COMMAND OF AERONAUTICS

AERONAUTICAL ACCIDENT INVESTIGATION AND PREVENTION CENTER

FINAL REPORT
A - 113/CENIPA/2013

OCCURRENCE:	**ACCIDENT**
AIRCRAFT:	**PR-HRZ**
MODEL:	**BELL-212**
DATE:	**14JUN2013**

NOTICE

According to the Law nº 7565, dated 19 December 1986, the Aeronautical Accident Investigation and Prevention System – SIPAER – is responsible for the planning, guidance, coordination and execution of the activities of investigation and prevention of aeronautical accidents.

The elaboration of this Final Report was conducted taking into account the contributing factors and hypotheses raised. The report is, therefore, a technical document which reflects the result obtained by SIPAER regarding the circumstances that contributed or may have contributed to triggering this occurrence.

The document does not focus on quantifying the degree of contribution of the different factors, including the individual, psychosocial or organizational variables that conditioned the human performance and interacted to create a scenario favorable to the accident.

The exclusive objective of this work is to recommend the study and the adoption of provisions of preventative nature, and the decision as to whether they should be applied belongs to the President, Director, Chief or the one corresponding to the highest level in the hierarchy of the organization to which they are being forwarded.

This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with item 3.1, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree nº 21713, dated 27 August 1946.

Thus, it is worth highlighting the importance of protecting the persons who provide information regarding an aeronautical accident. The utilization of this report for punitive purposes maculates the principle of "non-self-incrimination" derived from the "right to remain silent" sheltered by the Federal Constitution.

Consequently, the use of this report for any purpose other than that of preventing future accidents, may induce to erroneous interpretations and conclusions.

N.B.: This English version of the report has been written and published by the CENIPA with the intention of making it easier to be read by English speaking people. Taking into account the nuances of a foreign language, no matter how accurate this translation may be, readers are advised that the original Portuguese version is the work of reference.

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SYNOPSIS

This Final Report refers to the accident with the PR-HRZ aircraft, BELL 212 model, which occurred in 14JUN2013, in Tefé - AM, classified as Spatial Disorientation.

The helicopter took off from the support base of an oil exploration company and, after five minutes of flight, crashed into the ground.

The aircraft had substantial damage.

The pilot and the passenger died on the spot.

There was the designation of accredited representative from the National Transportation Safety Board - USA, and from the Transportation Safety Board - Canada.

GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ANAC	(Brazil's) National Civil Aviation Agency
ATS	*Air Traffic Services*
CA	Airworthiness Certificate
CHT	Technical Qualification Certificate
CINDACTA IV	Forth Integrated Center for Air Defense and Air Traffic Control
CMA	Aeronautical Medical Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
DCTA	Aeronautics' Science and Technology Department
IFR	*Instruments Flight Rules*
IFRH	*Instruments Flight Rules* - Helicopter
Lat	Latitude
Long	Longitude
METAR	Regular Meteorological Aeronautical Information
OVC	*Overcast*
PPH	Private Pilot - Helicopter
PLH	Airline Pilot - Helicopter
RBHA	Brazilian Aeronautical Homologation Regulation
SBTF	ICAO location designator – Tefé Aerodrome - AM
SBUY	ICAO location designator – Porto Urucu - AM
SWTF	ICAO location designator – Porto Moura - AM
SERIPA	Regional Aeronautical Accident Investigation and Prevention Service
SIPAER	Aeronautical Accident Investigation and Prevention System
UTC	*Coordinated Universal Time*
VFR	*Visual Flight Rules*

AIRCRAFT	**Model:** BH212 **Registration:** PR-HRZ **Manufacturer:** *Bell Helicopter*	**Operator:** *HRT Oil & Gas*
OCCURRENCE	**Date/time:** 14JUN2013 / 12:10 (UTC) **Location:** Support Base BAT 1 **Lat.** 24º30'12"S – **Long.** 065º31'18"W **Municipality – State:** Tefé – AM	**Type:** Spatial Disorientation

1 FACTUAL INFORMATION

1.1 History of the Occurrence

The helicopter took off from the Porto Moura helipad, AM (SWTF) denominated Tefé Support Base, at 08h05min (local time) with a pilot and a mechanic on board, bound for Clareira da Sonda HQ-8 in order to perform passenger transport from the HQ-8 to the Tefé Aerodrome, AM (SBTF).
Five minutes after takeoff, the helicopter crashed into the ground, about 0.6Nm away from the Support Base.

