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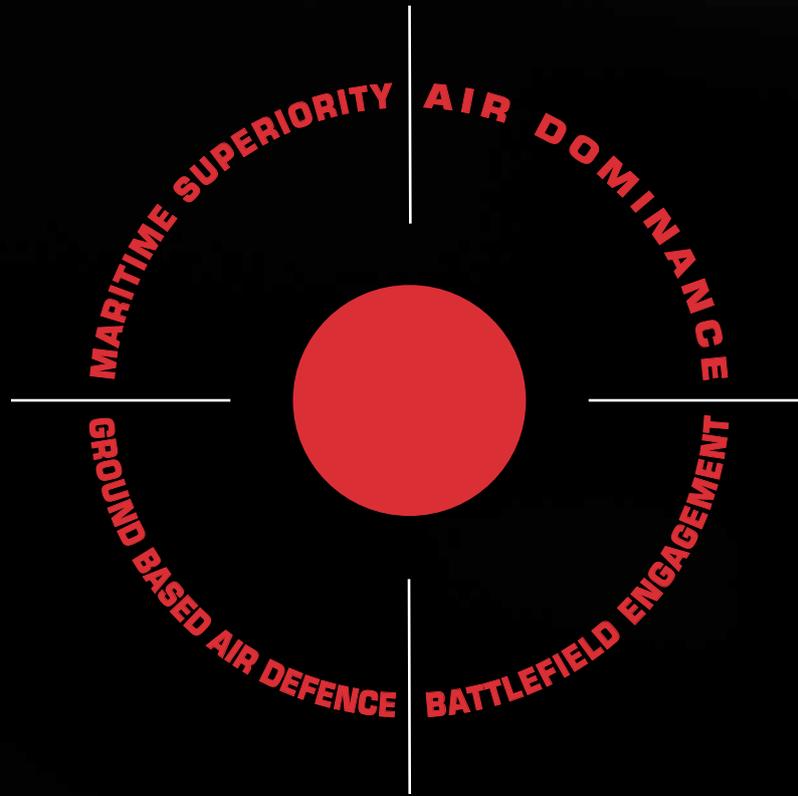
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By Leandro Maldonado

# No-Fly Zone

## UN air interdiction operations over Libya



***In the early spring of 2011, after over two weeks of intense air operations over Libya, the coalition led by the major NATO military powers—the USA, Britain and France—mustered enough resources in the air and at sea to continue carrying out its air interdiction mission under UN resolution 1973. All this on a steady tempo in protection of advancing anti-Kadhafi Libyan forces. However European air forces were then still struggling to put more hardware in place to make up for a major US military pull-out, once NATO take-over of all the tactical responsibility of the UN-backed military operation is complete.***

In the wake of the first French and US strikes on Libyan governmental targets on 19 March 2011, after eleven days of intense air operations over Libya, the UN-ordered coalition was placed under NATO command in preparation of a longer campaign than thought initially.

On 28 March, the United Nations had seen no evidence of a ceasefire in Libya or of any steps by the country's authorities to fulfil their obligations under Security Council resolutions aimed at protecting civilians in the strife-torn North African country, and Secretary-General Ban Ki-moon expressed serious concerns about the protection of civilians and respect for human rights and international humanitarian law in Libya. Mr. Ban told Member States during an informal closed meeting of the General Assembly, which he briefed on his recent travels: "I call, once again, for full respect for international humanitarian law and human rights by all those involved in the fighting." This was not echoed in Tripoli...

### Under UN Resolution 1973

Let's recall that on 10 March 2011 the UN Security Council adopted a resolution authorising Member States to take "all necessary measures" to protect civilians in Libya. And since the early US, French and British involvement several newcomer countries have carried out air strikes or air patrols as part of their efforts to help implement the UN resolution.

By the end of March, Mr. Ban told the General Assembly that there were recurrent reports that opposition groups

↑ 20 de março de 2011, um Dassault Rafale C da Força Aérea Francesa, pertencente ao esquadrão EC/330 "Côte d'Argent", que seguia em direção ao espaço aéreo da Líbia é visto aqui armado com quatro bombas Sagem AASM de 250 kg e um par de mísseis MBDA Mica IR. 20 march 2011, a French Air Force Dassault Rafale C from squadron EC 1/330 "Côte d'Argent" headed for Libyan air space is seen armed with four Sagem 250-kg AASM rocket-bombs and a pair of MBDA Mica IR all aspect air-to-air missiles for self-protection. © EMACOM



←← 20 March 2011, a USAF B-2 taxis for take-off before a 20-hour long flight mission. Um B-2 da USAF é visto em Whiteman AFB, antes de uma missão de 20 horas de voo! © USAF

