

A Story of the Budd RB-1 Conestoga

by Nancy Canavan Heslop

When visitors go to the Pima Air & Space Museum in Tucson, Ariz., they are both thrilled and comforted by seeing WWII aircraft flown by their fathers, grandfathers, and now great grandfathers. Familiar aircraft that took their loved ones on the adventure and even horror of a lifetime 70 years ago.

But there is one airplane there – with its odd shape and bulbous proboscis that makes it look like a harmless broken-winged gooney bird, causing people to stop in their tracks and ask, “What the heck is that?” This “strange” looking aircraft is the sole surviving Budd RB-1 – one of only 17 constructed and delivered to the Navy.

The story of this aircraft is inexorably linked to my father, Desmond (“Des”) E. Canavan, who had been a pre-WWII Naval and Marine Corps aviator, coming up through the Fleet Cadet program started in 1935. Eight years later he was a test pilot at Anacostia, and was transferred to the brand new facility at NAS Patuxent River, Md., when it opened in 1943. The Naval Air Station was newly constructed from estate farms and duck blinds in a conscious attempt to have at one location a superior naval flight test center. “Des” Canavan was one of the very few Marines assigned to duty at what was called “Pax River.” By January 1944, Lt. Colonel Canavan was chief project officer, Flight Test, DIF (Duty In Flight). His immediate superior officers were Director of Flight Test, Cmdr. Charles T. (“Tommy”) Booth, and Director of Tests, Cmdr. Paul H. Ramsey.

Canavan would enjoy many firsts as a Marine at Flight Test. He was the first Marine Corps pilot to fly both America’s first helicopter (Sikorsky HNS-1, BuNo 39034, March 30, 1944, and solo in BuNo 39046, November 2, 1944) and jet (Bell YP-59-A, BuNo 10002, July 18, 1944). In the year and a half he was at “Pax River,” he flew many experimental and prototype aircraft... but not altogether uneventfully. Canavan was in several crashes and from time to time, engine fires engulfed the cockpit causing indelible memories to plague the man’s later dreams. In a letter to Marion Carl, Canavan related that he was also the first Marine Corps aviator to have survived the tour at Flight Test. Both Al Bohne, 1936 Classmate at Pensacola, and Bill Saunders, who preceded him at Anacostia “bought the farm.” “For obvious reasons, it was the custom to assign bachelor Marine officers to Flight Test with additional duties as White House guides.” Canavan was not only married but he had a baby daughter, Kathleen.¹

The morning of December 7, 1941, a young 1st Lieutenant Canavan was just coming on duty as Officer of the Day at Ewa



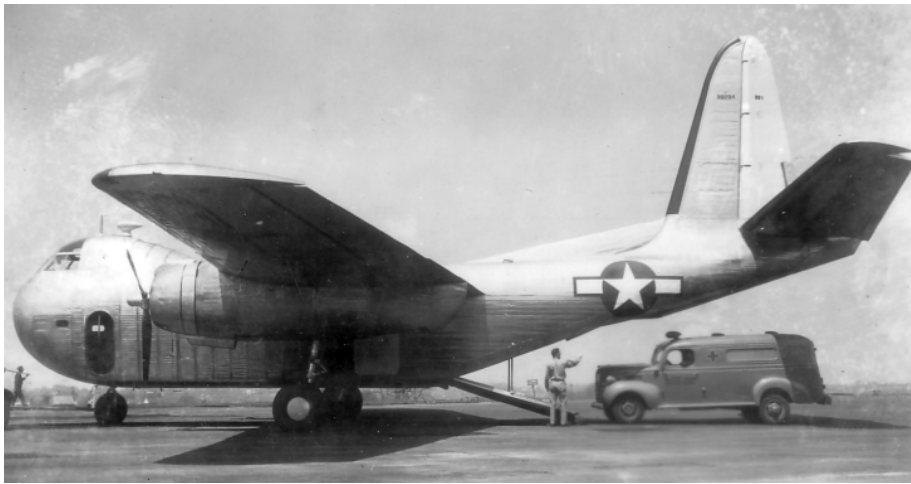
Budd RB-1 Conestoga, BuNo 39307, msn 016, NC33308, sits at the Pima Air & Space Museum awaiting restoration. (Photo by George Gewehr from the author’s collection)

Field on Oahu and watched helplessly as Marine Air Group-21’s planes were destroyed by Japanese attackers, throwing the United States into a two-front oceanic war. By 1943, everyone at Pax River had seen some sort of action: Pearl Harbor, the Battle of Coral Sea, Midway, Guadalcanal and the slog for the Solomons and even in the Mediterranean. A stretch of good “shore duty” for gifted naval aviators was a chance to fly the latest innovations in the field. The need to develop the finest aircraft money could buy and American industry could build was the number one goal at NAS Patuxent River, the nexus for all the testing that would give the U.S. Navy its superior edge.