1.2 Injuries to persons

Injuries	Crew	Passengers	Third parties
Fatal	1	1	-
Serious	-	-	-
Minor	-	-	-
Uninjured	-	-	-

1.3 Damage to the aircraft

Substantial damage to the entire structure of the aircraft and the rotating system.

1.4 Other Damage

Nil.

1.5 Personnel information

1.5.1 Information on the crew

HOURS FLOWN	
DISCRIMINATION	PILOT
Total	12.600:00
Total in the last 30 days	18:45
Total in the last 24 hours	01:35
In this type of aircraft	1.177:30
In this type in the last 30 days	18:45
In this type in the last 24 hours	01:35

NB.: Data on hours flown were provided by the company operator of the aircraft.

1.5.1.1 Professional Formation

The pilot held the Private Pilot Helicopter course (PPH) at the Aero Club in Nova Iguaçu - Brazil, in 1981.

1.5.1.2 Validity and category of licenses and certificates

The pilot's Airline Transport Pilot License - Helicopter (PLH) and his license of technical capability of aircraft type Bell 212 were valid.
The pilot had the qualification of Flight Instrument - Helicopter (IFRH), however, it was expired since March 2011.

1.5.1.3 Qualification and flight experience

The pilot had sufficient qualifications and experience for the proposed flight.

1.5.1.4 Validity of the medical certificate

The pilot had valid Aeronautical Medical Certificates.

1.6 Aircraft information

The aircraft of serial number 30524, was manufactured by Bell Helicopter in 1971.
The Certificate of Airworthiness (CA) was valid.
The books cell, engine and rotor were with the updated data.

The last inspection of the aircraft, the "30 DAYS SPECIAL INSPECTION" type, was held in 03JUN2013 by the company (CHE nº111161), with 12 hours and 55 minutes flown after inspection.
The last overhaul of the aircraft, the "3000 hours" type, was held in by a foreign repair shop in 29DEZ2011 (HIV - Vancouver Island Helicopter Inc.), standing with 1260 hours and 30 minutes flown after the review.
The aircraft was not approved for conducting flight under IFR.

1.7 Meteorological information

The weather conditions were not favorable to visual flight.
Because the site of the occurrence did not present an available Weather Station, it was asked to a meteorology expert from the Forth Integrated Center for Air Defense and Air Traffic Control (CINDACTA IV) the preparation of a Region Weather Report closest to the crash site,that was Porto Urucu (Sbuy) on the date of 14JUN2013.

The weather reports (METAR) were as follows:

METAR SBUY 141100Z 00000KT 0150 FG OVC001 24/23 Q1012=

METAR SBUY 141200Z 00000KT 0150 FG OVC001 25/24 Q1013=

METAR SBUY 141300Z 00000KT 1400 BR OVC003 25/24 Q1013=

METAR SBUY 141400Z 00000KT 9999 BKN004 26/24 Q1013=

The report, prepared on the basis of satellite images and analysis of weather reports, pointed the result that the weather at Porto Urucu surface (Sbuy), between 1100Z and 1400Z, had horizontal visibility restrictions around 150 meters, due to the presence of fog (FG), and vertical visibility around 100ft, with overcast skies (OVC001).

1.8 Navigational aids

Nil.

1.9 Communications

The last radio contact was made by the pilot with another aircraft of the same company, which had taken off two minutes later.

1.10 Aerodrome information

The accident happened outside the aerodrome.

1.11 Flight recorders

Neither required nor installed.

1.12 Wreckage and impact information

The marks left on the vegetation in the treetops indicated that the aircraft collided frontally and with a lateral inclination of 45 ° to the left.
There was a separation of the tail cone, which has been found approximately 23 meters to the right of the cabin wrecks.

The tail cone stabilizer was found 28 meters from the cabin wrecks, slightly to the right and behind the tail cone.
The distance from the first point of impact to the cabin was 45 meters. The semicircular line and the concentration of the wreckage are consistent with impact of attitude on the left curve, at low speed.
The collision of the cabin to the ground with the aircraft was inclined at 90 degrees to the left.

1.13 Medical and pathological information

1.13.1 Medical Aspects

There were no medical nature change evidence relevant to the accident.

1.13.2 Ergonomic information

Nil.

