Summer 2009

ECATS: PIONEERING OUTSOURCING IN FRENCH PILOT TRAINING

Murielle Delaporte

SLD Special Reports

www.SLDinfo.com

ECATS:

PIONEERING OUTSOURCING IN FRENCH PILOT TRAINING

SLD visited Cognac FAF air base BA709 and interviewed its current Commander, Colonel Etienne Patry, the FAF Flying Training School Commander, Lieutenant-Colonel Fabien Lefebvre, as well as Daniel Gendreau, Pilot-Flight Operation Manager, and David Desroches, Contract Manager, for ECATS, EADS Cognac Aviation Training Services. Was also interviewed for the purpose of this article, BA709 previous Commander till 2008, Colonel Christophe de Cugnac.

Credit: EPAA (*Ecole de pilotage de l'armée de l'air*)

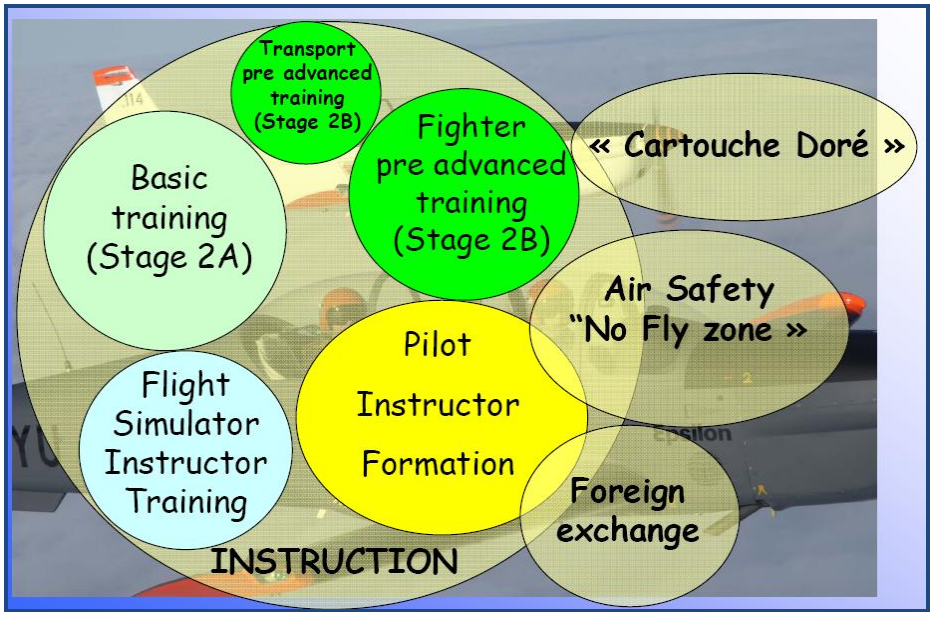
The Cognac-Châteaubernard French Air Force base was at first a military airfield created in 1938, before being occupied and expanded by the German Luftwaffe between 1940 and 1944. Heavily bombed at the end of the war, it was rebuilt right afterwards and a flying school was created in 1945, before being transferred to Marrakech (Morocco) from 1950 till 1961. Since then, Cognac air base has been home for the EPAA (*Ecole de pilotage de l'armée de l'air*, i.e. the Air Force Flying School) in charge of the training of young pilots in their pre-specialization qualifications. Besides its historic legacy, what makes BA709 unusual though is the integration in the past three years of a customized EADS subsidiary – an operational unit of the Military Air Systems Division of EADS Defense & Security (DS) to be precise -, called ECATS for "EADS Cognac Aviation Services": for the very first time in France, a military base has been welcoming

more than a hundred civilian employees whose task is to support the Flying School's training equipment and infrastructure. In June 2009, ECATS celebrated its 50,000 flying hours at Le Bourget and has been pioneering such an approach in outsourcing training services' support, which is now being duplicated and even expanded in other settings. This report focuses on such a "success story" by attempting to provide an overlook of the lessons learned ever since the process of privatization was initiated.

RECENTERING ON CORE MISSIONS

Defining the 'playing field'

"*The impulse behind the creation of ECATS lies in the willingness of the ministry of defense to have the French armed forces focus on its core function, i.e. military operations, while outsourcing everything susceptible to be delegated to non-military personnel*", stress both Colonel Patry, who commands the base since September 2008, and his predecessor, Colonel de Cugnac, who oversaw the whole negotiation process. Indeed, if Cognac BA709 is mostly known for its flying training school, military instructors also have a "no Fly Zone" operational mission with Mirage 2000 flown over the area for air safety. Cognac has in addition a mission of representation and is home to the "*Cartouche Doré*", which represents France at about thirty air shows a year.



The Missions of the FAF Flying Training School (source: LCL Lefebvre, School Commander, 2008, brief slide # 4)

"A*t the time of the launching of the ministerial strategy of reform (RGPP- Révision générale des politiques publiques - in particular) and given the context of staff reduction, the question asked within the FAF was whether or not initial training should be done by military or civilian personnel*", explains Colonel de Cugnac. "*The decision taken in the early stage of the negotiation concerning the Cognac air base, when the first documents were written in 2004, was to outsource maintenance and the implementation process*", he pursues, "*(...) leaving the military in charge of in-flight instruction, the training of the flight-instructors and flight safety issues: were hence outsourced the support of the aircrafts, the simulators, as well as ground instruction*." This includes the training aircrafts, "*but also those of the "Cartouche Doré" pilots (who are also school instructors)*", says the School Commander, Lieutenant-Colonel Lefebvre.

