MISSED APPROACH

❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖❖

MACK ADAMS

Beltway Publishing Company
Beltway Book Group
P.O. Box 994
Great Falls, VA 22066
Beltway Publishing Company is a division of Freelance LLC

ISBN 978-1496199676

2 4 6 8 9 7 5 3 1
DAG

Platinum Edition

To

Rio Adams

Our beloved rescue canine companion.

We loved her dearly...and forever will.

(March 17, 1996—September 9, 2013)

MISSED APPROACH

ONE

RioAero, SA

FRIDAY, FEBRUARY 20, 1981

Flight Operations…we have a problem…" Captain Franco Rameros' voice came through loud and clear on the secure RioAero factory communications frequency.

When the incident was occurring only seconds before, little action could be taken from the cockpit. And, the event was over virtually within a blink of an eye. Now at ten thousand feet, a frustrated Captain Rameros had everything back under control. But an enigma still remained as the WindStar lumbered back to the airport, laboring from the confounding incident.

As chief test pilot for RioAero, SA, Rameros was a highly qualified aviator. His career as a pilot spanned over twenty years: beginning with the Brazilian Air Force for eight years, then continuing with RioAero. During that career, he had encountered almost every imaginable problem an aircraft could have. He had seen total power-plant failures, cabin/cockpit fires, fuel tank explosions, jammed flight controls, structural failures, a variety of landing gear malfunctions, and two crashes. Today's in-flight situation was different than anything he had ever experienced. What had just happened simply could not have happened, but indeed it had.

The turboprop aircraft he was flight-testing was neither a prototype nor an experimental aircraft. There was no reason for anything unexpected to occur. During the previous three years, RioAero had painstakingly designed and engineered a new generation of aircraft—like no other available. The WindStar-100 had been rigorously tested and recently certified. Over twenty aircraft were already in military and commercial service. Rameros was now merely performing a routine pre-delivery flight check of a WindStar destined to join others already in the Brazilian Air Force fleet. He was verifying that every system was operating in accordance with standard specifications. One system certainly had not.

"Advise on your problem," a voice came back over the company frequency. It was the dispatcher at Flight OPS responding to Rameros' radio transmission.

Franco Rameros, a wiry man in his early forties, was perhaps the best known pilot in all of Brazil; that is, next to the late Alberto Santos-Dumont, the country's famed patriarch of aviation. Rameros was a perfectionist with a can-do attitude. Unfortunately, he was also rather arrogant and abrupt. His ego was as legendary as was his reputation as a skilled pilot. His spiritedness tended to overpower his occasional charm. He was direct—too direct—about matters involving RioAero and its aircraft programs. He had no qualms about making statements critical of others. He had no tolerance for lines of authority—he did not care who you happened to be. Even more grating, he was invariably and gallingly correct on any position he took.

Tall and lean, Rameros was once a handsome man; that was ten years ago, before the fiery accident. A sudden hydraulic failure in the prototype aircraft he was taxiing produced an immediate total loss of both braking and nose wheel steering. As a result, the aircraft collided with a parked fuel truck filled with avgas. The ensuing explosion and fire caused second and third degree burns to seventy percent of his body. Nine months of skin grafts and rehabilitation at the Burn Unit of Rio de Janeiro's Saint Christopher Hospital allowed Rameros to be functional again; however, the deep scarring of his body—and especially the permanent disfigurement of the left side of his face—also annealed his personality. He emerged from his ordeal even bolder and brasher, more relentlessly aggressive. He chose to have few close friends. He was more irascible than ever before.

But lately, Franco Rameros found he even irritated himself. He began finding most of his test flights tedious and monotonous. Unchallenging. BORING. Today, however, his flight was far from commonplace. His problem was real—very real.

"It is an engine problem," Rameros matter-of-factly advised OPS. "Well, it is really the prop. We will be cutting this test flight short and coming back for landing with only one engine operating. The right power plant was developing zero thrust. We had to shut it down."

"So, the prop went into feather and everything is under control?" the dispatcher queried, knowing the WindStar had excellent single-engine performance capabilities. Under most circumstances, the aircraft could fly for hours on only one engine. When feathered, the propeller of the failed engine automatically angled its blades directly into the airflow like a knife and ceased to rotate. Very little drag was created.

"Roger, everything is under control, but we will have to install a new prop after we get back to the hangar. The one that stopped working is now a piece of junk." Rameros paused, still leaving his microphone open, effectively controlling the dialogue with Flight OPS. "And by the way, I better not see any emergency equipment or curious bystanders out on the tarmac when we land. We have a very delicate situation here. No publicity."

"Understand your request," the dispatcher responded.

Rameros' face reddened. "It is not a goddamn request," he shot back. "Make sure it does NOT happen!"

There was no response from Flight Operations. None was necessary nor wise. Rameros had made his position perfectly clear.

Of all days, today Franco Rameros happened to have a special guest on board who was being allowed to serve as first officer. On test flights, the company's policy typically permitted only pilots type-rated in the WindStar to be first officers. Major Osvaldo Paulo was an exception. He was the newly appointed director of procurement for the Brazilian Air Force. The major was an experienced pilot (transport category jets), but now spent most of his time flying a desk. He knew very little about the WindStar, except that the Air Force had already integrated ten WindStar aircraft into its operations and was expected to take a dozen more soon. The aircraft in which they were flying today was due to be one of the additional WindStars for the Air Force fleet.

Major Paulo was being afforded the VIP treatment. Earlier that morning, he had been given a red carpet tour of RioAero's impressive facility. Following coffee in the executive dining room, Salo Montero, RioAero's Chairman and CEO, had suggested that Paulo join Franco Rameros on the pre-delivery test flight of the eleventh WindStar the Air Force would be accepting delivery of on Monday. Of course, the major eagerly accepted the invitation.

The factory's VIP approach to the major's visit was more of a courtesy than a necessity. In actuality, the major's role in procuring aircraft for the Air Force was simply to follow through on decisions already made by military top brass. Even the Air Force itself had little choice when selecting an aircraft. The government's mandate was that if any aircraft manufactured by RioAero came even close to meeting the needs of the Air Force, an acquisition would be made. The same dictate applied equally to every other Brazilian agency or commercial enterprise that used airplanes in any way. The military controlled the country. The military owned RioAero. The military also owned many of the country's other major industrial enterprises.

"Do you have any idea why it happened?" Paulo asked.

Franco shrugged. “It could be a manufacturing defect. It could be faulty installation. It could be damage in shipment. It could be lots of things. It is really too early to tell.”

The major craned his neck to look out the side cockpit window and then back to the wing where the engine was mounted. This action had been repeated over a half a dozen times since the incident occurred. The slick black deicing boots glistened, contrasting against the mirror-like white Alumigrip paint of the wing and engine nacelle. Everything seemed perfectly normal; that is, everything except for one very important item.

The major was confounded about what he saw—actually, about what he did not see. There was no propeller attached to the engine. The entire eight-foot diameter, four-bladed prop assembly had separated from the shaft that attached it to the engine gearbox. Over two hundred pounds and nearly a hundred thousand dollars worth of propeller components had mysteriously detached and plunged to the ground. Amazingly, there was no visible damage to any part of the aircraft. Now to the eye, it appeared as if someone had simply forgotten to install the prop assembly onto the right engine.

TWO

St. Croix, U.S.V.I.

By nine o'clock that Friday morning, Rick Harris had already checked out of the Hotel Caravelle in Christiansted on St. Croix, the largest of the U.S. Virgin Islands. He was now on his way to the airport in a rusted-out Volkswagen taxi that rattled along the city's still sleepy streets. He gazed disinterestedly at the harbor's old buildings. Then, a sudden overwhelming feeling of anxiety engulfed him for no obvious reason. His face felt flush. His mind shouted out: *What the hell have you gotten yourself into, Mr. Harris?*

No calming voice answered.

Harris abruptly shook his head much like a dog stung on the ear by a bee. He inhaled deeply, and then groaned a slow exhale. Had he made the right decision? He hoped so, but knew he could not be sure. Not yet.

Rick glanced at the laminated business card ID tag attached to the handle of his leather travel bag. It read: *Richard A. Harris, Director of Aircraft Sales, Empresa Rio de Aeronáutica, NA*, a.k.a. RioAero, NA. He smiled for a fleeting moment, allowing the reality of it all to sink into his mind. He was keenly aware that his recent decision to join a young Brazilian aircraft manufacturer in heading up the North American sales for a new and as yet unproven airframe would certainly provide for more than enough challenges. Though Harris had always thrived on challenges—on pressure—this time an unsettling feeling was nagging at him. It was a feeling he had never experienced before. He was beginning to sense his upcoming task would be more formidable than he had initially imagined. Still, he hoped his tingling, foreboding sensations were wrong.