On the afternoon of April 12, 1944, Lt. Colonel Canavan taxied to the end of Runway 24 at the then year-old Pax River facility. That April afternoon, he was preparing to test the Budd RB-1, BuNo 39293 (NX37097, msn #002). Aside from himself, the aircraft carried a copilot, Cmdr. Everett L. Phares, and six other passengers. The plane weighed in at

UNITED STATES MARINE CORPS HEADQUARTERS, MARINE AIRCRAFT GROUP TWENTY-ONE 2ND MARINE AIRCRAFT WING, FLEET MARINE FORCE EWA, OAHU, T.H.			
December 5, 1941.			
GUARD DETAIL FOR SUNDAY, DECEMBER 7, 1941			
OFFICER OF THE DAY:	1stLt	CANAVAN, D. E.	VMJ-252
OFFICER OF THE GUARD:	WtSgt	STAPH, W. L.	HQ&SS-21
SERGEANT OF THE GUARD:	TsGt	ZOLLICOFFER, G. S.	VMJ-252
CORPORALS OF THE GUARD:	StrSgt	VUILLEUMIER, V. A. R.	VMSB-232
	"	WHISENAND, J. H.	"
	"	SEDAM, W. J.	"
BUGLER OF THE GUARD:	PFC	STANNER, J. N.	HQ&SS-21
SENTRIES & SUPERNUMERARY:	"	COOK, J. L.	"
	"	McCARTHY, E. S.	"

Part of the December 7, 1941, duty rooster for MAG 21 at Ewa Field, Ohau, Hawaii, showing 1stLt. Desmond Canavan as Officer of the Day. (From the author’s collection)



Herman Leidel, Budd Aircraft test engineer, directing the loading of an Army ambulance via the tail loading ramp, unique to the RB-1 design and later incorporated into other military cargo-aircraft designs. (Budd Aircraft photo from the author's collection)

32,241 pounds. Canavan had flown this particular aircraft a total of 12 times for 13.8 flight-test hours since its arrival on March 11, 1944. Known as the Budd RB-1 Conestoga, it was the Budd Co.'s second attempt to build an airplane and its very first for the military. The Edward G. Budd Co. had produced "10,000 railroad cars using stainless steel" and would eventually boast that it was the nation's, if not the world's, largest consumer of stainless steel for over 50 years.²

The Conestoga was an innovative design as a military transport fabricated in stainless steel, marrying the "shotweld" process of railroad car manufacture to aircraft. With a tricycle landing gear, the twin-engine high-wing monoplane offered an elevated position for the two-man crew³ in the bulbous glass-topped fuselage above and separate from the cargo area. Cargo loading could be accomplished by two different openings, including a novel piano-hinged tail ramp that would be adopted by later transports, allowing a truck with a hoist easier, unobstructed access to freight. The wing structure housed the removable fuel tanks, and the retractable main landing gear, mounted in the wings' box sections, was anchored to the bottom of and retracted into the nacelle. The goal to have a large unobstructed cargo bay led to other modifications to traditional design necessitating a significant change in the construction of the spars as well as the unusual wing-fuselage design in which the wings did not carry through the body of the fuselage⁴. Pratt & Whitney engines and Hamilton Standard propellers completed the ensemble. Supposedly the original design was "to fill a curious need ... as a wartime measure by the Rubber Development Corp. to bring processed latex out of the jungles of South America, where runways are short. At some point they also excited the Navy."⁵

The reason stated for this April 12 test was that "previous flight experience of Lt. Colonel Canavan, the project pilot, had indicated that the RB-1 was extremely unsatisfactory for takeoff with full flaps because of the negligible initial rate of climb and marginal directional control. His experience had also shown that the rate of climb of the plane was increased by retracting the flaps immediately after takeoff and that when the flaps were retracted the loss of altitude was negligible. This takeoff was

made to further investigate the RB-1's full-flap takeoff performance... with a normal gross loading"⁶ including eight human beings. The Pilot's Flight Operating Instructions for the RB-1 recommended for "Takeoff, Climbs & Landings" three-quarters DOWN flaps for hard runways and full DOWN for soft runways.⁷

Only the month before, on March 11, 1944, the Navy had taken possession of the aircraft from Budd even though it had been denied "NC" certification as required by contract.⁸ It received a temporary NX license until the contractor could pass further inspections. What the Navy did not know was that the day before the delivery of this aircraft on March 11, 1944, there was a problem on the assembly line involving RB-1 [msn #010] what was to become BuNo 39301. The night of March 10,

1944, a bolt used to fasten the channel forging and nacelle to the main spar of the wings was found to be sawed four-fifths of the way through on the left wing of the airplane. An FBI sabotage investigation was immediately triggered, special agents interviewed the two shifts of workers, examined their hacksaws, and concluded a month later that the cut bolt was an inadvertent mistake on the assembly room floor.⁹

While the Budd Co. had been around for years, its modestly successful passenger railcars spilled over to railway disc brakes

al 193

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION
MAR 11 1944
TELETYPE

Mr. Tolson _____
Mr. E. A. Tamm _____
Mr. Clegg _____
Mr. Coffey _____
Mr. Glavin _____
Mr. Ladd _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Mohr _____
Mr. Carson _____
Mr. Hendon _____
Mr. Mumford _____
Mr. Quinn Tamm _____
Mr. Nease _____
Miss Gandy _____

