academy at the airfield located at Brno-Slatina. Today, it is in the collection of the Technical Museum in Brno. The photograph shows the aircraft during its final landing at Brno-Turany.

(Pg.64 - PROFILE)

MiG-21M '2701', 11th slp, 2nd Squadron, Brno Slatina (after ferrying from Zatec), June, 1993

(Pg.64 - Caption for the bottom photo)

MiG-21M '2701' being towed to a hangar at Brno-Cernovice. Given the aircraft's age, some components were donated by other birds. The port landing flap carried a camouflage pattern, and the starboard front speed brake wasn't a dense yellow color on its interior face as were the other two brakes, but a grey-green. The inboard pylons were from Grey '4175' (port) and '4008' (starboard), and thus were a light grey.

(Pg.65 - PROFILE)

MiG-21M '2701', 11th slp, 2nd Squadron, Brno Slatina (after ferrying from Zatec), June, 1993

(Pg.65 - PHOTO CAPTIONS)

Members of the Military Academy accepting their new teaching aid. The aircraft was flown to Brno by Frantisek Hlavnicka.

(Pg.66 - PHOTO CAPTIONS)

Grey '4127' on the ramp at Mosnov with the 82nd ssLt. A distinguishing feature from the standard coloring of the Greys after midlife overhauls is the emblem of the defunct 8th sLp derived from the marking of the No.313 (Czechoslovak) Squadron of the RAF during the Second World War.

Aircraft '4127' was one of two MiG-21s that carried the knight logo of Eduard Model Accessories. Grey '4127' flew out of Ceske Budejovice with the 1st sLp from 1975 to the spring of 1989, after which it was assigned to the 8th sLp in Brno, and after that unit's disbandment, with the 82nd ssLt in Mosnov. In June, 1991, the Squadron Engineer Karel Cvancara picked out this aircraft for the work of applying the knight to the fin side, and the application of the stickers under the cockpit. Unfortunately, during its first flight, the aircraft, piloted by Pavel Vesely, suffered a birdstrike during a take-off that had to be aborted, and the plane ended up off the runway. The landing gear was damaged, and the engine sucked in some dirt from the adjacent field. The aircraft was delivered to LOK, where it went through its general overhaul which wasn't completed until March, 1994, and from then on the aircraft served with the 42nd Squadron at Caslav. The aircraft was brought up to MFN standard and was destroyed in an accident on October 10th, 2000.

'4127' decorated with symbols and logos of the firm Eduard Model Accessories.

(Pg.67 - PHOTO CAPTIONS)

MiG-21MFN '4127' on the firing range at Poland's Slupsk. The paint, following general overhaul, is completely new. The dog head emblems were never completed.

(Pg.68 - PROFILE)

MiG-21MF '4127', 82nd ssLt, Mosnov, June, 1991.

(Pg.69)

Karel Cvancara

Born: 1963

Entered Air Force: 1986

Technician and Base Engineer for: L-410, An-12, An-26, Il-14, MiG-21, L-39, Mi-2, Mi-8, Mi-9, Mi-17, Mi-24, PZL W-3A

Air Units: Air Transport Regiment VU 2073 Mosnov, 82nd ssLt Mosnov/Prerov, 33rd zVrL Prerov, SOR Quick Reaction Force during 33rd zVrL, GSh ACR.

Mosnov MiG-21MF '4127'

By way of strange coincidences, this specific airplane intersected with my life and many times, I didn't even realize it. It was only recently, after Eduard released their MiG-21MF kit, that I began to search for photographs of the plane, and after several months, a rather remarkable, if forgotten, history came to see the light of day. My friends took notice, and requested that I share the experience here.

The story begins with the construction of this MiG-21MF on August 1st, 1975, in the former Soviet Union. It was allocated the serial number 96004127, the practice of which was to use the last four digits as the fuselage code. The aircraft was destined for the Czechoslovak Air Force, and after the necessary checks, tests and acceptance flights, was cleared by military inspectors and on September 17th, 1975 was delivered to the 1st slp at Ceske Budejovice. With that, this airplane's career with the Czechoslovak Air Force began. It served at Ceske Budejovice until June, 1989, when it was transferred to the 8th slp at Brno. The 8th slp VU 8548 was formed on October 10, 1945 at Kbely, and its first Commanding Officer was Jiri Hartman (the last CO of No.310 Czechoslovak Squadron, RAF). The unit was formed from 'A' Flight No.313 Squadron RAF and was subordinate to the 3rd Id in Brno. This unit, which was for some time also stationed at Mosnov, was later disbanded at Brno, and out of this came the 82nd sslt. In May, 1991, the aircraft along with the 82nd sslt was moved to Mosnov. Often being relocated, the unit received the nickname that was consistent with 'sslt' but translated to something along the lines of 'Independent Moving Regiment', and it was no surprise. It went from Brno to Mosnov, then on to Prerov and finally to Caslav.

It was in Mosnov where I met up with MiG-21MF '4127' for the first time. I served as the regimental engineer for airframes and engines. The CO of the 82nd sslt was at the time my friend and devoted modeler Colonel Oldrich Mlatecek. At that time, the aircraft was really just one of many, and I had no notion of how our paths would cross in the future.

Also at that time, the firm Eduard was in existence and successfully expanding. During a talk with a friend of mine and one of the company's founding members, Karel Padar, I expressed the idea of how cool it would be to have the company logo applied to an actual aircraft. One thing basically led to another, and one fine day I received a parcel with the required templates and a supply of paints in spray form.

The whole thing was supported by Olda Mlatecek, who gave the green light to go ahead and apply the logo to one of his MiGs. This was back in 1990/91, at a time when something like this was not overly common. In fact, this was a bit of a pioneering undertaking, who's understanding from the higher-ups within the PVO Division was not guaranteed.

Our first step with Olda was to simply evaluate the inventory and select the machine with which to proceed, which would be considered the best within the unit. This ended up being MiG-21MF Grey '4127' and with this, this specific aircraft began to develop a certain uniqueness.

Soon after, we met up for the second time, over a weekend in June, 1991. Back then, along with a friend who's name unfortunately escapes me, we got to the apron, collected all the step ladders we could, and began decorating. It was a beautiful, sunny day. We progressively added template after template, added paint color after color, and the Eduard knight on both

sides of the fin began to take shape. We placed him ahead of the national insignia and just a tad lower, and it truly shone against the light grey background. After completion of the knight, we were left with the application of the Eduard self adhesive stickers that were applied around the windscreen, again, symmetrically on both sides of the cockpit. The small 8th slp badge, developed from the No.313 Squadron RAF marking, that was placed above the AoA vane (so only on the port side) earlier, naturally remained intact. It was a fitting tribute to the Spitfires of the RAF's famous No.313 Squadron from which the 82nd sslt directly descended. It was a shame that this fact was largely lost on the remnants of the 8th slp that were integrated into the unit. This marking would certainly look good on the Gripen as a reminder of the history that we should be very proud of.

After completion of the work, we turned our attention to photographic documentation. At the time, I realized that I had left my camera at home. Fortunately, my colleague could not say the same. And this marks the beginning of a set of coincidences that would intersect me and my Eduard MiG through the future.

At that time, I shrugged off the forgotten camera. Certainly, there would be many opportunities to photograph the plane later on. And then it began. My colleague was from Brno, and that is where he submitted his film to be developed. But, at least according to him, the film was lost. Simply put, he never got the camera or the photographs back. My subsequent attempts to take pictures came to naught. Fortunately, someone had had better success, and photographs, through a happy set of circumstances, somehow found their way many years later into the archives of two brothers, Michal and Martin Janousek.

Immediately after that weekend, there was a so-called 'flight element' event taking place. That meant that the unit was visited by personnel that were in leadership roles, and they actively took part in this event. This was a way that the higher-ups, including pilots, could keep up their ratings, their effectiveness and maintain prescribed flight hours. What then happened is not something that I unfortunately witnessed first hand, since I personally did not take part, but heard of later, and I will try and describe the event fully and accurately.

It is a beautiful June morning, and a flight day. Flight preparations are in full swing. As a part of that, aircraft are being allocated to specific pilots, and they themselves are in the process of familiarizing themselves with the training exercises they are to demonstrate. This includes the possibility of aircraft choice. Every rider has his favorite horse, and tries to fly the machine that suits him the best as much as possible. This time, though, it's a bit different. The 'guests' have first choice. Part of the 'higher up' inspection includes an inspection of the ramp. It's a beehive of activity, a ballet of many people that is very well rehearsed and backed up by years of experience. Technicians are preparing aircraft for flying and guide the required maintenance equipment to the aircraft. Individual specialists replace each other and logbook pages continually fill up. Everyone knows exactly what to do, and when to do it. Among all of this, an invite is issued to an official. The tom tom signals 'danger in the den' – nobody likes these guys looking over their shoulder, even from a distance. One of them, Colonel Engineer Pavel Vesely, has become captivated by the newly decorated '4127'. The tension rises. What will happen next? Will the crap hit the fan? An order for immediate removal of the art? This was something rare at the time. Instead, the words 'I want this one'

rang out to the smiles and relief on the faces of the technicians bent over their work. The Eduard knight got the green light.

Flight preparations are winding down. Pilots and engineering personnel meet. Meteorological representatives are consulted. They have it easy, as it's really a beautiful day, not a cloud in the sky, visibility unlimited. In short, the conditions are ideal. The final preparations are made with whatever remaining special items need attention. At the end of it all, the final go ahead is given, and the next phase is initiated.