The "Cartouche Doré" (credit: Voodoo34)

A "multi-service" contract was therefore negotiated at that time and signed in 2006 with EADS, which included:

- Availability of planes and flight simulators ("*which cost the same as planes*", recalls Daniel Gendreau, former Air force officer, pilot and flight operation manager for ECATS);
- Refurbishing and maintenance of infrastructure;
- Management of airfield activities;

- Ground maintenance;
- Ground technical instruction;
- Integrated logistics support (e.g. spare parts).

All the implementation of the means necessary - air assets, including a brand new fleet of 18 IFR (Instrument Flight Rules)–equipped Grob 120A; ground assets, including three new generation simulators, the FNTP2; infrastructure; etc... -, as well as all the maintenance have since then been done by the industrials, i.e. EADS, its subcontractor SOCATA (Daher-Socata since January 2009), as well as Grob (which provides in particular a comprehensive spares package) for the planes, SOGITEC for the simulators, and readiness is their responsibility. ECATS is indeed certified by the Civilian Aviation General Division (DGAC – *Direction générale de l'aviation civile*) to perform civilian and military MRO (maintenance, repair and overhaul) activities. MRO includes in this case 500 planned visits and one major overhaul a year.

The Grob 120A Fleet (Credit: SLD)

Flight simulators in Cognac: From 6 LMT531 initially to 3 FNPT2 (credit: ECATS)

The contract is performance-based and has been negotiated in terms of flight hours, as opposed to platforms, which was quite innovative in 2006 in France. The range negotiated at the time is between 15,000 and 32,000 flight hours and between 4,500 and 9,000 simulator flight hours. Given the nature of military requirements, ECATS has found an innovative solution to set up a potentially expandable fleet of new planes to match a given number of flight hours: up to 23,000 hours, 18 Grobs are necessary; up to 27,000 hours, twenty planes are needed; beyond that, 22 planes are required. ECATS has in addition been able to "reset" the Epsilon TB30 fleet by upgrading it in particular with new voice and data recorders as of January 2009. There are currently 37 Epsilons, but the number should eventually go down to 26.

The infrastructure was modernized by locally hired subcontractors and 1.2 million Euros were invested in the upgrading: "*warehouses are for instance benefitting from new air conditioning and hydrometric conditions*", says Daniel Gendreau.

Credit: ECATS

The beginning of the end of "Business as usual"

ECATS was born out of an unusual negotiation process characterized by speed and a constant interaction between the government and industries: "*In about eighteen months, the negotiation process was wrapped up and an agreement was signed as early as April 2006 with EADS, which was selected out of several candidates (the selection was down to seven at the end of 2004 and to four by the Fall of 2005): for the very first time in France, a process of competitive dialogue was implemented by the then-newly created SIMMAD (Structure intégrée du maintien en condition opérationnelle des matériels aéronautiques du ministère de la défense)*", describes Colonel de Cugnac. "*Were involved in the talks not only technical experts, mechanics and officers, but also - and for the first time - an Air Force General*", he adds, stressing a certain rupture with the traditional "business as usual" approach. "*In six months, from July 2006 to the end of the year, the technical expertise was transferred from the military personnel to the civilians, while early 2007 the first Grob120s were starting to partially take over the Base's Epsilon fleet*." In March 2007, Grob Aerospace was indeed delivering the very first aircraft followed by a delivery rate of three a month.

Cognac Trainers'fleet (Credit: SLD)

The FAF had indeed been looking for a partnership, as it could not afford to renew its Epsilons, which first flight dates back to 1979, and was looking for "*innovative solutions to optimize the initial training of its pilots*: *EADS was able to propose an attractive "package deal", which included a new plane, a new simulator and flight data recorders' upgrades*", explains Daniel Gendreau. Indeed, the main reason why EADS was in a position to win the competitive bid was that it was able, thanks to its size and financial weight, to invest upfront for an entirely new fleet of trainers, the Grob 120A, and simulators, the FNPT2, and to propose a long-term solution (ten years as opposed to the more traditional five year approach). A ten-year 175 million Euro contract was therefore concluded in 2006 inaugurating a new contracting model for the military, as five years are considered firm and five are conditional and have to be re-negotiated each year.

Cognac has indeed been such a forerunner in France in this area that "*the legal framework is only now catching up with the process, with the signing of a new decree early 2008*", explains the BA709 Commander, Colonel Patry, stressing the complicated legal aspects of aircrafts' ownership: "*The Epsilon is a state-owned plane which was transferred from the French air force to the industry; on the other hand, the Grob120 belongs to the industry, but is technically state-owned as well, since it is used exclusively by military pilots*." This is where more recent outsourcing contracts, such as the one concluded with the Dax Helicopter flying school (EAALAT or *Ecole d'application de l'aviation légère de l'armée de terre*), tend to differ, since in this particular case, the helicopters can be used during the week-end by civilians.