WASHINGTON FROM PHILADELPHIA 8 11 7.55 P
DIRECTOR ROUTINE
HUT. UNSUBS. BOLT CUT IN PLANE NUMBER TEN EDW. G. BUDD MFG. CO.,
PHILA., PA. MARCH TEN NINETEEN FORTY FOUR. SABOTAGE. ON MARCH TEN
NINETEEN FORTYFOUR A BOLT-APPROXIMATELY ONE INCH IN LENGTH AND ONE
HALF INCH DIAMETER WAS FOUND CUT. FINE BOLTS ARE USED TO FASTEN
THE CHANNEL FORGING AND NACELL TO THE MAIN SPAR IN THE WINGS. BOLT
HAS BEEN SAWED ABOUT FOUR FIFTHS OF THE WAY THROUGH. ALL BOLTS ARE
PUT INTO PLACE AND NUTS ARE PUT ON WITH PRESSURE WRENCHES SET FOR SIXTY
FOOT POUNDS. AT FORTY FOOT POUNDS THE UNCUT-~~SECTION~~ PORTION BROKE.
BOLT IN QUESTION WAS TO BE USED IN FASTENING THE LEFT WING OF AIR
PLANE NUMBER TEN UNDER CONSTRUCTION BY THE EDW. G. BUDD MFG. CO.,
PHILA., PA. COMPANY ENGAGED IN MANUFACTURING CARGO PLANES FOR
US NAVY. NO DELAY CAUSED AND DAMAGE NEGLIGIBLE. INVESTIGATION
CONTINUING.

SEARS
HOLD
2 APR 13 1944

198-29469-1
27 MAR 14 1944

A copy of the initial FBI report on the investigation of the cut bolt. (From the author's collection)



One of the first two Douglas R4D-1, BuNo 3133 or 3143, at Ewa Field, Hawaii. Canvan flew BuNo 3133 on the 16.2 hour flight to Hawaii, May-29-30, 1942. (USN photo from the author's collection)

and one-piece auto bodies by 1940. With the arrival of warfare in Europe, the international steel operations of the Budd Co. caused its German-run business to be separated from the British and American corporate parent by the Nazi regime. Until the company approached the U.S. government¹⁰ about building the RB-1, Budd's contribution to the war effort was in the manufacture of bazooka rounds, shells and bombs.

According to one history, Budd's proposal was presented in August 1942, just three months after Capt. Des Canavan had flown one of the first two militarized DC-3s (R4D-1, BuNo 3133) in the Pacific theatre. Budd proposed building a stainless steel competitor to Douglas' successful aluminum R4D. The U.S. government financed the construction of a large plant on Red Lion Road that bordered the Philadelphia-Montgomery County line. It was at this plant that the 17 RB-1 Conestoga aircraft that the Navy obtained were constructed. The initial Navy order was for 200 with a possibility of an even larger Army Air Corps order to sweeten the deal. The war orders helped staunch the bleeding that the Depression had caused the company. But delays in obtaining the stainless steel and the unbridled success of the R4D/C-47 led to the cancellation of the Army Air Force order and reduced that of the Navy as well.

Canavan, then assigned to Marine Air Group 21, flew one of the two very first R4D-1s from San Diego to Oahu in a 16.2 hour overnight flight on May 29-30, 1942¹¹. The other R4D-1 was flown by Capt. Albert Munsch, also of MAG-21. Munsch then took pre-battle supplies, pilots and a small package that Canavan brought all the way from San Diego from Aide Henderson for her husband Joe, new CO of the ill-fated VMSB-241 on Midway. This was the secret baptism of the DC-3 as the "Workhorse of the Pacific."

Days later Captain Canavan and MAG-21 CO Claude Larkin flew the first R4Ds into Midway to assist the CO of MAG-22 after the battle.¹² It seems ironic that Canavan was then tasked almost two years later to flight test the aircraft meant to supplant it.

Former Classmate Al Bohne and three others were killed on takeoff, undergoing production inspection trials of the first C-46A diverted from the USAAF to the USMC as R5C-1 Curtiss Commando on March 24, 1943¹³. Major Canavan's third flight at Anacostia in May 1943 was flight-testing the R5C Curtiss Commando. It would take another 17 months, until August 1944, for the Commando to overcome its problems to become operational and be introduced to squadrons in the Pacific.

According to the Navy's "Trouble Analysis" of the April 12, 1944, for RB-1 BuNo 39293 (with underlining added for emphasis):

"Takeoff was started using full flaps and standard take-off power for the plane. The plane was airborne after a run of about 3,000 feet and the wheels were immediately retracted, but take-off power was maintained in an effort to gain altitude. As soon as the wheels had been fully raised the flaps control switch was manipulated to retract the wing-flaps in quarter travel stages as had previously been found satisfactory. The flap indicator remained in the full flap position and the trim of the plane did not change. The flap switch was then put alternately in the neutral and up position, but the flaps still did not retract. At the first indication that the flaps would not retract it became apparent to the pilot that the plane would probably not clear the trees on the rising slope ahead so he applied full throttle. The climb at full throttle was not sufficient to clear the trees and therefore a crash landing was made in the trees. Plane sheared off the tops of several trees and crashed to the ground. Distance from the point of takeoff to the scene of the crash is about 9,130 feet and the tree tops in the vicinity of the crash were 85 feet higher above sea level than the runway."

