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NORTH AMERICA'S BEST-SELLING MILITARY AVIATION MAGAZINE

Vol 15, No 2 | www.combataircraft.net

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FEBRUARY 2014 \$4.99



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EXERCISE REPORT



CRUZEX 2013

South America's premier multi-national air combat training exercise, 'Cruzeiro do Sul' (CRUZEX) Flight 2013 took place from November 4-15 and saw record participation by 92 aircraft, nine helicopters and more than 3,000 military personnel.

report and photos: **Marnix Sap and Carlo Brummer**

Above: A Venezuelan F-16A from Grupo Aéreo de Caza 16 'Dragones' with special markings for the 30th anniversary of the 'Viper' in Venezuela.

Right: Six A-37 'Dragons' from the Fuerza Aérea Colombiana's Escuadrón de Combate 311 made the long journey from their home base at Malambo to Natal. The aircraft had been modified to carry GBU-12 Paveway II LGBs, while their pilots also used tablet computers for mission information.



THE PRODUCT OF some 15 months of preparation, exercise CRUZEX Flight 2013 saw the majority of the combat aircraft and crew operating out of Base Aérea de Natal in the state of Rio Grande do Norte. Refueling, rescue and reconnaissance assets flew from Base Aérea do Recife in the state of Pernambuco some 100 miles south of Natal, while a small radar and rescue contingent was located at Caicó.

This seventh CRUZEX saw delegations from Canada, Chile, Colombia, Ecuador, the US, Uruguay, and Venezuela coming together in the largest exercise organized by the Força Aérea Brasileira. While each nation had its own specific training objectives, the opportunity to build relationships with the members of other countries' forces is a significant benefit of participation.

Inspired by the French ODEX exercises, previous editions of CRUZEX were

organized every two years from 2002. Except for 2002 and 2006, all took place at Natal.

Located in the north-eastern corner of Brazil, Natal air base is co-located with Augusto Severo International Airport and normally home to 2º/5º Grupo de Aviação (GAv) 'Joker' operating the A-29 Super Tucano in the combat training role, as well as 1º/11º GAv 'Gavião' flying the H-50 Esquilo in which student pilots take the Curso de Especialização Operacional de Asas Rotativas (operational helicopter training course).

Being a training base, Natal has the requisite structure for exercises of this scale. The vast expanse of airspace at its disposal covers the states of Rio Grande do Norte, Ceará, Paraíba and Pernambuco, as well as the Atlantic Ocean.

Although France and Argentina had participated in the initial and final planning conferences for CRUZEX Flight 2013, both were notably absent, Argentina officially

cancelling just days before the start of the exercise. France had indicated that due to 'operational commitments' it was unable to join, while Argentina had to admit that it stepped down at the last minute since Congress had not authorized its participation.

This was disappointing for the Fuerza Aérea Argentina as it was very keen to bring some six A-4AR Fightinghawks plus a single KC-130 Hercules 'Tanquero' to the exercise. This gap was quickly filled by the Brazilian Air Force, which sent additional aircraft to Natal as substitutes.

Novelties

Contrary to previous form, this year's CRUZEX was focused purely on the air combat training element of the exercise. This distinction started in November 2012 when CRUZEX VI was exclusively dedicated to command and control, with troops training in a virtual environment to practice their



C2 capabilities. To underline the difference between the two versions of the exercise now in place, the word 'Flight' has since been added to the name.

2013 also saw the introduction of combat search and rescue missions involving Brazil's Esquadrão Aeroterrestre de Salvamento (Airborne Rescue Squadron), or PARA-SAR. These Air Force specialists were either air-dropped by C-130 or C-105 Amazonas aircraft or inserted with the support of Brazilian Air Force UH-60Ls to carry out forward air controller (FAC) as well as combat rescue missions. They also performed several partnership jumps with US and Canadian special forces. Making their debut, two AH-2 (Mi-35M) Sabres and one spare operated by 2º/8º GAv made the long journey from Porto Velho to provide rescue escort (RESCORT). In addition, a range of aircraft comprising examples of the F-5EM, F-2000 Mirage, R/A-1 Falcão, A-29, K/C-130H, E-99, C-105 Amazonas, SC-105

Pelicano, H-1H Iroquois/'Sapão', H-60 Black Hawk and H-34 Super Puma took part, making the Brazilian Air Force the largest force contributor.