← 20 March 2011, a French Rafale B from squadron EC 1/91 armed with six Mica missiles. Um Rafale B armado com seis mísseis Mica em patrulha sobre a Líbia. © EMACOM

↘ A UAE Air Force Mirage 2000-9. Six such fighter-bombers are deployed today in Italy. Mirage 2000-9 dos Emirados Árabes Unidos; seis destes foram deslocados para a Itália. © USAF

#### PRINCIPAIS AVIÕES DE CAÇA UTILIZADOS SOBRE A NO-FLY ZONE (FORA EUA)

PAIS	#	TIPO	MISSÕES	ORIGEM	DESLOCADO PARA	DESDE
Bélgica	6	F-16AM	DCA, BAI	Kleine Brogel	Araxos, Grecia	21/03
Canadá	7	CF-18	DCA, BAI	Bagotville	Trapani, Itália	21/03
Catar	6	Mirage 200-5	DCA	Doha	Suda Bay, Grecia	01/04
Dinamarca	6	F-16AM	DCA, BAI	Skrydstrup	Sigonella, Itália	20/03
EAU	6	F-16E/F	DCA, BAI	Al Dhafra	Decimomannu, Itália	01/04
	6	Mirage 2000-9	DCA,BAI	Al Dhafra	Decimomannu, Itália	01/04
Espanha	4	SF-18	DCA, BAI	Torrejon	Decimomannu, Itália	21/03
França	8	Rafale C/B	DCA, BAI	BA 113	BA 126/BA 113	19/03
	2	Rafale C	Reco	BA 113	BA 113	19/03
	8	Mirage 2000D	BAI	BA 133	BA 126/BA 133	19/03
	6	Mirage F1CR	BAI, Reco	BA 112	BA 126	14/03
	4	Mirage 2000-5	DCA	BA 102	Suda Bay, Grecia	29/03
	8	Rafale M	Reco, BAI	GAE	FS Charles-de-Gaulle	22/03
	9	Super-Étendard	BAI, AAR	GAE	FS Charles-de-Gaulle	22/03
Holanda	6	F-16AM	BAI, DCA	Volkel	Decimomannu, Itália	27/03
Itália	4	Tornado ECR	SEAD	Piacenza	Trapani, Itália	25/03
	4	F-16A	DCA	Trapani	Trapani, Itália	25/03
	8	AV-8B	BAI	GAI	FS Garibaldi	25/03
Noruega	6	F-16AM	DCA, BAI	Bodø	Suda Bay, Grecia	27/03
Reino Unido	4	Tornado GR.4	BAI	Marham	RAF Marham, UK	19/03
	4	Typhoon F.1	DCA	Coningsby	Gioia del Colle, Itália	20/03
Suécia	8	Gripen	DCA	Ronneby	Sigonella, Itália	06/04

Norwegian fighters jumped in the pool later. Meanwhile the first Arab elements of the coalition started their operation on 28 March during a common French-Qatari Mirage 2000-5 combat air patrol over the Libyan No-Fly Zone. This highly political move came in the wake of the formal recognition by France, Qatar, the UAE and Jordan of the new Libyan National Transition Council as the sole legitimate representative of the Libyan people from now on. Since then, Italy

also has taken steps to give the NTC formal international recognition

The Qatar Air Force is providing a complement of 6 Mirage 2000-5 interceptors supported by two C-17s ready to bring humanitarian help to Benghazi. The Qatari Mirages are part of a common fighter pool of Mirage 2000-5 jets set up with the French Air Force at Souda Bay in Crete. However, as the Qatari Mirages were not purchased with a refuelling probe, they can only accomplish short



duration defence counter-air (DCA) sorties with their Mica and Magic II missiles. In parallel, the United Arab Emirates Air Force is entering the fray with a detachment of six Mirage 2000-9 and six F-16F Desert Falcon fighters. Qatar and the UAE are the two first Arab countries to join the UN-backed coalition, while Jordan's vague desire to collaborate never went forward on account of internal unrest.

#### Operation "Unified Protector"

While the US presence allowed the coalition a good start, it did not go beyond 5 April when the US fighter force officially left the theatre to others, operation "Odyssey Dawn" now leaving way to operation "Unified Protector". Some 200 aircraft participated in the UN-backed operations over Libya at the peak of the No-Fly Zone actions. Half of them being US, with France providing 25% of the total air combat force. After the US pull-out, Paris is becoming the principal actor in support of the UN Resolution 1973, providing roughly half of the international help called for on 6 April, Sweden and Norway from Italian so

For more of that story, read LAmag #1 next June 2011



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geopolítica e questões ligadas à indústria e à soberania