This description reads like a slow-motion nightmare: analytical, cold and certain, as life imposed a frame-by-frame image of approaching trees. Sadly we know the next frames



Budd RB-1, BuNo 39293, crashed on takeoff on April 12, 1944, during a test flight with Lt. Col. Canavan as pilot. Canavan is being evacuated on the stretcher. (USN photo from the author's collection)

passed at a torrential speed. Nearly two miles from where takeoff began eight men lay in crashed rubble, one of them dying on a tree-lined slope in Maryland.

The accident report states the injuries the men suffered though this author is uncertain as to the meaning of initials that code the personnel. Under Canavan's name, identified as "pilot," it describes "Contusions, multiple" followed by the letter "D." Cmdr. Everett L. Phares, the copilot, was uninjured, but five others suffered various and serious injuries: fractured clavicle, multiple lacerations and scalp wounds, and one man's injuries were fatal. Some records have blacked out the names, others listed the men. By contract, a civilian from the Budd Co. was required on the flight and he was listed among the wounded. Aside from my Marine Corps father, the other men were Navy.¹⁴

Dr. Michael Watter, designer of the RB-1, mistakenly stated in his speech of October 15, 1966, "The five men in the cockpit were only shaken up, despite the fact that the plane in its fall knocked down some 15 to 20 trees of 12 to 16 inch diameter, in addition to all the tops it sheared off." He failed to mention the injuries sustained by seven of the eight men aboard, including those of the required Budd civilian employee on the flight and death of a serviceman. The cockpit seated two.

The aircraft was listed as "completely demolished"—and it was. Confusion dominated the crisis. My father told me he was the pilot in this accident. Canavan's Pilot's Log lists two other accidents in the RB-1, but not this one: one on May 8, 1944, and another on June 16, 1944. But on April 12, 1944, there is a picture of him, on a stretcher being carted away to safety. At least one Seattle newspaper reported Canavan as copilot for this crash.

The official accident report made it pretty clear that Canavan was the pilot. Why wasn't it in his log? The answer was fairly straightforward. No one turned in a Yellow Sheet, the Marine Corps' equivalent of a naval aircraft flight record. It's the pilot's flight record detailing information about the aircraft and the flight, turned in at the end of each flight. The flight was then added to the pilot's log and affirmed by the flight officer or squadron CO and pilot at the end of each month.

Though the public records have the incorrect date of the crash as April 13, 1944, rather than on April 12, the photograph and accident analysis were dated April 12, 1944. Adding to the confusion the press release must have listed Canavan as the copilot as the hometown newspaper so cited on April 13. According to his medical report of April 12, Canavan's arms and hands were scraped, his ribs and shoulder were badly bruised and scraped, but he was alive.

Several sources now state that "the test pilot swore that the plane's stainless steel construction saved his life."¹⁵ Dr. Michael Watter's speech of Oct. 15, 1966, to the AAHS, may have been the source for this statement. At that time he said, "the Marine test pilot greeted me with, 'If it were not a stainless steel airplane I would not be here talking with you today.' (I wish he had put that in writing.)"¹⁶ Though we discussed this accident many times, I never heard my father say that. It's not in the accident report. But there were several more crashes yet to come. Perhaps these sources spoke with a pilot from another

crash or the uninjured Commander Phares.

Since the aircraft was well fueled, Canavan believed the slope all around them was drenched with aviation gasoline. Back in the day when everyone smoked, a helpful doctor attempted to put a cigarette in his mouth, gesturing as if reaching for a match. On his stretcher Canavan was unable to use his hands, arms, or shoulders. Instead he reared up his legs as the doctor leaned down and catapulted him away with all of his might, to save the rescuers from a possible conflagration. According to Dr. Watter, the wing fuel tanks¹⁷ did not burst upon impact.¹⁸

Canavan was examined at the infirmary and checked for his pains in the right lumbar region and his right side and shoulder. Nothing appeared broken and with only a few abrasions, he spent the night for observation and was discharged for duty the next day, April 13, 1944. But his shoulder would trouble him until the day he died.

Subsequently, Flight Test, NAS Patuxent River "issued restricting operating instructions for the RB-1 type aircraft:

1. No flap shall be used for takeoff.
2. Not more than 25° flap shall be used for landing.

*And it is recommended that the contractor be directed to limit the travel of the landing flaps and, further, to investigate the desirability of eliminating flaps from this type aircraft."*¹⁹

Though he was cleared for duty, he waited for his wounds to heal; and did not return to flying for another 11 days. Canavan resumed flight tests of the RB-1 on April 25, 1944, BuNo 39292, [msn # 001]. The theory being that you "get back up on the horse that throwed ya." He put in 4.3 hours testing the RB-1 with three local flights, calibration testing and more seriously – climbs.²⁰

