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## Lost of Situation Awareness During Commercial Flight Over Colombian Mountains

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### **facts about the flight:**

According to the report received by the commander of the aircraft, the 48 hours prior to the event were instructional flights with high workloads, as they were aspirants who expected to be linked to the company, the assignment of the flight began in Medellin(Colombia) under the condition of additional crew member ( tripadi) to the city of Cali, there he made his first flight covering the Cali-Bogota route, without any novelty with the student, they had a stopover in Bogota of approximately three (3) hours and departed to Cali in order to perform an initial operational training (IOT) for the first officer.

This is how the instructor served as pilot monitor (PM) in the left chair of the A-318 and the first officer, co-pilot, was as a pilot flying (PF) in the right chair, it was a night flight taking off at 21:25 Local time, with an approximate arrival itinerary at 22:33 LT it was a dark night, they flew under IFR conditions, during the descent phase performing a standardized arrival procedure called "STAR MANGA8" at 22:33 LT when the aircraft was 40.5 miles from Cali VOR and 13,980 feet above In the area of the central mountain range, in an area where the minimum height for IFR flights was 17,000 feet, the instructor noticed that the FMS (Flight Management System) of the aircraft was badly programmed

and it was there when he began to give directions to the first official, to correct the error, which led to the aircraft crossing the MANGA position below the flight level ( FL) 170, it was there when the instructor neglected the vertical profile of the aircraft and automatically activated the alarm of the GPWS (Ground Proximity Warning System) when they were approximately 13,980 feet above the mountain terrain, the device turned on indicated in imperative and loud tone "PULL UP" "PULL UP" "TERRAIN" "TERRAIN", in that moment the instructor takes control of the aircraft and declares "the plane is mine" and carried out the evasive maneuver ascending to a flight level of 20,000 feet, there proceeded to level the aircraft and when all the parameters were normalized, he return the controls The student after inquiring about whether or not he was able to continue with the control of the aircraft, upon obtaining an affirmative response, the co-pilot finished the descent and the normal approach to Alfonso Bonilla Aragón Airport that serves the city of Cali Colombia South America .

The instructor said that he was very well trained to face the situation; since the evasive maneuver was executed according to the flight technique and recommendations of the manufacturer of the aircraft, taking into account the confusion factor that the student presented and the low situational awareness that they had at the precise moment when the GPWS He gave the warning notice, The commander is fully aware that no one is exempt from making mistakes, but is committed to further develop competencies that allow him to mitigate the chain of error by being more aware of the situations that may arise, managing better the time in which the flight instruction is given under permanent monitoring of the environment and the lateral and vertical profile of the aircraft by the crew under initial operational training, adhering strictly to the established procedures. " It is striking that when inquiring about the performance of the Air traffic Controller (ATC), he indicated that they was under radar surveillance and the control authorized them to approach; However, if they had radar contact, why did not they warn them about the dangerous descent below the minimum allowed?



According to the statement made by this experienced instructor commander, it is important to clarify that after the event that took place on March 27 of last year year, the assignment of this captain ended with a flight the next day on the CALI-MEDELLIN-JFK route. the city of NY USA; Now according to the Colombian Aeronautical Regulations "114,500 Actions post - accident / serious incident or incident (a) Preventive cessation

of aeronautical functions : (1) While assessing the incidence or not of their operational or technical performance in an accident or serious incident; the members of the crew involved will be suspended from any aeronautical activity of land or flight as appropriate, automatically and without any requirement, before which this staff will refrain from exercising the privileges of their license ... ". According to the above, why did the airline not suspend this crew member immediately after this serious incident? once his last assignment was completed, he was unable to make flights because he was on free days. After this, he rejoined his work, but was found to have him on land (GRND) to allow the investigation of this particular event.

On the other hand, analyzing the event itself, carrying out the evasive maneuver did not take much time, just a matter of seconds, because according to its version the procedure that was implemented was to disconnect the autopilot and start an immediate ascent with maximum angle of pitch and maximum power that for the reaction time would take around 30 Seconds, to subsequently level again with 20,000 feet approximately without any conflict with other aircraft to be alone in the area that was flying, if eventually had other aircraft in At the top level, the TICAS of the aircraft would have been activated without any doubt and its version is totally trustworthy.

This flight was under radar surveillance and the control authorized them to approach; However, if they had radar contact, why did the air traffic controller not warn them about the dangerous descent too low of the minimum flight level in this area allowed?.