By Jean-Michel Guhl

# Rafale em combate

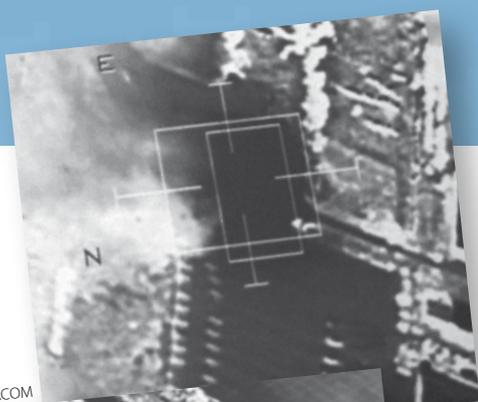
## Rafale at war over Libya

*In the spring of 2011, after over two weeks of intense air operations over Cyrenaica, Tripolitania and the Fezzan, in the face of modest and erratic Libyan Air Force operations, all of the aircraft known to have been destroyed by French military aircraft so far have been hammered on the ground with bombs, and not with air-to-air missiles. A very original score due without any doubt to France's new miracle weapon: the Sagem-designed AASM "rocket-bomb".*

**H**istory will one day remember that France, assisted by the USA, was the first Member State nation of the United Nations Organization to intervene over Libya on 19 March 2011. Very soon joined by Britain and Canada in the nascent UN-backed coalition of willing nations hastily organized to help the Libyan people topple Colonel Kadhafi's more than four decade long dictatorship.

### Half of Libya in rebel hands

In March and early April, while Libyan rebels were still battling hard against government loyalist troops for the control of the road to Sirte —Colonel Kadhafi's birthplace and a key step



© EMACOM





towards Tripoli— nothing yet was clear to whom would go the final victory: to the green flag of the Jamahiriya or the red-black-green flag of the Benghazi-based provisional government and its cohorts of slipshod civilians in arms. The struggle was on. In their westward-advance, rebels had at that time seized the town of Nawfaliyah, west of Bin Jawad, extending their advance towards Sirte, but without securing their spearhead columns of light vehicles toting salvaged Russian machine guns of all types. Reports of early April said rebels on the road to the city came under heavy fire from government troops, forcing them back to Bin Jawad and ultimately back to Brega and Ras Lanuf.

At about the same time, France said its jets had struck several Kadhafi command centres just south of Tripoli's

suburbs, while the UK said it had destroyed many ammunition bunkers in the southern desert region of Sabha without encountering any serious enemy air threat.

#### **AASM: France's lethal "rocket-bomb"**

In the face of wretched Libyan Air Force aerial operations, most of the aircraft destroyed by French military aircraft so far have been pinned on the ground with bombs. Not any bomb: the 250 kg Armement Air-Sol Modulaire (AASM), a new and very ingenious stand-off precision guided munition (PGM), actually a "rocket-bomb" imagined twenty years ago by a French Air Force officer in the aftermath of "Operation Desert Storm".

On 29 March, the tally already totalled six Soko G-2 Galeb jets and two

✦ 31 March 2011, a French Air Force Dassault Rafale C from squadron EC 1/7 "Provence" is seen retracting its landing gear after launching from Solenzara air base in Corsica. The aircraft — a recent F3 model fitted with the US Rover system for CAS missions in Afghanistan — is armed with four Sagem 250 kg AASM rocket-bombs and four MBDA Mica air-to-air combat missiles.

*31 de março de 2011, um Dassault Rafale da Força Aérea Francesa recolhe o trem de pouso após decolar da base aérea de Solenzara na Corsica. A aeronave — um modelo F3 recente, equipado com o sistema US Rover para missões CAS no Afeganistão — está armada com quatro bombas Sagem AASM de 250 kg e quatro mísseis ar-ar MBDA Mica. Um olhar mais detalhado sob o cockpit deixa claro que este Rafale já participou de várias missões de bombardeio. A equipe de solo do Armée de l'Air grava apenas o número de bombas que foram realmente lançadas durante as missões. © Author*



← 31 March 2011, Lt. General Patrick Chareix of the French AF explains how a pair of Rafales conducted earlier, unescorted, a successful strike against a Libyan SA-3 "Goa" SAM site. *O Tenente-General Patrick Chareix da Força Aérea Francesa explica como um par de Rafales conduziu um bem sucedido ataque contra um sítio de mísseis SAM SA-3 "Goa" líbio.* © Author



Mil Mi-35 attack helicopters [see photos on page 8, taken through the Damoclès pod of a Rafale on 26 March 2011]. All struck from a stand-off distance of 15 to 25 km using the 250 kg INS/GPS AASM baseline variant, especially developed for the Dassault Rafale at the turn of the century. A new weapon which has been designated "Hammer" by NATO.