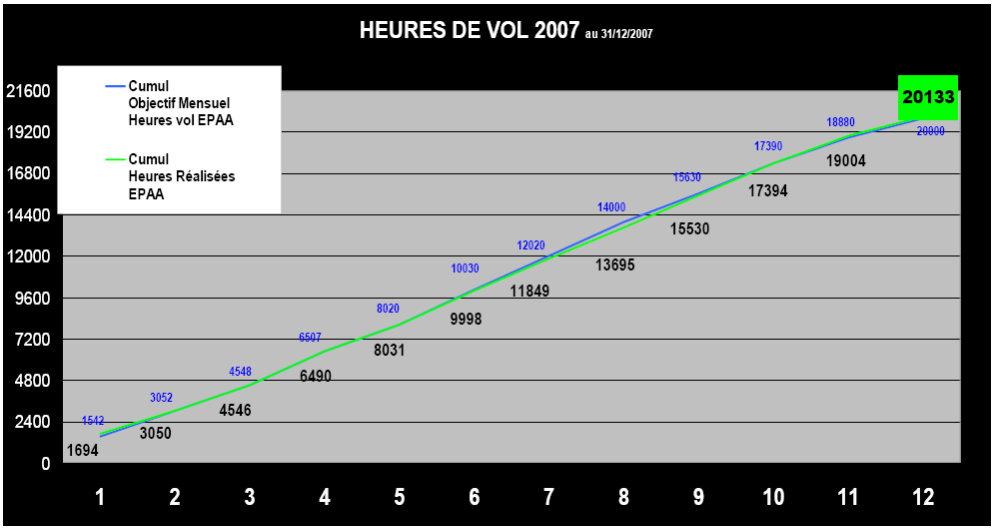
LESSONS LEARNED: REACTIVITY, THE KEY TO SUCCESS

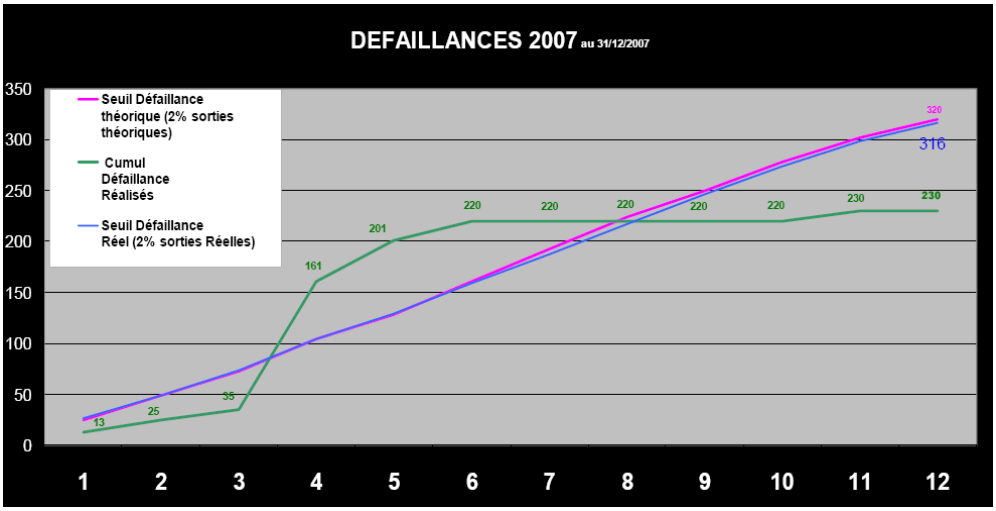
A genuine 'win-win' situation

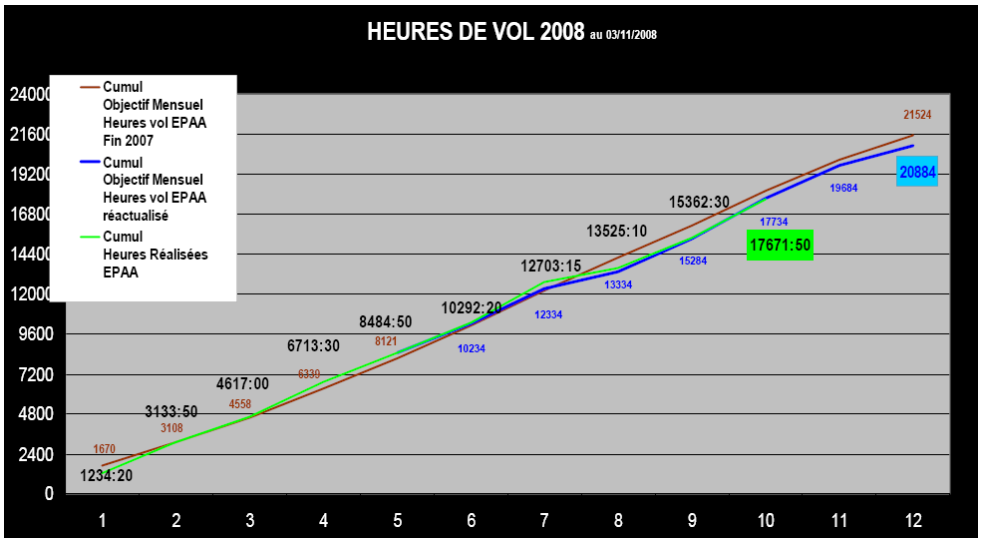
The reason why the Cognac outsourcing venture has been viable is based on mutually beneficiary terms of agreement. Available statistics tend to speak on their own, as far as reaching, nay even surpassing, the initially defined objectives: "*In terms of gains of personnel, the calculus is simple, since Cognac used to be in a situation of 'maintenance over-capacity' with 250 Air Force mechanics vs less than a hundred industrial staff nowadays*", recalls Colonel de Cugnac. With 49 ECATS and 42 SOCATA personnel taking care of 18 Grob120s, 37 Epsilon TB30s and 3 simulators FNPT II, "*productivity gains for the French Air Force have reached 35%*", confirms Daniel Gendreau. Because the fleet is more modern (the Grob has a carbon structure), support is also easier and cheaper. No airframe check is required and the first in-depth revisions can be done after ten years of use. In addition, the Grob's fuel consumption is less important. "*As far as simulators are concerned, the breakdown rate is almost none, with a 99% functioning rate*", he also notes.

