

ROMANIAN AIR FORCE

The **Fortele Aeriene Romane** also on it's way to NATO

PRESENT, FUTURE AND A LITTLE HISTORY

part 1 of 2

NOTE: Due to economical reasons on our site we give you hereby our **COMPLETE** article (parts 1 and 2) in one document. We hope you enjoy it !

ROMANIA

Clenched between the Ukraine, Moldavia, Bulgaria, Servia, Hungary and the Black Sea. An important strive of Romania is to become a fullworthy member of the European Union (2007) as well as NATO (2004). Concerning the first approval of some points is desired, thinking of fighting corruption or improval of infrastructure. The country is poor, never the less the strong willing of approval has found it's roots and the goals are crystal-clear. As to the militairy stage the Fortele Aeriene Romane (FAR) is reasonably on it's way considering that for some time already they participate in the 'Partnership For Peace'programs, and within Nato connection they co-participate in excercises such as Cooperative Key and Cornerstone 2003 where there is a strong coorporation between various countries amongst others the United States. In this kind of excercises often humanitairian disasters are set in scene, to be handled and dealt with by the participating countries to a satisfying stage without any direct threath's for all involved. 'Pilot And Arplane', the Dutch largest aviation magazine got the chance to visit several RoAF bases. Within two opportunities the bases Otopeni, Titu-Boteni, Fetesti, Mihael Kogalniceanu and Timisoara , also Campia Turzii, Bacau, Boboc, and the shooting range Capu Midia and Aerostar Avionics (this year their 50st celebration) were visited. A picture of the FAR is drawn from the far West of the country to the beaches on the Black Sea eastside of the country where tourism already started it's flaming development !

AEROSTAR and the Mig-21's

Aerostar exists since 1953 and was called IR.A. up till end of the sixties. Aerostar is the absolute market leading company concerning avionics and updating of several Romanian Air Force types of aircraft and has a large experience in maintainance, amongst others all Mig-21 versions. The company is also well known on the market of light aircraft (a.o. Aerostar 01) and under the USSR regime the complete production of Yak-52 for the USSR and Romania was taken care of. In 1991 the name chnaged in Aerostar. After the fall of the 'Iron Curtain' the Soviet Union as a market disappeared and Aerostar had to look for new ways to survive. Besides keeping the yak-52 production-line going, and the maintainance for the Romanian Air Force the company got credited for the maintainance of foreign Mig-21's and furthermore small series of L-39 were modified for the civil market. Another strong part is the production of gearboxes, undercarriages and piston and jet-engines.

Even controlpanels for the Royal Air Force Nimrods are fabricated here. Other interesting developments are the Jet-TR-96, a jet-engine capable of fighting oil-fires (used in Kuwait in 1991 after the Gulf-war) and a plural rocket launching-system called LAROM, a sort of modern 'Stalin-Organ'. Aerostar is most well known because of it's LanceR (Mig-21) and Sniper (Mig-29) projects. Aerostar has it's own comprehensive equipped workshops and the well motivated personell handles the orders conscientious. The 7th of september 2003 contracts were signed for the coorporation – announced at the Hilton Hotel in Bucharest – between Aerostar S.A. and Stork-Fokker Aesp. BV, forming a joint venture. The new company represents a value of one-million euro with a Aerostar majority interest of 2%. The main reason is to develop a production-line for advanced aviation-mechanics.

LANCER

Since Romania wishes to become part of NATO there is a necessity to have at their disposal A capable fighter. Finally it appeared not possible to buy the F-16 fighter and for that reason the choice was made to midlife-update the in total 110 Mig-21's by Aerostar in corporation with Elbit systems from Israel, these two form a consortium together. In total For 350 million euro an extreme outfigured update program was realised , within it a mix of modern avionics from Russian and Western weapon systems, the Mig-21 fighters being at that moment in the first half of their duration, which in total should remain up to 2010. It concerns a 5th generation avionics, nowadays usual in most Western-European countries though applied to this 4th generation fighter. First of all the high-tech is used to present the data (entered via sensors) in a optimal way to the pilot for his combat actions. Multifunctional color displays (MFCD) and head-up display (HUD) and also the use of modern radar contribute to this for the fullest measure. In contradiction to the classic Mig-21 variants the pilot now has a large possibility to act autonomous, with the help of strongly improved sensors and communication equipment like a Hybride Navigation System (HNS) which links inertial navigation to GPS and Distant Measurement Equipment (DME). Unique for the Mig-21 is the by Aerostar/Elbit developed DASH system (Display And Sight Helmet). This system implicates that the pilots helmet interfaces with the on-board informationsystem by sensors on the helmet and in the cockpit. This has also been applied in the IAR-330 (SOCAT Puma) In other words the computers 'know' which side the pilot turns his head and they 'look' where the pilot looks.