Sagem's AASM is a novel family of smart, precision-guided weapons (PGM), based on different guidance and range augmentation kits (rocket engine)



← 31 March 2011, Lt. Col. Michel, commanding officer of the French AF Rafale detachment in Solenzara. In 2010, he led the Rafale team which attended the Cruzex V international air exercise organised by the Força Aérea Brasileira. This was the first time Rafale fighters visited South America. *31 de março de 2011, Tenente-Coronel "Mitch" Michel, oficial comandante do destacamento de Rafales da Força Aérea Francesa na base aérea de Solenzara. Em 2010, ele liderou os pilotos franceses de Rafale no exercício brasileiro Cruzex V em Natal no Rio Grande do Norte.* © Author



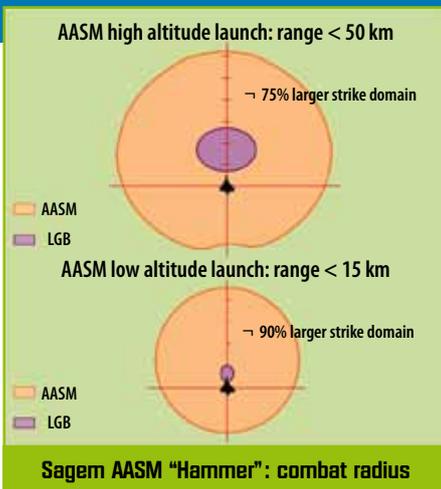
← 31 March 2011, two French Air Force Rafale pilots from squadron EC 1/7 "Provence" at Solenzara air base after returning from a 6-hour long mission on the Libyan theatre. *31 de março de 2011, dois pilotos de Rafale franceses, pertencentes ao esquadrão EC 1/7 "Provence", aqui vistos na base aérea de Solenzara (BA 126) após retornarem de uma missão de 6 horas no teatro líbio.* © Author

↘ Solenzara, 31 March 2011, French Col. Eric Bometon, deputy-commander of BA 126, describes the principal no-fly zones patrolled by AASM-armed Rafales in the Syrte area. *31 de março de 2011, o Coronel francês Eric Bometon descreve as principais zonas patrulhadas por Rafales armados com bombas guiadas AASM na região de Syrte.* © Author

adapted to conventional bomb bodies. It offers a range exceeding 50 kilometres, and is capable of being fired off-axis, day or night and under all weather conditions. This new weapon —also selected by the Royal Moroccan Air Force for its modernized Mirage F1Ms— provides an aircraft with a real multi-target capability, and very high precision with a terminal trajectory suited to all types of targets. A new but yet combat proven PGM, the AASM is also used by the French Air Force and Navy Rafales



↑ 31 March 2011, three Sagem 250-kg AASM precision guided munitions locked on the right wing Rafaut "tri-bombes" pylon of a Rafale B fighter-bomber; 750 kg in all on each wing. *31 de março de 2011, três bombas de precisão guiadas AASM de 250 kg carregadas no cabide Rafaut "tri-bomba" da asa esquerda de um caça-bombardeiro Rafale B; 750 kg de carga em cada asa no total.* © Author



regularly deployed on the Afghan theatre in support of ISAF since 2008.

An innovative new-generation precision weapon using both GPS and inertial guidance, the AASM somehow fills the capability gap existing today between laser-guided bombs—with limited range and requiring continuous laser illumination towards the target—and far more expensive cruise missiles that provide much longer range. The AASM is for the time-being only operational with France's aviation, but it has largely demonstrated its operational capabilities in combat, as the AASM offers a high degree of operational flexibility. This flexibility is mainly due

↘ 27 March 2011, a French Air Force Dassault Rafale C from squadron EC 1/7 is seen topping off behind the boom of a French Boeing C-135FR Stratotanker after egressing the Libyan No-Fly Zone. 27 de março de 2011, um Dassault Rafale C da Força Aérea Francesa, pertencente ao esquadrão EC 1/7, é reabastecido por um C-135FR Stratotanker após deixar a zona de exclusão aérea líbia. É possível notar-se que a aeronave não utilizou nenhuma de suas bombas AASM. © EMACOM

to the PGM's different guidance modes, powerful navigation algorithms that minimize flight-time to impact and its intrinsic qualities, enabling it to carry out a wide variety of conventional air-to-ground missions, while also offering new tactical possibilities actually not yet fully exploited in actual "live" situations.