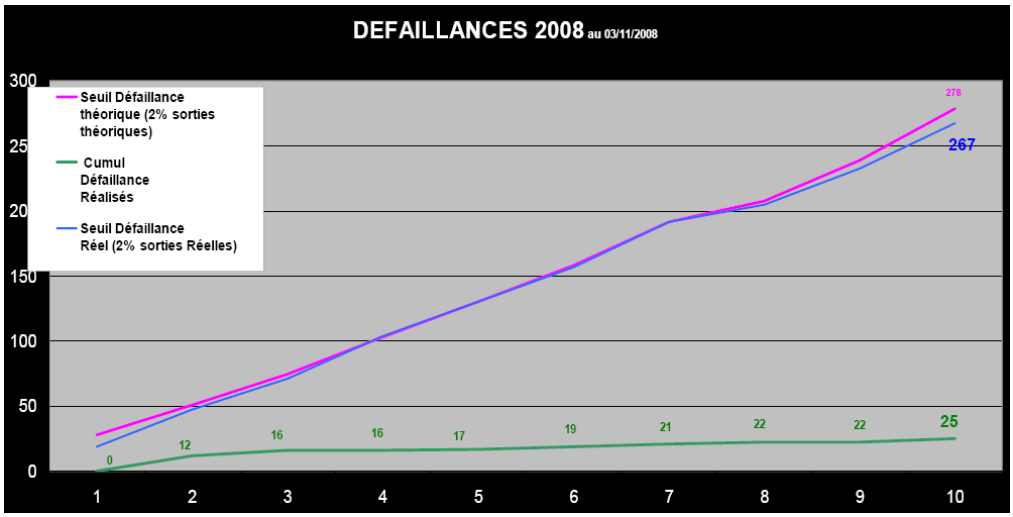
Credit: ECATS

In order to match military requirements as best and as fast as possible, ECATS has been implementing what it calls a "Progress Plan", which includes milestones and an interactive path for improvement. This is bringing very concrete results, such as for instance the customization of aircrafts to military needs: "*bought off-the -shelf, the Grob120 is more modern, but not as good a performer for fighter pre-specialization qualification as the Epsilon: the reason is due to its side-by-side initial crew configuration as opposed to the Epsilon's tandem one; that is why the fighter pre-specialization tends still to be done on the Epsilon, and the transport pre-specialization tends to be done on the Grob, but such an organization is not set in stone and common applications are possible*", says Colonel Patry. Indeed, in order to get as close as possible to the pilot needs, "*Grob was able to customize its trainer by reversing the seats, since the pilot is on the opposite side in the civilian field, as well as by adding UHF radios*", recalls Daniel Gendreau. "*Another concrete example of upgrades born from this process concerns the modification of the Epsilon's breakdown rate measurement tool [sonde de taux de pannes] and its attachment*', adds David Desroches, ECATS' contract manager. But this "Progress plan" also works to improve processes and work habits, and achieve savings in overall management. The level of hours flown has as a result steadily increased, while technical issues have become marginal (see charts below).


HEURES DE VOL 2007 au 31/12/2007
Cumul Objectif Mensuel Heures vol EPAA
Cumul Heures Réalisées EPAA
21600
19200
16800
14400
12000
9600
7200
4800
2400
0
1 2 3 4 5 6 7 8 9 10 11 12
1542
3052
4548
6507
8020
10030
12020
14000
15630
17390
18880
20133
20000
1694
3050
4546
6490
8031
9998
11849
13695
15530
17394
19004


DEFAILLANCES 2007 au 31/12/2007
Seuil Défaillance théorique (2% sorties théoriques)
Cumul Défaillance Réalisés
Seuil Défaillance Réel (2% sorties Réelles)
350
300
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12
320
316
230
220
220
220
220
220
201
161
35
25
13


HEURES DE VOL 2008 au 03/11/2008
Cumul Objectif Mensuel Heures vol EPAA Fin 2007
Cumul Objectif Mensuel Heures vol EPAA réactualisé
Cumul Heures Réalisées EPAA
24000
21600
19200
16800
14400
12000
9600
7200
4800
2400
0
1 2 3 4 5 6 7 8 9 10 11 12
21524
20884
19684
17734
17671:50
15284
13334
12334
10234
8121
6330
4558
3108
1670
15362:30
13525:10
12703:15
10292:20
8484:50
6713:30
4617:00
3133:50
1234:20



Comparison of flight hours and technical issues between 2007 and 2008 (source: ECATS)