The ramp is approached by the pilots who head to their designated, or chosen, aircraft. Colonel Engineer Pavel Vesely approaches '4127'. The technician delivers his report, and the mandatory preflight is made. Everything looks to be OK. The pilot's signature in the logbook translates into '...and she's mine for the next fifty minutes'. He knows very well that the technician is merely lending him the aircraft, and so is always just a little bit nervous about both of them returning safely. What the tech wants most after the flight is to see the smile and hear the words 'Thanks! No troubles.' and the corresponding 'NT' in the logbook together with the pilot's signature. So, up the boarding ladder, with the technician's assistance, and he pulls the safeties out of the ejection seat. One final glance over key areas, confirming that all's well. The SUEZ (electrical vehicle on a Praga V3S chasis), on the order of the technician, belches out a black cloud of burnt diesel and starts up. The pilot pulls his eyes off the cockpit instruments and switches, and looks at the technician. He sees his thumbs up signal. Switched to external power, instruments all indicate exactly what they should, and the pilot gets the signal to start the engine. The starter-generator begins to turn the engine, SUEZ screams at full power, supplies energy, and the engine RPMs climb. Idle. Switch over to on-board systems. The SUEZ umbilical cord is disconnected and is safely cleared of any exhaust gases. RPMs and temperatures are within parameters, all instruments are checked, and they too show prescribed measurements. The pilot lifts his eyes from the instrument panel, and gives the thumbs up. The tower gives permission to leave the apron and enter the taxiway and the ground crew remove the wheel chocks. The final eye contact is made between the key personnel of this entire action, between the pilot and the technician. Nods and thumbs up... The crew chief salutes. It's not just a simple gesture, but a message to the pilot in the cockpit, a sort of unspoken 'good luck'.

The engine RPMs whine at an increasingly higher pitch and the aircraft begins to move forward. The pilot presses against the braking lever, and the machine elegantly rocks on its front oleo in a bowing gesture to all those around, acknowledging their quality work. All's well, and on we go. A turn onto the centerline of the ramp, throttle to idle, and a gentle roll. Here, the ramp is left behind. The runway threshold passes under the airplane. The pilot's heartbeat is synchronized with the aircraft. The excitement of the pilot is difficult to contain, even if it has been repeated a hundred times before in a familiar routine.

The pilot sees the crowds of ground crew on the sides of the taxiway. On signal, he stops at the line at the end of the runway. This is the final preflight check; the final safety check. Ground crew disappear below the wings of the plane, and perform the last mandatory checks. Here, there is no room to overlook a single thing. Everything is dependent on the mutual trust between ground crew and pilot, and in the air force, this is to a very high standard.

Once again, the raised hand with the thumb up in the air signals that all's well. The pilot requests access to the runway. His request is granted. A few more meters and he finds himself at the end of the strip. He lines himself up with the centreline. Brakes, instrument checks. Permission to take off, and the throttle is pressed forward and then pushed all the way, the afterburner kicks in, and the aircraft fights with the brakes. Take-off. The brakes are released, and the aircraft feels as though it just got a major kick in the ass, and charges forward. The speed increases like a rocket. With a smooth pull on the stick, the aircraft rotates and begins a climb into the sky. And suddenly, a loud bang! The heart rate goes through the roof. It's only a matter of a fraction of a second. Questions race through the pilot's head: 'A birdstrike? What about the engine? What about the plane? Abort take-off!' Thoughts race at an incredible pace, and the eyes furiously alternate between the cockpit instruments and the outside world through the windscreen. Speed brakes are deployed. The throttle is pulled back to idle. The runway at Mosnov is over four-and-a-half kilometers long; hopefully, it'll be enough. However, '4127' is full of fuel, and is coming back down hard. The brake chute is deployed, but the end of the runway is coming up damn fast. The pilot realizes that this is not going to work out as hoped after all. He braces for leaving the runway, and in a moment, the time has come. The concrete ends, and the aircraft screams onto the adjacent grass field, and finally comes to a rest, but in an emergency situation. The engine is shut down, and the tower contacted. In the distance, emergency vehicles; an ambulance, firefighters, and so on, are dispatched. It's all over. Actually, it ended quite well, and the pilot is uninjured. An examination of the airplane confirmed that in fact, '4127' did suffer a birdstrike. The marks on the fuselage did the talking. The pilot, though, couldn't have known that the bird was not ingested into the engine, and that he could have simply kept flying. However, he did the right thing.

Unfortunately, '4127' flying days are over for quite some time. The damage is serious. The intake is full of dirt, and the engine ingested some of it. The engine's a writeoff, and to that, the landing gear is damaged. '4127' is not well with a damaged heart and broken legs. The engine can be replaced relatively quickly, but the damage to the landing gear is beyond the capabilities of a unit level repair. '4127' is therefore transported to the LOK (the Kbely repair depot) at Prague.

Further fate of the aircraft is not entirely clear. It is not certain if '4127' flew after repairs or not. It is most likely that it was stored at LOK, and then passed through its general overhaul in September, 1993. That was completed on March 28th, 1994 and then was ferried on April 29th of the same year to the 4th sslt at Prerov, which was just the redesignated Mosnov 82nd sslt that was moved in the meantime. The hero of our story was stripped of her paint over the course of the general overhaul, and so lost all of the markings placed on her, including the beautiful Eduard knight....unfortunately, forever. I was also stationed at Prerov for a short time, and maybe even saw my '4127', but as a matter of coincidence and did not even realize it. That would be because I was already assigned to the Gsh ACR. Along with the 4th sslt, '4127' then went on to Caslav, where this unit was disbanded and its aircraft were passed on to the 4th zTL, specifically to the 42nd slt. Among them, officially from January 1995, was 'my 4127'. In 1999, another change had been implemented, and '4127' now figures in with the 41st slt. At the time when '4127' flew out of Caslav, it received a green shield on the nose on which the unit dog head emblem was to be painted. However, I have been unable to locate a

photograph of the plane with the completed badge. Similarly, there are photographs showing the aerodynamic fences on the wings clearly in yellow, with black tiger stripes that also appeared on the auxiliary intake doors and the landing gear covers.

It seemed like bad luck was losing its grip on '4127'. Thanks to a high usability still left in it, it was chosen as the prototype for the MFN upgrade that would bring it up to NATO compatibility. This upgrade integrated an AN/APX-100 IFF interrogator, NAVSTAR Trimble 2101 Plus GPS receiver, DME-42 radio navigation system, VIR-42 ILS system, two channel UHF/VHF LUN 3520 for two-way communication, an ARK-15 radio compass, and finally, new anti-collision lighting.

With that, '4127' joined the ranks of the elite among MiG-21s in the Czech Republic. Only ten aircraft were designated for this upgrade. It seemed like it was destined to enjoy a long service career in the Air Force, at least insofar as the MiG-21 was concerned, but fate would deal a poor hand to '4127'.

The modernization was complete and another nine planes were so modified. '4127' once again played a starring role on the Caslav ramp, but unfortunately only until October 10th, 2000. On that day, tragically, both pilot, Mjr Ivan Ondrak, and plane flew for the last time.

It was a two plane flight, and the mission was to conduct a combat exercise. What followed is largely speculation. It was typical fall weather, so nothing to write home about. The ceiling was low. Nevertheless, the pilots received the go ahead to conduct the training exercise. Due to the conditions, the pilots likely found themselves often flying below a preset safe altitude, setting off a very unpleasant alarm in their headsets, and apparently, both pilots disabled this alarm. But again, that is only speculation. The training exercise was concluded and both pilots were heading back to Caslav. However, they neglected to turn the altitude alarm back on. At that time, I was onboard an Mi-17 and was heading to Prague, when we entered the airspace around Caslav, and received orders changing our course and flight plan. The cloud cover was low...very low. Under those conditions, and in the mountains, the ceiling is virtually at ground level. The reason for our new orders was the crash of two MiGs in the vicinity of an ammo dump near Caslav. Our Mi-17 was close, and we were on the scene within a matter of a few minutes.

The last thing that the Caslav air traffic controllers heard was the emergency signal that indicated an ejection. After that, all contact was lost. At the time, it could not be confirmed if one pilot had ejected, or both.

We arrived at the impact point of both planes. Under me, in the trees, I spotted something that resembled a piece of a parachute. We were guided to a suitable landing spot and set down. We piled out of the helicopter with full anxiety. We learned that what we were dealing with was not only a catastrophic event, but a dual one. Both pilots were tragically killed, and so there was no one for us to help. The lead, who was Mjr Ondrak, whose nickname was 'Cert' ('Devil') managed to pull on the ejection handles, but there was not enough time for the system to save his life.

At the point of impact, they were not far from the landing strip and despite the low ceiling, they surely believed that, thanks to their familiarity with the surrounding terrain, they could safely get below the cloud deck and set down on the runway. Unfortunately, when the clouds

broke ahead of them, all they saw were trees and by then, it was too late to avoid the inevitable outcome.

And without even knowing it at the time, that was my last meeting with 'my '4127''. This airplane, guided to tragedy by fate, became the last MiG-21 lost in the Czech Air Force. It is quite remarkable how this plane meandered in and out of my life, and that I would somehow have a small role to play in its tragic end.