A remarkable fact: the AASM can be used in "time sensitive targeting" type operations, characterized by short decision cycles. For example close air support for troops or suppression of enemy air defences (SEAD) in full stand-off mode. Moreover, the AASM's very high terminal precision also significantly



limits the risk of collateral damage. For instance, on 28 March, was it revealed by Colonel Thierry Burkhard, the French Armed Forces spokesman: "No collateral damage or civilian casualties has been reported to this date during strikes

↘ 31 March 2011, a French Air Force Dassault Rafale B from squadron EC 1/91 "Gascogne", ready for a night sortie over Libya, is seen at Solenzara air base loaded with six Sagem 250 kg AASM rocket-bombs (three per pylon) and four MBDA Mica air-to-air combat missiles.

31 de março de 2011, um Dassault Rafale B da Força Aérea Francesa, pertencente ao esquadrão EC 1/91, pronto para uma sortida noturna sobre a Líbia, é aqui visto carregado com seis bombas guiadas Sagem AASM de 250 kg (três por cabide) e quatro mísseis ar-ar MBDA Mica. © Author



## Thales Damocles: the Rafale's targeting pod

In France, tactical targeting pods have been in use since the first precision guided munitions (PGM) appeared some 25 years ago with what was then reported as the "Laser Duo" of the French Air Force: the Matra BGL 1,000 kg bridge buster bomb and the Aérospatiale AS 30 L air-to-ground missile. If the Matra BGL never made it to the battlefield, on account of the disintegration of the Warsaw Pact, the AS 30 L on the contrary performed extremely well a little later during the nineties. Both "Operation Desert Storm" over Kuwait, and "Operation Allied Force" over the former Yugoslavia demonstrated to a wide public—directly on television—the amazing precision of the AS 30 L strikes performed by the Jaguar fighter-bomber pilots of the French Air Force.

The almost "surgical" performances of the AS 30 L were due to the good conception and extreme precision of the ATLAS II laser day targeting pod of the Jaguar—the first of its kind used by the French Air Force—and the result of a Thomson-CSF development.

After the ATLAS II pod, the French industry created with Thomson-CSF (later Thales), and especially for the Mirage 2000D fighter-bomber, the PDLCT-S all-weather targeting FLIR pod which represented a step forward enabling precision night strikes with laser guided bombs (LGB) and the AS 30 L. Finally, for the Rafale, Thales designed the Damocles advanced targeting FLIR and laser pod [photo below] which entered Armée de l'Air service in January 2011, just in time for action. ◆



➤ 28 March 2011, Misrata air base, Libya, was on several occasions visited by French Air Force Rafales which destroyed a number of attack helicopters and jets there, namely Mi-35s and Soko G-2 Galebs. Only aircraft considered as menacing for the rebels have come under attack, as all others seem to be grounded for good. 28 de março de 2011, base aérea de Misrata, Líbia, várias vezes visitada por Rafales franceses que destruíram vários helicópteros de ataque e jatos de combate, entre eles Mil Mi-35s e Soko G-2 Galebs. © Google Earth

performed by French aircraft, for the simple reason that the rules of engagement set by the French HQ are extremely restrictive, and on several occasions planned bomb drops were simply cancelled at the last moment to avoid any risks of collateral damage." The truth is, because of the extensive use of new generation PGMs like JDAMs and GPS-aided LGBs by the coalition, much collateral damage on Libyan soil has been avoided so far. "Wide destructions to civilians" on the ground, claimed by the Kadhaifi-controlled press, is pure disinformation.

### A full "stand-off" precision guided bomb

The greatest operational value of the AASM is that it is a true stand-off weapon, which means it can be fired safely from outside the range of existing enemy short and medium range air defence systems, whether at high or low altitude. According to Lieutenant General Patrick Chareix, of the French Air Force CDAOA staff, this fact was proven on several occasions during the initial phase of the interdiction campaign over Libya where the Rafales operated without the need of any dedicated SEAD asset—and to the big surprise of the USAF theatre commander on one specific action against a Libyan SA-3 "Goa" SAM site in March 2011! Its solid rocket propulsion system gives the AASM a range of over 50 km when fired from high altitude, and over 15 km for low-altitude firing. In the latter case, the AASM can also climb over its release point to avoid difficult terrain, while providing a near vertical terminal trajectory for better final precision. These characteristics are awesome, as most of the time, the AASM strikes come as a full surprise for an observer on the ground,

➤ 29 March 2011, French Navy Rafale Ms from squadron 12F are seen on the deck of FS Charles-de-Gaulle cruising off the coast of Libya. Both aircraft are dressed for reconnaissance with a centerline Thales Reco-NG pod. 29 de março de 2011, Rafales M da Marinha Francesa, pertencentes ao esquadrão 12F, são vistos aqui no deck do porta-aviões Charles-de-Gaulle cruzando próximo à costa da Líbia. Ambas as aeronaves estão preparadas para função de reconhecimento equipadas com o um pod ventral Thales Reco-NG. © ECPAD

for the simple reason that the launch aircraft is unseen and unheard... even more when the launch aircraft is a Rafale, thanks to its stealthy characteristics.