Canavan took a short breather as administrative flights took him all over the Southeast for a few days before returning to Pax River. He took the RB-1, BuNo 39292, for two more flights totaling another 5.1 hours, giving the aircraft 9.4 hours of flight time at Pax River in five flights before crash landing on the field May 8, 1944²¹. This time the problem was "caused by a malfunctioning of the main landing gear motor and emergency system." Though Canavan required an x-ray of his spine, no one was badly injured, and the aircraft suffered "minor damage... including nose wheel collapse during landing run."²² But it would take three days²³ before Dr. Watter, his pilot Guy Miller, an unnamed service man and Budd flight test engineer Herman Leidel, "jumped into our Howard and were shortly over the Patuxent runway, where our bird was helplessly sprawled. The CO was fuming – unless we did something, he would shove it off the runway with bulldozers! We asked for a crane and hoisted the plane up, lowered the gear and clamped it for safety, and in little over an hour were winging our way home in it."²⁴ The CO, then Cmdr. Putt Storrs, was fuming because one of his flight test runways had been blocked for three days and there was a war on. BuNo 39292 returned to Budd Field for continued testing and photo ops, and apparently never made it back to Pax River.

Consummate professionals with no hard feelings, Canavan and Lieutenant (jg) Bernhard, who was copilot in the crash of May 8, rejoined Des as copilot on May 10 in RB-1, BuNo 39294 [msn # 003], and somehow they persuaded six others to be passengers for another local test flight. It was uneventful.

Thru mid-June 1944, Canavan had 10 flights in RB-1, BuNo 39295 [msn # 004], mostly with Bernhard as copilot, totaling 18.5 hours, the most he amassed on a single RB-1. Then on June 16, with Lt. Cmdr. John M. Miller (U.S. Navy Helicopter Pilot #2) as copilot, BuNo 39295 crashed on takeoff. This time the accident report said Canavan made an "intentional wheels up landing on field while conducting experimental flight. Aircraft rate of climb insufficient to clear obstacles 2,500 ft. from end of runway." ²⁵The aircraft suffered minor damage and there were no injuries mentioned.

A decision was made to fly down to Budd Aircraft in Philadelphia. Canavan, and Lt. Commander Wood as copilot, flew themselves and three others to a meeting on July 5, 1944, where they had yet another test flight of nearly an hour in BuNo 39292 (NX41810, msn #001), the same aircraft that had crashed on landing on May 8, returned to Budd Field on May 11, and only had to have its nose and landing gear replaced²⁶.

A search of the Navy and the National Archives have not yielded any minutes from this meeting. The Budd Co. does not appear to have any records from this period either. It is speculated that Canavan, Cmdr. Charles "Tommy" Booth, Cmdr. Paul Ramsey, and possibly someone, such as Col. Charlie Fike, from the Bureau of Aeronautics, attended the meeting. It is possible that this was the meeting when the order for the RB-1 was cancelled or at least some animated discussions took place concerning quality of the workmanship on the assembly line.

Navy records include the accident analysis for three more accidents, one on July 22, 1944, when under Lt. Commander Vantuil, BuNo 39294's [msn #003] "left landing gear failed in flight. All electrical and manual means for locking gear to full extracted position of no avail."²⁷ *The Pilot's Flight Operating Instructions* for the RB-1 stated that the emergency manual operation of the hand crank requires 133 turns.²⁸ This particular aircraft managed to survive Flight Test, only to be sold to National Skyway Freight in July 1945, but within six months met its destiny, performing a belly-landing when it crashed during a snowstorm on New Year's Eve, in Bluefield, Virginia.²⁹

On August 7, 1944, Des' friend Cmdr. George Greene was pilot for what was supposed to be a full-fledged radio test carrying 10 passengers on RB-1 BuNo 39296 [msn # 005]. After a harrowing two hours and 30 minutes:

"during a routine flight, the landing gear failed to retract fully after takeoff. Efforts were made to put the gear in the down position by normal methods, and by the emergency method, and also by diving and zooming the plane. The nose wheel was put down and locked by emergency flexible shafts. The main wheels could neither be lowered nor raised, but remained in a fixed position about half retracted. A fully-stalled belly-landing was made on the grass, the plane making contact on the tail

skid and then rocking forward on the nose wheel. After making contact with the ground the plane skided 130 yards before stopping. The nose wheel collapsed and retracted after approximately 75 yards. On raising the plane, both main wheel actuator screws and lines were found to be broken. Contact with Budd representatives indicate that the manufacturer attributes this actuator shaft failure to sudden application of the main wheel brakes while gear was in the retracting position. OTHER: Main wheels were about one quarter retracted, and collapsed upon contact with the field. Nose wheel was down and locked, but retracting mechanism gave way after rolling about 75 yards. The field was smooth and the grass was wet."

The overall conclusion was that the accident was caused by "100percent landing gear faulty design" and the recommendation to the Bureau of Aeronautics and the contractor was to affect a redesign or reinforcement to the actuator shaft and that placards be placed at the pilot and copilot stations prohibiting the use of brakes to stop spinning wheels while retracting the landing gear.³⁰ A warning was issued that passengers be careful where they take crash positions within the cargo area in relation to the forward bulkhead. If the nose wheel was down, there was a chance that the mechanism would collapse in a crash and enter the bulkhead causing serious injury.