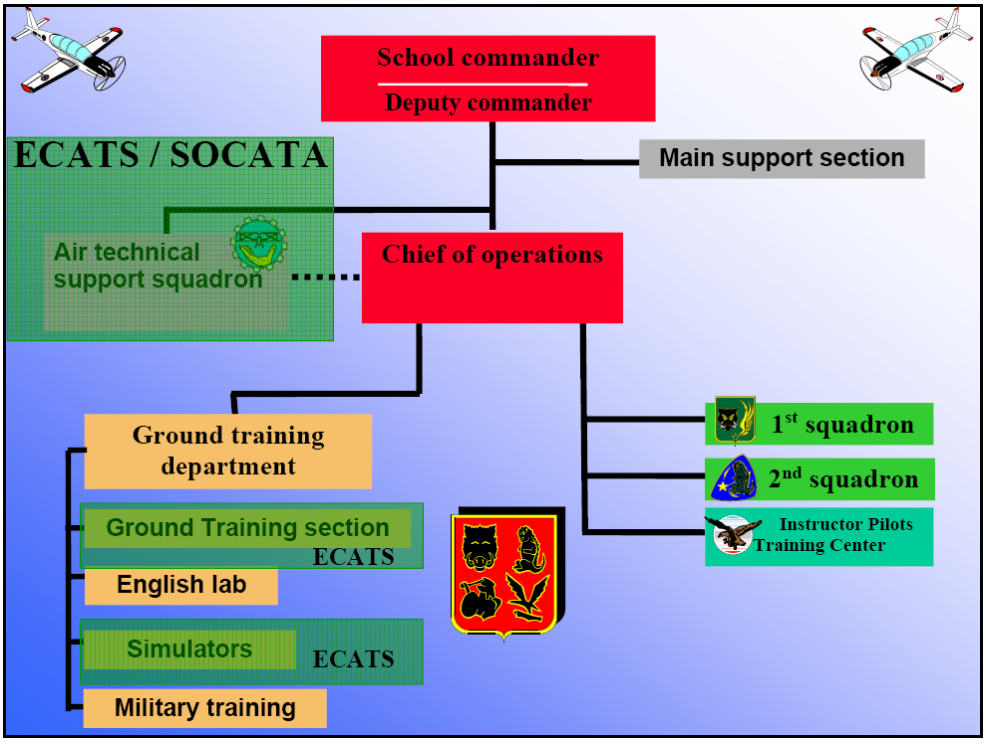
If the end goal is not met, ECATS can be penalized ; on the other hand, if savings occur, they are equally divided between the government and ECATS.

An acknowledged advantage brought about in the past three years with ECATS involvement in pilot training support has been the quest for additional qualifications, both for pilots and mechanics, and especially civilian equivalence and airworthiness standardization: "*Another innovation has been the pursuit of civilian equivalence in terms of maintenance: the adoption of ISO 9001 norms for example is not only a guarantee of quality and airworthiness, but allows the crews to painlessly acquire civilian diplomas*", explains Colonel de Cugnac. "*The rationale behind the FAF determination is the arrival of new-generation equipment with recent technical norms*", develops his successor, Colonel Patry: "*on the Epsilon, some adjustments are necessary to keep up with these new navigability requirements, in particular as far as data recorders are concerned. This process also applies to pilot licences with the adoption of joint aviation requirements (JAR/UE) and other licences (e.g. JAR/FCL – Flight Combat Licence -; ATPL – Air Transport Pilot Licence -; CPL – Commercial Pilote Licence -; etc...).*"

Another aspect of profound change initiated at Cognac is its internationalization, with the inclusion of a full training in English. Historically linked to Belgium ("*Belgian pilots come here every year to train three full weeks on our side*", recalls Colonel Patry) as well as Morocco, the EPAA is furthermore opening its doors to more and more foreign trainees. In addition to these two countries, *an exchange program exists in particular with Portugal, which trains its pilots on Epsilons as well, but also with the UK, Canada, Italy, and Greece*", describes Lieutenant-Colonel Lefebvre. A trend which fits the increasing multinational character of French military operations.

"From a Cold War logic to a civilian logic"

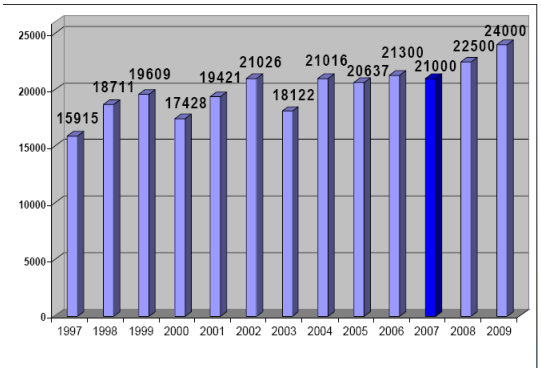
All players in the "Ecatisation process" note a few natural bumps in the road, which are being overcome thanks to the adaptation skills displayed on both sides. "*At the beginning, there were some natural psychological resistances, and it has been necessary to accompany the human side of things*", notes Colonel de Cugnac stressing that the transfer occurred as smoothly as could be in a very short period of time, "*while there was no rupture in the training program of the young pilots*." One of the ways to achieve such a smooth transition - while dissolving a whole team of 220 military mechanics (the ESTS (*Escadron de soutien technique spécialisé* – specialized technical support squadron) - has been to try to preserve the military expertise as best as possible, by hiring former military personnel able to pass on such invaluable experience. "*At the time of the transition, most military personnel decided to pursue a military option, but about thirty stayed along, while seventy civilians were recruited in the Charentes area*", recalls Colonel de Cugnac. The former FAF chief of technical support, Laurent Blattner, was one of the military personnel who decided to be part of the adventure: he actually became the director of ECATS and describes his position as the one of a small business CEO with the comfort of having EADS behind him. Such an alternative is indeed especially attractive for retiring military personnel, who can keep doing their former military job as civilians. Indeed, "*four former reserve military pilots are instructors, while three are to be hired in the near future*", says Colonel Patry. The physical and organizational integration of ECATS within the base is the key for such interaction between military and civilian staff to occur.