1.13.3 Psychological aspects

According to some respondents, the pilot liked to do his tasks in advance, he demonstrated not to be afraid to fly in adverse situations and based his decisions on his extensive experience as a pilot.

On the day of the accident, the weather conditions were adverse and the pilot's license for instrument flying was overdue for more than two years.

According to reports, before takeoff, the pilot agreed with another commander to take off after him, so he could receive information about the weather, which at that time have not

yet showed favorable. However, the pilot had a different attitude from the one previously agreed. He took off first and after a few minutes flying, reported by radio that the weather was very bad.

1.14 Fire

There was no fire.

1.15 Survival aspects

There was no abandonment of the aircraft. The occupants died at the accident site.

1.16 Tests and research

During first response it was revealed that the power transmission shaft of the engine to the main gearbox had several rubbing marks in the radial direction.

It wasn't found any part of the aircraft that showed its detachment before the first impact.

The research performed in the technical documents of the airframe and aircraft engines did not show any significant discrepancy that could contribute to the accident, and maintenance was considered regular and adequate.

The opening of both engines was attended by a representative of Pratt & Whitney from Canada, the engine manufacturer and an engineer of the Department of Aerospace Science and Technology (DCTA). One report was issued noting that both engines had normal operation and were developing power at the time of the accident.

1.17 Organizational and management information

The operator of the aircraft had a fleet of thirteen helicopters including six Sikorsky Model S 61N five BELL BH212 model, including the aircraft involved in the accident and two Eurocopter Model AS 350 B2, with a staff of 27 pilots.

The company had ANAC's approval to perform the maintenance as RBAC 145, with two engineers and fourteen mechanics and inspectors. Performed maintenance for S61 fleet and Bell 212, and the rest of the fleet had the outsourced maintenance.

The company operated the model of the crashed aircraft without co-pilots, because it was governed by Part 91 and it wasn't a mandatory requirement.

The hiring of the Bell 212 aircraft pilots was held by curriculum review and the renewal of qualifications was made by proof of experience, and there wasn't therefore, an initial training program, periodic or on simulator, because the company operated under the rules of Part 91.

Some respondents refered to the company as an organization based on informal processes, marked out in friendship and so, no one was notified by nonstandard practices, with no control or formal monitoring of existing tasks or routines.

The autonomy felt by the pilots was seen by them as something positive and it was noted that the pilots didn't relate that autonomy as a potentiating factor in the risk of operations.

According to respondents, there was practically no meetings with employees, and the communications usually sent by e-mail. They came to make comparisons with other companies that have stricter rules and standards, referring to it as a bad thing.

The function that the pilot executed demanded a high requirement of human performance due to its high complexity, which began in flight planning, went through inspection of pre-flight, culminating in the analysis of the weather. Only then, he made the decision to take off or not, and this decision was made in isolation, because he didn't count with a copilot to help him.

It was observed that at the workplace there wasn't the figure of a flight engineer with experience in helicopter, since the pilot who held this position didn't fly helicopters and rarely went to the area of operations.

It was also observed that there was no division of tasks, poor exigencies in the hierarchical system, lack of control in trainings, schedules, procedures, standards, among others. The pilots had a lot of autonomy and there was little exigencies and requirements.

The organizational climate in the company was of apprehension, since there were rumors that significant changes were to happen. There were comments from the possible sale of helicopters and that there would be layoffs. Some respondents reported that this was a current topic in Support Base, including the pilot involved in this occurrence that constantly talked about the uncertainty of losing his job.

Regarding the support system, it was observed that the company had a large volume of flights, however, it did not have a support of surface weather information.

Pilots performed the weather forecast consultations through the Internet, however, at different times, there was no connection, so the consultations that were held frequently at the beginning of the operation fell into disuse and most pilots started to use empirical knowledge to assess the time and decide when performing takeoff or not.

As for equipment and ergonomics, the helicopter model of this accident was twin engine and it was approved only for conducting flight under visual conditions.

The helicopter didn't have weather radar, autopilot or other automation system that could reduce the pilot's workload, mainly because there wasn't a co-pilot figure.

The site of the operation required long distance flights over the Amazon jungle with few points of support. Due to the complexity of the operation, the pilots were constantly exposed to fatigue conditions due to high workload in the cabin and the low technology added to this aircraft model.

Organizational processes used by the company for the recruitment of staff did not follow a formal system for selecting, monitoring and evaluating the performance of the professionals. The company selected professionals through resumes and statements. The teams were chosen at the discretion of the greater experience.