Rick Harris had always been involved with aircraft. As a native Texan and son of an Air Force lieutenant colonel, Rick grew up in Seguin, a small town near Randolph Air Force Base just northeast of San Antonio. During his formative years, he received the type of discipline and direction that would serve him well throughout his entire life. By the age of seventeen, while still a senior in high school, he had earned his private pilot license. Later, he attended Texas A&M for a degree in engineering, had a four year stint as a pilot with the Texas Air National Guard, and as the final part of his formal education he received an MBA from SMU in Dallas. While in graduate school, he

worked part-time at the local airport and became a flight instructor. That led to his involvement in selling small single-engine planes, then larger piston twins, then even larger turbine-powered aircraft. He had worked for such companies as Cessna, Piper, and Fairchild.

It had been just a few months earlier, during a breakfast meeting at the Commuter Airline Association of America (CAAA) convention in Chicago, that Rick first met RioAero's Chairman and CEO, Salo Montero. Salo was so impressed with Rick that by the end of the convention Harris had an offer from Montero that Harris simply could not refuse. So now, Rick Harris had a high visibility position with the Brazilian airframe manufacturer's newly established North American subsidiary.

Rick and Salo had overlapping backgrounds. Montero, a former colonel and pilot in the Brazilian Air Force, had been sent to the United States by his government to study aeronautical engineering at Texas A&M during the early '60s. But Salo's trajectory after graduation was much different than Rick's.

Salo Montero had ascended to be highly placed in the Brazilian military establishment. He knew everyone who was important. He was held in high esteem. The Brazilian military was a club of sorts—a very exclusive and powerful one indeed. In Brazil, unlike the United States, the military controlled or influenced everything—government and industry. So when Brazil decided to expand its industrial base by designing and manufacturing aircraft, Salo was well-positioned and was quickly tapped to launch the venture.

Salo Montero was innovative and hard working. The small aeronautical company he spearheaded in 1968 flourished. While much credit for RioAero's accomplishments had to go to Salo, the Brazilian government basically guaranteed the success of the company. The government supported RioAero's sales by placing onerous restrictions on all competing aircraft imported into Brazil. Essentially, RioAero was a favorite son: if RioAero did not have some part to play in manufacturing an aircraft, that aircraft was unlikely to be sold to fly in Brazil.

In its early days, RioAero just manufactured a variety of light single-engine and twin-engine aircraft under license agreements with foreign corporations that wanted to sell aircraft in Brazil. During the process of manufacturing those aircraft and interfacing with major aeronautical firms around the world, RioAero was able to advance to have its own aircraft design and engineering capability, as well as to adapt cutting-edge production technology.

Now with thirteen years of experience under its belt, RioAero was rapidly becoming a mainstream aeronautical corporation. Major airframe component contracts with Lockheed and Boeing had fueled

tremendous expansion. The company's facilities had grown to over forty-five acres, and included research and development, engineering, marketing, as well as production. RioAero even had South America's only Level IIIC wind tunnel to test aerodynamic designs. Nearly seven thousand people were employed at RioAero's sprawling facility near the outskirts of Nova Iguaçu, a city of almost a million people just northwest of Rio de Janeiro in the Sarapuí River valley.

Boldly, three years previous to his meeting with Rick, Salo had made a calculated gamble. He believed that the deregulation of the airline industry in the United States would create a need for a reliable and truly efficient nineteen-seat commuter airliner. Because the U.S. Airline Deregulation Act of 1978 would slash enormous federal subsidies and allow major air carriers to pull their heavy jets out of unprofitable markets, Salo envisioned an influx of fledgling airlines rushing to fill in the gaps. He was adamant that this new generation of commuter and regional airlines would need hundreds of smaller, new technology, turboprop aircraft. So, and of course with the Brazilian government's backing, Salo bet his reputation and his company on his vision—a vision that evolved into the WindStar-100.

It took over $500 million to design, engineer, certify, and tool-up for production of the WindStar. That was more than the company had earned during its entire thirteen-year history. Beyond the startup expense, a completely new facility had to be built to manufacture the aircraft. And now, RioAero was posed to pounce. Even though it had been only four months since the WindStar had received certificates of airworthiness from both the *Centro Técnico de Aeronáutica* (CTA) in Brazil and the Federal Aviation Administration (FAA) in the United States, the factory was turning out an astounding number of aircraft—nine each month. Indeed, these aircraft had to be sold—sold in large numbers and sold quickly.

Unfortunately, sales had been slower than anticipated. Initially, the Brazilian government could only absorb a couple dozen of the new aircraft in its military operations. The North American market seemed averse to jumping on the bandwagon for a brand-new aircraft from a relatively new company. RioAero had yet to complete setting up a fully stocked and staffed support operation in the United States. The result was that for each of the nine aircraft manufactured every month, five remained unsold. At well over two million dollars per aircraft, that type of sales lassitude could not continue.

Twenty "white tails"—unsold aircraft, many painted base-white—lined the factory's ramp area. Some aircraft had avionics and interiors installed; others were unpainted, unfinished or "green." A growing number of RioAero's vendors were beginning to slow delivery of critical parts needed to produce the aircraft. Most vendors had not

been paid in over three months. Both Salo and government officials were becoming unnerved.

This was where Rick Harris entered the picture. He had been hired to do a thing he did best—sell aircraft. Rick knew exactly what the company's situation was. The task was enormous, but by no means impossible. Rick and Salo had come to respect and trust each other's skill and judgment. Still, the challenge at hand would test both to their limits.

Rick repositioned his body, attempting to stretch out his legs within the confines of the VW's tiny back seat area. He tried not to think about the four additional hours of flying it would take to reach Fort Lauderdale. This would be the last segment of the almost twenty total flight hours required to get home. Indeed, southern Brazil was a long, long way from South Florida. He wearily closed his eyes. Then, before he realized it, he was at the airport.

"Uhh," Harris said stirring himself from his reverie as he began to instruct the cab driver, "just drive on the ramp past that big gray hangar."

Security was rather lax at most smaller airports outside the continental United States, especially in areas designated for general aviation operations. St. Croix was no exception. There were no guards to confront and no locked gates to contend with. Access to the general aviation area was easy and direct.

The cab slowed as it neared the weathered-gray hangar. The driver's eyes focused on an aircraft that stood out from all the rest. "Haven't seen one of those before," the driver remarked. "Know what kind of plane it is?"

"Sure do." The suddenly invigorated Harris beamed to the driver. "It's a factory-fresh, brand-new 1981 WindStar. She does three hundred knots and can carry nineteen passengers. She's a state-of-the-art air taxi. You, sir, are now one lucky man. Not many people have seen a WindStar. This one's number thirty-four off our production line at RioAero in Brazil."

The cab driver grinned. "Air taxi, huh," he said, mulling over a phrase well known to him.

"Yup," Rick acknowledged, keying into the driver's apparent interest. "While the WindStar is an air taxi when it's used for on-demand flight, others label it a commuter or regional airliner when it's operated on a regular flight schedule. But no matter the nametag, the WindStar is a symbol of air travel freedom, a versatile alternative to…" He paused, hearing the aircraft sales pitch rolling off his tongue,

no prospective client here, but he finished with flourish anyway, "…a versatile alternative to large airliners."

Rick handed the driver his fare as the cab stopped near the nose of the WindStar. He unfolded himself out of the taxicab's uncomfortable back seat, exited the cab, and then reached back inside to pull out his well-worn leather travel bag. As Rick purposefully pushed his double-gradient Ray-Bans up the bridge of his nose, he zeroed in on a flight line crew that had just completed fueling the WindStar's tanks.

Rick smiled. "All topped off?" he asked, making his way toward the line chief.

"Roger that," came the reply. "By the way, nice plane." The line chief nodded three times in genuine admiration. "Would you mind if we took a look inside?"

"Not at all," Rick said radiating pride as they walked toward the aircraft. He loved everything about the WindStar. It was a pilot's dream. It was a passenger's delight.

The plane's snow-white Alumigrip paint glistened in the morning sun. A band of five cobalt-blue stripes ran the entire length of the fuselage. The crisp lines streamlined the aircraft. Initially tapered at the nose cone, the striping flowed backward along the fuselage, first gradually broadening, then dramatically expanding in a rapid upward sweep at the tail before bluntly ending at the rudder. On the tail, in twelve inch-high black lettering just above the striping, appeared the FAA registration: N100WS. The aircraft's overall appearance gave it character; its registration provided unique identity.

The airstair door leading to the cabin was a fully integrated part of the WindStar's fuselage. It was a three-by-five-foot plug located just forward of the left engine's propeller; its lower fuselage attach point was about shoulder height. Rick reached up and rotated a handle connected to the latching mechanism; five bayonet-like rods that extended into the fuselage structure immediately retracted back into the door. With a slight pull on the handle, the door's counter-balance and gas-spring actuating system allowed it to slowly open from the top as it pivoted on its lower mounted hinge.