Source: FAF Flying School, ibid, ..., briefing slide # 6.

Having former military personnel involved has indeed been crucial to facilitate the dialog and help civilian staff understand military requirements: it has been an asset not only at the outset of the contract in the implementation phase, but along the road, as new challenges have been coming up: one of the conflicting views between a military approach (Cold War or not) and a commercial one concerns for instance the flight rhythms and conditions. "F*rom a commercial point of view, it is possible to fly in bad weather, which is however not feasible for military instruction*", recalls Daniel Gendreau. The mix of cultures also brought its own set of challenges and mutual adjustments, such as for instance the necessity for the civilian mechanics, who would accompany the "*Cartouche Dorée*" on industrial export missions, to adopt a uniform reflecting the image the FAF wanted to project: "*in very little time, the ECATS team was able to adapt and adjust to the new representation requirements*", recalls Lieutenant-Colonel Lefebvre, who commands the flying school *per se*.

Still, the civilianization of Cognac training services lead to many organizational and cultural changes everyone has to familiarize himself with relatively rapidly: "*We had to go from a Cold War logic to a civilian one*", sums up Daniel Gendreau. The lengthening of the operable hours is for instance a major shift brought about with the privatization of the training services, which required some adjustments on the military side. "*The day starts at 8:30 and the last plane takes off at 18:30 with often two additional night flights, as opposed to 9:00 to 17:30 before: this allowed us to increase the number of flight hours with less planes from 20,400 in 2008 to 24,000 in 2009. The goal is to keep a range of 20 to 24,000 flight hours: this accounts to about 110 to 130 sorties a day, (130 including night flights), with one sortie lasting an hour and twenty minutes. In addition, all simulators are used 100% of the time*", explains Daniel Gendreau.



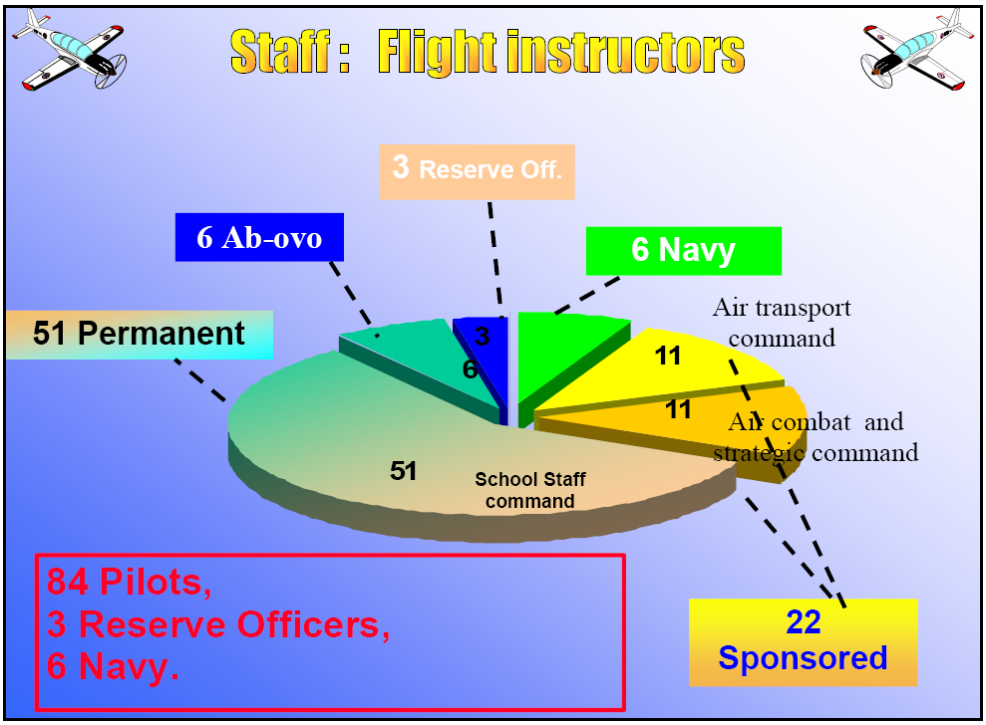
Source: FAF Flying School, ibid, ..., briefing slide # 8.

One of the key advantage of a civilian structure is however its relative flexibility to hire to address face this kind of surge capability: "*with the fluctuations overtime of the number of students per promotion, such an arrangement allows to customize the number of instructors required by calling on reserve personnel and/or hiring*", explains Colonel Patry. Indeed,

ECATS "*was able to hire six news contractors in two months*", says Daniel Gendreau. On the other hand, integrating a fully commercial entity on a military base also means bringing an entirely new culture: "*the big news for the military has been the integration of labor laws [called "Code du Travail" in France] and the unavoidable rigidity it carries with it, but everyone has adjusted pretty well, since they share the same interests*", notes Colonel Patry.