One of the technical novelties was the introduction of a small portable GPS. Easily fitted in a pilot's pocket, its use introduced the possibility of 'shot validation' for the first time. In an exercise like CRUZEX, the launch of missiles is only simulated, and in the past it was difficult to assess whether a 'kill' was made or not. Often the result was defined by shouting it out. Now, with the introduction of these portable GPS devices, the process works as follows. In Recife, air traffic controllers from the 3rd Integrated Center for Air Defense and Air Traffic Control (CINDACTA III) monitor the fight as it evolves, using the radar network in the region. This enables them to make the initial validation of the virtual shots as the pilots call them. After landing, this ATC data is cross-referenced with information

collected from on-board aircraft systems and the data downloaded from the portable GPS devices. Once processed, all the pilots who participated in the mission will meet for a second validation, evaluating their mission by watching an animation that re-creates every moment of action based on all data collected. As in a video game, it is possible to see on screen where each aircraft was at every moment, as well as their altitude and the trajectory of the 'shots'.

Another novelty was the participation of the Fuerza Aérea Colombiana. The Colombian Air Force's Escuadrón de Combate 311 operating the A-37 'Dragon' prepared itself extensively by participating in two large-force employment (LFE) exercises in 2013. Monitored and evaluated by the Colombian Air Force as a 'last check' prior to attending CRUZEX, the latest exercise was run in September at Malambo air base and involved some 30 aircraft including Kfir, A-37B, A-29B, OV-10, AH-60 >



This photo: Performing the defensive counter-air role, two F-5EMs from 1º/1ªGAvCa 'Jambock' from Santa Cruz are pictured. The nearest aircraft is toting an MAA-1 Piranha missile.

Below left to right: Ecuador was making its first CRUZEX appearance with three Super Tucanos from Escuadrón 2313 'Halcones' of Ala de Combate 23.

The three Uruguayan Pucarás deployed for the exercise taxi behind the Colombian A-37s. The Uruguayan Pucarás had just received new color schemes, with the previous hog's head markings removed from their noses.

Santiago Rivas

and Huey II as well as AC-47T, KC-767, C-130 and C-295.

Before their departure to Brazil, Colombian A-37 aircrews had on two separate occasions practiced long-endurance flights aided by air refueling, mimicking the long non-stop journey from Manaus to Natal, covering some 1,500nm or close to five hours of flight. After departing their coastal town of Baranquilla, each of the six Dragons had to be air-refueled five times before reaching Manaus in the heart of the Brazilian Amazon for a night stop, and five times more before making Natal, totaling some 60 connections with the Colombian KC-767 MMTT *Jupiter* tanker operated by Escuadrón de Transporte 811. Colombia's KC-137 *Zeus* was also scheduled to participate in CRUZEX, but it was decided that it would remain in Colombia in support of national security operations. In a similar way, the absence of the Dragons was resolved by temporarily deploying some Kfirs and Super Tucanos to the CACOM 3 area of operation.

Without doubt Canada had to travel the longest distance to participate for the first

time in a CRUZEX Flight exercise when it deployed two of its CC-130J Hercules and more than 40 members of the Royal Canadian Air Force from 8 Wing Trenton, Ontario, 3 Wing Bagotville, Quebec, and 1 Canadian Air Division, Winnipeg, Manitoba, as well as personnel from the Canadian Army Advanced Warfare Centre, Princess Patricia's Canadian Light Infantry and the 3rd Battalion, the Royal Canadian Regiment.