The year 2000 saw the removal of MiG-21MFN, fuselage code '4127', serial number 96004127, from the register of aircraft. It served for a total of twenty-five years.

(Pg.72 - PHOTO CAPTIONS)

MiG-21MF '4315' was interesting in the Czechoslovak Air Force by virtue of the fact that it was originally flown in bare metal, later gaining a camouflage scheme. Usually, the reverse was true; camouflaged aircraft becoming bare metal. The reason for this anomaly is the earlier experimental LERAN camouflage that it gained likely during its midlife overhaul. After the next (general) overhaul, the aircraft received a scheme consisting of the standard shades for the brown-green MiG-21MFs. The aircraft was lost in an accident on June 10th, 1992.

In September, 1993, this Grey '4421' collided with '7701' flown by Jiri Bucek. Damage to either plane was not great. Repair to '4421' involved the replacement of an aileron, and the aircraft flew for a short time after. In the same year, the plane was put into storage at Line and never flew again. Today, it can be found in the personal collection of a Mr. Palecek.

A new coat of silver paint applied on the occasion of its general overhaul in 1991 led to this MiG-21MF being selected for a commemorative paint scheme celebrating the 40th anniversary of the formation of the 11th slp.

(Pg.73 - PHOTO CAPTIONS)

MiG-21MF '5212' while serving with the 11th slp at Zatec. The emblem on the nose of the aircraft commemorated the formation of the Zatec unit.

(Pg.74 - PROFILE)

MiG-21MF '5212', 4th zSL, 43rd Squadron, Caslav, 1996.

(Pg.74 - PHOTO CAPTIONS)

After the disbandment of the 11th slp, '5212' went to Caslav where it progressively served with the 2nd Squadron, 28th sbolp, 43rd and 41st Squadrons. The only changes that occurred while at Caslav were the finishing of the dog head emblem, the installation of the civil transponder with the associated cockpit equipment and the new antenna for the KXP 756 transponder on the left behind the nose gear well.

(Pg.75 - PHOTO CAPTIONS)

The biography of MiG-21MF '5214' reads pretty much the same as most of the twelve uncamouflaged Series 52 and 53 MiG-21MFs. It was delivered by the Soviet Union in March, 1973. After a short stint with the 4th slp, it and its entire Squadron were transferred to the 5th slp at Line. After the disbandment of that unit in the spring of 1991, it went with all the other 11th slp MiG-21MFs to Zatec. After the disbandment of the 11th slp, its new owner became the 28th sbolp at Caslav. It stayed there, assigned to the 43rd Squadron until its retirement in 1999.

'5214' in its most colorful guise in September, 1996.

(Pg.76 - PHOTO CAPTIONS)

The repair work to the radome was carried out in a very unorthodox manner. The nose gear well doors were dressed up in the national colors, although the white was represented by the natural metal color of the door, the code is outlined in yellow, and the dog head insignia is also painted on the aircraft. The aircraft already sports the transponder antenna in the standard spot, on the port side of the fuselage, behind the nose gear well. The blemish behind the code under the boarding ladder is a remnant of the 2nd Squadron, 11th slp insignia. While serving at Zatec, the aircraft carried no border to the fuselage code, and on the starboard side behind the code carried the 11th slp crest.

'5214' while at a repair depot at Ceske Budejovice in June, 2002. The tri-color on the right nose gear doors was by now removed, as was the non-standard painting of the radome. The airplane, however, did gain the dog head insignia on the right side of the nose.

(Pg.76 - PROFILE)

MiG-21MF '5214', 4th zSL, 43rd Squadron, Caslav, September, 1996

(Pg.77 - PHOTO CAPTIONS)

'5214' touching down at Caslav's landing strip. The laminated antenna cover on the bottom of the rear has a less common green color. This color was only usually used at the beginning of an aircraft's service career when delivered from the factory and at the end, when original spare parts were used. During midlife and general overhauls, the green color was typically stripped, leaving the natural laminate color of brown visible. It often happened that these covers were soaked with fuel that leaked during normal service applications.

While serving with the Caslav unit at Namest, '5214' carried the dog head insignia on the starboard side of the nose. The aircraft carries UB-16 rocket pods.

(Pg.77 - PROFILE)

MiG-21MF '5214', 4th zSL, 43rd Squadron, September, 1996.

(Pg.78 - PHOTO CAPTIONS)

After delivery to Czechoslovakia, MiG-21MF '5303' served with the 5th slp in Line all the way through to the unit's disbandment in May, 1991. After its acceptance flight after undergoing general overhaul in May, 1991, it was sprayed silver on all surfaces. By that point in time, the 5th Regiment no longer existed, and the aircraft was assigned to the 2nd Squadron, 11th slp at Zatec. Here, the Lovec Tygru ('Tiger Hunter') inscription appeared on the left side of the nose, and above it, the No.313 Squadron, RAF badge, along with the skull under the cockpit. The inscription 'Lovec Tygru' came out of the rivalry with the 1st Squadron that began an effort in the spring of 1991 to join the Tiger Association. In this guise, the airplane took part in an airshow at Kbely in September, 1991. In March of the following year, during training off of a reserve field at Blatna-Tchorovice, the aircraft gained a new marking depicting an eagle carrying in its talons the severed head of a tiger on the right side of the nose. This was removed after the training exercise in the south of the country. The blemish left behind after the removal of the marking was visible for a long time. Technician Lubos Habl painted the Eduard logo on the fin of the airplane on the right side. In this guise, the aircraft took part in live fire exercises in Slupsk, Poland in June, 1992. After the disbandment of the 11th slp, the aircraft was reassigned to the 82nd sslt. Here, the colors of the Eduard knight logo gradually wore off, eventually leaving only a black silhouette. The Lovec Tygru inscription returned, this time, though, in a black and yellow tiger striped coloring. The aircraft served out its days at Caslav til 1999, when it was retired along with six other aircraft. Today, the aircraft is displayed in a store with military goods in Montlingen, Switzerland.

'5303' wearing the Eduard logo during live fire exercised in Slupsk, Poland. Exercises that were flown out of Slupsk began in 1992. Up to that time, they were flown in East Germany from Zatec or Line. For such flights, the aircraft carried three auxiliary fuel tanks.

(Pg.79 - PHOTO CAPTIONS)

The photo on the left shows the original look of the inscription, when the aircraft served at Zatec. On the right, the final appearance of the inscription, while at Caslav. The predatory bird on the nose appeared in the spring of 1991, but did not last long. It is not known for certain, if the bird and the Eduard logo appeared on the plane simultaneously.

(Pg.80 - PHOTO CAPTIONS)

A detail shot of the skull under the cockpit of aircraft '5303', and a shot of the left side of 'Lovec Tygru'. The winged horse, Pegasus, became the basis for the 2nd Squadron, 11th slp insignia.

During a local airshow at Prerov in June, 1994, MiG-21MF '5303' was part of the display. After the display, it was pushed back into its hardened shelter by the ground crew to carry out its alert duties. The drawing of the Eduard knight had lost its original colors, and only the outline remained, in black. Earlier, the drawing of the eagle and the tiger head was removed from the nose of the airplane.

Lovec Tygru together with other noteworthy aircraft at Prelouc, seen here waiting for its new Swiss owner. The left side carries the inscription, while the right side has the blemish left over from the eagle marking.

(Pg.81 - PROFILE)

MiG-21MF '5303', 11th slp, 2nd Squadron, Zatec, 1991.

(Pg.82 - PHOTO CAPTIONS)

The second oldest Czechoslovak camouflaged MiG-21MF was delivered to the CSLA (Czechoslovak Peoples' Army) in the summer of 1973 and assigned to the 6th sbolp at Prerov. Between September, 1980 and August, 1981, it underwent its midlife overhaul at LOK, at which point it lost its camouflage paint and continued flying in natural metal. On May 23, 1988, it flew to the 9th slp at Bechyne. At its new home, it carried the original, small Bechyne city crest on the suction relief doors. Between June, 1991 and February, 1992, it went through its general overhaul, after which it was sprayed silver overall. A month prior to the disbandment of the 9th sbolp, on April 30, 1993, it was transferred to the 11th slp at Zatec. Here, it was adorned with the Regimental insignia, that of the 2nd Squadron, the inscription 'DELTA FIGHTER 2' on the left side of the nose, and on the right side, the stylized red and white triangle with the letter 'F', similar to previous 'Deltas' '7709', '2205', and '2410'. After the disbandment of the 11th slp, the plane was transferred over to Prerov's 4th sslt on

September 3rd, 1993. A year later, on October 22nd, 1994, it became one of the aircraft of the LZO, the so-called 'Stress Squadron' at Caslav. After the move of the LZO to Line in May, 1995, Technician Vladimir Dano, the author of many colorful Bechyne aircraft, sprayed the entire MiG black. The gloss black coat was given markings similar to those of other Delta Team aircraft. The three lines within the triangle symbolize the third attempt at resurrecting the display team. The rudder received the letters 'LS' signifying the Stress Squadron (and was in a similar style to that of camouflaged MiG-21MF '7711').