One would think that no one would ever fly this plane again, but that would be wrong. Three weeks later, on August 30, 1944, with only 6.9 flight hours on this aircraft, Commander Greene got back up on that horse. This time he was carrying only four passengers and all confirmed the same fundamental story that during the final approach for landing, both engines failed. From all accounts

"the cause of the accident was a failure of both engines about 800 feet in altitude followed by a well-executed water landing. The descriptions of the sounds of the engines and the readings of the instruments bear strong testimony that the engines' failures were due to malfunctioning of the fuel system. However, subsequent examination of the fuel systems of both engines revealed that those systems were clear, intact and open throughout."

All aboard suffered minor injuries.

The BuNo 39296 lay at the bottom of the Chesapeake Bay. Divers brought up the suspect faulty parts only to find nothing in particular. The airplane was struck from the record³¹. The conclusion was that somehow air must have found its way into fuel supply of both engines through the selector valve system.³² It may have given pause to the whole program. Something was clearly wrong with this aircraft.

Of the 17 RB-1s delivered to the Navy, there had been six accidents in five months involving five of the Budd Conestogas. Two had already been demolished, one of them struck from the Navy's records. In fact, BuNo 39296 only shows up on the Navy list and in Herman H. Leidel's *Pilot's Log*. The Budd flight test engineer at the Budd Aircraft factory kept his log that

confirmed numerous problems³³ associated with the RB-1.³⁴ As these test pilots have flown to their great reward, their logs will speak for them even if they cannot. The work these brave men did deserves proper recognition.

David Leidel reported that his father, Herman, told of discovering that someone had wired his parachute's shroud lines together. Had there been a problem, Herman Leidel's chute would have failed. Reporting the incident, Mr. Leidel triggered another FBI sabotage investigation that yielded no results. Leidel told his son that on several occasions the FBI was called to investigate various problems.³⁵

By this time the U.S. Navy had two aircraft that could and were handling the transport needs of the service over long hauls, the Douglas R4D and the Curtiss R5C, now being delivered to squadrons out in the Pacific. The Budd RB-1 Conestoga was at best a temperamental, unpredictable, heavy gas-hog, unable to perform reliably or safely. Some sources indicate that all but one of the Budd aircraft went right from the factory assembly line to storage prior to sale as surplus. While not precisely accurate, these sources may not have had any way of knowing of the early accidents.

According to Herman Leidel's Log, the last Budd RB-1 he ferried to NAS Patuxent River was BuNo 39299 [msn # 008] on August 4, 1944. Thereafter, he logged a flurry of initial flights for BuNo 39301 [msn # 010] on August 23, 1944, BuNo 39303 [msn # 012] on September 8, 1944, BuNo 39305 [msn # 014] on September 21, 1944, and BuNo 39307 [msn # 016] on October 7, 1944. In all cases the goal was CAA certification. In order to get paid for the cancelled aircraft, Budd still had to have the aircraft meet certain specifications and obtain CAA certification.

Inquiries concerning suspicions of sabotage led to filing a request through the Freedom of Information Act to both the U.S. Navy and the FBI. Some "responsive records" have been delivered but they end just before the accident of April 12, 1944, yielding incomplete findings.

The case of the RB-1 is now 70 years old and would have come under the jurisdiction of the FBI who investigated all claims of suspected espionage and sabotage. And, while they investigated 20,000 claims during WWII, the FBI has not yet admitted that there was even a single successful effort. The files associated with the investigation were sealed and we cannot imagine what national security aspect could exist at this point in time.

[Author's Note: Perhaps this article will spark an interest and someone will decide that there is no longer a security risk to opening the inquiry. May I ask to continue the search with the hope to revisit the discussion within this AAHS Journal in the near future?]

Meanwhile, the Navy's Judge Advocate General's Office (JAG) said they have no correspondence records of the RB-1. A small reference detailing the Office of the Judge Advocate General's concerns about the very first accident and fatality, noting that no one was injured through their own misconduct and "expresses no opinion as to the liability in this matter and recommends that decisions relating thereto be deferred." Other pages noted that the aircraft had been unable to earn "NC"

certification at the factory with either Budd or CAA pilots and engineers. On March 11, 1944, RB-1, Bu. No 39293 [msn # 002], aircraft received "conditional NX" status and was delivered to NAS Patuxent River "as is," and was to be checked daily and at 25-hours.³⁶

In any event the decision was made to cancel the RB-1 and to get rid of the ones the Navy had. Testing apparently ceased after August 30, 1944, when George Greene skillfully landed RB-1 BuNo 39296 in Chesapeake Bay. There may have been some chatter in Washington, especially at the Bureau of Aeronautics to cancel the program. By the first of 1945, the War Assets Administration (WAA) was set up to sell off the war surplus that its predecessor the Office of War Mobilization and Re-conversion had amassed. The war was not over, but the Budd RB-1s were for sale. Meanwhile, Canavan and others at Pax River were sent back to the Pacific to see the war to its end.

