

Terror in the Brazilian sky

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This could be the scenario of a movie, the movie of the horrible crash which killed 154 persons aboard flight Gol 1907, but the described events, the human and equipments behavior are pure fiction. The police and administration inquiries are still on the run and no evidence has been released. Although, in order to make that narration more realistic, the technical data related to both flights (route, takeoff time) are as released by the media, the full timing has been obtained using Microsoft ® Flight Simulator 2004 ®.

Map and timing :

<http://gol1907.pfiquet.be/manaus2.htm>

Setting up

On Sao José dos Campos « Professor Urbano Ernesto Stumpf » airport, 44 NM N-E of Sao Paulo, the Jet Legacy 600 crew is preparing to take the ownership of his new baby while the owning company managers are still at the (ending) manufacturer's party.

For that maiden flight, the N600XL will bring these gentlemen (two managers from the owning company, two managers from the manufacturer and one U.S columnist who was visiting the assembly plant and has been invited to join them for his return flight) to Manaus where they will spend the night in order to take advantage, the next morning, of the wonderful spectacle offered by the sunrise over the Amazon river. Then, they will fly back to the USA, final destination: Mac Arthur airport on Long Island (New York). And since the pilots are not familiar with the Brazilian airspace and regulations, the flight plan has been prepared by one of the manufacturer's pilot.

In accordance with the regional rules, that flight plan calls for departure through the PCL beacon located 92 NM away from Sao Jose where they will track the UW2 jetway to Brasilia, heading 005, flight level 370 (37000 ft). When flying over the Brasilia (BRS) beacon, 367 NM after PCL, they will catch the UZ6 jetway by turning to heading 334. Due to that new heading, they will have to choose an "even" flight level, in that specific case, FL360 (36000 ft). It is also planned that the flight level will be changed again (to 38000 ft) when passing the TERES intersection, 255 NM away from BRS, until new ATC instructions to prepare for the landing to Manaus.

PLANE 1	TYPE OF AIRCRAFT E145	CLASS OF SERVICE M	REG. NO. SI
OPERATOR SBSJ	DESTINATION 1730		
ORIGIN N0452	FLIGHT LEVEL F370	DCT PCL UW2 BRS/045 F360 UZ6	
TERES/ND447 334 UZ6 MAN DCT			
OPERATOR SBEJ	DESTINATION 0334	OPERATOR SBBV	
OPR/EXCELAIRE			
FROM/SBSJ			
MMV AYO DAC 256/GOP-3/28.09.05			

By 14:15, everyone prepares for boarding, exchanging lots of handshakes and congratulations while the pilots go through the check-lists, for the last time with the manufacturer's chief pilot. These two guys are no « rookies », the captain, 20 years as a commercial pilot with over 8000 hrs (400 on aircrafts of the Legacy family), and the copilot, 10 years as a professional pilot and over 6400 hrs, have total respect and confidence from their employers.

At 14:30, the door is closed and the startup procedure begins. The copilot requests the flight plan clearance then the clearance to taxi to the active runway, which today is the 33.

It is 14:47, at the runway 33 holding point, the Legacy waits for a military C130 to clear the runway, and at 14:50, the pilots, one hand over the other as per the procedures, push the throttle levers forward.

At the same moment, in Manaus where it is only 13:50, another crew climbs the stairs to the Gol airlines brand new Boeing 737-800 PR-GTD (delivered 12 days earlier), in order to prepare for the flight 1907 to Brasilia which they are expected to reach at 18:12 (eastern time, the time zone limit being crossed at the Xingu river point NABOL), then to Rio de Janeiro.

The two pilots start their check-list while the cabin crew hurries up securing the containers just delivered by the catering company; down there, inside the airport, the 148 passengers are called for boarding, there is no time to loose.

« Passengers for flight Gol 1907 bound to Brasilia and Rio de Janeiro are requested to report immediately to gate 3B with their boarding pass ».