The line crew eagerly followed Rick up the entry door stairs. Their appreciative glances quickly took in the spacious stand-up cabin and the three abreast leather-covered seats configured for nineteen passengers. The new aircraft smell was intoxicating.

Rick flipped on the master power switch in the cockpit—the aircraft came alive. The slight clicking that occurs as the fluorescent cove lighting first illuminates the cabin was barely noticeable. He switched on the cockpit cassette tape player typically used for giving prerecorded announcements to passengers. But instead of the typical,

he inserted a special tape for his visitors. Rhythms of Sergio Mendes were broadcast over the cabin sound system.

"Very impressive," complimented the line chief. And, he really meant it.

Pleased, and taking the praise as much for the aircraft as for his own performance, Rick nodded. "Thanks, that's always nice to hear." He shepherded his visitors back out of the aircraft.

As the line crew drove away in their fuel truck, Rick began a perfunctory preflight inspection of the WindStar. He was looking for any leaks of oil, fuel, or hydraulic fluid; any damage that might have occurred to the aircraft during the night. Everything seemed fine during the cursory check. It did not need to be exhaustive. Rick knew finding a flight-grounding item on an aircraft with less than twenty-five hours entered into its log would be very rare. Besides, if he found any significant problems with the aircraft, he knew he would be stranded in St. Croix for at least two more days until parts arrived from Brazil. That was not going to happen. No problems. Not here. Not today.

THREE

RioAero, SA

This type of incident could be a real disaster for the company," Paulo said to Rameros. The major grimaced with the statement; he knew that RioAero's future weighed heavily upon the success of the WindStar. A lone prop incident might not seriously affect sales in Brazil, but then again, the country could only absorb so many WindStars. By far, the largest and yet untapped market for the WindStar was the recently deregulated airline industry in the United States. And, the interested audience grew even larger since the entire worldwide aviation community was closely monitoring how the new WindStar was performing.

"*Disaster* for the company?" Rameros sarcastically parroted the major. "It is going to be more like a friggin' catastrophe." He clenched his jaw, shaking his head slowly, first up and down, then from side to side. "Yes, this one is going to be hard to keep quiet…from the press, I mean." Rameros paused, unnecessarily fiddling with the rudder trim that he had already set and reset three times before. The more he thought about the incident, the more noticeably disturbed he became. He knew once word was out that a new WindStar had had a propeller simply fall off during a routine flight, the press and RioAero's competitors would have a field day. Questions would be asked. Airline operators would be skeptical about ordering the WindStar. Passengers would be apprehensive about flying in WindStars already in service. But WindStars had to be sold. The company's very existence depended upon it.

"Hopefully," the major continued, "Engineering and QA will quickly be able to determine the cause."

Rameros remained silent. He knew there could be a lot of buck-passing and finger-pointing. RioAero might blame Dayton-Standard, the propeller vendor, for design flaws or manufacturing defects. Dayton-Standard might blame RioAero for improper installation or faulty rigging. And, of course, if the FAA or Brazil's CTA thought the aircraft might now be unsafe for any reason, the entire fleet of WindStars could be grounded—or worse, the airworthiness certificate for the WindStar could be revoked. Even false rumors of problems concerning an aircraft type could spell disaster for an airframe manufacturer.

"I wish I could agree with you, major," Rameros finally said with a sigh, "but I know how the system works. Weeks could easily pass

before anyone knows why what happened, happened. I truly hope I am wrong and the cause of the problem becomes obvious. But first, we need to get this bird on the ground and take a good look at the engine gearbox prop shaft." Rameros paused, then switched from the secure company communications channel to the Tower frequency. "WindStar Papa-Tango-Sierra-Bravo-Whiskey is fifteen miles southwest for landing."

Although the aircraft's speed was now only slightly more than half the three hundred knots of which it had been capable, it was still operating very well on only one engine. Rameros saw no reason to tell the Tower that the right engine's propeller had fallen off and into the Sarapuí River some thirty miles southwest of the airport. He knew that if he announced his current "single-prop" situation to the Tower, he would likely be able to watch his landing later today on the evening news. The press always had the Tower radio frequency programmed into their scanners. A reporter would be on the scene in a matter of minutes with videotape rolling.

The Tower acknowledged the aircraft's registration, position, and request for landing. It also advised of a wide band of thunderstorms fifteen miles north of the airport that was rapidly moving to the south. The same system, of course, Rameros had been monitoring with his in-flight weather radar. The controller concluded his transmission by saying, "Report passing the Outer Marker for a straight-in approach to Runway Three."

"Thank you, Tower," Rameros responded. Then, reflecting upon the propeller incident, he said to Paulo, "You know, major, we should be thankful it was not the left propeller assembly that failed. The left prop would have caused a much more serious problem for us."

"How so?" From Paulo's perspective, a propeller separation was a propeller separation. What did it matter if it was on the right engine or the left engine?

"Think about it." Rameros smiled, breaking his own tension by toying with the major. "Oh sorry, I forgot that you are used to those heavy transport category jets—the ones without propellers."

"Still," the major said, dismissing Rameros' snide remark, "it should not make any difference which propeller it was. Should it?"

"Why yes, it really does." Rameros presented the major with some basic information about turboprop propulsion. He explained that most aircraft engines were mounted with propellers facing forward which turned in a clockwise direction. He noted that during rotation, the descending blades created most of the thrust. "So you see, major, if a right propeller assembly separates from the engine gearbox of an aircraft in flight, it would tend to move up and away from the fuselage. But on the—"

"Okay, now I understand. That explains why there was no apparent damage to the aircraft after the right prop broke away from the engine." The major, glad for the intellectual diversion, eagerly grasped his new found knowledge. However by not taking it a step further, he was still truly unaware of the gravity of the situation that would be posed by a left propeller separation.

"But on the other hand," Rameros continued, somewhat irritated with the major's lack of intuitiveness, "if the left propeller assembly were to have separated, it is very likely that the blades of the detached rotating disc would also have moved away from the engine and to the right. That means the blades would probably have slashed somewhere into the left fuselage."

"And…" the thought finally dawning on the major, "the blades could remain embedded in the fuselage?"

"Exactly."

"So now, Captain Rameros, what is the probability of having the left propeller assembly separate and rip into the fuselage?"

"That could happen any second now," Rameros said deadpanning.

The major's eyes widened.

"Nah…" Rameros said with a grin. "Two propeller assembly failures on the same day, on the same flight? Not to worry, major," he chortled, "it will never happen. We have a better chance of anything else happening: fuel flow blockage, hydraulic failure, even a heart attack of the pilot-in-command."

Franco Rameros knew that the WindStar propeller assembly was manufactured by one of the most reputable companies in the United States—Dayton-Standard. Like most parts incorporated into the WindStar, propeller components were manufactured to exacting tolerances. The testing and inspection was in accordance with rigorous procedures approved by the FAA and CTA. Entire propellers simply just did not fall off an aircraft in flight. However, Franco Rameros knew that if one propeller assembly had improbably and mysteriously broken away from an engine gearbox, a second propeller failure could also occur. The odds certainly weighed astronomically against having a second failure on this flight, but the odds had also been heavily against the first failure.

"Are you sure the left prop will stay attached to the engine long enough to get us back to the airport?" Major Paulo asked with new concern.

"Absolutely. Positively!" There was no reason for gloom and doom. Frankly, there was nothing that could now be done about it anyway. Franco Rameros casually reported passing the Outer Marker to the Tower.

FOUR

St. Croix, U.S.V.I.

The same Volkswagen taxi that had ferried Rick to the airport almost an hour earlier slowed as it once again approached the WindStar. The cab stopped just twenty feet from the left wing tip. As the passenger door opened, a lithe brunette in her early twenties emerged.

"Good morning, Rick."

"Good morning, Vicky."

Victoria Montero was the daughter and only child of Salo Montero. Rick had met Victoria just the week before his scheduled departure to the States. He was in Salo's office discussing his North American sales program when Victoria interrupted by abruptly walking in and announcing that she had just crashed the new WindStar simulator—twice! Rick had jokingly replied, "As long as you don't break the contraption, crash it as many times as you like." Everyone laughed.

Despite Victoria's family aviation history, her true love was medicine. She was enrolled at the University of Miami, and had accepted her father's offer to hitch a ride with Rick in the new WindStar Rick would be ferrying up to the United States for customer demonstrations. Salo had convinced her that by joining in on the flight with a highly qualified and experienced pilot like Rick, she could both get back to her course work in Miami and learn more about aviation along the way. The dutiful daughter also knew garnering more familiarity with the WindStar during the flight would very much please her father.