Between February 23rd and April 2nd, 1996, '7701' flew with the port elevator sprayed aluminum. This was a replacement part donated by another aircraft. At the same time, the rudder was also temporarily sprayed aluminum. This later received a black coat, but without the letters 'LS'. After finding a defect on April 7th, 1996, the aircraft was transported to Line's repair facility, and the repair work lasted until June 21st, 1997, and the plane was ferried over to Ceske Budejovice, where, in the meantime, the LZO had relocated to. The repair work conducted utilized a camouflaged wing from aircraft '9412' which did not go through its general overhaul and was stored at Line since October, 1994. In this form, '7701' flew to the beginning of September, 1997, when it was repainted in an intricate splinter scheme composed of three greys. With its new look it survived not only the existence of the LZO in the summer of 1998, but lasted until its retirement in Caslav. Its last flight took place on March 21st, 2002, where it flew to Ceske Budejovice to be stored.

Prior to its general overhaul, '7701' flew in natural metal. For an airshow at Kbely, an interesting weapons combination appeared that was not a common arrangement, consisting of four R-3S missiles. Note the small Bechyne coat of arms that only appeared on '7701' and '7710' from the fall of 1989.

(Pg.83 - PHOTO CAPTIONS)

Black display MiG-21MF in its most striking, and consequently best known, scheme. It flew like this for only a relatively short period of time, from May, 1995 to February, 1996.

(Pg.83 - PROFILE)

MiG-21MF '7701', LZO, Line, May, 1995 to February, 1996.

(Pg.84 PROFILE)

MiG-21MF '7701', LZO, Line, May, 1995 to February, 1996.

(Pg.84 - PHOTO CAPTIONS)

Very well known scheme applied to '7701' that is today referred to as the 'handkerchief scheme'. A big part of this scheme was the input of photographer Petr Soukup. It carried

these colors from September, 1997 to March, 2002. The drop tanks, painted this way as well, were sometimes carried by other MiG-21s, such as the classic camouflaged '9804'.

(Pg.85 - PHOTO CAPTIONS)

The last of the Delta Team aircraft, '7711'. Classic camouflage, applied during general overhaul, was complemented by arrows in the national colors, the Delta Team badge, and the letters 'LS' on the rudder. Later, the vertical tail was resprayed and new unit markings were applied. After that, the aircraft collided with miG-21UM over the base at Ceske Budejovice. This collision marked the end of the existence of the Stress Squadron.

Typical armament of the MiG-21MF. The inboard pylons carry beam riding RS-2US missiles, that the Czechoslovak Air Force already used on the MiG-19PM and lasted in inventory until April, 1999. The outboard stations carry R-13M missiles, which was a modernized version of the R-3S IR guided weapon.

(Pg.86)

Jiri Mrazek

Born: 1960

Entered Air Force: 1983

Air Units: VVLSH Kosice, 6th sbolp, 28th sbolp, 4th zTL, CSA

Flown Types: Z126/226, L-29, L-39, MiG-21U, UM, F, MF, MiG-23UB, BN, ATR42/72, B 737 400/500.

Total Flight Hours: Approx. 7500, 350 to 400 hours on the MiG-21

Although it has been some thirty years since my four year stint with the 6th sbolp at Prerov, I would like to shed some light on what it was like to fly the MiG-21MF through the eyes of a fresh air force lieutenant.

At that time, the 6th sbolp was the only one to have all three Squadrons equipped with this type. I joined the regiment in late 1983, ten years after the unit received its first MFs. It was also a time when this intensive role of the MiG-21MF was already well tuned, same as the training syllabus for the pilot that came to the unit's 3rd Squadron from VVLSH Kosice. It was also a time when live weapons were carried from the home field to associated firing ranges (most often Malacky, Zarovice, Belecko) during tactical training exercises, and then other areas such as Libava, Doupov and so on. In later years, these flights were carried out only with cement practice bombs, and for live weapons firing, flights to Malacky were organized, where the firing range was 'just around the corner'. The camouflage schemes of these aircraft are quite clear in my memory, and they tended to look very purposeful.

I have one unique memory of '7701'. On January 19th, 1984, I flew my first solo, a 40 minute flight of up to 2500m altitude. Flights included short and long circuits, approach, and finally a

solo landing. After previous training flights (MiG-21F) and at a combat unit (MiG-21UM), cockpit ground familiarization, various 'blind' cockpit training where the pilot was literally blindfolded and had to point out various instruments and controls, and finally, the flight itself. A closed cockpit, and a new view out of the aircraft, a new 'situational awareness', aircraft behavior, all of which stays with the pilot during transition to another aircraft. A small item found its way into my head, and focused around the size and positioning of the stick. It appeared small and off kilter compared to other types, and the movement seemed heavy to me compared to the MiG-21F, although these sensations would disappear with later flights, except for the 'heavy' feeling. That feeling returned while training with three drop tanks (a configuration we flew as young pilots until a specified number of hours had been flown), and on flights carrying weapons. This was most noticeable during the third landing turn with the gear down, which required a 'lot of leg' – using the rudder so that the turn put you where you needed to be and the pitch and roll indicator ball was in the middle. Back then, I had no idea how famous '7701' would become and would go through several schemes.

The first half of the eighties, the regiment was undergoing an intensive training of new pilots, that would later fill needs of the 28th sbolp at Caslav, that re-equipped with the MiG-23BN. The MiG-23BN at that time was classified, and to be rated on it you needed to be 1st Class rated (only later pilots without a Class rating – without any 'bad landing habits' picked up from the MiG-21, could transition to the BN).

At that time it was the duty of all pilots, for lieutenants, to gain one grade higher with each training year, meaning that after three years, to achieve a 1st Class rating. So, to be consistent with this, our flying ranged in the neighborhood of 80 to 100 hours a year, and we flew two to three times a week. Especially at the beginning, young pilots were limited by the weather – each had his own personal limits imposed with respect to grade. For example, at the beginning of training, only NPP-D (translated to 'Normal Wind Conditions-Day') 500/5 (height of the bottom of cloud cover and 6/8 (visibility in km). Other training parameters might have stipulated ZPP-D of perhaps 400/4 to 300/3, with training at night at the beginning of maybe 600/7. These limitations were imposed by secret order – after having flown a minimum number of hours, training according to prescribed outlines, and the appropriate training on the MiG-21UM.

At around the acquisition of a 2nd Class rating, we would become involved in all forms of tactical training, dictated by the mission requirements. Prior to flying out of Dlouha Lhota, Blatna, we underwent what was known as 'thin strip' training. This involved flying to the field at Piestany, with a runway width of, I believe, 34m. Most airfields had runway widths of 60m (some 45m, others 75m). Landing on a narrow runway, especially in a MiG-21MF, required precisely maintaining landing protocols, including speed, because things tended to stretch out during speed reduction coupled with losing sight of the end of the runway behind the foreground ahead of you. Final correct setting down required precise alignment with the runway and maintaining orientation with the edge of the grass. Here, the MiG-23BN was at an advantage, because the view to the left was noticeably better, but on the other hand, these were more demanding of proper speed and prone to distortions due to the retractable keel, but that is for another chapter...

I still remember my first landing at the field in Dlouha Lhota. A young pilot in training, a responsibility to his colleagues who normally would observe such landings, a certain heightened respect for the aircraft (much better than the reverse), all of which had an effect on the last phase of the flight. I managed to set down a little harder than was normal, and I remember saying to myself after touching down 'that was a kick!' There was no word on the gradual setting down of the nose. I could hear the flight director Mr. Lavicky say 'you can thank the designers of the landing gear!' It all went down without incident, but I had a greater motivation during subsequent landings at this field, weather in the MiG-21 or later in the MiG-23BN.

Several years ago, I bumped into Mr. Strubl, both of us now as civilians. I recalled one of our many flights that took us over a course at low altitudes with different flight profiles somewhere from Banovce southward. Waypoints, as a rule, were not defined by large cities, but rather small towns or villages. After flying the designated course and at a given location of the flight, we were ordered to an altitude of 100m above the ground. These routes were flown at 750km/h. On approaching the airspace under the jurisdiction of the airport at Bratislava, OREB (the radio callout for Bratislava) radioed a request for lowering our altitude over concerns of local air traffic. We were at about 50m when OREB again signaled a request to go a little lower. My reply was 'well, a little more, then'. This was unknown terrain, and there was no thought of busying me eyes by sticking my nose into a map. At this speed, and at around 30m.....I was thinking 'just don't miss the waypoint.' Fortunately, we nailed it right on. On the return flight, I managed to take a picture of the designated church somewhere near Morkovice, and that was that. I remember being pretty much soaked in sweat, but I also remember the feeling of pride of having completed this flight, although to an experienced pilot today, this wasn't an overly huge accomplishment. And the words of the CO after landing – 'well, alright. We had to drop down a bit lower, eh? Timewise it was good, and hopefully the gun camera caught the church; now bring the flight logbook over.'