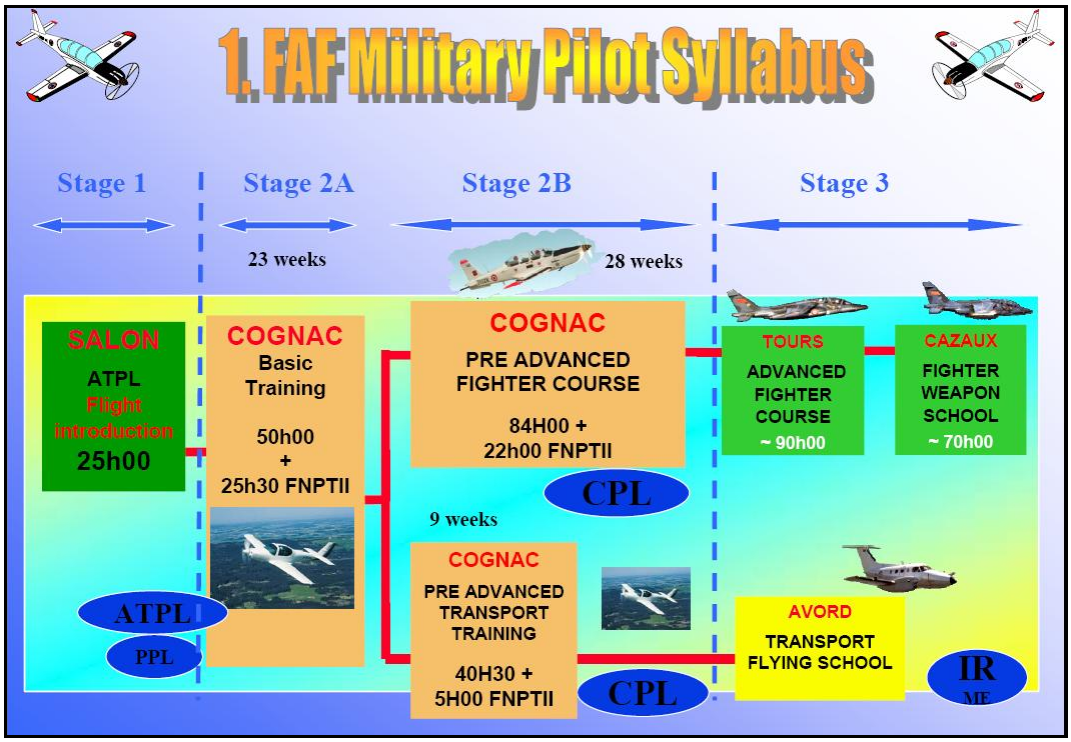
An interactive process of adaptation

For both the EPAA and ECATS, spiral effects have been felt in terms of organization and management. The conjunction of the outsourcing process in Cognac and the general FAF restructuration has indeed brought about many changes in the pilot school itself. As LCL Lefebvre explains, the standardization of training (with the pre-mentioned additional civilian equivalence), the flight hours planning for 2009 – which meant a 10% increase in productivity with a 15% decrease in staff -, as well as the necessity to orchestrate a new type of streamlined relationships between the ECATS, the DIS (*Division instruction sol et simulateur* - Ground training and simulator division), the CFIP (*Centre de formation des instructeurs pilotes* – Flight Instructors Training Center) and the EIVs (*Escadrons d'instruction en vol* – In Flight Instruction Squadrons) have brought about a fundamental restructuring of the EPAA, which took place in September of 2008. The biggest transformation is the shift from four EIVs to only two, in order to match the new productivity requirements (in particular the above-described more compact daily schedule): the Commander of the school sees these changes as positive in the sense that not only are the training goals attained and the full capability of Cognac used, but the coaching and support structure for the trainees has actually been augmented and improved thanks to a different organization and to the fact that commanders can truly go to the heart of their military mission. This is no small achievement when each EIV can include up to fourty pilots in training. There is currently a total of 85 flight instructors (vs 100 before) and 10 flight simulators instructors in Cognac.



Source: FAF Flying School, ibid,..., brief slide # 23.

Such and evolution is done in synergy with the changes carried in the overall reorganization of the French air force and the July 2008 White Paper: "*Since last year, the basic "phase 2" training has been concentrated at the EPAA, when it used to be spread between Salon de Provence for active-duty officers and Cognac for shorter-term career pilots*", explains Colonel Patry: "*the program was hence modified in order to accommodate the new progression requirements.* (...) *After their training in Cognac, students either go to Tours to train as fighter pilots on Alpha Jets or to Avord to train as transport pilots on Xingus.*"



Source: FAF Flying Training School, LCL Lefebvre, School Commander, 2008, brief slide # 3.