The night before the departure, Salo invited Rick to join him and Victoria for dinner at his hilltop compound overlooking the city. They talked for hours about aviation: everything from J-3 Cubs to swing-wing Tomcats; and indeed, at great length, about Rick's many anticipated future sales to airlines. The convivial evening and shared dreams led Salo and Rick to joke that someday, somewhere, there would be a regional airline with an expansive fleet of RioAero aircraft named "WindStar Airlines." Laughter filled the air as lofty dreams were toasted with cups of espresso capped with lemon twists.

At the end of the evening, Rick took the opportunity to brief Victoria about the upcoming three-day flight. It would involve a lot of flying: up the Brazilian coast to showcase the new WindStar at Salvador, Recife, Fortaleza, and Belém; then, onto Port-of-Spain in

Trinidad, and Christiansted in St. Croix; and finally, ending in Fort Lauderdale. It would be, he remarked, a long, long flight.

Now, no one watching Rick and Victoria stroll toward the WindStar could have guessed they were not friends of long acquaintance. It was obvious that what was normally expected to be a tedious and boring trip had become enjoyable with time passing quickly. Throughout the trip, common interests had spurred many lively conversations. The trip had jump-started and cemented a friendship. But the realization had suddenly set in. This was the last flight segment; soon their journey would be over. The end would be both welcome and regrettable.

After re-entering the aircraft and securely closing the cabin door behind himself, Rick followed Victoria to the flight deck. There, each settled into one of the cockpit's two imposing and remarkably comfortable sheepskin covered seats. The metal tongues of seatbelts and shoulder harnesses clicked into the respective buckles. Rick attached the airport taxiway chart to the clip on his control yoke. Entries were made in the aircraft's log. He handed Victoria the day's flight plan and two low altitude charts for enroute navigation.

"Let's get down to business," Rick said.

Victoria nodded in agreement while pantomiming fanning her face. The mid-morning sun was beginning to heat up the cockpit like a greenhouse. Once the engines were started, bleed air taken from the compressor sections would allow the air cycle machine to cool the aircraft's interior.

The master power switch once again energized the aircraft. Noise from dozens of peripheral system switches, buttons, knobs, and levers, each with a unique hallmark sound, flooded the cockpit as Rick's deft hands seemed to float through the air, checking, setting, and rechecking positions and functions. The whirling sound of gyros feeding critical information to key flight instruments increased in pitch during spool-up. The multitude of annunciator lights on the master caution panel, just below the center window glare shield, illuminated in hues of red or yellow—some flashing, some not—as the press-to-test switch was activated. Rick double-checked the fuel gauges and made sure the fuel-used indicator was set to zero. This was a long flight; his fuel reserve would be little more than the required extra forty-five minute amount.

Harris continued on with the engine start checklist. The WindStar was designed to be a simple and straightforward aircraft. The two full weeks of day and night training he had received from factory test pilots made him comfortable and capable—but not cocky—with the aircraft and its systems. His years of experience made him confident.

Rick had accumulated over five thousand hours in airplanes, and half of that time was in turbine-powered equipment like the WindStar.

On the overhead panel, Rick moved the right-engine-start switch upward. A low-pitched humming sound increased in frequency as the starter began to rotate the engine's compressor section. Focusing on the instrumentation cluster located just above the engine control pedestal, he murmured: "Oil pressure, check; speed stable, twelve percent." He advanced the fuel condition lever forward. Igniter plugs of the automatic ignition unit emitted a rapid clicking noise as high voltage current arced across contacts. Then, like a blowtorch, the kerosene fuel being sprayed into the engine's combustion chamber lit off. Digital numbers on the ITT (Internal Turbine Temperature) gauge flashed by, rapidly rising, peaking at 750°C, gradually backing off to 550°C. The Dayton-Standard propeller slowly came out of feather and then droned at 1,100 rpm. Everything was normal. The second engine's start only slightly increased the noise level in the cockpit. TurboAirTech had designed a remarkable new technology engine. It was as extremely reliable as it was relatively quiet.

The avionics master switch was flipped on. Both Rick and Victoria donned their headsets. Rick punched in the "hot mic" button on the avionics select panel. He and Victoria could now leisurely converse through the cockpit intercom without having to compete with the low, but still noticeable, engine noise.

"Anything we forgot?" he quipped over the intercom, glancing at Victoria.

"Does *we* mean *me*? As in, did I remember to bring coffee from the hotel?" She knew Rick really liked his coffee. "Well, the answer is negatory on the 'forgot.'"

"Thanks." He smiled. "I'm really glad you decided to come along on this flight, and I don't mean just as the major coffee procurer." Pressing the small round button on the top left side of the control yoke, he said, "Ground Control, November-One-Double-Oh-Whiskey-Sugar is ready to taxi VFR (Visual Flight Rules), Fox-Lima-Lima (FLL)."

"Roger, Whiskey-Sugar, taxi to Runway Two-Seven; wind, three-one-zero at one-two; altimeter, twenty-nine-ninety-nine. Say aircraft type."

"WindStar One Hundred."

"Nice!"

The line chief gave Rick a thumbs-up as the WindStar taxied past the fixed-base operations hangar. By now, half a dozen mechanics had walked out onto the tarmac to see it taxi by for takeoff. The mid-point of Runway 27 was a mere three hundred feet from where the on-lookers stood.

As Rick slowly taxied east to the beginning of the runway, he made a thorough pre-takeoff check of the aircraft, its systems, and its flight instruments. With typical Caribbean weather, there was no need to file an IFR (Instrument Flight Rules) flight plan. Going VFR with occasional radio contact with San Juan Center would make this last long flight segment less tedious and more enjoyable despite strong forecast headwinds. When he was two hours out of Fort Lauderdale, he planned on checking in with Miami Flight Service to see if the weather was improving as forecast. Then, he would work his way into the air traffic control system with Miami Center.

"Good morning, Tower, Whiskey Sugar is ready to roll, Runway Two-Seven," Rick casually announced.

"Roger, November-One-Hundred-Whiskey-Sugar; wind, two-eight-zero at one-zero. Cleared for takeoff."

Rick taxied out to the departure end of the runway and lined-up with the centerline. He knew that the line chief and the group of mechanics assembled in front of the hangar would be watching.

It's showtime, Rick thought to himself. Then, over the cockpit intercom, he briefed Victoria, "This takeoff will be max performance. I want the folks here in St. Croix to remember and then talk about the WindStar for months to come. There will be some abrupt maneuvering and a bit more noise than normal. So, be prepared. Don't worry, though, it will be perfectly safe."

"Are you sure?"

Rick shrugged. He had absolutely no reason—at least at this point—to believe it would be otherwise.

"Fine," she acknowledged. This should be exciting. She was eager to see what a maximum performance takeoff would be like in the WindStar.

With brakes firmly held, Rick smoothly advanced the power levers until the engine torque read seventy percent. The aircraft vibrated under the strain; the prop wash striking the tail buffeted its structure. The cockpit noise level increased significantly.

"Here we go," he said over the intercom.

As the brakes were released, the aircraft surged forward, pressing Rick and Victoria back into their seats. He had further increased the power to bring the torque to one hundred percent with propellers rotating at 2,000 rpm. Now each engine was developing its full thirteen hundred shaft horsepower.

Thirty knots...

The wheels thumped over expansion joints in the concrete runway.

Sixty knots...

Acceleration dramatically increased.

Eighty knots…

Though poised to leap into the air, Rick held the WindStar on the runway a split second longer.

Rotate.

The WindStar pitched up at just over ninety knots. While the gear slowly retracted, Rick allowed the aircraft to quickly accelerate to its best twin-engine angle of climb speed before rocketing skyward. All assembled eyes focused on the aircraft as it climbed out at nearly a thirty-degree angle from the runway. It had the performance of a lightly loaded Learjet.

"Say altitude," the Tower queried.

"Passing through three thousand."

"Extraordinary," was the comment from the controller. "You are clear of our airspace; frequency change approved at pilot's discretion."

Rick grinned. *Great aircraft!*

FIVE

Destination: Fort Lauderdale

Ten minutes after takeoff from St. Croix, Rick Harris leveled off at 16,500 feet. He watched the aircraft's true airspeed rise to three hundred knots, then he reduced the engine power to long range cruise and adjusted the props to 1,500 rpm. The cockpit noise level markedly quieted. Navigation instruments were double-checked. The autopilot was engaged.

Flight conditions were perfect. The cloudless pale-blue sky blended into the distant horizon, converging with the ocean below. Although the aircraft was moving along at a rapid pace, it seemed motionless—fixed in time and space. There was no meaningful outside reference to indicate its speed. Even clusters of islands dotting the azure waters below gave no clue as to the rate of the aircraft's true forward movement.

Slightly behind the left wing tip, the landmass of Puerto Rico could easily be identified, seeming to lazily float upon the water. The Dominican Republic appeared as a mere shadow in the distance much farther to the west.