The story took an interesting turn at this juncture, even though the war had not ended. Many members of the American Volunteer Group (AVG) who had joined with Claire Chennault before the war, had sailed to the Far East under the guise of being missionaries³⁷ and soon came to be known as the *Flying Tigers*, returned to the United States within months after war was declared. According to Daniel Ford who wrote *Flying Tigers: Claire Chennault and his American Volunteers*, 85 percent of them, including my father's college and aviation cadet friend Greg Boyington,³⁸ were re-absorbed into the services but 15 percent were not technically "veterans" though some flew transports "Over the Hump" for the military. Others took private jobs with the airlines.³⁹

By 1945, back in the States, former AVG pilot Robert "Bob" Prescott was negotiating with the WAA for three of the Budds on behalf of a new freight airline in Mexico to be called Aero-Azteca. Prescott had met earlier with Samuel B. Mosher, a Los Angeles oilman and his associates in November 1944 in Acapulco, who were also interested in having an airfreight line to run up and down the west coast of United States and Mexico. The investors from Signal Oil Co. hired Prescott in hope of his assistance.

The Navy's RB-1s were transferred to the WAA "for the legal disposal of U.S. Government surplus property previously used for military purposes."⁴⁰

When Prescott learned that the entire production run of the Budd Conestoga had been cancelled and would be sold, Prescott's brother suggested that the returned Flying Tigers buy the remaining aircraft themselves and start their own airline. Ten of the AVG pilots pooled their resources and for \$10,000 each, organized a new business called National Skyway Freight. Mosher's investors put up half of the money and Prescott's Flying Tiger friends put up their half. According to Robert "Catfish" Raine, "It was this inside knowledge ... that made the airline possible. They felt that if anyone could make the Budds into reliable airplanes, they could. If not, the Budds could be replaced when DC-3s became available."⁴¹ A prewar DC-3 could cost \$125,000; postwar veterans could lease one for \$4,000 a year or buy one for \$25,000 as war surplus.⁴²

Investor pilot Catfish Raine was under the impression that the Navy was rejecting the aircraft for "MINOR" [his caps]



Two views of RB-1, BuNo 39305, NC45356, msn 014, in its National Skyway Freight/The Flying Tiger Line markings. (Photos from the AAHS archives, L/R: AAHS-54573, AAHS-54574)

mechanical problems and technically the AVG pilots were civilian rather than military veterans, but considering their combat records the technicality was overlooked in negotiating the sale. In the most casual of business arrangements, Raine described a free ride in a RB-1, receiving civil registry on March 10, 1945, destined for Aerovias-Azteca, from D.C. back to California as they outlined their plans to start their own airline with Bob Prescott as president, Duke Hedman as vice president and Raine as chief pilot.⁴³

As an aside, there are various versions of this story that either folklore or the passage of time has altered in the telling: how many planes, who they would sell them to, would they just buy cheap and sell high, or just buy for themselves, could they make them work, and how much did they actually pay and how much were they worth? Two different colorful biographies exist; either would leave the reader concluding that accurate record keeping was not the highest priority.

Prescott wrote the Reconstruction Finance Corporation on May 31, 1945, negotiating for the “entire fleet of Budd aircraft which you have for sale. This fleet constitutes 14 airplanes, 13 of which are flyable.” Prescott reasoned that the price for the fleet was “*excessively high for the following reasons:*”

1. *Due to the critical situation in spare parts, a good part of the planes will have to be cannibalized in order to produce sufficient spare parts for the operation of the remainder of the fleet;*
2. *The airplanes are built of stainless steel, an untried material in aircraft construction, and as yet there is no proof by experience that this material will withstand vibration peculiar to aircraft over a long period of time. For example, in the short service experienced with the airplane, several unexpected vibration cracks have appeared in the skin.*

We therefore should like to make a firm offer of \$375,000 ... for the fleet of planes and existing spare parts. We will also undertake the expense of putting the planes in flyable and licensable condition. This cost we estimate at least \$2,000 for each of the planes stored at Bush Field, Georgia.”⁴⁴

Prescott delivered the promised Budds to Aero-Azteca. By deduction, BuNo 39307 (NC33308, msn # 016) and BuNo 39308 (NC33330, msn # 017).⁴⁵ They were negotiating for three, but it seems that two leased Budds were delivered and soon confiscated by the Mexican government. Aero-Azteca went out of business before it ever carried a paying cargo.⁴⁶

How is one to assess this? Looking at all sides of this strange arrangement, one might wonder if the receipt of the 12 remaining, inexpensive but faulty, aircraft was a good deal or an attempt to shoot a lot of ducks with one pull. Did the returned Flying Tigers have enough “inside information” to make right multiple booby traps? Would they have assumed everything was all right – that aircraft that were built at a cost of \$28 million would be sold for around \$400,000 including \$12 million in spare parts?⁴⁷

On June 25, 1945, National Skyway Freight was founded by Robert Prescott. The new company purchased the remaining 12 Budd Conestogas for \$28,642 each and immediately sold four of them to Asiatic Petroleum Co.⁴⁸, parent company to Shell Ecuador for a price (\$198,000) that allowed them to recover much of their purchase price paid to the War Assets Administration.⁴⁹

According to Joe Baugher, the aircraft sold to Shell Ecuador in July 1945 received their civilian registry July 5, 1945, were:

- 1) BuNo 39297 - (NC 45349, msn # 006) that crashed May 15, 1946, at Shell Mera. (Damaged beyond repair in forced landing and was turned into a local bar.)
- 2) BuNo 39299 - (NC 45350, msn # 008) WFU⁵⁰ July 23, 1946, due to wing fatigue problems.
- 3) BuNo 39300 - (NC 45351, msn # 009) WFU October 1946, due to wing fatigue problems.
- 4) BuNo 39301 - (NC 45352, msn # 010), WFU August 26, 1946, due to wing fatigue problems. (This was the aircraft with the sawed bolt.)