Among them are many commuters using that flight every week for their job, but there also are a few tourists, for example these twelve retired guys who spent a week fishing uncommon species in the Amazon river, and are discussing about the stories they will tell their relatives once back home, the poor men cannot imagine that the fishes, carefully packed in isothermal bags in the luggage compartment will end up rotten a few miles From the Xingu river.

One thousand four hundred miles to the south, it is 14:57, the Legacy N600XL leaves Sao Jose departure to join Brasilia Control on 126.65 Mhz. At 15:00, she crosses FL200, 6 minutes before the PCL beacon, then over PCL, turns to heading 005 to follow the UW2 jetway while continuing to climb to FL370 (as recorded in the flight plan) which they reach at 15:15.

On flight 1907, the passengers are now comfortably installed, doors are locked, the copilot requests the flight plan confirmation, then the taxi clearance. The jet engines are started while a truck pushes the plane out of the gate area.

The pilots may then drive the 737 to the runway 10 holding point.

First problems

15h29, 187 NM before Brasilia, the Legacy enters a new control area and is instructed to switch to 128.5 Mhz, while in Manaus, 6 minutes later, the Gol 737 accelerated for takeoff.

15h45, the Legacy is 52 NM, or 6.5 minutes for Brasilia. The pilots, preparing the next leg of the trip, call the area controller.

-Brasilia control from November six zero zero X-ray Lima bound to Manaus, request clearance to descend to flight level three six zero.

-Zero X-ray Lima, maintain flight level tree seven zero, report overhead BRS.

-Maintain thee seven zero, will report overhead BRS, Zero X-ray Lima.

Then, a few seconds later:

-Zero X-ray Lima from Brasilia control, squawk zero four four one.

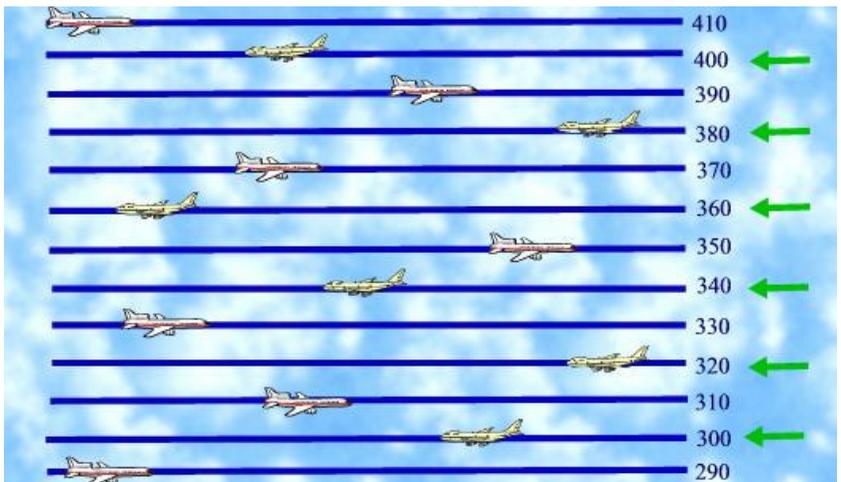
-Squawk zéro four four one, Zéro X-ray Lima.

And that's where the whole tragedy starts. The copilot, as he sets the new squawk code, discuss with the pilot to try and understand why they were denied the change to FL360 and take some time to validate the new code. Since he is a newcomer on jet aircrafts, he does not know that the radio equipment he is using may be defective. On September 12, the FAA has issued a note requesting that the radio module be changed within a given period of time and that, in the meantime, it is mandatory to make sure that a squawk code be validated within 5 seconds to avoid the risk that the whole radio unit, including the transponder and the TCAS (anti-collision system) switches to standby mode with no possibility for the pilot to notice that switching.

From now on, the Legacy is mute and deaf.

As they fly over the BRS beacon, the copilot calls the controller as requested but receives no answer. He tries on the second radio set (COM2), no more answer. The two pilots check the radio panel, seems all right; they discuss, try to find reasons for that lack of answer and decide to stay on FL370 as instructed 10 minutes earlier, until further notification.