Rick entered a new frequency into the aircraft's navigation system to capture signals from the San Juan VOR (VHF Omnidirectional Range) transmitter. He turned the WindStar seven degrees to the left, settled back into his seat, and began tracking direct toward Grand Turk, a tiny, yet still invisible island located along his route some three hundred miles ahead.

Rick yawned, then glanced toward Victoria who had just returned to the cockpit from the cabin's small galley area. She had poured two cups of coffee from the thermal jug the hotel had filled earlier that morning. She handed him a cup.

"Still that Brazilian java?" he quipped.

"Why of course!" She scowled, her nationalistic Brazilian pride momentarily affronted. "You know, we grow over half the beans that you folks use." Then, adding with a tsk, less seriously, "Do not believe what that Juan Valdez guy and his Colombian friends may say."

"Oh, that's just advertising," Rick said. He took a sip. "Mmmm…most of us who drink coffee in the States really have no idea of its origin. It just tastes either good or bad." He grinned, then admitted, "You know, mostly we have little appreciation of how good

or bad it does taste. We drink it anyway." He paused. "Someday, North Americans will become connoisseurs of really good coffee as are people in Europe and South America. But in the meantime—"

"You are really glad I came along or you would just have to drink whatever you were served!" Victoria knew Americans' habits.

He shrugged, then keyed his mic, "Miami Radio, November-One-Hundred-Whiskey-Sugar is on one-twenty-three-thirty-five." He had just passed Grand Turk and was looking for a weather update from Miami Flight Service.

"Go ahead, aircraft calling Miami Radio."

"Miami, WindStar One-Hundred-Whiskey-Sugar is requesting the current terminal weather and forecast for Fox-Lima-Lima."

"Stand-by one." The flight service station operator gathered the latest data and relayed it to Rick. Although FLL was now in the clear, a frontal system that had essentially shut down its air carrier operations for most of the morning had only moved twenty miles to the southeast—directly into Rick's flight path. There was no way around it, especially considering the strong headwinds and limited fuel reserves on board.

"Thanks for the info." Rick paused, mentally reviewing the mechanics of the IFR flight plan data he was about to give Miami. He keyed his mic again, "Miami, we'd appreciate your re-filing us for IFR to cruise at Flight Level one-eight-zero, RNAV direct Fox-Lima-Lima."

"Roger, Whiskey-Sugar, we will amend your flight plan as requested and put the information into the system for Miami Center. So long."

"Well now," he said to Victoria, "looks like we're in for some actual."

"Actual? Actual what?" a perplexed Victoria asked.

Pilots are known to communicate about flight activity rather cryptically, some say in the interest of reducing radio frequency congestion when talking with air traffic control. Although pilots and controllers fully understand what is being said, those not intimate with "aviation talk" typically find the lingo of the truncated words and phrases confusing.

"Oh sorry," Rick said, instantly realizing that she had no idea what he was talking about. "The weather in Fort Lauderdale is beautiful," he began explaining. "It's sunny and unseasonably cool. But a frontal system that had the airport socked-in earlier this morning has moved directly into our flight path. We'll have to penetrate the front. That will mean a bumpy ride and some *actual* instrument flying."

The previous flight time in the WindStar on the trip up from Brazil had all been under excellent weather conditions. Now, Rick thought,

the last hour of the flight would be more challenging—at least for him. He also knew flying IFR would give Victoria a better perspective of what being a pilot was all about.

Rick disengaged the autopilot and slightly re-trimmed the WindStar for straight and level flight. “Okay, Vicky, how about some real practice?”

“Sure!” Victoria was excited, but apprehensive. She had “flown” the simulator at the factory, and some of those sessions had not ended so successfully. However, her confidence had largely been restored when she had flown the WindStar at various times during earlier segments of this trip. But during the past two days, there had been no significant weather with which to contend. “Now remember, I am only a private pilot. Don’t let me scare myself.”

“*No problema*,” Rick said, “that won’t happen.” The way he had learned how to really fly was by being a flight instructor. If he had been given to paranoia, he would have concluded that his students were always trying to kill him by attempting to crash whichever aircraft was being used for instruction. Nowadays, he felt habitually prepared for anything.

SIX

RioAero, SA

Franco Rameros surveyed his approach. From four miles out, the airport was in plain view. The two hundred foot wide, nine thousand foot long runway was ahead and slightly to the left. RioAero's massive facility was located just to the north side of the runway. A dozen buildings and nine large hangars were edged by expanses of tarmac ramp areas and taxiways. A huge inventory of WindStars, positioned wingtip-to-wingtip, sat temporarily stored along the side of Hangar Seven (Final Assembly) and Hangar Eight (Interior Finishing). All the aircraft had bright yellow wooden chocks bracketing their nose wheels and heavy-duty nylon ropes looped through mid-wing tie-down rings to secure them in place. This inventory of unsold aircraft was an embarrassing testimonial to the dismal sales record of the aircraft since its certification. Airframe manufacturers always strive to have strong order books with many dozens, if not hundreds, of sold aircraft backlogged but yet to be manufactured. However, RioAero's aggressive manufacturing schedule, anemically supported by an inept sales program, now resulted in the very opposite situation.

Although production of the WindStar was still going strong, logic would soon have to rule. Unless a major order came in for the aircraft within the next few weeks, the WindStar production line would likely be severely cut back or, even worse, shut down. For now, though, RioAero's facilities were still operating at high capacity.

"Roger, Sierra-Bravo-Whiskey, not in sight," the Tower responded to Rameros' report of passing the Outer Marker. "Wind is three-one-zero at one-eight with gusts to two-niner, altimeter three-zero-one-one. There is no traffic. You are cleared to land."

"Thank you, Tower," Rameros came back.

The airstrip at Nova Iguaçu generally had little flight activity. During weekdays, most of the traffic was generated by factory pilots testing recently manufactured aircraft or prototypes still under development. There were also a variety of military aircraft operations from the Air Force base located on the south side of the field. Commercial traffic was almost nonexistent, since those flights typically used Rio de Janeiro International or Santos Dumont Airport, both a short distance away.

Rameros completed his pre-landing checklist, reserving both flap and gear extension for when the aircraft would be on a short final to the runway. Naturally, even in perfect weather, single-engine

approaches always required more caution than did normal twin-engine approaches. In the event a go-around was required prior to landing, a "clean" aircraft could more quickly respond to the limited power available from just one engine. But today's gusty conditions created a formidable task even for experienced pilots who were operating aircraft with two functioning engines.

Major Paulo was very much aware of the challenges that the weather presented to Franco Rameros. He watched Franco further position the nose of the aircraft to a generous twenty-five degree "crab" angle into the strong winds that were now blowing almost directly across the runway. Still, the WindStar was slowly drifting to the right. Experience told the major that as the aircraft descended, the effects of the wind on the aircraft would be magnified.

Rameros knew that in order to safely land, he would have to muscle the WindStar onto the runway, all the time being sure proper airspeed, directional control, and descent rates were maintained. Although the current wind conditions had been tested to be within the WindStar's twin-engine operating limitations, the crosswind component now exceeded the aircraft's demonstrated single-engine landing criteria. A further problem was that the factory's huge hangars bordering the northern side of the runway's touchdown zone were known to create unpredictable wind shear conditions.

Within one mile from the runway, Rameros set in fifteen degrees of flaps. Then, he moved the gear handle down and continued to rest his right hand on the switch as he briefly waited for three green lights to appear on the lower instrument subpanel, indicating that the gear was down and locked. He throttled back slightly to allow the airspeed to bleed off to one hundred thirty knots and set the rudder trim to neutral.

"Well, major," he said unflinchingly, "looks like we have a tiger by the tail."

Major Paulo tried to respond, but words failed him.

As was anticipated, the wind was now having a greater effect on the aircraft's controllability during the descent to the runway. Vertical and horizontal components of the gusty conditions were seemingly at odds with the aircraft's intent to land. The major silently watched Rameros make constant and sometimes aggressive changes to the flight controls in order to cope with the aircraft's ever-changing pitch, roll, and yaw. Just as the WindStar would stabilize in its three-dimensional approach to the runway, a burst of wind would throw it off course. Within seconds, the same scenario would play out again.

Indeed, Franco Rameros was no longer a bored pilot. The WindStar was bobbing and weaving, fighting its way down to the runway. Layers of wind tore through space, surging, whirling and

hissing, almost as if mocking the WindStar's resolve to land. There were jolting air pockets with powerful bursts of energy. The effects were very visible, very real.

"Wind check, two-seven-zero at two-five, peak gusts three-five," the Tower controller broadcasted an update. The wind had intensified.

The major's eyes widened. The words "peak gusts three-five" seared into his mind.

Rameros added further power to the left engine. It was critical for him to maintain a specific margin above the aircraft's normal airspeed. He felt the relentless wind and its unpredictable gusts continue to menace the WindStar's approach. Now, the aircraft had to be firmly flown down and onto the runway relying upon techniques like those used by Navy pilots during aircraft carrier landings.