According to the statement made by this experienced instructor commander, it is important to clarify that after the event that took place on March 27 last year , the assignment of this captain ended with a flight the next day on the CALI-MEDELLIN-JFK route. the city of NY USA; Now according to the Colombian Aeronautical Regulations "114,500 Actions post - accident or serious incident (a) the crew involved can't return to his flight duties due to Preventive cessation of aeronautical functions : (1) While assessing the incidence or not of their operational or technical performance of the crew in an accident or serious incident ; the members of the crew involved will be suspended from any aeronautical activity of land or flight as appropriate, automatically and without any requirement, before which this staff will refrain from exercising the privileges of their license ... ". According to the above, why did the airline not suspend the crew member immediately after this serious incident? once his last assignment was completed, he was unable to make flights because he was on free days. After this, he rejoined his work, but was found to have him on land (GRND) to allow the investigation of this particular event.

On the other hand, at looking closely the event itself, carrying out the evasive maneuver did not take much time, just a matter of few seconds, because according to its version the procedure that was implemented was to disconnect the autopilot and start an immediate ascent with maximum angle of pitch and maximum power that for the reaction time would take around 30 Seconds, to subsequently level again with 20,000 feet

approximately without any conflict with other aircraft to be alone in the area that was flying.

In my opinion there is not any doubt about his version is totally trustworthy

## Situation Awareness In Aviation System

Situation awareness (SA) is the perception of environmental elements and events with respect to time or space, the comprehension of their meaning, and the projection of their future status.

“Level 1 SA\_ Perception of the elements in the Environment.

A pilot needs to perceive important issues during his flight such as other aircraft ,terrain,system status and warning signals.”

“Level 2 SA Comprehension of the current situation.

Its based on a synthesis of level 1 elements, include an understanding of the significance of those elements in light of one’s goals .

A novice pilot may be capable of achieving the same level 1 SA as more experienced pilots , but may fall far short of being able to integrate various data elements along with pertinent goals in order to comprehend thje situation as well.”

Level 3 SA\_ Projection of the future status.

“Amalberti and Deblon(1992) found that a significant portion of experienced pilots time was spent in anticipating possible future occurrences . This gives them the k knowledge ( and time) necessary to decide on the mosty favorable course of action to meet their objetives.”

Actions of the airline after facts :

the airline acknowledged that the instructor commander had taken an active part in the reported incident and proceeded with the execution of immediate actions in accordance with Colombian regulations RAC 114, article 114.500.

the pilot was subjected to two periods of flight simulator emphasizing the following aspects: training oriented to the flight line, use and modes of the EGPWS, LOFT with a scenario of correct application of procedures in the vertical handling of approach modes and descent calculations , as well as the handling of workloads with respect to the terrain MEA, MORA, MOCA, workloads with respect to the position of the aircraft.

After satisfactory training you must complete at least 50 hours of route check, once completed you must submit again to training for the validation of the results and obtain the approval to return to the line of flight .

During the leveling of this crew, it was established that their resilience structure was optimal, which facilitated his rapid internalization and corrections of their own errors, reflecting their adequate understanding and risk management.

At the moment, this commander is classified as a safe pilot for the airline's flight line and is currently in operational monitoring although he no longer performs instructor duties.

## RECOMMENDATIONS

Commander: follow-up of the process of reincorporation to the flight activity will be carried out, through technical operational reports by the company quarterly during six months of its effective entry to the flight line.

Aeronautical Authority: according to the version of the commander when they were reported with air traffic from the city of Cali they were informed that they were under radar contact and they authorized the approach; However, if they were monitored by radar, why did not the control warn them that they had a flight level lower than that allowed in that area? It would be convenient to investigate if this aircraft, which was the only one in the airspace at that time, was actually being monitored by radar, in which case, because they were not warned that they had descended below the limits allowed for the mountainous area who were flying over at that time?

It would be advisable that the air traffic controller be cited for evaluation by Aeronautical Medicine for the reasons already explained in the aeronautical recommendations.

For the Airline: taking into account that this case was less than 30 seconds from becoming a CFIT accident, the airline is required to provide timely information on some aspects of it, to document the study carried out in order to improve the As far as possible, operational safety by a human factor: the airline is required to review, among other aspects: the training process of its flight crew members, bearing in mind that in this case the student pilot had hardly any operational experience in the flight team. only 35 hours. The rules on the training processes on commercial flights must be improved, although it is written which are the critical phases and the respect that must be had to the sterile cabin, there is still no clarity in this respect in reference to when it should stop imparting the instruction to attend fortuitous situations that may compromise the safety of the flight as in this case.

It would be advisable to cite the air traffic controller to evaluation with Aeronautical Medicine, bearing in mind that he was monitoring the plane under radar surveillance and he not warning about the fact that the plane was not flying under safe level

Request a copy of the recording of the communications of the controller with the aircraft in its phase of approach to the Alfonso Bonilla Aragón airport in the city of Cali Colombia

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