Data transmission in the cockpit by HUD (Head Up Display) and HOTAS (Hands On Throttle And Stick) give the pilot a strongly improved reaction ability compared to the time the cockpit was ruled by loads of all kind of mechanic utilities all over the place. These systems fit perfectly on the DASH Helmet system, which is adjusted on the specific personal visual profile of a pilot. The machines are prepared for the IFF (Identification Friend or Foe) system, but will receive the software after they joined NATO in 2004. LanceR's are equipped with a advanced data transmission system computer. A DTS cartridge can be pre-programmed from a terminal, just like a memory-card in a digital camera. On this way DTS not only takes care of a rapid mission preparation, but it also improves the briefing process.

This data cart can be read very fast on a terminal after flight. Together with a VTR (airborne video system) this generates many 'learning-moments' to be used and evaluated within the learning processes of the pilots. These kind of systems are a first requisite for the participation on missions like PfP. Chaff, Flares and rockets can be launched for self-defence, and next to Radar Warning Receiver (RWR) there is a special Electronic Counter Measure (ECM) pod (Elta EL/L-8222R) When asked if RoAF actually uses this pod already we didn't get the answer so that remains a question. The updates have been executed on three Mig-21 types of aircraft for the FAR. The LanceR-A (Mig-21M) is the groundattack version to be recognised by its brown/green camouflage. The LanceR-B (Mig-21UM) the duo-seat variant is besides being a trainer also capable for all tasks. The LanceR-C (Mig-21MF), the airdefence variant hits the skies in light blue/grey colours but compared to the groundattack versions this machine has a more advanced radarsystem (Multimode Pulse Doppler, IAI-ELTA EL/M-2032) in the nose-cone which recognises targets on a longer distance, and then can lead its air-to-air rockets to it.

The LanceR-C is meant as air-superiority interceptor and can be armed with the Russian Vympel R-73^E (AA-11 Archer) as well as the Israeli Rafael Python 3. For the ground attack versions in interdiction of Close Air Support (CAS) role a special pod has been developed with a laser guided system which can lead 'smart-bombs' to their targets , as we already know this phenomenon from the Gulf-war. When this system will be operational was not known yet at the time of our visit. The LanceR's A/B are equipped with a special range-radar (IAI-Elta EL/M-2001B) so they can carry the Israeli Opher infrared guided IAI Lizard

Laser Guided Bomb (LGB) or the Russian rocketlaunchers. Aerostar further developed this concept for the Mig-21bis, used in various countries still, in a variant called Mig-21bis LanceR III, though up till now only Croatia showed his interest so far. Another interesting development within Aerostar is a version of the Mig-29 Fulcrum with a similar advanced technique package as the LanceR's. This project is called 'Sniper' , and was realised also in cooperation with the German DASA, called EADS nowadays. Probably for budgetairian reasons this project has not been started yet within the FAR, and it is the question if it will after all. Time sure flies, and for now the Fulcrums are waiting for their major overhaul or destiny at Mihail Kogalniceanu

TIMISOARA – Baza 93 Aeriana (2005, present stage is that the base has been closed)