Over the course of another flight, during another tactical training exercise during the summer months, it was hot enough to be considered borderline for flying. We were prepared to, if conditions permitted, land without braking chutes in order to lighten the turnaround workload of the ground crew. The landing went off without a hitch, all parameters were satisfied, speed good, and I heard the tower say 'no chutes'. I remember thinking 'good...I'll save the parachute packers the work of retrieving the chutes (MiG-21MFs didn't taxi with their brake chutes. They were jettisoned once they turned off the runway). The airfield at Caslav is a bit 'hilly', and at its end it is slightly elevated, followed by a short patch of level ground. I didn't even need to brake much while budgeting my exit speed off the runway, but I did want to slow down a bit before that level ground, and what's this? No reaction. I try again....and again.....fortunately my speed is not that great, maybe a little fast, but I should exit the runway pretty much normally. After reaching the level area, I spot a V3S ahead of me loaded with soldiers ready to pick up any chutes that need picking up! Damn, he is in the wrong spot at the wrong time! I couldn't risk it, it might not work out, one more try, and if it doesn't work, I'd go into the grass. The important thing is that I didn't hit the V3S. Maybe it would've been OK, but... I immediately turned off the engine, and went off the runway by about 50m. I reported: 'on the grass, no damage.' I waited for my ride and was greeted by Mr. Hradecek's 'welcome back among the field pilots.' The plane was towed in from the field and resumed flying after being checked out. As is usually the case in the air force, a number

of things came together at the same time; high temperatures and overheated brakes that did not work as they should under such circumstances. And from that point, I have two incident comments in my logbook while flying the MiG-21MF (the other being regarding a lost heading in clouds), this one reading 'left the runway with no resulting damage; main reason, poor instructions from tower coupled with poorly timed braking by pilot (no mention of the faulty brakes, poor control tower guy...'). The important thing is that nothing major happened and I could continue flying to Doupov.

(Pg.88 - PHOTO CAPTIONS)

MiG-21MF '9707' in May or June, 1989, when it was transferred from the 1st slp to the 8th slp in Brno.

The airplane left the assembly line on August 28th, 1974, and its first assignment in Czechoslovakia was the 6th sbolp in Prerov. During the eighties, this airplane was chosen for an upgrade allowing it to carry the SPS-141 ECM pod. After the midlife overhaul, it was not returned to Prerov, but rather was transferred to Line and the 5th slp. It changed assignments yet again in May, 1988, this time going to the 1st slp at Ceske Budejovice. Another camouflaged MiG-21MF, '9714' made it to the 1st slp from the same unit along with '9707'. Two Greys were delivered from the 1st to the 9th slp at Bechyne, '4008' and '4175'. The reason for this particular exchange of assets between units of Tactical Air Force and the PVOS was that Greys served exclusively with the 1st slp with no SPS-141 compatibility. In the end, the pods were not put to use at Ceske Budejovice due to their age and their complex nature. After the retirement of the MiG-21MF with the 1st slp, '9707' and '9714' were transferred, along with the remaining aircraft to Brno and the 8th slp. While serving with the 8th slp, the aircraft was decorated with the badge of No.313 Squadron, RAF.

After the unit disbanded in May, 1991, both aircraft parted ways. While '9714' flew off to Sliac to the newly commissioned 81st sslt, '9707' strengthened Zatec's 11th slp. Little white stars, repainted in red, stayed with the airplane until retirement. After the 11th was also disbanded, it was ferried over to Caslav and the 28th sbolp, and after that, the 42nd Fighter Squadron.

'9707' together with other MiG-21MFs that came from the Brno 8th slp under the roof of a Zatec hangar.

MiG-21MF '9707' in the spring of 1994 during an airshow at Namest nad Oslavou.

(Pg.89 - PHOTO CAPTIONS)

A photograph of '9707' in September, 1996. The aircraft received small avionic upgrades in the form of a civil transponder (the small antenna behind the front well) and a digital altimeter calibrated in feet.

(Pg. 91 – PROFILE + CAPTION)

MiG-21MF '9707', 4th zsl, 42nd Squadron, Caslav, September, 1996.

While in for its midlife overhaul, a new camouflage coat was painted over the old one. As with most other aircraft that were so painted, this top coat began to seriously peel away, and the aircraft became the butt of jokes, and it was suggested that this one looked like it had gone through the war in Vietnam. So, 'Vietnamese' became its nickname. In support of this name, five small white kills appeared beneath the cockpit, later to be overpainted in red, and remained on the aircraft until it was retired.

(Pg.92)

The 1st of November, 1993, saw the formation of the 4th State Air Defence Corps (sbor PVO), which for the 82nd sslt not only brought a designation change to the 4th sslt, but also a move from Mosnov to Prerov. This was preceded by the winding down of the use of Greys in the unit. Six of them were flown to Line for long term storage, while two were singled out to become museum pieces in Brno and at Kbely.

In the fall of 1994, the 4th sslt moved from Prerov to Caslav (by October 31, 1994). The reason for that were the complaints of the locals over the noise, culminating in the cessation of MiG-21 flights out of Prerov. It also made sense since it was planned to have all fighter aircraft operating from Caslav, although this was not to happen until 1996. While at Caslav, the 4th sslt was renamed the 42nd Squadron. At the same time, another unit was disbanded at Prerov, the 1st slp, but, as mentioned, it no longer operated MiG-21s, and transferred three aircraft to the 82nd sslt a year earlier, another three to the 28th sbolp, and the remaining three were retired.

On December 31st, 1994, an order for the cancellation of all existing fighter units came into effect, and the 4th zsl was formed at Caslav instead. It was composed of three Squadrons, the 41st Squadron with the MiG-23ML, the 42nd Squadron (formerly the 82nd/4th sslt), and the 43rd Squadron (merged 2nd Squadron, 11th slp and the 47th pzlp (reconnaissance)) using MiG-21MFs (the MiG-21R having already been retired). At the same time, Caslav was the base for the so-called Stress Squadron. Its designation in January, 1995 was simplified to 'LZO', initials translating to 'Air Research Institute'. This Squadron was formed on March 1st, 1994. Its purpose was to develop and validate new organizational elements and work procedures to small groups of people who then transfer that knowledge to the units themselves.

At the beginning of 1995, the 42nd and 43rd Squadrons had one MiG-21M, nineteen MiG-21MFs, and six Greys. Another six MiG-21MFs served with the LZO.

The concentration of several units at one field presented certain problems, and so the Stress Squadron moved to calmer surroundings at Line in May, 1995. At this location, personnel conducted work on MiG-21s and ultimately served as a place for their

decommission as well. Their use at Line also brought with it the complaints of the locals, and the Squadron of the remaining three MiG-21MFs and one MiG-21UM moved to Ceske Budejovice through June and July 1997. The end of the unit came with a collision between a MiG-21MF and the MiG-21UM over Ceske Budejovice on June 8th, 1998. The remaining two MiG-21MFs were taken over by the 4th zSL at Caslav.

Caslav saw the downsizing of the three Squadrons to two. On July 1st, 1997, the 43rd Squadron was disbanded and its assets were transferred to the 42nd Squadron. The Caslav base changed the word 'Fighter' in its designation to 'Tactical'. In December, 1997, the final MiG-21M was retired, coded '2614'.

(Pg.92 - PHOTO CAPTIONS)

MiG-21MF '5215' on standby, 4th zSL, Caslav, 1996.

(Pg. 93)

NATO

As 1998 drew to a close, so did the service of the MiG-23ML with the 41st Squadron, and the unit received MiG-21MFs. At that time, the 42nd Squadron, from where the aircraft were sourced, had 24 MiG-21MFs and nine MiG-21Ums. A new role was in the works for the now 23 to 27 year old aircraft. With the anticipated entry into NATO, they were to serve as Quick Reaction Alert aircraft within the NATINADS system. There was no political will to spend money on new fighters, so a plan was formulated to modernize the MiG-21MF (new radar, AIM-120 air-air missiles, new avionics, and so on), on par with the Romanian Lancer upgrade. After members of parliament looked at the proposal, it appeared that given the age of the aircraft, such an investment was a waste of money, and the plan was scrapped. However, it was clear that at least a partial upgrade was necessary, and modernized aircraft received the designation MiG-21MFN ('N' for NATO). The aircraft chosen were the youngest, so came from the Greys. Ten aircraft were to be modified, six of which were currently in long term (five years) storage at Line. The first flight of a modernized MiG-21MFN, '4127', came on February 19th, 1999, and in April, '5603', '3008' and '4017' followed, and by the end of the year, these were joined by '2205', '2500', '4003', '4175', '4405' and '5581'. The upgrade was carried out at Caslav, in co-operation with the repair depot at Kbely. On March 12th, 1999, the Czech Republic joined NATO, and the MiG-21MFNs plugged into the NATINADS system. If it turned out that the Czech Republic did not join NATO, then the army would have given up its supersonic capabilities, and would have turned to seventy-two L-159 aircraft at Caslav and Namest.

The 42nd Squadron stopped flying the MiG-21 in 2000, and flew the L-39ZA until receiving its L-159s in 2001. The 41st Squadron entered the new millennium with twelve classic MiG-21MFs and twelve Greys (ten of which were MFN aircraft). It can be said that the next five years, following the preceding years of constant change, were rather quiet. The remaining MiG-21s were not looked upon as unwanted inheritances of previous years, but rather

they were seen as aircraft that are fulfilling duties, even if to limited degrees by virtue of their age, that came with NATO membership. Resources were available for maintenance and repair of the aircraft. The aircraft no longer went through general overhauls, but went through life extending R-1 Revisions instead, conducted at LOZ Line, and later LOZ Ceske Budejovice (extending service life by 150 hours). Nevertheless, the inevitable decline in the numbers of these aircraft was unavoidable. The planned purchase of twenty-four JAS-39 Gripens was nixed by major flooding in 2002, and literally at the last minute, a lease of twelve JAS-39C and two JAS-39D aircraft was negotiated. These arrived in the Czech Republic in April, 2005. At that time, the last seven Greys (five of which were MFNs) served with the 211th Squadron (renamed from the 41st Squadron on December 1st, 2003). These barely served their rapid response duties (two on alert and two in reserve), received only necessary work, and a minimum of conditioning flights. After the Gripens took over the Rapid Reaction duties on July 2nd, 2005, the last flights of the MiG-21MFs took place on July 12th. In the evening, they were flown to Prerov for further sale or scrapping.