Just after crossing the runway threshold and descending through two hundred feet, Rameros initiated his final maneuver to position the WindStar for landing. The aircraft's angled crabbing into the wind transitioned to a forward slip. The left wing was lowered into the wind to prevent the aircraft from drifting across the runway; the nose was aligned with the runway centerline using slightly less left rudder pressure than had been required before. Now positioned for landing and effectively compensating for wind drift, the aircraft was banked to the left, but flying longitudinally straight. It was awkward looking. It was awkward feeling.

The WindStar descended to within one hundred feet of the runway.

Fifty feet…

The aircraft veered to the right. Corrections were made, bringing it back on runway centerline.

Thirty feet…

SEVEN

Destination: Fort Lauderdale

Victoria adjusted her seat to be more comfortable at the controls. “Maintain heading and altitude?” she asked.

“Yup,” Rick acknowledged, then reconfirmed, “three-five-zero and sixteen thousand five hundred.”

Harris powered up the aircraft’s weather radar. It was the latest digital system from Bendix—an RDR-1400. Bendix Avionics Division had consigned the system to RioAero for use in this new demonstration aircraft. The RDR-1400 was so advanced that helicopter operators in Texas and Louisiana used it under instrument flight conditions to make approaches to oil rigs in the Gulf. Definitely an impressive piece of equipment to have in the demonstration WindStar, but the radar’s features and functions were overkill for most small airline operators.

He glanced toward Victoria. “You’re doing just great, Vicky.” It was true; still, reinforcement was always good to hear.

“Thanks.”

“Remember,” he continued in instructor mode, “try to relax and let the airplane fly itself. When it strays, just use light pressure on the controls to help it get back to where you want it to be.” Rick knew that low flight-time pilots invariably became stressed when at the controls and facing unfamiliar situations. There was a tendency to over control the aircraft and force a reaction, rather than just coaxing with a gentle nudge now and then. “Think of it this way,” he went on, “if these contraptions were too hard to fly, no one would buy them. Remember, pilots aren’t brain surgeons or rocket scientists.”

“I hear you, but it is not as easy as you make it out to be.” Victoria was being modest about her capabilities. Her heading rarely varied by more than ten degrees, and she was almost always within one hundred feet of the prescribed altitude.

Rick studied the aircraft’s weather radar display. It showed exactly what was ahead. The microwaves being pulsated from the radar transmitter penetrated the forward airspace. Each sweep of the parabolic antenna, located in the aircraft’s nose cone, captured those waves that hit and then bounced back to the aircraft from pockets of moisture being developed by the frontal system. Shades of green, yellow, and red illuminated the CRT, mapping out the weather.

Rick switched to COM-2. It was time to contact enroute air traffic control. “Miami Center, WindStar One-Hundred-Whiskey-Sugar is

with you over Manta Intersection at sixteen point five; like to pick up an IFR to Fox-Lima-Lima."

Center promptly responded, "Roger, One-Hundred-Whiskey-Sugar, radar contact; cleared as filed, climb to and maintain Flight Level one-eight-zero, squawk four-zero-nine-six."

"As filed, up to one-eight-oh." Rick set the transponder to 4096 and motioned for Victoria to pitch up the aircraft.

The controller asked, "Whiskey Sugar, are you radar equipped?"

"That's affirm, we're painting the front some fifty miles down the road."

"If you need to deviate, let us know."

"Wilco, Whiskey Sugar."

In a little more than ten minutes, Rick knew it would be a bouncy ride picking their way through the front. Several small isolated patches of heavy precipitation flashed in red on the radar screen. Narrow batches of yellow, indicating moderate precipitation and moderate turbulence, clustered near the flashing red targets. The entire picture was raggedly framed by a wide area of lighter precipitation depicted in dark green. Every two to three seconds, the oscillating radar antenna captured a new weather image as the aircraft advanced on the front.

"Better be sure your seatbelt is snug," he cautioned Victoria over the cockpit intercom. "We're gonna get jolted around. And, it'll be rather noisy when the precip hits the plane."

Her eyes repeatedly glanced at the ominous weather ahead and then refocused on the flight instruments in the cockpit. "I think you might want to take over at the controls," she said with a slightly nervous tinge.

"Nah, it'll be good practice," Rick said confidently. "Remember, Salo wanted this trip to be a learning experience for you. Indeed, it will be."

Rick twisted a knob on the radar indicator to adjust its range and paint what was just twenty miles ahead. Suddenly, the entire CRT lit up like a Christmas tree. "Hmmm…" he moaned, "looks like we've got another minute or so before entering the leading edge of the front." He paused, reducing the power somewhat. "Don't worry, though, you'll do fine. Just concentrate on the aircraft's attitude indicator with an occasional check on the altimeter and HSI (Horizontal Situation Indicator)."

The midday sun disappeared as the aircraft penetrated the weather. The bright whiteness of the clouds turned to turbid gray. Rick switched on the panel lights to better illuminate cockpit instrumentation. He flipped off the wing-tip strobes to suppress the annoying sequenced flashes.

"Miami Center, One-Hundred-Whiskey-Sugar would like to pick our way through this weather."

"Roger, Whiskey-Sugar, thirty-degree deviations from course approved at pilot's discretion. Descend to one-four thousand, expect one-zero thousand in two-five miles."

"Whiskey-Sugar is out of one-eight for one-four." Rick paused. Victoria had heard the controller and was already beginning the descent. "Vicky, turn left to three-three-zero so we can miss that weather cell up ahead." Moderate to heavy precipitation and its associated turbulence were flashing on the radar screen.

Just as the aircraft leveled on the new heading, it began to shake like a car on a washboard road. Then, it seemed as if it was hitting a series of gigantic potholes. Powerful updrafts and waves of turbulence began slamming and pounding the WindStar. Suddenly, three hundred mile per hour rain pelted the windshield and fuselage; sounding like birdshot, it peppered the aircraft's skin. The tumultuous precipitation intensified. Now, torrential streams of water separated from the air, blanketing the aircraft as the WindStar fought its way forward. The sounds were almost deafening. The aircraft felt as if it would be torn from the sky. But it was not. Victoria was doing a remarkable job at the controls.

Rick raised his brow in absolute surprise. "How'd you get so good, Vicky?"

"You know, Rick, that new full-motion WindStar simulator that FSI (Flight Safety International) installed at the factory—the one you used for part of your training…" She hesitated as she pitched the aircraft up slightly. She was getting close to her desired altitude. "Anyway, after I crashed it twice, I went back for more…" She hesitated again. "Sorry, but I don't think I can chitchat with you while I am doing this."

Now, he understood why Victoria was doing so well at the controls. She had spent much more time in the simulator than he had previously thought. And, he knew that a flight simulator was always more difficult to fly than was the real aircraft.

Rick eyed the radar screen. "Okay, only ten miles to go and we'll be through this weather. Take a heading of three-six-zero."

Just as Rick gave her the new heading, he knit his brow in puzzlement. His nostrils flared. There was a strange smell in the cockpit. It was pungent and distressingly identifiable. It was the hallmark odor of scorched wire insulation.

An instant later, he heard the distinct sound of a circuit breaker pop. It came from the primary electrical bus. The panel was located on the cockpit sidewall below his left elbow.

The radar display suddenly disappeared. The entire cockpit darkened. The constant chatter that filtered through Rick's headset between other aircraft and Miami Center went silent.

Rick's eyes shifted down and to his left, focusing upon the circuit breaker panel. He immediately realized there had been a catastrophic failure of the PSU (Power Supply Unit). The PSU was the heart of the aircraft's electrical system.

Instantly, everything electronic became inoperative. Red flags appeared on the attitude indicator and the HSI. There was no flight control guidance. No navigation. No communication. The cockpit intercom that fed through the master avionics panel no longer functioned.

"Damn," Rick exhaled the word as his eyes once again focused upon the circuit breaker panel.

But he had no time to concentrate; things began happening quickly—very quickly.

The aircraft had rapidly accelerated. Descending in a tight spiral to the left, the WindStar plummeted into the turbulent sea of air and driving rain. The rushing sound of speed increased in amplitude and became earsplitting.

Engine propellers surged.

The IVSI (Instantaneous Vertical Speed Indicator) was pegged at six thousand feet per minute.

Airspeed was approaching redline.

THE AIRCRAFT WAS OUT OF CONTROL.

EIGHT

RioAero, SA

Major Paulo cracked a nervous smile in relief as the WindStar continued its single-engine descent through fifteen feet.

Everything was looking good. The aircraft seemed ready for touch down.