One of the most remarkable facts of this base is it's base-commander Stepan himself ! By the time we met him he had just been appointed as the new commander, the man is a real speech-specialist, visibly very proud of 'his' base ! he learned us about the History of Timisoara, electrical light and the first beer-factory in the country ! Possibly his enthusiasm for us was feed by the fact that he visited our main F-16 base Leeuwarden at the time with 4 LancerS , and he flew a F-16 himself in a Friesian Fighting Falcon as duo-seater to expire this machine. Being proud at 'his' Romanian Air Force, and his strong will to integrate within Nato made commander Stepan a outstanding personality during our visit. Many military and civil sum up facts passed the revue and ofcourse we were told about the Air Force headroles in the revolution of 1989. First striking fact that was noted by landing on Timisoara Airbase (which is also used for the civil aviation) is the long row of phased-out Mig-23 (MF & UB) Floggers, who seem to enliven the runway as some sort of guards of honour. These are the machines that served at Timisoara, as well as at Mihail Kogalniceanu. Nowadays Timisoara has at it's disposal a LanceR unit with 2 squadrons LanceR A and B and is the only base without the air-to-air LanceR-C version. Positioned in the Western part of the country on the border with Hungary this seems to fit in the idea that NATO countries are friends and therefore there is no danger to be expected from that side. How right they are, and how good it is to know that the situation has improved that much since the earlier times !

Timisoara has the disposal of a Mig-21 LanceR Combat Mission Trainer and Data Processing Complex, installed by Elbit Systems. This tool makes it possible (with help of various software) to practice various Nato missions simulated for and by the pilots.

Timisoara has a limited maintenance-hall for small repairs, while a major overhaul for the LanceRs is taken care of by Aerostar factory's. The maintenance of the LanceRs with their digitale techniques has much improved and is a lot easier compared to the older Mig-21 versions. The licenced built IAR-330L Puma is also stationed at Timisoara for transport and Search & Rescue tasks in the western sector. Timisoara was one of the first bases to adjust on Nato-procedures in 1996. What the continuing reorganisations within the FAR will bring Timisoara in future is not known yet.

BACAU – 95 Baza Aeriana Centrul Trecere pe Avioane Supersonice

Bacau is a important airfield to the FAR, allocated just next to the Aerostar factories.

The Supersonic Training Center (STC) is located here where graduated pilots of the Air Force Application School at Boboc can follow a Level Increasing Course on the Mig-21 LanceR. It needs no further explanation that the complete implementation process of the LanceR started here in the backyards of Aerostar in 2001 with only April 2003 the ending of delivering LancerS with the last updated machine. The 95th AB worked very tight together with Aerostar concerning development and test flights. The first converted pilots were all dyed-in-the-wool Mig-21 pilots. They were very contempt about the conversion to the new LanceR (about six weeks) who was –as they stated – easier to learn than the classic Mig-21 versions. These guys of the 'first hour' transmitted their knowledge to the new

'fresh'generation pilots, using the 'teach the teacher' principle. The new pilots start on the LanceR-B twin-seater and are to be fully trained after a period of 10 months. All pilots are very enthusiastic about the new concept, and only now it appears possible to explore the real limits of the Mig since the computer can bring the plane in 'area's' which existence was not known before. The operability has been considerably improved, the preparation of flight is covered today by a crew of 9 persons, this was 24 in the past. Also de-briefing is strongly improved with the help of electronic data management by the Elbit Systems computers. Trainingsdata for missions are supplied by the Combat Support Group. Elbit simulator systems can imitate many 'live' situations including electronic warfare, though our informers were a bit vague about this last subject. But it's military, so you can't expect them to reveal all secrets... Anyway, training in offensive way, as well as air defense techniques fit to NATO tactics now. Momentarily within the LanceR pilot group a lot of attention is given to training night-flights, and instructor training. Next to that weaponry training is given at Bacau. In 2001 the advanced helicopter training with the IAR-330L Puma was integrated in STC to learn about elementary techniques of battlefield-interdiction. For both LanceR and Puma pilots goes that further combat training in the assigned squadrons will follow. Next to the education activities the 'Fighter-Group' of 95th AB also has the task of air defence in the sector of Bacau. The 95th AB participated in several large PfP exercises (Romania, Turkey en Bulgaria) and visited The Netherlands in 2001. LanceR's flew ground attack missions as well as aggressor tasks within these exercises in corporation with NATO allies. It is expected that Bacau will know have large NATO interaction starting 2004.

CAMPIA TURZII - Baza 71 Aeriana

The 71st AB is a very important part in particular the Air Defence. With a tradition of older Mig-21 versions a new era started in 2001 with the arrival of the LanceR. Two LanceR squadrons, the E711-AvV and the E712-AvV make two of the best units of the FAR.