Taking part for the first time in an air exercise with Brazil since the 1970s, debutant Ecuador brought three of its 'digi-camo' A-29Bs and some 34 pilots and technicians to CRUZEX Flight 2013. Operated by Escuadrón de Combate 2313 'Halcones' in the border surveillance and training role, the Ecuadorian Super Tucanos operated alongside those from the Brazilian Air Force.

Another new development was the appearance of the first modernized A-1M (serial 5520) that was delivered to the Brazilian Air Force on September 3, 2013. Equipped with the initial version of the BR2 datalink, this aircraft is the first of 43 to be





refurbished and upgraded. Sixteen airframes have been inducted for conversion so far. In due course, all F-5Ms, A-29Ms and A-1Ms as well as the upgraded E-99s should share the same avionics suite, allowing these aircraft to exchange large amounts of data and even images in a secure way.

It was the US Air Force's second visit since its inaugural CRUZEX participation in 2010, but considering the budget sequestration of 2013 its presence was significant. More than 150 US airmen were involved, including two pararescue members and an MC-130 pilot from the 129th Rescue Wing at Moffet Field to exchange best practices in airlift and airdrop operations. A single KC-135R Stratotanker from the Arizona Air National Guard's 161st Air Refueling Wing and six F-16 Block 30Fs from the District of Columbia Air National Guard's 113th Wing went down to Brazil too.

Known as the 'Capital Guardians', the 113th Wing normally operates 18 aircraft and is also responsible for the 113th Aerospace Control Alert (ACA) Detachment, assigned the task of providing air sovereignty to defend the nation's capital and the National Capital Region (NCR). The ACA Detachment at Andrews AFB is one of 16 units nationwide where fighters sit ready to defend America's airspace — it is one of the busiest, exceeding 4,000 alert events, more than the other 15 ACA units combined, since Operation 'Noble Eagle' started in September 2001. Bringing this vast experience to the exercise, in CRUZEX Flight 2013 the US F-16s filled the role of offensive counter-air (OCA). Only in one scenario did US F-16s support the defensive counter-air role (DCA).

Combined air operations

Contrary to the previous CRUZEX pattern, there was no gradual build-up in terms of complexity of the combined air operations (COMAO). Orientation flights were to occur in the days ahead of the exercise, with some countries taking the opportunity to fly

during the weekend prior. On the first day of CRUZEX Flight 2013, all participating crews were given instructions on communications, information systems, logistics, operations and flight safety, the latter considered one of the most important points.

At the start of each day, all pilots involved in the COMAO attended the 'mass briefing' in which they discussed and agreed on mission objectives, ingress and egress procedures, time of taxiing, take-off and landing, and co-ordinated the various times over target (ToT), as the accomplishment of this would determine the success of the mission. After the mass briefing, pilots from all the participating countries would break out to start briefing the specifics of the mission, during which the day's mission commander would explain the tactical maneuvers required in the attack to meet the assigned targets. Only those countries that had previously participated in CRUZEX were eligible to provide a qualified mission commander to lead a COMAO. On completion of the sortie, in the debriefing, pilot performance and shooting results were related to the tactics used in order to determine the overall result, lessons learned being fed back to each of the countries.

Exercises like CRUZEX require large communication networks to control the airspace and ensure situational awareness of the aircraft involved. To this purpose, the Mobile Unit for Information Technology (UCTI) set up a powerful operational structure to connect Recife and Natal in a wider communications network. Working as a single network, some 400 work stations were connected by placing 10 antennas in Natal, Recife, Assu, Sousa, Caicó, São José do Egito and Pau dos Ferros. Due to the area of mountains and uplands in the region, additional radar coverage was required to complement the ground radars at Natal and Recife. Located in the small town of Caicó, 70 military personnel with their equipment operated some nine VHF and UHF channels and the TPS-B34 tri-dimensional radar





Above: Flying 53 missions during CRUZEX, six F-16 Block 30s from the 'Capital Guardians' mainly filled the role of offensive counter-air in support of the 'blue forces'.