Quite a surprising and positive point is the fact that the AASM can be fired off-axis in relation to the aircraft's flight path, thus optimizing its extended range and enabling it to hit distant targets right behind the aircraft—something totally impossible for a conventional laser-guided bomb. From the operational standpoint, this enables the aircraft to immediately engage its target, without having to manoeuvre to place the launching aircraft in position, as would be required for other existing laser or GPS-guided tactical weapons.

A very valuable tactical advantage is also that the AASM allows a single aircraft to engage up to six targets simultaneously! For example one Rafale fighter fitted with two triple underwing Rafaut hard-points—as was the case during "Opération Harmattan" over Libya—can loiter and attack successively or in a single action up to six targets of different nature located in opposing directions. For that, the Rafale pilot





(or navigator in the two-seat models) can use target coordinates previously programmed on the ground during mission briefing, or even in flight at the last minute in the case of time-sensitive targets! This in-flight reprogramming capability relies on new coordinates either sourced through the Rafale's tactical data link terminal (NATO L-16) or obtained via the laser rangemeter of a Damoclès targeting pod.

In order to minimize collateral damage in war operations where civilians

could be put in harm's way, the AASM Hammer is purpose-designed to control its impact conditions according to various mission requirements; including speed and an impact angle which can be adjusted all the way to vertical. This specific feature of the AASM maximizes its final impact under any release conditions. Furthermore, because the AASM is highly manoeuvrable, it lowers operational restrictions on the launch aircraft due to threats, terrain or ground infrastructures.

#### **An innovative architecture**

Comprising a guidance kit and a range augmentation kit, the AASM converts a standard NATO Mk.82 250 kg bomb into a high-precision guided weapon. The range augmentation kit includes a solid rocket motor and four deployable fins.

The AASM weapon family, once fully developed, will use 125, 250, 500 and 1,000 kg bombs. The 125, 250 and 500 kg bombs are used by all Rafale variants. The 1,000 kg bomb is used by the Rafale M. The AASM 250 and 500 kg

For more  
of that story, read  
LAmag #1  
next June 2011



By Franco Salvador de Grugyn

# O fenomenal crescimento da aviação comercial no Brasil

## Brazil's phenomenal national and regional airlines boom

**S**omething of a curiosity, when seen from Europe or North America... In 2011, for the first time ever, the number of passengers travelling by plane inside Brazil's vast expanses exceeded that of passengers travelling by interstate coach, a true sign of a developing economy for many experts. Last year, some 66 million passengers have been reported commuting on regional aircraft while

interstate coach travellers—daily users of what is called *ônibus interestaduais* (in Portuguese) between the country's 26 States— have dropped from a 67 million figure as commercial airlines recorded an extra 10% traffic increase. In fact, since 2002, the number of passengers travelling by aircraft in Brazil grew 115%, while those using interstate coach tumbled by 31%, according to official transport figures released in the *Folha*

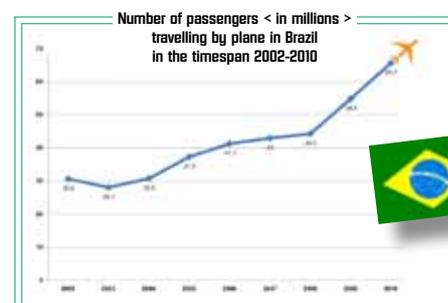
*de São Paulo*, one of Brazil's main daily newspapers. One good reason for that can be credited to the Lula presidential years (from 2004 to 2010) which brought real improvement in the average income of the population, especially since 2007. Other conditions, like those favourable for aviation, are also identified as reasons for that drastic change. Not to mention the speed, safety and extra comfort brought by new aircraft models.



✦ One of Azul's national-designed Embraer ERJ 195 jetliners overflies the world famous Copacabana beach in Rio de Janeiro. Besides being a large user of Embraer twinjet airliners, Azul is one of Brazil's main operator of the European ATR commercial 72-seat biturboprop.

*Um Embraer ERJ 195 da Azul sobrevoa a mundialmente famosa praia de Copacabana no Rio de Janeiro. Além de ser uma das maiores operadoras deste modelo bimotor da Embraer, a Azul é também uma das principais empresas a operar o turbo-propulsor europeu ATR 72, com características regionais e capacidade para 72 passageiros máxima. © Embraer*

geographic heartland, as well as various islands in the Atlantic Ocean. Brazil is the fifth largest country in the world. The only countries that are larger are the Russian Federation, Canada, China, and the United States (including Alaska). The national territory of Brazil today extends 4,395 kilometres from north to south and 4,319 kilometres from east to west. It spans four time zones, the westernmost of which, in the State of Acre south of Amazonia, is the same as Eastern Standard Time (EST) in the United States. The time zone of the country's capital Brasília, and of the most populated part of Brazil along the east coast, is two hours ahead of Eastern Standard Time, except



Moreover, Brazil being a vast country with virtually no viable passenger railway system, the next development step after the road could only be the large and still unobstructed airspace of that continent-sized land.