Besides Air-defence also Ground-attack versions are stationed here. The E713EL squadron with Puma's is mainly launched for transport and medevac operations. Remarkable are the camouflaged grey versions next to the uniform, smooth versions operating next to each other, without having any specific separated tasks. Some Antonov-2 'Colt' planes are used for training paratroopers. Within the FAR Campia Turzii is a base with growing concept and capability which will be prepared on several tasks. Though participating in NATO exercises and PfP exchanges seem to come within reach now, the base has not as yet been assigned for PfP. The complete expanded capacity state will be reached from 2005, never the less the C-5 Galaxy can already be welcomed at campia Turzii, the proud base-commander explained us !

End part 1 - Part 2:**MIHAIL KOGALNICEANU – Baza 57 Aeriana**

This base is situated on the Black Sea near the town of Constanta. The history of this base has a rich past, having had in service the Yak-23, Mig-15, Mig-19 and several kind of types of the Mig-21. In 1979 the first of 2 squadrons Mig-23 were formed, the next would follow at Timisoara. The Mig-23MF and Mig-23UB versions would remain up till 2002. Since the LanceR project was started the unavoidable end came for the Mig-23, expensive and complicated to maintain and aged as it comes to avionics. The tasks are now taken care of by the LanceR's. Also to be found here the IAR-316B Alouette and IAR-330L Puma units, taking care of transporttasks and surveillance. Because of the base being situated at sea there is a special responsibility in supporting the Navy, as well as the Air Control Police for shipping, and Search & Rescue (SAR) specially the coast-line and shipping traffic-routes. In times of crisis there are extra responsibilities and if necessary Close Air Support (CAS) and Combat Search and Rescue (CSAR) missions can be delivered.

The main present battleforce exists of some units Mig-29's of escadrilla 2 and 3. These Fulcrums-A, some Mig-29UB Fulcrum-B twinseaters and 1 Fulcrum-C, taken over from Moldavia are grounded at this very moment.. The machines are all waiting for a 'major-overhaul' which can only take place at three places, in a.o. Germany and Russia. Momentarily there would be no capacity at these factory workshops, but it is also possible that the machines remain on the concrete at this moment (not being in a crisis situation) for budgetairian reasons. This in contradiction to other countries such as Slovakia and Poland where Pilots and Fulcrums operationality are being held up-to-date. Some Shadow UAV's finally are stationed here for reconnaissance tasks.

OTOPENI-BUCHARESTI – 90 Baza (90th Airlift Base)

Otopeni is partly a civil airfield, the militairy part is called 'Baza De Transport Aerian Georghe Banciulessu'. Homebase for the Antonov 24 and 26 in de 1st Airlift Group and Antonov-30 and Hercules C-130 in the 2nd Airlift/Recce group. The 3rd Heli Group operates the IAR-330 Puma and the IAR-316 Alouette III , also some MI-8 and MI-17 Hips are still operational. With this material the FAR is well supplied to execute the ordered missions concerning transport, search and rescue, reconnaissance, humanitarian and multinational (open skies) missions, disasters or civil protectiontasks. FAR reorganisation also hits this airbase. Specially the cadre is to be reduced for economic reasons. The C-130B Hercules entered the RoAF end 1996. After a intensive training by the Americans the first flight took place in march1997, the first flight with a complete Romanian crew. From 1998 RoAF participated with the C-130 in several important international exercises such as Cooperative Key (France 2002 and Bulgaria 2003) , Strong Resolve as well as combined exercises with American units, ISAF and the Enduring Freedom actions in Afghanistan. It is planned to enlarge the Hercules fleet with a few more soon. In the FAR a lot of attention is given to Basic and Operational Qualification Training to get and keep personell at NATO standards. Missions have to be possible day and night, even under minimal / marginal conditions, supported by 'CAVOK' (Ceiling And Visibility OK). Otopeni's facilities enclose a seperate militairy refuelling and on/off loading area with a separate own emergency electric system, and maintainance hangars. Next to that Otopeni has it's own digital phone-system network and a disinfected drinkingwater system. The civil aviation also uses this air base, and only because of a very structured coordination this combination miraculously works ! Though neither of the two 'camps' is very happy with this situation.