(Pg.93 - PHOTO CAPTIONS)

Top: MiG-21MF '9801', 4th zTL, 211th Squadron, LOZ Ceske Budejovice, 2003.

(Pg.94 - PHOTO CAPTIONS)

A photograph from the winter of 1992/93 showing MiG-21MF at Bechyne with a new classic style camouflage applied during general overhaul that took place in October, 1992. This is one of thirteen Pardubice based camouflaged MiG-21MFs that, after the disbandment of the 4th slp, were handed over to Bechyne.

A photograph from the ceremonial rollout of the LOZ Ceske Budejovice R-1 Revised aircraft in 2003. The same scheme was applied to two other MiG-21MFs, '9804' and '9805', and two two-seat MiG-21Ums. Due to a lack of funds, MiG-21MFN '4175' did not receive the same paint. The new paint on '9801' already peeled off in places after just its first flight. The reason was that the paint was not given enough time to properly harden, and had to be repainted. After that, the paint displayed remarkable resilience, as it did on the other planes so painted. The aircraft in this low-viz scheme did not undergo any major modernization, and received an altimeter in feet (nicknamed, and translated, the 'feetometer') and a civil transponder KXP 756 (with its associated antenna behind and to the left of the front wheel well).

(Pg.94 - PROFILE)

MiG-21MF '9801', 4th zTL, 211th Squadron, Caslav, September, 2004.

(Pg.95)

MiG-21MF '9801', 4th zTL, 211th Squadron, Caslav, September, 2004.

(Pg.95 - PHOTO CAPTIONS)

'9801' in September, 2004 undergoing bang seat work. The aircraft carries what was by then the only weapons configuration in use – two adapters for R-60 missiles and two PTB490 drop tanks. It was retired the same year after having served for thirty years.

(Pg.96 - PHOTO CAPTIONS)

An originally uncamouflaged MiG-21MF after a short, six-month stint with the 4th slp served with the 5th slp at Line up to the disbandment of that unit. From here, it was transferred to the 11th slp at Zatec on March 27th, 1991. After the 11th's disbandment, it was handed over to the 82nd sslt at Mosnov, and after that, the 4th sslt at Prerov. From the 30th of March, 1994, it served with the Stress Squadron in Caslav. From 1995, it served with the 43rd Squadron, also located in Caslav. In the summer of 1998, it went through the R-1 Revision, when it was given an all-grey camouflage scheme. On the occasion of the Czech Republic's entry into NATO, the aircraft was given colorful markings commemorating this event. But first, it was necessary to remove the Squadron insignia, in the form of the familiar dog head, from both sides of the nose.

On the very day of entry into NATO on March 12th, 1999, Quick Reaction aircraft were given a modified weapons combination replacing the up-to-then used two RS-2US, two R-13s and two PTB 490 drop tanks, and removing the Alkali missiles (those being the RS-2US units). There was also a modification to procedures, and the aircraft always took off in pairs.

(Pg.96 - PROFILE)

MiG-21MF '5209', 4th zTL, 41st Squadron, Caslav, April, 1999.

(Pg.97 - PHOTO CAPTIONS)

During a Quick Reaction Alert take-off on April 20th, 1999, aircraft '5209' had the starboard landing flap in brown, likely from a donor aircraft. The aircraft at the time flew with the 41st Squadron.

On June 17th, 1999, '5209' collided with MiG-21UM '9342'. Its pilot, Maj. Ivan Kaiser did not survive.

(Pg.98 - PHOTO CAPTIONS)

This originally Bechyne Grey was ferried over to Line for storage from Mosnov after the disbandment of the 82nd ssLt. It was again pressed into service at LOZ Line, because from 1994, LOK was not performing general overhauls on MiG-21s anymore. After this revision replacing the general overhaul, the aircraft was passed on to Stress Squadron. During work conducted to press the airplane back into service, the front end was resprayed. The aircraft then went on its second (supersonic) flight, after which the paint showed signs of blistering and cracking. The aircraft was not yet brought up to MFN standard, but does already have the KXP 756 transponder. The different shade on the nose section was removed during upgrade to MFN.

After being brought up to the MFN standard, '2500' was dubbed 'the Five-hundred' and flew with no paint on the nose section. This was provisional, as the resources were not immediately available for the repainting of the section. All Greys that were brought up to MFN standard were done so in Caslav.

(Pg.98 - PROFILE)

MiG-21MF '2500', 4th zsl, 41st Squadron, Caslav, 1999

(Pg.99 - PHOTO CAPTIONS)

'2500' during firing exercises in Poland. Inboard APU-60 launch rails hang under the aircraft for R-60 missiles and APU-13M rails for R-3S, or, more likely, R-13M missiles are also carried. Live fire exercises in the Peoples' Republic of Poland really only occurred two times in the history of the independent Czech Republic, in 1994 and again during Ocelot 99. In both instances, exercise was conducted at the Ustka Polygon and were flown from Slupsk.

Anniversary markings were painted on '2500' in 2002 by Caslav technicians. They commemorated the 45th anniversary of the formation of the fighter unit at Caslav, and at the same time resurrected the dying tradition of the Tiger Squadron. Especially along the rear bottom of the aircraft, paint tended to peel off and its frequent touch-up, and for that reason the tiger stripes could vary from picture to picture.

(Pg.100 - PROFILE)

MiG-21MFN '2500', 4th zTL, 41st Squadron, Caslav, October, 2002.

(Pg.101 - PHOTO CAPTIONS)

'2500' on Rapid Reaction duty. From the Prague NATO summit in 2002, the weapons configuration was changed and instead of R-13M missiles, R-60s were used, and these were available in numbers after the retirement of the Su-22, Su-25, MiG-23 and MiG-29. There were also sufficient quantities of their specific launch rails. The missile could not fully cooperate with the old avionics that were found on the MiG-21MF, and could not tilt the infrared seeker. The amount of power that was needed to feed the system was also problematic.

Aircraft '2500' had one anomaly – the simultaneous use of the two interior rear-view mirrors (same as with the MiG-21M previously) and the rear view periscope.

During engine run testing, the nose of the airplane needed to be screened off to prevent foreign object ingestion, most notably the people kind. The airplane needed to also be tied down, and even so, there was the mandatory firefighting assets standing by. This was all based on years of experience that included the deaths of personnel and the total destruction of aircraft.

(Pg.101)

MiG-21MFN, '2500', 4th zTL, 41st Squadron, Caslav, October, 2002.

(Pg.102 - PHOTO CAPTIONS)

One of the last camouflaged MiG-21MFs in service, '9414' flew out of Namest while its home field of Caslav was undergoing maintenance. It carries the weapons that were typical for Rapid Reaction aircraft prior to the Czech Republic's entry into NATO, two R-13M and two obsolete RS-2US, along with a centerline droptank.

R-3S, R-13M and R-60 missiles all had their training versions, basically acquisition rounds. They lacked their motors and fins. They were used often and repeatedly, and their coloring more or less indicated this. There was no training version of the RS-2US thanks to the principle of its guidance system.

(Pg.103 - PHOTO CAPTIONS)

Before being painted in the three tone grey scheme with low-viz markings ('9801', '9804' and '9805'), MiG-21MF and MFNs '4003', '4405', '5512' and '5603' received a new monotone scheme with fuselage codes that, instead of being sprayed through metal templates, were sprayed through templates cut out on plotters. '4405' was also one of the few that, at the end of its service career, used a solid-wheel hub instead of the one with the spokes.

A nice send-off for MiG-21MFs took place during an open house on May 21st, 2005. But, even after that, they continued to serve as Rapid Reaction aircraft until this role was taken over by JAS-39 Gripen on July 1st, 2005. The mood on the occasion of last flights of the MiG-21s on July 12th was bitter-sweet. The aircraft carried inscriptions of 'thank you!' in Russian, along with the signatures and comments of pilots and especially ground crew. MiG-21MFN '4405' left Caslav in the late morning hours to land at Kbely for the last time, and to permanently enrich the collection of the aviation museum there. The small sharkmouths on the droptanks was the work of Martin Kral. The flight lasted to after noon, when the last aircraft took off for the last time through Pardubice, Plzen, Ceske Budejovice and Namest to land at Prerov. For some, they went on to the African nation of Mali, while the remainder went to the scrapyard.

(Pg.104)

The MiG-21MF in Slovakia

The history of the MiG-21MF in Slovakia is not as colorful or as complicated as in the Czech Republic. It can be said that the Slovak Air Force came into being in a green field. The only combat unit that was on Slovak territory at the time of the split was the 81st sslt (Independent Fighter Squadron) based at Sliac and was equipped, not surprisingly, with MiG-21MFs. In the summer of 1992, the time when the splitting of Czechoslovakia was being negotiated, it possessed three MiG-21Ms (inherited from the 9th sbolp) and fifteen camouflaged MiG-21MF (delivered after the disbandment of the 6th and 8th slp). In the fall of that year, after agreeing on the distribution of assets among the two resulting independent states, the Squadron received eighteen classic MiG-21MF (eight uncamouflaged, ten camouflaged, all from the 9th sbolp in Bechyne).