In the aspect related to training, qualification and development, it was found that the company did not offer nor demanded that employees do periodic training to keep up to date, since the company was operated according to the rules of the Brazilian Aeronautical Certification Regulations 91 (Part 91). The training would have the goal of improving work

efficiency, improving skills, knowledge and attitudes, thereby increasing situational awareness.

About a year before this accident, the company underwent a similar event, and in that instance there was no loss of life. Contributing factors in this accident were brought to the attention of the operator, along with the flight safety recommendations, to improve the operation supervision processes and hire co-pilots, in order to reduce the workload and improve the management of cabin resources.

1.18 Operational aspects

The operating area of the helicopters was near the municipalities of Tefé and Carauari, both in the Amazon, basically conducting external load operations and passenger services in support of research and oil exploration activities.

The pilot was already flying at this location for more than two years. Their range was fifteen working days for fifteen resting days and this was the second working day in the period.

The day before the accident, there was a period of 8 hours resting, and the accidnt flight on the first day.

Before takeoff, the pilot carried out the pre-flight inspection and nothing unusual was found and there was no technical discrepancy record on the aircraft's logbook.

The aircraft was fueled the day before of the accident with 1,400 lb. (full tank), and thus had an autonomy of approximately 02 hours and 30 minutes. The flight stages between the Base Support / Glade HQ-8 / Tefé had predicted time of 01 hours and 20 minutes. The aircraft was within the established weight and balance limits.

The flight plan said that there would be two stages with the helicopter model Bell 212 in Clareira de Sonda QG - 8 stretch to Tefé / AM, and another stretch from the Support Base to Tefe / AM, to be held by the helicopter model Sikorsky S61, in order to carry employees who would be replaced in the fortnight. Both departures were scheduled for 07:00, but the S61 helicopter would make a direct route to Tefé, and the Bell 212 should fly to Clareira de Sonda QG – 8.

According to information collected with the crew of the S61 aircraft and with the support staff on the ground, the day began with calm wind, but with a heavy fog, and the horizontal visibility into the soil was no more than 50 meters.

Around 07:30, the fog cleared and formed a thick layer covering all sides, whose base was found approximately 70 meters tall. This corresponded to the average of 30 meters above the treetops.

The Support Base didn't not have Meteorological Surface Station. There was only one windsock for wind visual information. Pilots could see the METAR of Porto Urucu (SWUY) and Tefé (SBTF) through the Internet; But in the morning of the accident, they were unable to connect.

At 07h40min the crews of both helicopters, Bell 212 and S61, headed to the courtyard to equip aircraft. At this point, the commander of the S61 suggested to the commander of the crashed aircraft to wait for his take-off, because in this way he could tell the weather, especially the height of the base and the top of the cloud layer.

First, the commander accepted the suggestion, however, for unknown reasons, the commander of the crashed aircraft took off two minutes before, against the agreement he had made with the commander of the S61.

About a minute after the S61 takeoff, while rising and under instrument flight conditions, the commander contacted via radio, the pilot of the Bell 212, which had taken off two minutes before and asked about the weather.

Company employees reported that the Bell 212 took off and remained below the layer as it flew away, and five minutes after takeoff, they heard again the sound of the Bell 212 approaching, and then the crash in trees.

Information gathered from the company's employees that used to fly as passengers, revealed that the Bell 212 pilots constantly transposed the cloud layer when they could not maintain flight with visual reference with the ground, opting to climb and fly above the layer, and that this commander, in particular, was the one that used to fly in these conditions the most.

1.19 Additional Information

Nil.

1.20 Utilization of other investigation techniques

Nil.

2 ANALYSIS

It was a logistical support flight to transport employees of the research firm and oil exploration, which remained in fortnight periods in the locality, being removed by helicopter from the clearings to the city of Tefé / AM, from where they departed on scheduled flights to Manaus.

The pilot had a wide experience accumulated over thirty years flying helicopters. In this type of aircraft he had more than 1,000 hours, which showed that he had enough experience to carry out the flight.

He also had a good knowledge of the locality, where he flew for more than two years.

Although he was with the Technical Qualification Certificate valid for this aircraft, his flight Qualification Certificate Instrument for helicopter was expired for more than two years.

The aircraft was supplied with a full tank, it was inspected by the pilot before the flight and nothing unusual was found. There were no records of technical discrepancies on the logbook.