It is 15:56, the Legacy heads to 334 on the UZ6 jetway. Normally, with that heading, they should fly an "even" level



but since the controller said to maintain 370

On the opposite way, the 737 reaches 37000 ft at 15:05 (16:05 for the Legacy), they are 72 NM before VIBOT. In the cabin, the four attendants have prepared the carts and start the drinks service. Of course, Gol being a low cost company, added to the fact that flight time is 3 to 6 PM, there is no food service.

A 15:18(western time), while the 737 pilot switches the radio to 123.9, the Brasilia controller seeing that the Legacy approaches the limit of his area, calls to notify the frequency change to the pilots. Despite several tentatives with no answer, he transfers the flight information to his colleague in charge of the next area.

Nobody seems to really worry since the radar spot is excellent. Of course there is no more squawk code, no altitude information on the screen, but according to the flight plan, they should be on FL360. The new controller tries again to notify that small problem, to the Legacy but since they don't answer...

16:23, the Legacy flies over TERES where they should climb to FL380 according to flight plan, but with no radio contact, the pilot decides to maintain FL370.

16:46, flying overhead NABOL and consequently, entering the same control area as the 737 which is in front of them at a distance of 140 NM, and again, no one seems to worry, the two aircrafts are not supposed to be at the same level, they are equipped with a TCAS, the Boeing crew has been warned of the potential risk, but as long as the TCAS gives no signal... In addition, it would be exceptional that the two aircrafts be exactly at the same altitude and on the very same track; those equipments are not accurate by a few yards.

Would you bet ?

The tragedy

A 15:55 local, (16:55 in Brasilia) the Legacy bumps a little, it is probably due to a local turbulence which is immediately corrected by the autopilot. The writer, installed in a left side seat over the wings line takes a look through the window and, Surprise! notices that the winglet is almost totally torn away. After a quick visual check, the pilot decides to abort the flight, in case the damages extend. The Cachimbo military airfield is 60 NM ahead, they will land there for the sake of their own safety.

The copilot sets the transponder to "7700" (emergency code) and therefore reestablishes the radio circuit for the landing procedure.

Inside the Boeing, the pilots give regularly a glance over the instrument panel, just in case, but since the TCAS stays mute...

The problem is that as the Legacy radio module is on standby, it does not emit any signal and of course, the 737 TCAS cannot see it.

Suddenly, a small thing appears far ahead, just a small bright spot, but growing very rapidly. Within a few seconds, just enough for the Gol crew to understand what happens and to switch the autopilot « off », with a cumulated aircrafts speed of one nautical mille every 1.5 second, the two planes are face to face, the pilots try to escape to the upper right, but it is too late ! The Legacy winglet strikes the Boeing left wing leading edge while the 737 winglet skims the Legacy horizontal stabilizer.

See <http://www.pfiquet.be/n600xl.jpg>



The 737 enters a spin, the pilots push on the yoke and the pedals to try and stop the spin, they lower the gear and the flaps to slow it down but this creates so much stress in the structures that the left wing, weakened by the collision, breaks and hits the vertical stabilizer. The shock is so hard that the rear structure of the body starts cracking and finally rips of. Nothing else can be done, the 737 is totaly out of control. In less than two minutes, the pieces of the aircraft reach the Amazonian forest, spread over a 10 NM diameter area.



I will not be sad towards those who have lost a beloved one in the tragedy and try and describe what those two minutes have been in the cabin.

I hope they accept the idea that two minutes is a very long time as you wait for something to happen and do nothing, but it is so short when you are part of the event and think at what you can do to save yourself.

see the translation of the official inquiry preliminary report at :

<http://gol1907.pfiquet.be/Golreport.ppt>

see also

<http://histoiresdavions.skynetblogs.be>

www.pfiquet.be

www.crash-aerien.com