The second unit equipped with the MiG-21 was the newly formed 3rd Fighter Bomber Regiment at Malacky-Kuchyna. This base welcomed 10 MiG-21Ms in the fall of 1992, eight of which hailed from the disbanded 5th slp at Line and two from the 9th sbolp at Bechyne. Another five classically camouflaged MiG-21MFs came from the 9th sbolp as well. The final two camouflaged MiG-21MFs came from the 1st lshp in Prerov.

So, at the time of its formation, the Slovak Air Force possessed thirteen MiG-21Ms and thirty-five MiG-21MFs. There were no Greys that went to the Slovaks.

On the basis of the 81st sslt at Sliac, the 1st Fighter Regiment was formed. Its 1st Squadron had in its inventory MiG-29s, its 2nd Squadron MiG-21MFs, and its 3rd Mixed Training Squadron MiG-21s and L-39s. The 3rd sbolp's 2nd and 3rd Squadron s were equipped with MiG-21MFs at Malacky (the 1st Squadron was equipped with the Su-22 and the 4th with Su-25s).

During the first reorganization of the Slovak Air Force in 1995, it was decided to concentrate all MiG-21s with the 1st slp. As such, all MiG-21s at Malacky were flown to Sliac in September, 1995.

Thanks to organizational changes, the 1st slp, effective October 1st, 1995, became the 31st Fighter Wing with the same number of Squadrons. On October 1st, 2001, the unit was renamed yet again, this time as the 1st Fighter Wing.

Slovak MiG-21MFs were not put through general overhauls or the R-1 Revision upgrades, since they were not seen as prospective assets. The aircraft did not serve Rapid Reaction duties, and their remaining airframe lives were used in training flights. Thanks to the low service stresses placed on them, they lasted in service until the end of 2002, when the final examples were retired from the Slovak Air Force.

(Pg.105 - PHOTO CAPTIONS)

This airplane was assigned to the 4th slp at Pardubice in July, 1969. It went on a long-term loan, from October, 1974 to June, 1987, to the 47th pzlp, located at the same base. During that time, it was given the capability of carrying the SPS-141 ECM pod. It went back to the 4th slp and served another two years, up to the unit's disbandment in the spring of 1989. From there, it went, along with another five MiG-21Ms to the 9th slp at Bechyne. In this photograph from the summer of 1991, the airplane is in the care of ground technicians. On the left side of the nose is the Bechyne city Coat of Arms, and the shadowed code was an informal identifier of the 2nd Squadron.

The MiG-21MF went on to the newly established 3rd sbolp ASR (Army of the Slovak Republic) on December 11th, 1992. The original Bechyne Coat of Arms was sprayed over with a darker tone of silver, and the fin gained a rendering of a bird. It did not fly for very long in Slovakia, and even before its official expiration, it was withdrawn from service in September, 1994.

(Pg.105 - PROFILE)

MiG-21M '1209', 3rd sbolp, Malacky, 1993.

(Pg.106 - PHOTO CAPTIONS)

Initially a Pardubice MiG-21M, this aircraft was transferred to the 81st sslt at Sliac from the 9th sbolp on October 23, 1992. It flew from this base even after the formation of the Army of the Slovak Republic. It held on to all of its colorful markings.

While the red stripes succumbed to the effects of weather, as they did on the Czech museum MiG-21PF, the Bechyne badge maintained its composure even on the retired aircraft destined for liquidation. Officially, it flew its last in 1996, which corresponds to the ten-year period from its general overhaul: June 10th, 1986.

This MiG-21MF was one of the static display participants during a star studded and legendary aviation day at Kbely in September, 1991. It was not chosen at random, because on April 23rd, 1991 it completed servicing during its general overhaul at nearby LOK and its camouflage shone like this.

(Pg.107 - PHOTO CAPTIONS)

After the end of the aviation day at Kbely, '7702' received the markings of its owner, the 9th sbolp. On November 6th, 1992, it was transferred from Bechyne to the 81st sslt at Sliac. From there, it went on to the 3rd sbolp at Malacky, a unit within the now independent Slovak Air Force. In March, 1993, an externally contracted group from the repair depot at Trencin sprayed on the national markings, during which the Bechyne regimental badge remained. Later, the badge was painted over with brown paint.

(Pg.107 - PROFILE)

MiG-21MF '7702', 3rd Sbolp, 2nd Squadron, Malacky, summer, 1995.

(Pg.108 - PHOTO CAPTIONS)

On the nose of some of the Malacky 3rd sbolp, the 2nd Squadron badge was applied – a wild boar likeness.

On the 23rd of September, 1995, '7702' was transferred to its new user, the newly established 31st Air Wing (formerly the 1st slp) at Sliac. With the new ownership, the badge was removed and the aircraft, as shown here, completed its service career in 2001.

(Pg.108 - PROFILE)

MiG-21MF '7702', 3rd sbolp, 2nd Squadron, Malacky, summer, 1995.

(Pg.109)

The former 'Vrakous' ('Physical Wreck') was transferred at Malacky to the newly established Slovak Air Force on October 30th, 1992. Here, though, it didn't live very long, and went on through its general upgrade at LOK, and remained there as did three other Slovak MiG-21MFs, '7704', '7710' and '7712'. As part of the general overhaul, it received a new camouflage paint application, and made its way back to Malacky for a short stay with the 3rd sbolp. On February 25th, 1994, it was transferred over to Sliac. Another change came on July 28th of the same year when it was donated to the RAF Benevolent Fund at Fairford. The Fund

sold it into the US, where on August 9th, 1996 it received Experimental status and flew as a Warbird with the civil registration NX7708.

Overseas, it received a new scheme including newly applied (and identical) fuselage code and national insignia. The scheme, however, was composed of different shades of the colors and varied in the field locations. Currently, the aircraft can be found in the possession of the South Florida Antiquities Defense Museum Inc. It carries its original fuselage code and Vietnamese markings.

It was said of the 77th Series aircraft that they possessed the best flying qualities of all the MFs, and so they were tasked with flying displays at airshows. In these shots, '7713' is shown as an airshow participant in Bratislava in 1996. Sitting out in the open has left its mark on the paint scheme applied a few years earlier during general overhaul.

(Pg.109 - PROFILE)

MiG-21MF '7708', 1st slp, 2nd or 3rd Squadron, Fairford (after ferry flight from Sliac), July, 1994.

(Pg.110 - PHOTO CAPTIONS)

By the following year, '7713' began to appear at airshows sporting a sharp new camouflage. The same scheme was applied to a Slovak An-26.

(Pg.111 - PROFILE)

MiG-21MG '7713', 31st slk, 4th Squadron, Sliac, July, 1997

(Pg.112 - PHOTO CAPTIONS)

A photo taken after midlife overhaul from July, 1983, showing a camouflage scheme in virtually new condition. That, of course, didn't last long.

A shiny new silver paint scheme applied after the recent general overhaul of originally camouflaged '7801' on the ramp of the newly established 81st sslt at Sliac, summer, 1991. In the background are Rapid Reaction MiG-21MF and L-39ZA.

(Pg.112 - PROFILE)

MiG-21MF '7801', 1st slp, Sliac, April, 1993

(Pg. 113 - PHOTO CAPTIONS)

Virtually an identical commemorative three-color scheme for flying displays was applied to MiG-21MFs '4402' and '8208' besides '7801'.

'7801' displaying weapons capabilities. The aircraft carries a typical weapons load for Rapid Reaction duties comprising pairs of RS-2US and R-13M missiles. Underneath the airplane are the less-used PTB800 tank and UB-16 rocket pods.

'7801' also carried a birds head artwork, apparently that of an eagle, besides the commemorative flashing. The devil marking on the spine was painted over and '7801' never flew with it.

(Pg.114 - PROFILE)

MiG-21MF '7801', 1st slp, 4th Squadron, summer, 1993.

(Pg.115)

Memories of '7801' by its Crew Chief, Mr. Milos Brtan

I wanted a cool airplane, and to that end I first sprayed on the eagle head somewhere during April, 1993. It was sprayed through a template using yellow and brown spraypaint. The rest was sprayed with a spray gun shooting synthetic paints and was finally coated with a clear gloss. The head was applied when the aircraft still carried Czechoslovak markings, Slovak markings weren't applied until somewhere around May or June, 1993; I don't remember exactly. At around the same time I also added the blue trim to the head, but the '21' by then sported Slovak insignia. There wasn't a lot of time for the application of artwork, as '7801' was usually in the air, and when it wasn't flying, I had a different aircraft. Because it was among the best of the birds in the unit, it also received the commemorative flash markings in the national colors. Subsequently, she stopped flying and waited several months for a new engine. At that time, I painted a devil motif on the spine. This ended up seeming to me a little overdone, and before it could fly with it, I oversprayed the entire spine in silver. However, at night, the spine really 'shined', and I applied a matt clear coat to it. I only left a thin stripe on both sides, and this way I could tell my '7801' apart from '4402' at night, and the latter also had the colors of the flash in reverse order. She got a really good engine, and when opened up, she could do over Mach 2. I don't recall fully anymore why she stopped flying. There was a leak in tank no.3 or 4 (fuselage tanks), but by then I was working on MiG-29s and Albatroses. I also don't recall if she carried the 'SL' letters before she ceased flying. All of the other small additions to the paintwork on the nose were added after she completed flying and was in the care of the 4th (storage) Squadron. There, they had time to add artwork. Because '7801' still looked good, she was often used in static displays.