The aircraft is within weight and balance limits established by the manufacturer and was approved only for flights under visual conditions, so it was prohibited to carry out flights by instruments.

The flight plan said that there would be two stages with the helicopter model Bell 212 in Clareira de Sonda QG - 8 stretch to Tefé / AM, and another stretch from the Support Base to Tefe / AM, to be held by the helicopter model Sikorsky S61, in order to carry employees who would be replaced in the fortnight.

The planning also involved another aircraft of the Company, a Sikorsky S61, which hold a flight stage of the Support Base and with the same goal of transporting employees to Tefe / AM.

Both take offs were initially planned for 7:00 am, however, this fact couldn't happen, due to a heavy fog that covered the entire area of the Support Base and the horizontal visibility on the ground was not more than 50 meters.

Pilots had at their disposal a computer to check the weather online, however, that morning there was no connection. Thus, the judgment of the weather happened to be based on personal experience, being the pilot's decision to take off or not. The only aid for takeoff was a windsock, which only provided the direction and some notion of the wind strength which that day was calm.

The fog lifted and the crews of both helicopters went into the courtyard in order to equip the aircraft, at about 07h40min.

Although the visibility conditions on the ground have improved, a thick layer of clouds was formed covering the entire sky, whose base was estimated at approximately 70 meters.

Thus, the commander of S61 suggested to the commander of the crashed aircraft to wait its takeoff, so that it could inform the weather with greater precision, especially the height of the base and the top of the cloud layer. The pilot accepted the suggestion, however, he took off two minutes before, going against to what had been agreed with the commander of S61.

One minute after taking off, the commander of S61 was rising and had not yet transposed the layer, when he contacted via radio with the pilot of the Bell 212 and asked about the weather, getting the reply that the flight conditions were very bad. This was the last contact of the aircraft before the crash.

Five minutes after takeoff, employees heard the sound of the helicopter returning to the Base and then the crash against the trees, which resulted in the death of the occupants.

During the First Response, it was observed that the trail of wreckage described a semicircular line compatible with left turn and slow speed. There, it was further observed that the power transmission shaft of the engine to the main transmission box had several rubbing marks in the radial direction, indicating preliminarily that the engines were operating.

The technical examination of openness and analysis of both engines was attended by representative of Pratt & Whitney Canada, that is the engine manufacturer and an engineer of the Department of Aerospace Science and Technology (DCTA). If ratified, through technical report, that the evidence found in the First Response evidenced that both engines had normal operation and were developing power at the time of the accident.

With regard to individual aspects of the pilot involved in the occurrence, it was concluded that his co-workers considered him an easy living person and he was not reluctant to meet the flight for which he was cast, being one of his characteristics the fact that he liked to do his tasks as soon as possible. His risk analyzes were based on his extensive experience as a pilot, and even getting into risky situations sometimes.

This kind of behaviour could be noticed through the pilot's attitudes on the day of the accident, when he took the decision to take off with adverse meteorological conditions, without waiting for further climate information from the other pilot. In this incident it became clear that the decision-making process was affected by characteristics of his personality, such as wanting to do his tasks as soon as possible and not resisting or showing fear of flying in adverse situations. The company run a highly complex activity, mainly because it operated in the Amazon region, where distances make logistics a daily challenge and pilots are practically isolated for 15 days.

Thus, it was necessary the figure of a flight engineer with experience in helicopters on site, that could act as a leader with the technical qualities to charge standard deviations of safety standards and able to assist pilots in the critical processes of decision making, such as, for example, in situations in which the meteorology proved unfavorable. However, this did not occur actually, since the pilot exercising this function was not operational in rotary wings and rarely visited the area of operations.

It is clear, then, that this task demands high requirement of individual performance, due to its high complexity, especially the planning of flights, the pre-flight inspections, analysis of weather conditions and, finally, the decision making part, which is a difficult task because commanders did not count with a co-pilot to assist them.

Even under this perspective, it was possible to ascertain that the culture of the working group tended to mutual complacency, since some pilots referred to the company as a place where friendship prevailed and that no one was notified by their sins, thus leaving clear that small deviations from the safety standards were customary in the company, as there was no charge regarding training, time, pressure to take off, among others, which increased the autonomy of the commanders.