But at that moment, just as everything seemed to be under control, everything changed. A violent gust of wind wreaked havoc on Rameros' intended landing. The aircraft instantly leapt twenty feet above the runway. Its left wing angled upwards nearly thirty degrees. The WindStar began pivoting to the right as its airspeed dropped to eighty knots. The ominous, heart throbbing, stall warning horn loudly echoed throughout the cockpit. The aircraft struggled to stay in flight—its airfoils buffeting; its control yoke shuddering.

Rameros reacted immediately by shoving the left power lever full forward, slamming it into the throttle quadrant stops. There was a slight delay in response. Then the lone operating engine roared as its turbo machinery transferred thirteen hundred shaft horsepower to the forward gearbox. Propeller blades bit angrily into the air. The WindStar yawed further to the right, perilously drifting to the side of the runway. Rameros kicked full left rudder.

But nothing happened.

Catastrophe seemed imminent.

The major had been transfixed by the ongoing events. He had not spoken since the flaps and gear had been extended earlier during the approach. But now, the fingers of both of his hands had a death grip on the armrests of his seat. His widened eyes glazed. His body froze. Profound terror.

Rameros had to act quickly. His reactions sprang from pure instinct. There was no time for thought; no margin for error. Adrenaline surged. Pupils dilated. Even though he still held full left rudder, the WindStar had yet to respond. There was no turn back to the left. The aircraft was still drifting with the aggressive wind.

Ahead and to the side of the runway, the ILS (Instrument Landing System) glide slope antenna loomed large as an obstruction. A fully extended windsock beckoned like a Greek Siren. Five tons of aluminum, composites, hydraulics, and electronics were failing to answer Rameros' control inputs.

Rameros ripped the power lever of the left engine to its aft flight-idle stop, all the time holding full left rudder. He simultaneously nosed

the aircraft down toward the runway to gain airspeed and sharply banked to the left. Momentarily, the aircraft seemed to hang as if suspended. Then abruptly responding, the WindStar pivoted violently to the left. The indicated airspeed fell to sixty knots—well below flying speed—as the pitot tubes were briefly blanketed from detecting forward air pressure by the rapid maneuver. With a sudden jerk back on the yoke, Rameros neutralized the descent and immediately added aileron to level the wings.

Amazingly, the WindStar had not yet crashed. It was now hazardously positioned just two feet off the ground over the grass apron that bordered the right side of the runway. Still flying, nearly colliding with a taxiway marker and runway edge light, the aircraft was heading directly into the wind. As the wing tips crossed the runway's edge, Rameros abruptly planted the landing gear down onto the runway's concrete surface. It was an unconventional landing—across the *width* of the runway. The airspeed indicator read eighty knots; however, ground speed was a mere forty-five knots due to the powerful head wind.

As ground contact further slowed the WindStar, Rameros angled toward a taxiway just ahead and slightly to the right. He locked into the sensations coming through the controls to him. Focusing on safely clearing the runway, his mind raced ahead. He was oblivious to the superfluous and, at the moment, incoherent mutterings from the major who was slowly emerging from stark terror.

Immediately after clearing the runway, the WindStar began to shudder. Rameros felt the newly familiar, sickening oscillations reverberate through frames of the superstructure that held the sidewalls and floorboards in place. The entire aircraft now shook violently, uncontrollably. The vibration was so extreme that the instrument panel almost became a blur. A master caution warning on the annunciator panel flashed, indicating a prop over-speed condition detected from the left engine gearbox. The sensations were *déjà vu* to those experienced only thirty minutes earlier with the right propeller shaft failure. And within a split second, it was all happening again.

Before a word could be said or an action taken, an explosive penetration of the left fuselage occurred with the heart-stopping intensity of a mortar shell. Then, eerie silence. The last thing that Rameros thought could happen, actually had happened. The propeller from the left engine had separated from its gearbox, striking the side of the fuselage and becoming embedded in it.

"Mary, Mother of God," the major shouted in Portuguese. "That, that…" he stammered, "that could have happened earlier. That could have—"

"Jesus Christ, major. *Silêncio!*" Rameros had had enough stress for the day. He had little tolerance for an Air Force major—and a pilot, as well—who was on the verge of hysteria over what was now history.

"Interesting landing," the controller commented on the Tower frequency. "Wish I could have videotaped it."

Keeping a level head, Rameros knew that the controller's reference had to be an empty remark about the WindStar's unorthodox approach to landing across the runway. The Tower cab, located on the far eastern side of the field, was well out of range for videotaping any aircraft after its touchdown on Runway 3. Apparently, the wild gyrations had transfixed the controller enough to overlook the missing propeller on the right engine, and it was physically impossible for him to have witnessed the after-landing failure of the left prop.

"Thanks, I guess," Rameros coolly retorted. "I assume we are cleared for taxi to operations."

"Roger that."

The WindStar, now without any engine power, yet still in motion by virtue of its previous momentum, coasted along the taxiway that led between Hangars Seven and Eight, slowing as its inertia dissipated. Switching to the secure company frequency, Rameros radioed, "Flight OPS, Sierra-Bravo-Whiskey needs a tug." Pause. "We are on the taxiway just south of Seven and Eight." Pause. "And, by the way, you had better call Biega in Engineering and Martinez in QA. Have them come down to Hangar One right away."

"Wilco, Sierra-Bravo-Whiskey."

NINE

Destination: Fort Lauderdale

“I got the aircraft,” Rick shouted out. “I’VE GOT IT!”

Victoria abruptly released her white-knuckled grip. Her fingers flew off the control yoke and locked onto the armrests of her seat, all the while her eyes remaining riveted to the meaningless outside view.

Rick ripped the power levers back to their flight idle stops. The engine noise faded. The propellers acted as massive speed brakes. A high-pitched buzz was emitted as the props reacted to the excessive airspeed. With both hands on the control yoke, Rick muscled ailerons to the right. The wings leveled. A split second later, he eased the WindStar out of its dive by slowly increasing its pitch. He was relying on the aircraft’s pitot-static vacuum system which powered his four primary flight instruments: airspeed, vertical speed, altimeter, and turn-and-bank.

The airspeed reversed direction. The noise level inside the aircraft markedly quieted. Then, engine noise increased as the power levers were advanced to climb settings.

By now, the number one NAV/COM radio was operational and the left instrument panel gyro horizon and HSI had fully spooled up. These, and a few other critical flight instruments and devices, were connected to the emergency electrical bus which was fed by a 24 volt nickel-cadmium battery. Emergency power would last for approximately forty-five minutes.

Voices crackled once again through the earpieces of his headset. “One-Hundred-Whiskey-Sugar, this is Miami Center, radar contact lost.” There was a pause. “One-Hundred-Whiskey-Sugar, do you read Miami Center?”

Rick hoped that this was Miami Center’s first call. He really did not want to comment about his in-flight problem. Questions would be asked. He would have to file a report with the FAA. Skepticism could be cast upon the WindStar.

“Roger, Miami, Whiskey-Sugar is level at one-four thousand.” He lied. The aircraft had lost nearly three thousand feet during the incident and was just now climbing past twelve thousand. Rick knew, with radar contact lost and an inoperative transponder, there was no way air traffic control could know his real altitude.

“Whiskey-Sugar, descend to six thousand, contact Miami Approach on one-twenty-eight point six. You should be in the clear

shortly." Center's hand-off to Approach Control at this point was a standard operating procedure.

Rick Harris took in a deep breath. "Out of one-four for six, so long."

With his right hand, Rick twisted the Miami Approach frequency into COM-1. Almost like magic, the cockpit brightened. There was clear blue sky for as far as their eyes could see. Home was now so close that any thought of further problems was vanquished from his mind. He smiled and glanced over toward Victoria who was still visibly shaken by all that had just transpired.

"What happened, Rick?" she spoke more loudly than before, partly from fear and partly knowing that the cockpit intercom was inoperative.

"Well, we had an electrical failure," Rick responded casually, as if what had just happened was a normal occurrence, a mere slight inconvenience. Of course, it was not.

But while the electrical failure was obvious, it was not the whole explanation for how the aircraft got into such a perilous situation. In just the few seconds it took Rick to look down at the circuit breaker panel of the primary electrical bus, Victoria had let the aircraft get away from her. When the instruments she was accustomed to using had failed, she diverted her attention to the weather outside the cockpit. Then, she lost all perception of what was up, down, left, right—where the aircraft might be.

Victoria had allowed the WindStar to go into a graveyard spiral. And, she had done it so smoothly that it was virtually unnoticeable until it was almost too late.

"So, an electrical failure makes an aircraft go out of control like that?"

"Well, yes and no." Rick was trying to be diplomatic. As pilot-in-command, he realized he was ultimately responsible for the aircraft's diving spiral. He should have been more diligent with Victoria at the controls, especially after the electrical failure in the storm. "Let me put it this way," Rick continued, "without the electrical failure, the aircraft would not have done what it did."

Victoria was very bright and perceptive. She knew Rick was side-stepping the gist of her question. "Interesting explanation," was her only comment.