#### **An aviation network serving a huge country**

With its sprawling territory, Brazil occupies most of the eastern part of the South American continent and its

***In 2011, In Brazil, for the first time ever, the number of passengers travelling by plane inside the country exceeded that of passengers travelling by interstate coach. Last year, some 66 million passengers have been reported commuting on regional aircraft while interstate coach travellers have dropped from a 67 million figure as commercial airlines recorded a further 10% traffic increase. In fact, since 2002, the number of passengers travelling by aircraft in Brazil grew 115%, while those using interstate coach tumbled by 31%.***



← One of Azul's first ATR 72 was given a special pink livery to advertise Brazil's national campaign against breast cancer in 2011. *Um dos primeiros ATR-72 da Azul recebeu uma pintura especial cor de rosa para promover a campanha nacional brasileira contra o câncer de mama em 2011.* © ATR

↘ TRIP Linhas Aéreas was the very first Brazilian company to buy the 'long' version of the baseline ATR 42 in January 2007. *A TRIP é um dos principais operadores do turbo-propulsor europeu ATR no Brasil. Em 2010 a companhia recebeu 6 novos ATR 72-500 elevando sua frota para 30 ATR.* © J.-M. Guhl



when it is on its own daylight savings time, from October to February. On Brazil's east coast, the Atlantic coastline extends 7,367 kilometres. In the west, in clockwise order from the south, Brazil has 15,719 kilometres of borders with Uruguay, Argentina, Paraguay, Bolivia, Peru, Colombia, Venezuela, Guyana, Suriname, and French Guiana.

Brazil is the most populous country in Latin America and the fifth most populous country in the world. The highest concentration of Brazilians live nowadays in the Atlantic coastal region. Of the total population, the states of Minas Gerais, Rio de Janeiro, and São Paulo contain approximately 41%; the states of Rio Grande do Sul, Bahia, Pernambuco, and Ceará contain about 23%; and the remaining states hold about 36%. Today, the population of Brazil is extremely urbanized with 78% of the population living in cities, a

worldwide phenomenon customary to fast developing countries.

So what's actually driving the Brazilian airlines boom? The main driver behind the present witnessed growth is the rapid revitalisation of Brazil's commercial aviation sector along with the fast development of the country's economy, about 8-9% per year.

Spurred by the financial troubles of the legacy main flag carrier Varig, other newer airlines like Gol and TAM increased their market presence and the subsequent competition fostered an important upswing in the sector since 2005 roughly. In 2008, Gol bought Varig for \$275 million and announced its intention to increase the number of seats offered at low fares to stimulate further Brazilian rise in air travel. *"With this acquisition, Brazil will maintain an important flag in global aviation, the industry will benefit from an increase in jobs and demand will be better*



→ A TAM Airbus A320 during a short stopover at São Paulo-Guarulhos international airport. The company has regular passenger flights on both national and international routes. It is today Brazil's largest carrier after its partial merger with neighbour airline LAN Chile.

*Um Airbus A320 da TAM durante uma escala no aeroporto internacional de Guarulhos-São Paulo. A companhia oferece voos regulares tanto em rotas nacionais quanto em rotas internacionais.* © J.-M. Guhl



↘ Gol is Brazil's main and fastest growing low-cost airline. One of that company's Boeing 737-300 is seen landing at Natal airport in Rio Grande do Norte. While TAM mostly uses European Airbus jetliners, Gol only flies US-made Boeing airliners.

*A Gol é principal empresa aérea "low cost" brasileira e também a que mais rapidamente cresce. Um dos seus Boeing 737-300 é visto aqui pousando no aeroporto de Natal, Rio Grande do Norte. Enquanto a TAM usa majoritariamente aeronaves européias, a Gol voa apenas aeronaves Boeing norte-americanas.* © J.-M. Guhl



served," said on this occasion Gol's CEO Constantino de Oliveira Junior. "We are confident that throughout this acquisition Gol will continue its mission of popularising air travel and consolidate its position as one of the leading low-cost carriers in the world. We will work so that our companies become the Brazilian carriers of choice for both domestic and international passengers." Indeed, just as Gol's orange tailed jet liners emerged to take on and ultimately takeover Varig's famous compass and globe decorated aircraft, new entrants have now appeared in the commercial aviation sector, stimulating further expansion in the country's air

transport market. Until the end of the previous decade, the Brazilian national market was dominated by two airlines—TAM and Gol—but as it attracted more players, more companies have appeared and developed to support the escalation in air traffic as well as the construction of new airports all around the country.