This autonomy was seen by pilots as something positive and they did not relate it to a potentiator risk factor in operations to the point of making comparisons with other companies in which the rules and regulations were stricter, referring to it as something bad. This shows that there was a failure in the management of flight safety monitoring processes.

The company did not provide nor demanded that the pilots did initial training or periodicals to keep up to date, since, as they were operating under the rules of Part 91, there wasn't this requirement.

However, it is understood that the training would be needed due to the complexity of the tasks that pilots had to perform. These trainings had the goal of improving work efficiency, improving skills, knowledge and attitudes, thereby increasing situational awareness.

There wasn't in the company a formal system used to recruit, select, monitor and evaluate the performance of pilots. The teams were formed by pilots and extremely experienced mechanics.

The lack of a formal system may contribute to the selection of unsuitable professionals for the specific job, as the experience is not the only factor contributing to a good performance of the function.

From this perspective, it can be inferred that the lack of monitoring of pilots, with meetings and training, has become detrimental to the company, for the pilots and even for flight safety.

Another aspect that may have been relevant to the outcome of the flight was the organizational climate in the company. Some respondents knew of the significant changes that were to occur in the company with the imminent sale of helicopters and therefore there would be layoffs. Some respondents even said that this was the main issue that was being discussed in the Support Base, including the pilot involved in this occurrence, that was constantly talking about the uncertainty of losing his job.

The helicopter model of this accident, although it was twin-engined, was approved only for conducting flight under visual conditions. It did not have weather radar, autopilot or other automation system that could reduce the pilot's burden, mainly because the company operated without the co-pilot figure.

Although operating within the regulatory requirements, operations typically involved shifts over long distances on the Amazon jungle with few points of support.

Added to this, there was the complexity of the type of operation, with low added technology in this model, which constantly exposed pilots to fatigue conditions, because of the workload in the cockpit.

Approximately one year prior to this accident, the company underwent a similar event, and, in that instance, there was no loss of life. Contributing factors in this accident were brought to the attention of the operator and were issued flight safety advice, in order to improve the supervision processes and hiring co-pilots, in order to reduce the workload and, consequently, decrease the likelihood failures in managing the cabin features also assisting in decision making.

Thus, the organization's flight safety culture proved fragile because there was no appreciation of the learning culture by managers and members of the company, where errors should be seen as an opportunity to learn and serve as a tool in the prevention of new aircraft accidents.

3 CONCLUSION

3.1 Facts

a) the pilots' aeronautical medical certificate was valid;

b) the pilots' technical qualification certificates was valid;

c) the pilot was qualified and had enough experience for the flight;

d) the pilots' technical qualification IFRH (*Instruments Flight Rules* – Helicopter) was expired;

e) the aircraft's Airworthiness Certificate (CA) was valid;

f) the technical documents of the aircraft were updated;

g) the aircraft was not approved for instrument flight (IFR);

h) the flight stage was scheduled to last 01:20;

i) the aircraft was within the limits of weight and balance;

j) the weather conditions were not favorable for visual flight;

k) five minutes after takeoff the aircraft crashed into the trees;

l) the collision occurred frontally in the treetops and with the aircraft tilted 45 ° to the left;

m) the collision of the cabin against the ground occurred with the aircraft tilted at 90 degrees to the left;

n) the aircraft had severe damage throughout the structure and rotation system; and

o) the pilot and the passenger died on the spot.

3.2 Contributing factors

3.2.1 Human Factor

3.2.1.1 Medical Aspect

Nil.

3.2.1.2 Psychological Aspect

3.2.1.2.1 Individual information

a) Attitude – contributed

The pilot presented characteristics of not demonstrating fear of flying in adverse situations and to finish his tasks as soon as possible. When deciding to hold takeoff with adverse weather conditions, without waiting for more precise information about the time, the pilot demonstrated overconfidence, which led him to the loss of critical capacity and to minimize the risks involved.

The commander had a behavioral tendency that led him to carry out operations on a way bolder than the other pilots. His judgment to analyze the safety issues concerning the meteorology was based on experience gained over more than thirty years of flying helicopters.

b) Decision-Making Process – contributed

The pilot decided to take off in bad weather conditions even being with his qualification to fly instrument expired and the aircraft was not approved for flying by instrument, showing a poor decision making.

By agreeing to another commander who would take off after him, and thus be able to receive information about the weather and then fail to comply with the agreed, performing the takeoff first, the pilot of this occurrence demonstrated poor judgment of the situation, disregarding the risks inherent to fly in uncertain weather conditions.