Rick forced a laugh and went back to his original treatise. "Unfortunately, sometimes systems problems like the one we encountered do happen. New aircraft have what we call teething problems. Those take time to sort out. But the real problem is…" He lingered for effect. "The real problem is, how are we going to get those darn coffee stains off the new cockpit carpet?"

"You are a crazy man," she said as she playfully punched him in the arm. Rick's inane comment about spilled coffee had served its purpose, both diverting her attention from the electrical system malfunction and reducing her anxieties.

He smiled, then put his forefinger to his lips. The universal sign silenced their conversation before his next radio contact. "Miami Approach, One Hundred Whiskey-Sugar is level at six thousand with the airport in sight."

"Roger, Whiskey-Sugar," came the response from Approach Control, "cruise three thousand, contact the Tower on one-nineteen point three."

The approach to Fort Lauderdale was always a pleasant sight for Rick, and today even more so. He first glimpsed the huge, red and white smoke stacks of Florida Power and Light towering just to the west of Port Everglades. Then, two massive cruise ships at the docks came into vision. Next, he sighted Pier Sixty-Six on the other side of the Seventeenth Street Causeway. After that, he briefly focused upon white roofs of houses clustered along the meandering Intracoastal inlets in the far distance.

He checked in with the Tower, "WindStar One Hundred Whiskey-Sugar is with you on a three mile left base for Two-Seven Left."

"Roger, Whiskey-Sugar, follow the Aero Commander on a two mile final, cleared to land Two-Seven Left."

Rick acknowledged the Tower and kept the Commander in sight while slowing the WindStar to its normal one hundred twenty knot approach speed. He selected fifteen degrees of flaps. The aircraft pitched up slightly and continued slowing.

No more surprises, Rick thought to himself. But the day was still young.

TEN

RioAero, SA

The clang of the metal tow bar hitting the concrete floor echoed throughout the factory's nearly empty Hangar One. The tug's transmission whined over its muffled engine noise as it slowly backed away from the hapless WindStar and then departed from the hangar. Two pairs of forty-foot tall electrically powered steel doors slowly converged from each side of the hangar's entrance. The doors rumbled along over tracks embedded in the hangar floor, occasionally creaking and squealing, until reaching their forward travel-stops with a thunderous bang. Now, the almost ghostly stillness that fell within the hangar was only penetrated by disembodied bits of monotone conversation droning from nearby the WindStar. Dozens of fans suspended from high atop the hangar's massive girders wobbled while silently circulating the searing summer's air.

Hangar One was the heart of RioAero. Every new aircraft designed by the company was painstakingly developed and perfected by engineers working in various sections of the hangar. Each aircraft evolved through a series of developmental stages. Initially, detailed engineering blueprints were converted into full-scale wooden mockups for a proposed aircraft. The wooden mockups were used to layout, test, and fine-tune each aircraft zone and system—cockpit, avionics, flight controls, landing gear, etc. Later, as many as three prototypes were custom-produced by Manufacturing for flight testing, structural analysis, and the all important certification process required by airworthiness authorities.

Six months ago, when both FAA and CTA approval of the WindStar's Certificate of Airworthiness appeared imminent, the factory began spooling up for full production of the genuine aircraft. However, concurrent with the optimistic decision to manufacture the aircraft at an aggressive rate, any new engineering programs had to be placed on hold. The extensive cash outlays that had been required to successfully complete the WindStar program and enter the aircraft into production had severely drained the company's financial reserves. So, belts had to be tightened.

Still, a few programs involving the WindStar had been kept ongoing. Serial Number 003 was undergoing fatigue testing in a separate area of the hangar—a required program for any newly certified aircraft; it would last several more years. Serial Number 001 was being modified for military special mission operations—a fifteen foot radar antenna pod was being affixed to the fuselage belly; two seventy gallon extended range fuel tanks were being fitted to hard points beneath each wing. Serial Number 009, a full production aircraft previously delivered to the Brazilian Air Force, was being retrofitted for armament—short-range, air-to-ground missiles. Despite these aircraft modification programs, nearly two-thirds of the immense Hangar One remained empty. And now on Friday afternoon, when even the small crews needed for these projects had wound up their day and left, the entire hangar seemed deserted.

A small entrance door at the rear of the hangar slammed. The metal-to-metal impact resonated throughout the structure. Distant fast-paced footfalls slapped against the glistening gray concrete floor. Faster. Closer. Louder. The buzz of conversation from around the WindStar ceased. The footsteps slowed, and then silenced. A hulk of a man now stood just forward of the aircraft's left wingtip.

"Hello, Lou," Gabe Batista almost whispered as he quickly glanced up at Biega. Batista, the long-time propulsion engineering department manager, fully understood the ramifications of the problem at hand.

"I just got here a few minutes earlier myself," Jeffe Martinez declared defensively, knowing full well that his quality assurance department had ultimate responsibility for detecting any production line defects.

Lou Biega was almost larger than life. His imposing six-foot four-inch height was accentuated by a massive frame that supported nearly three hundred pounds of engineering savvy and personal obstinateness. Big Lou, as he was known, was as much of a physical and emotional individual as he was an aloof aeronautical intellectual. Biega had joined Salo Montero as a senior engineer when RioAero was formed in 1968. Two years later, Biega headed up Propulsion, then Structural Design, and finally, in 1973, Big Lou was promoted to run all of Engineering. Next to Salo, Lou Biega was the most powerful man at RioAero.

"It looks like a structural failure," Batista flatly stated.

"Probably a defect in milling the prop shaft," Martinez interjected.

Biega's face remained expressionless. He pushed back his long, wind-tattered, pitch-black wavy hair with one hand and with the other hand removed an unlit, half-smoked panatela from his moist lips. He slowly walked up to the left engine nacelle and gazed at the gearbox—the sheared shaft, ragged. He cocked his head to the right, studying the propeller assembly that was still embedded in the fuselage.

"What do you think, Lou?" Martinez asked.

"What do I think? What do I think?" Biega slowly muttered in a disgusted voice. His body tensed. "I will tell you what I think," he roared. "I think some friggin' sonovabitch screwed up my goddamn airplane. Nobody does this to one of my birds. NOBODY. I am going to get to the bottom of this. When all is said and done, the bastard responsible for this is going to pay. I will have his friggin' ass. You got me, Martinez? Dead meat!"

Martinez, visibly shaken, stepped backwards. He was new to RioAero, joining the company a little over a year ago after serving as an assistant director of QA for a European airframer.

Biega's oral tirade boiled over into pure physical anger. His face reddened. His eyes narrowed. Uncontrollably, with the instep of his right foot, Big Lou kicked the lower blade of the propeller assembly that hung less than two feet above the hangar floor. He kicked it again, and again. The embedded assembly silently withstood the savage onslaught unmoved.

"Lou, Lou, wait!" Batista shouted, rushing toward Biega. "We need to carefully analyze every aspect of the damage. We need to preserve all the evidence. We need to learn what actually happened. We need to know why."

"Yeah, yeah," Biega grumbled. He knew Batista was right. Big Lou feigned a final kick, then abruptly backed away from the fuselage, his arms windmilling to maintain his balance. "You know, this kind of shit just does not happen by itself. Somebody caused it to happen. Gabe, I want you to call Dayton-Standard and have them get their asses down here tomorrow. Tell them what happened. Tell them this is not some kind of joke. Have them bring whatever equipment they need to get the answers."

"But I am not sure they can get here by then," Batista advised. "I think—"

"Call Willie Roth." Big Lou fumed, throwing his cigar to the ground and savagely grinding it into the concrete floor with his heel. "He is their goddamn president. He can make things happen. Tell him I want him and his best engineers down here no later than Sunday. Or tell him, if he prefers, I will personally fly up to Dayton and shove one of these goddamn prop blades up his friggin' ass."

"Okay, Lou, I will take care of it." A flustered Batista turned and hurried away toward an office near the front of the hangar.

"So, Mister Quality Assurance," Biega said searingly, turning to Martinez, "what the hell is going on? You guys in QA are supposed to make sure this kind of shit does not happen." He paused, glaring at Martinez. "Spending too much time in Rio with the samba girls?"

"No, no," Martinez stammered, "I cannot understand it. We have detailed inspections. We perform numerous tests. Each aircraft is signed off by over a dozen inspectors before being released to Flight OPS. It is not a quality assurance problem. I can tell you that."

"Yeah, right." Biega knew human nature. He found that engineers, like most other people, had a difficult time in accepting responsibility for problems that arose on their watch. "Tell me, Martinez," Biega continued, "who was the pilot of this plane when everything went to hell?"

A still uneasy Martinez grinned to himself.

###

There are seventy-seven **more** exciting chapters and nearly five hundred **additional** pages to go before you finish *MISSED APPROACH*! I hope you've enjoyed the flight so far.

Regards,

Mack Adams