Lieutenant-Colonel Lefebvre also notes an evolution overtime in the ratio between fighters and transporters, which corresponds to the shifts in strategic requirements and acquisition policy: "*with the reduction of the fighters fleet and closing of fighter air bases and with the planned arrival of the 400M, the ratio fighters/transporters has gone from 70/30 % to 60/40 % (...) After the first phase of training, which includes 50 flying hours and six months of common curriculum at Cognac, pilots are split between pre-specialization Fighter (phase 2B-C, [C for "Chasse"]) and pre-specialization Transport (phase 2B-T), according to the FAF availability and of course the students'skills, not only academically, but also in terms of alertness and team spirit. (...). The EPAA trains between 100 to 140 pilots a year spread in about fifteen classes all year round, out of which some of them will be selected to become instructors*", he explains. "*Students fly Epsilons and Grobs, but also work 20% of the time on simulators (with an average of 5,000 hours on flight simulator a year). Interestingly, the FAF considered at some point to eliminate such a specialization within the service to outsource it, but finally decided to solely outsource MRO. It could however be further explored as an outsourcing avenue, the way the Canadians do it, calling on the experience of former pilots.*" With the development of a new specialization such as Unmanned vehicles sytems pilots, the instruction should also remain military for now: "*right now, badged pilots tend to become drone pilots as a second career, but the FAF is examining a direct instruction program*", says LCL Lefebvre.

with the reduction of the fighters fleet and closing of fighter air bases and with the planned arrival of the 400M, the ratio fighters/transporters has gone from 30/70% to 40/60%. (...) After the first phase of training, which includes 20 flying hours and six months of common curriculum at Cognac, pilots are split between pre-specialization Fighter (phase 2B-C, [C for "Chasse"]) and pre-specialization Transport (phase 2B-T), according to the FAF availability and of course the students'skills, not only academically, but also in terms of alertness and team spirit. (...) Each yearly promotion includes between 100 to 130 graduates, out of which some of them will be selected to become instructors", he explains. "*Students fly Epsilons and Grobs, but also work 20% of the time on simulators (with an average of 5,000 hours on light simulator a year). And, same thing, some of them can also choose to become simulator instructors. Interestingly, the FAF considered at some point to eliminate such a specialization within the service to outsource it, but finally decided to solely outsource MRO. It could however be further explored as an outsourcing avenue, the way the Canadians do it, calling on the experience of former pilots.*" With the development of a new specialization such as Unmanned vehicles sytems pilots, the instruction should also remain military for now: "*right now, badged pilots tend to become drone pilots as a second career, but the FAF is examining a direct instruction program*", says LCL Lefebvre.

On ECATS' side, one of the challenge is the necessity to adapt to a certain lack of continuity, "*given the fact that military personnel rotates at a rapid rate: the base Commander only stays three years*", says Mr. Gendreau. ECATS has furthermore to demonstrate a constant reactivity in order to deliver the services expected by the military and has to bear the brunt of the initial investment, "*which is not without creating a few cash flow problems along the road*", says the ECATS flight operation manager. "*However, the burden of adjusting to the fuel price market still belongs to the Air Force and the logistic entity specialized in fuel management and supply, the SEA (Service des essences des Armées)*". In the long-term, the reversibility of the market is less likely and "*the management of risks is pretty well benchmarked*", he acknowledges.

***

Bumps on the road are unavoidable and the Cognac "success story" does demonstrate that with a willingness to work things out, strong reactivity, and cohesion, obstacles can be overcome. One of the main concerns linked to outsourcing in the military field is the fear of the supply base disappearing: this could have actually happened to ECATS, since Grob went bankrupt last year. In this case, there was little to be worried about though, "*since Grob has, as a company, thirty years of experience in composites and fiber materials and there were 17 candidates interested in purchasing the German company*", explains Daniel Gendreau. It was indeed partially acquired by H3Aerospace GmbH & Co.KG in February 2009. "*In addition, EADS was not too far away and (...) has a solid backbone".* Selecting strong backboned suppliers and sub-contractors is certainly one of the lessons to remember. For Daniel Gendreau, the secret behind Cognac success is indeed "*a stretched and efficient logistic flow*".

Colonel Patry stresses the fact that, in addition, "w*hat makes the Cognac experience a success is the fact that it is a genuine win-win partnership under the form of a PPP (Partenariat public-privé, [i.e. public-private partnership]), which is now being developed to other areas*". Indeed, the pre-mentioned agreement concluded in April 2008 with a consortium called "Helidax" to renew and support the helicopter fleet of the Dax Helicopter flying school was a similar PPP. Strongly encouraged by the French government and specifically mentioned in the 2009-2014 Program Law initial project, the Advanced European Jet Pilot Training (AEJPT) is another candidate for outsourcing at the European level, as is the Alpha Jet. "*One option is the Canadian model, which outsourced up to simulator training*", says Colonel Patry. The end goal for the FAF is to simplify and to keep optimizing the training syllabus of fighter pilots, while potentially create savings by transferring/downloading flight hours from fighters to training aircrafts (with an extra hundred flight hours a year, one can train an additional pilot): in that sense, ECATS is an experience to watch, since the fixed nature of the contract has been protecting pilots training (which is rarely a priority) from budget cuts and/or delays. Lieutenant-Colonel Fabien Lefebvre does ask the key question to know how far one can - and should - however go in terms of outsourcing: "s*ince Cognac military staff is not a strategic reserve of forces anymore, outsourcing is welcome and works well, especially as everyone goes back home every day. In OPEX [Opérations extérieures - Overseas operations] however, conditions are rather different, and one has to be careful not to break the cohesion between a pilot and his mechanics: this trust link is absolutely crucial in operations.*" This does indeed reflect the philosophy expressed by the Ministry of Defense as far as outsourcing is concerned, but some of the frontiers are still in the process of being chartered.