Right top to bottom: Two AH-2 (Mi-35M) Sabres operated by 2º/8ºGAv at Porto Velho performed air interdiction missions as well as escorting H-60Ls in support of C-SAR missions. Santiago Rivas

A KC-135E from the Fuerza Aérea de Chile operated by Grupo de Aviación No 10 provided refueling capabilities exclusively to the Chilean F-16s, while Colombia's unique KC-767 offered hose and drogue refueling.

Below: Participating for the last time in CRUZEX were Brazil's Mirage F-2000s. With their out-of-service date set for December 31, 2013, their alert mission at Anápolis will be taken over by a detachment of F-5Ms until the winner of the F-X2 fighter competition is decided.

FAB/Sgt Johnson





with a range of about 500km. Troops and equipment had to be moved from Recife to Caicó across narrow roads. A single H-34 helicopter operated by 3°/8° GAv was on standby at Caicó to perform rescue duties should the need have arisen.

Recife tankers

Although not strictly part of the exercise itself, several tanker aircraft were operating from Recife. From a location opposite the International Airport terminal, the USAF flew eight sorties with a KC-135R from the 161st Air Refueling Wing, home-based at Sky Harbor Air National Guard Base, Arizona, to provide the American contingent of F-16s with fuel.

In a similar fashion, a single KC-135E from the Fuerza Aérea de Chile operated by Grupo de Aviación No 10 offered air-refueling capabilities exclusively to the Chilean F-16 MLUs from Grupo de Aviación No 7, while Colombia's unique KC-767 and the only two KC-130Ms from the Brazilian Air Force flew multiple sorties every day. Delivered in 2010, the Colombian KC-767-200ER is a Multi-Mission Tanker Transport (MMTT) aircraft converted by the Bedek Aircraft Division of Israel Aerospace Industries (IAI). By means of an air-to-air refueling agreement specially made for this

exercise between Colombia and Brazil, both the KC-767 and KC-130M were active in cross-refueling F-5Ms, F-2000s and A-37s on a daily basis. It was most unfortunate that a similar agreement between Colombia and Uruguay did not get finalized in time for the exercise, otherwise the three short-legged A-37 Dragonflies that the Fuerza Aérea Uruguayana had sent to Natal would also have been able to make use of the refueling capabilities of the KC-767, significantly increasing their presence in COMAO missions.

Air refueling took place in accordance with NATO procedures and with every country paying for its own expenses; during every connection, the amount of fuel offloaded to the receivers was noted down for reimbursement later. Not involved in this year's CRUZEX were the KC-137s that had been in service with the Brazilian Air Force since 1986. After the mishap at Port-au-Prince International Airport in Haiti on May 26, Air Force Command decided to retire the remaining three KC-137s on August 10, 2013.

Under the FAB's KC-X2 program, IAI will overhaul and convert two second-hand Boeing 767-300ER commercial airliners into KC-767-300ER MMTT aircraft. As Brazilian aircrews are awaiting the delivery of their

own two MMTTs in the very near future, they were given the opportunity to fly on board Colombia's *Jupiter* to witness what it is like to operate this very modern tanker.

To illustrate the importance of *Jupiter* in CRUZEX Flight 2013, during the exercise some 52,000 gallons of kerosene were transferred to Brazilian F-5Ms, Mirage 2000s and Colombian A-37s.

Also operating from Recife were two Embraer E-99 airborne early warning and control aircraft from 2°/6° GAv at Anápolis, providing aerial radar coverage and acting as flying back-up radars should the need arise. Finally, one of only two SC-105 Pelicanos in Brazilian service operated by 2°/10° GAv was deployed to Recife to stand alert for search and rescue duties.

During the 12 days of the exercise, some 100 flights were launched each day, amounting to a total of 1,240 flight hours logged and consuming some three million liters of fuel. ✈

Acknowledgments: Col Max Barreto, Lt Humberto Leite, Col Keith Colmer, Col Gary Brewer, Capt Justin Brockhoff, Col David Barrero, Col Carlos Silva, Capt Nanny Gomez, 2nd Lt Nilsa Leal and Capt Christopher Daniel.