TITU-BOTENI – Baza 61 Helicoptere Atac

Titu Boteni is situated North-West of Bucharest. The history of the 61^{ste} goes way back to 1971 when the 1st sqn was set up with the in licence built Alouette III (IAR-316B). In 1978 the 2 sqn came to it , equipped with the also in licence built Puma (IAR-330L) a year later another two Puma squadrons were founded. These four squadrons were transformed into the 61st AB in 1980. This 61st was the leading force in 1989 in times of the fall of the communistic dictatorship while supporting the revolutionary civilians. The standard IAR-330 Puma takes care of search and rescue (SAR) and evacuationflights (Medevac) and reconnaissance missions. The same goes for the Alouettes III though most of these 'grasshoppers' have left the scene. There is a quite large stored number of them situated at Boboc. Next to the standard Puma version the 61st also operates the SOCAT Puma version, the absolute Backbone of Baza 61.

FETESTI – Baza 86th Aeriana

Fetesti's history goes back to 1952 with consecutive the well known Mig-15, Mig-17 and

Mig-19. Interesting plane is the Harbin Hong-5, a Chinese built Ilyushin L-28 beagle which kept on flying from 1970. The last examples were retired only recently..There was this beautiful fuselage painted H-5 ment to fly on RIAT 2001. Unfortunately it didn't appear because of a dramatic crash. Possibly the moment of retirement was decided at that very moment. The 86th exists from a group Combat Forces (fighter/bomber squadron) which makes it the 4^e LanceR base(A, B en C versions) a group Surveillance & Early Warning Forces (radar) and a group Command & Control devided in Headquarters, Operations center, Combat Support and Logistics. The main present role of the 86th AB (under command of 1st Air Division) is taking care of training, command and coordination to reach a fully operational stade for all Air Force units. This operational stade implicates in peacetime guarding the sovereign Romanian air space, (preventing the entering of the Romanian air space by non-authorised planes) and the coordination of militairy and civil aviation including PfP participation. In times of crisis and/or war situations they can expand these activities which leads to a stade of high preparedness which makes it possible to react very fast on acts of war, hitting enemy targets, give close air support, protecting civil, militairy and industrial objects and give support to air-, land-, and naval operations. The actual integration within the NATO knows another totally different problem which is called the English Language. For this Romanian AF puts his cards on the younger generation pilots who are more flexible in a remarquable way. This language problem has priority number one within the RoAF. Fetesti finally strives for a conciderable improvement Of the existing runway in the near future.

BOBOC - Baza 20 Aeriana

Boboc already existed in World War II and was the first base in the world with a real heating system integrated in the runway to be able to do operations from a snowfree runway ! At this base the 'Scoala De Applicatie A Forte Aeriene ' Aurel Vlaicu' (Air Force Applications School) is situated. Second years Yak-52 elementairy training Cadets from the Air Force Academy in Brasov Come to Boboc for ther advanced training. Depending from what the FAR needs for it's squadrons and personal qualities of the pilot a choice can be made for initial jet-training on the L-29 Delphin or the L-39 Albatros , helicopterpilot education on the Alouette III or trainig for transportpilot on the AN-2 Colt which takes about one year on this base. Next to that the Ground Based Air Defence (GBAD) units are trained here for the anti-aircraft defence tasks. Did the education meet a overweight of specialised high ranked officers, nowadays that fact has been reduced and more and more non-commissioned officers (NCO's) are being delivered. If necessary one can follow feedback courses at Aurel Vlaicu. Momentarily the active jet-course temporarily has been moved to Ianca AB and the present L-29's and L-39's are stored at Boboc, their cockpits sealed to prevent dust entering. Means are being generated to bring Boboc on NATO capacity standards which means that the old Russian radarsystems and communication equipment has to be replaced and the runway has to be improved. It is planned that the new SOIM IAR-99 trainer is to be in service here (primary 24 on order but reduced to 12). Problems with the delivery of the IAR-99 delayed the plans and the meanwhile educated pilots fly the L-39 for the time being.