#### **A mushrooming business**

As the number of flights departing from Brazil's airports never ceases to increase, the pressure on turnaround times has multiplied in order to generate more revenue. As every minute counts to an airline—

For more of that story, read LAmag #1 next June 2011





Aviação militar

Latinaero é a primeira publicação brasileira on-line e impressa que apresenta uma clara visão sobre o cenário aerospacial sul-americano no idioma Inglês. O Latinaero fornece atualizações semanais sobre os principais programas militares e de segurança sul-americanos, e notícias sobre a aviação comercial e executiva juntamente com informações sobre a indústria aerospacial, tudo isso apoiado pela melhor cobertura fotográfica atualmente disponível no continente. Durante as últimas duas décadas, a América Latina tem experimentado um crescimento econômico significativo, destacando-se o Brasil, a maior economia da região e a sétima maior do mundo. Com uma média anual de US \$ 140 bilhões em exportações, o Brasil lidera o continente em muitos campos, incluindo-se a indústria aerospacial e de defesa. Atualmente uma das regiões mais dinâmicas do mundo, a América do Sul é também um grande mercado para a aviação comercial e militar, sendo capaz de assegurar tanto grandes importações quanto exportações de / para a Europa, América, Rússia, Oriente Médio e Ásia, incluindo-se aviões civis e militares, helicópteros, mísseis, satélites, aviônica e VANTS. ◆

Latinaero, designed in Brazil, is the first publication to appear both on-line and printed forms that gives English speakers, a clear insight into the South American aeronautical scene in the English language. Latinaero provides weekly updates on major South American military and security programmes, and current news about commercial and business aviation and contracts, all this backed by the best photo coverage available on the continent today.

During the last two decades, Latin America has experienced a significant economic growth, notably Brazil which is today the region's largest and the world's seventh biggest economy. With US \$140 billion of average annual exports, Brazil leads the continent in many fields, including the aerospace and defence industries. Nowadays one of the world's most dynamic regions, South America is also one of the premier aviation market able to secure large imports and exports from / to Europe, the Americas, Russia, the Middle-East and Asia. That includes civil and military airplanes, helicopters, missiles, satellites, avionics and UAVs. ◆

## Aviação comercial



Latinaero magazine



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Data de publicação: 1º de Abril de 2011

Publication date : 1 April 2011

### LATINAERO n°1

☆ LAAD report ☆ Brazil's F-X2 programme in doubt  
Segundo trimestre de 2011 Second trimester

Data de publicação: 1º de Junho de 2011

Publication date : 1 June 2011

### LATINAERO n°2

☆ The new Brazilian airlines scene ☆ AVEX today  
Terceiro trimestre de 2011 Third trimester

Data de publicação: 1º de Setembro de 2011

Publication date : 1 September 2011

### LATINAERO n°3

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# A TECNOLOGIA DO RAFALE VAI INVADIR OS HANGARES DO BRASIL

Agora o céu do Brasil vai ficar muito mais bonito, protegido e cheio de tecnologia.

Com as aeronaves da Dassault Aviation, além de juntar-se ao seleto grupo dos países que possuem a mais avançada tecnologia de defesa, o Brasil vai conquistar muitas vantagens para o desenvolvimento da indústria aeroespacial, tais como: transferência de tecnologia e conhecimento, geração de empregos e muito mais.

**Com a tecnologia e a inovação do RAFALE, quem ganha é a soberania nacional.**



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Conflito humano. Catástrofes naturais. Fronteiras instáveis. Seja qual for a causa, estima-se que 375 milhões de pessoas precisarão de assistência urgente nos próximos cinco anos.\*

**POR QUE A VERSATILIDADE DA AIRBUS MILITARY SIGNIFICA ESPERANÇA PARA 375 MILHÕES DE PESSOAS EM TODO O MUNDO?** Para essas pessoas, a Airbus Military significa

uma resposta melhor e mais rápida por parte dos líderes militares e políticos. Significa o Airbus A400M, um avião cargueiro avançado que consegue levar 37 toneladas de carga por 3.200 km e pousar em uma pista de pouso não preparada. Ou o A330 MRTT, extremamente eficiente como avião-tanque e avião de transporte de pessoal, equipes de auxílio e evacuações aeromédicas.



Ou o C295 e o CN235, são aviões intermediários, versáteis e ótimos para transporte e vigilância marítima. Veja o que a Airbus Military significa para um mundo instável em

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\*Número de pessoas atingidas globalmente por crises climáticas até 2015 – projeção da oxfam.org.uk