3.2.1.2.2 Psychosocial information

a) Working Group Culture – contributed

The workgroup culture was seen by its members as a place where friendship and informality prevailed, leaving thus clear that small deviations from safety rules were usual in the company.

b) Leadership – contributed

There wasn't in the company a flight engineer with experience in helicopter and present on the Support Base, in order to advise the pilots in critical decision-making processes, such as in situations where the weather proved unstable, contributing to the occurrence.

3.2.1.2.3 Organizational information

a) Characteristics of the Task – contributed

The task demanded high requirement of individual performance due to its high complexity. Schedules of flights, preflight inspections, analysis of the weather conditions were tasks performed by commanders, without the aid of a co-pilot.

Thus, it's possible to say that the characteristic of the task contributed to the occurrence.

b) Work Environment – undetermined

There was a climate of expectation and concern over the possible sale of helicopters and therefore with layoffs.

Some respondents stated that the pilot involved in this occurrence constantly made comments about the insecurity of losing their jobs.

This situation may have contributed to the occurrence.

c) Organizational Culture – contributed

Failure on the enhancement of the flight safety culture on the part of the company managers and members contributed to the occurrence, since latent faults mentioned in the former instance, were also present in this accident.

d) Formation, Qualification e Training – contributed

The company did not provide nor demanded that the pilots did initial or periodic training to keep up to date. The need for such training was present because of the complexity of the tasks that pilots had to perform.

e) Work Organization – contributed

Divisions of tasks, autonomy given to pilots, the few demands on the hierarchical system and the absence of the coordinator, helped to increase the potential risk of the occurrence.

f) Organizational Process – contributed

The company does not have a formal system used to recruit, select, monitor and evaluate the performance of the professionals. The company would select through resumes and statements, where the team of pilots and mechanics was chosen only by experience.

g) Support Systems – contributed

The company didn't not have a weather station surface, although the flight volume was large.

Pilots performed the weather forecast consultations through the Internet. However, this support system proved to be ineffective, as at the day of the occurrence, at different times, because there was no connection, thus contributing to the occurrence.

3.2.2 Operational Factor

3.2.2.1 Concerning the operation of the aircraft

a) Adverse weather conditions – contributed

Weather conditions were unfavorable for visual flight. There was a cloud layer very close to the top of the trees at the scene.

b) Flight Planning – contributed

The pilot performed an inadequate flight planning, since it did not have sufficient weather information of the route and the destination.

Thus disregarded the possibility of encountering unfavorable conditions to visual flight.

c) Management Supervision – contributed

It was found that the company did not have adequate operational supervision of its pilots for the activities of planning flights, helping the pilot took for himself the decision to take off with bad weather conditions.

3.2.2.2 Concerning ATS units

Not a contributor.

3.2.3 Material Factor

3.2.3.1 Concerning the aircraft

Not a contributor.

3.2.3.2 Concernentes a equipamentos e sistemas de tecnologia para ATS

Not a contributor.

4 SAFETY RECOMMENDATION

A measure of preventative/corrective nature issued by a SIPAER Investigation Authority or by a SIPAER-Link within respective area of jurisdiction, aimed at eliminating or mitigating the risk brought about by either a latent condition or an active failure. It results from the investigation of an aeronautical occurrence or from a preventative action, and shall never be used for purposes of blame presumption or apportion of civil liability.

In accordance with the Law n°12970/2014, recommendations are made solely for the benefit of the air activity operational safety.

Compliance with a Safety Recommendation is the responsibility of the holder of the highest executive position in the organization to which the recommendation is being made. An addressee who judges to be unable to comply with a Safety Recommendation must inform the CENIPA on the reason(s) for the non-compliance.

Safety Recommendations made by the CENIPA:

To the National Civil Aviation Agency (ANAC):

A-113/CENIPA/2013 – 01 Issued on 03/06/2016

Consider the need for changes in Part 91, to ensure that certain operators governed by this regulation are required to meet minimum operational requirements to ensure safe operations.

A-113/CENIPA/2013 – 02 Issued on 03/06/2016

Review with the aircraft operator the implementation of stricter supervision, with the inclusion of daily or weekly coordination meetings with all involved in the operations.

5 CORRECTIVE/PREVENITATIVE ACTION ALREADY TAKEN

Nil.

Brasília, June 3th 2016.