(Pg.115 Plan)

MiG-21MF '7801', 1st slp, 4th Squadron, Sliac, summer, 1993

(Pg.116 - PHOTO CAPTIONS)

MiG-21MF '7803' was delivered over the first wave of camouflaged MiG-21MFs in July, 1973 to the 6th sbolp at Prerov. In all likelihood, it was configured in September, 1983, to carry the SPS-141 ECM pod. After going through general overhaul in August, 1991, it was transferred to a new owner, the 81st sslt at Sliac. The still freshly smelling paint began to quickly peel off in many areas. In the photo here from 1992, it is shown at Sliac still with Czechoslovak markings.

The devastation of the camouflage paint continued even with the new national markings. What began as some light bruising in spots developed into large areas of peeled paint.

(Pg.117 - PHOTO CAPTIONS)

In this set of pictures from 1995 taken at Malacky, what is commonly referred to as the 'color of natural metal' has largely taken over. The original camouflage paint remained only on the wings, the fuselage tank covers on the spine and the tail surfaces. '7803' at Sliac after landing. Note the small parachute extending from the fairing at the base of the fin.

(Pg.118 - PHOTO CAPTIONS)

The peeling of '7803' continued up to retirement in 1993 at Sliac. Such deterioration of paint after general overhauls was not common and was probably helped by a faulty painting technique employed on this airplane.

(Pg.119 - PROFILE)

MiG-21MF '7803', 1st slp, 2nd or 3rd Squadron, Sliac, 1995.

(Pg.121 - PROFILE)

MiG-21MF '7803', 1st slp, 2nd or 3rd Squadron, Sliac, spring, 1995.

(Pg.122 - PHOTO CAPTIONS)

Another one of the quartet of MiG-21MF that flew in an East German camouflage scheme after having undergone midlife overhaul. After the disbandment of the 4th slp, it served in Bechyne with the 9th slp/sbolp. In February, 1992, it had passed through its general overhaul, during which the traditional camouflage was applied. From the 9th sbolp it was transferred to the 81st sslt at Sliac on October 22, 1992, but on March 24th, 1993 it was taken over by the 3rd sbolp based at Malacky. For some time, it also carried the wild boar insignia on the nose for a time. After the end of the service career of the MiG-21 in Malacky, it was one of a number of aircraft flown back to Sliac on September 23rd, 1995.

(Pg.123 - PROFILE)

MiG-21MF '9713', 1st slk, 2nd Squadron, Sliac, 2002.

(Pg.123 - PHOTO CAPTIONS)

Aircraft were not stored in hangars at Sliac. The aircraft themselves didn't mind much, but the paints suffered. As a result, '9713' was given a new paint job directly on the field by members of the unit. Maybe even due to the wrong choice of tones, no other aircraft was painted like it. It was one of the last four MiG-21MFs to be retired by the Slovak Air Force and is today in the collection of the Piestany museum, where it was chosen as an interior display piece. The starboard landing flap hails from another camouflaged aircraft.

(Pg.124)

Accidents

The use of military aircraft carries with it a certain risk of mishap. It was no different with the MiG-21M, MF and MFN serving with the Czechoslovakia and Czech Republic.

Date	Fuselage Code	Unit
September 12, 1970	1204	4 th slp
Loss of consciousness during climb, after coming to, Capt. Fantisek Pavlik ejected.		
August 16 th , 1972	5211	5 th slp
Pilot drew the throttle back below SPS flap function, and the aircraft set down before the runway. A base searchlight operator perished along with Maj. Stanislav Bitál.		
March 26 th , 1973	1115	4 th slp
During a loop, aircraft entered into a spin. Lt. Jiri Podnecky ejected.		

October 15th, 1977	4314	9th slp
During aerobatic training, Maj. Jiri Motka was killed.		
January 17th, 1979	7804	6th sbolp
Uncontrollability in high winds, Maj. Jiri Ovissek ejected		
July 22nd, 1980	5494	1st slp
Pilot error in clouds, 1stLt. Peter Dubovsky ejected.		
April 2nd, 1981	2702	4th slp
Loss of control, Maj. Bozej Struz ejected.		
March 3rd, 1982	9715	4th slp
1stLt Bohumil Novotny suffered loss of control and could not recover.		
November 8th, 1982	1202	47th pzlpl
Engine fire, Maj. Jan Hendrych ejected.		
May 10th, 1985	4306	9th slp
Take-off took the plane into a flock of seagulls and burned in a field. Capt. Jiri Dolezal egressed.		
Photographs on this spread: After veering off the runway, a Stress Squadron aircraft flown by Maj. Jaroslav Klacek in Line suffered a collapsed starboard landing gear on January 23rd, 1997. Although the damage to the aircraft was deemed repairable, it was written off, having passed through general overhaul in October, 1993.		
 (Pg.125)		
December 19th, 1985	9812	5th slp
Ground impact during a circuit flight, Maj. Stanislav Pecho died.		
April 15th, 1988	2613	4th slp
Completely running out of fuel, Capt. Karel Prochazka ejected 1km from the landing strip.		
May 4th, 1988	9803	5th slp
Collided with MiG-21MF '9902', Maj. Jan Herzig ejected.		
May 4th, 1988	9902	5th slp
Collided with MiG-21MF '9803', in a simulated attack on ground targets, 1st Lt. Jaroslav Michanco did not survive.		
November 23rd, 1989	9503	6th sbolp
Engine failure in flight, Col. Jaroslav Matusu ejected.		
April 22, 1991	1205	5th slp

Midair collision with MiG-21M '1207', Col..Petr Budinsky ejected.

June 12th, 1991 2704 9th slp
Lt. Tomas Trnecka landed hard, airplane damaged beyond repair.

October 1st, 1991 9706 1st lsp
Engine failure in flight, Algerian student pilot Mohamed Bouchrieb ejected.

February 4th, 1992 1207 1st lsp
Algerian pilot landed poorly, front section damaged.

June 10th, 1992 4315 11th slp
Pilot error put the aircraft into a spin, Lt. Michal Cervenak attempted ejection, but was unsuccessful.

August 28th, 1992 7709 9th sbolp
Col. Jiri Moutvicka died practicing an airshow display.

September 2nd, 1996 5215 4th zTL
Low level flight clipped trees, Maj. Ivo Zachara was seriously hurt.

January 23rd, 1997 9802 LZO
Maj. Jaroslav Klacek snapped the landing gear on landing, repairable airplane was nevertheless written off.

June 8th, 1998 7711 LZO
Collision with MiG-21UM '3756' over the base at Ceske Budejovice, Maj. Lubos Kubat ejected.

June 17th, 1999 5209 4th zTL
Midair collision with MiG-21UM '9342', Maj. Ivan Kaiser died.

October 10th, 2000 3008 4th zTL
Ground impact under high wind conditions, Maj. Zdenek Svoboda died.

October 10th, 2000 4127 4th zTL
Ground impact under high wind conditions, Maj. Ivan Ondrak died.

(Pg.126 - PHOTO CAPTIONS)

A partially retracted left landing gear did not lead to any major damage. Inflatable bags were used to raise the aircraft, The event is not documented datewise, but likely occurred in 1983 when the inflatable bags were put into service and the aircraft still carries its old camouflage that it would've lost during its midlife overhaul in 1983.

Miroslav Dvorak getting into Grey '5494'. On July 22, 1980, this Grey was lost after the ejection of 1st Lt. Peter Dubovsky. Up to 2000, when two MFNs were lost in an accident, this was the only loss of a Grey.

Crash of '9812' of the 5th slp on December 19th, 1985.

(Pg.127 - PHOTO CAPTIONS)

On the very last day of flying for the 5th slp on April 22, 1991, there was a collision between two MiG-21Ms. Col. Petr Budinsky ejected from '1205'. Col. Jan Celechovsky managed to land back at Line. The aircraft suffered a damaged exhaust section and the right elevator, with minor damage to the lower speed brake. The aircraft was repaired using parts donated by MiG-21PFM '4404'.

(Pg.127 - PROFILE)

MiG-21M '1207', 5th slp, Plzen-Line, April 22, 1991.

(Pg. 128)

Abbreviations:

ACR – Army of the Czech Republic
ASR – Army of the Slovak Republic
CSLA – Czechoslovak Peoples' Army
GO – General Overhaul
GSh ACR – General Headquarters of Army of the Czech Republic
LA – Air Army
LOK – Repair Depot Kbely (currently LOM Praha)
LOZ – Air Repair Base (formerly POL-4)
Ishp – Air Training Regiment
LZO – Air Research Institute
POL-4 - formerly Mobile Aircraft Repair, later Divisional Repair
PVOS – **State Air Defence**
pzlp – Reconnaissance Regiment
sboip – Fighter-Bomber Regiment
slk – Fighter Wing (Slovakia)
slp – Fighter Regiment
slt – Fighter Squadron
sslt – Independent Fighter Squadron
VU – military unit
VVLSH – Air Force University
zSL – Fighter Air Force Base
zTL – Tactical Air Force Base
zVrL – Helicopter Air Force Base

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