The Alouette III will retire in 2007 , sof ar there are no plans for replacement. Specially for the collected press a Alouette demonstration was arranged, and as they called him 'one of the craziest pilots' flew on a distance of about twelve meters from the tower on about five meters high over our heads with a Antonov-2. In The Netherlands such a presentation would have meant a definit suspension of the pilot but in this case and specific situation – besides excitement amongst the press members – it also gave a visible approbation of the present staff. It was a exceptional experience, and the present commanding officer – who studied half a year in the Netherlands (Delft) about armament – exactly understood what impresses and he was very flexible in cooperating !

CAPU MIDIA – Shooting Range

On Capu Midia , a firing range on the Black Sea the opportunity was given to see a live demonstration of all air defence systems such as the GEPARD (called Pruttel in The Netherlands), SA-2, SA-6, SA-7, SA-8 and SA-9 missiles. There were demonstrations of Firing at radio controlled FOX TS-1 drones or torches on a parachute. Also a near-miss on a torch is considered as a hit, for a Fighter-jet is a bit larger compared to a tiny torch...

Considering the safety facilities and organisation, these were on the very same level as we know them. The last of this was not without importance, while the complete Romanian defence staff was present to , included Chief Commander Lieutenant General Gheorghe Catrina and the chiefs of Staff attended the exercises. Also a German military delegation was flown in to observe the GEPARD demonstration. Capu Midia also has facilities to train in three-dimensional advanced simulation environment in 360 degrees settings with air-defense systems, fireing systems to be used as well as from armoured vehicles as from the shoulder. This facility exists in a huge 20 meters across huge globe In which they can project several separate to combine sceneries in very various conditions such as a town by daylight or nighttime, mountains, rain, desert, fog, and so on. It really gives the impression you act in a real situation, which is created by advanced electronical systems.

SOCAT PUMA

Iar Brasov cooperates very tight together with Elbit systems from Israël on the SOCAT system, a anti-tank search & combat system. The PUMA in the SOCAT version is a side-slip in Eastern-europe where in the other neighbour countries the Russian Mi-24 Hind is used as a battle-helicopter. As a Western design with the special by IAR/Elbit designed update-kit gives the PUMA battlehelicopter a large advantage on the Hinds, looking at the connection to the NATO standards. The Helicopter Multi Role Computer (HMRC) the multi-functional colordisplays and HOCAS capacity give the pilot a full measure of 'awareness' . The battle-helicopter , forced in a direct combat situation against other similar enemy-helicopters, fighter rockets, or other air defence systems (such as Stinger or Sam-7) can become very vulnerable so the pilot is very dependent on very fast moments of decision which can mean kill or be killed. The survayability of the control and weapon systems can really make the difference in surviving. The sensor systems exist from standard Friend or Foe equipment (IFF) , embedded GPS, Inertial Navigation System, radar & laserwarning receiver (SPS 40V2) and a datatransfer system (DTS). IAR and Elbit gave a well concidered offensive capacity to this helicopter. A 20 mm turning gun is mounted in the nose and there is the capability to launch anti-yank rockets from Russian as well as Western origin.

A so called target acquisition and weapons system control, and Electro Optical Pod (EOP) with Forward Looking Infra Red (FLIR) and laser range finder generate the weapons to their targets. The MIDASH Helmet Mounted Displays and Helmet Mounted Sight System with 2 image intensifiers (day/night adjustable) give the pilot the possibility to 'look' the missiles to their targets. Night vision goggles give the helicopter night-fight capacity and selfdefense is taken care of by Chaff / Flare dispensers and the possibility to launch Air to Air Missiles (AAM) Next to Close Air Support (CAS) missions the SOCAT Puma is excellently to be used for Combat Search & Rescue (CSAR) , it is designed to survive in high-risk environments with a formidable fighting force and the possibility to repatriate pilots out of enemy territory. The SOCAT is a worthy do-it-all within the FAR. In 1997 the first SOCAT version was produced, since 2000 in the own IAR factories, though the production now is finished. Like the LanceR's the Puma's participated in PfP exercises, Cooperative Key 2002 in St.Dizier France was a real success. A large compliment for IAR/Elbit ! Who wouldnt like to fly such a helicopter ?

WIM DAS EN KEES OTTEN