In July 1945, the remaining eight Budds left their warehouse in Augusta, Ga., for Long Beach, California. Only seven arrived since one (BuNo 39292, NX41810, msn # 001 – WFU in July 1945) crashed en route in Fort Worth, Tex. where it was stripped for parts and “sold on the spot for \$500” and remained

as a hamburger stand for many years.⁵¹ According to one wag, “bringing it up to the same standard as the rest of the fleet.”⁵²

Catfish related, *“We had a lot of trouble with the Budds. The worst thing was the exhaust stacks kept falling off and causing engine fires. According to George Gewehr, a retired Flying Tiger Line pilot, Tiger mechanics worked very hard to keep the Budds in the air. The exhaust stacks had to be replaced on a regular basis. At the same time, the B-29s making the long trips to bomb Japan had problems with exhaust failures and engine fires. Men were expendable; there was no time to wait on perfecting the metallurgy.”*

“The first Budd we lost bellied into a graveyard in Detroit (BuNo 39306, NC 45357, msn # 015 – Written Off on August 25, 1945). No one was hurt but the copilot picked up his suitcase and walked off into the night. He was never heard from again... Jos Rosbert’s accident happened New Year’s Eve... about one o’clock in the morning... We gave the airplane to the golf course and they made a bar out of it.”

Rosbert described the crash with panache. *“I managed to get the plane around on one engine and made a wheels-up landing. There seemed to be a murky shadow a short way ahead of the airplane, and out of the shadow came dark a figure. As he approached we could see he was wearing a tuxedo and carrying a fifth of whiskey. He handed it to me and said, ‘Here, you need this more than I do.’”*⁵³

Wikipedia also mentioned the crashes in Detroit, Mich., and a far more serious one near Albuquerque, N.M., when both the pilot and copilot were killed and only the severely injured flight mechanic survived. Photographs of some of the different crashes show a similar forlorn appearance, a low vaudevillian bow of collapsed left landing gear, the left engine separated from both the nacelle and broken wing.

By the time the war was over the company was able to purchase surplus DC-3s, a far more proven, reliable and forgiving aircraft. National Skyway Freight shed its RB-1s and its name. The company became the *Flying Tiger Line* and they moved from Long Beach to Mines Field, which was to become Los Angeles International Airport.

In the summer of 1946, Chennault did reappear and tempted a couple of the original founders of the Flying Tiger Line, including Catfish Raine and Joe Rosbert, to join with him in founding CAT (Civil Air Transport) in China. Prescott too was initially interested in combining airfreight resources and sent his accountant brother, George, to scope out the possibility in postwar China. While waiting for a connection in the Philippines at the Manila Hotel, Filipino gangsters entered the lobby and sprayed it with machine gun fire. George Prescott was killed and with him, Bob Prescott’s interest for the venture.⁵⁴

In an era of anti-communist sentiment and purpose, Chennault ran a complex network that served multiple purposes supporting allies, parachuting emergency food or assistance to sustain or topple governments. After Chennault’s death in 1958, his contract airline was re-organized as Air America operating under the aegis of the Central Intelligence Agency, carrying out covert air missions as a part of our national policy.⁵⁵

By the end of 1946, the Flying Tiger Airline bid on

and won the first transpacific military contract, flying eight transpacific flights daily. The military would provide 32 C-54s and the Flying Tigers Airline would provide the flight crews, maintenance and operations. Routes and cargo served the needs of Occupied Japan and later Korea.

The Flying Tiger Line sold RB-1 BuNo 39303, NC45354, msn # 012, to the Tucker Motor Co. to transport their car around the country to auto-shows. Ultimately, it was sold by the Trustee for the company’s bankruptcy on April 19, 1949, for \$6,000. It was then used to fly shrimp in from Mexico. It was last seen abandoned in 1980, “at an airfield in Oakland, California.”⁵⁶ Another was sold to a company in Cuba (BuNo 39304, NC45355, msn # 013) and “the last two eventually went to South America.”⁵⁷

Now, this I remember. It stuck in my mind as an odd thing to say mainly because “South America” is a rather large place. Before he died, my father told me that his concerns over this aircraft were rekindled in the mid-‘50s when he heard that the aircraft sold to “South America” had crashed, leading him to think that every single Budd Conestoga might have crashed due to sabotage by someone at the factory. But thinking it isn’t the same as knowing and only now are WWII cases of sabotage coming to light.

Concerning the South American crashes, one source suggested Columbia was the country in question, another Brazil. South American countries had unlimited, untapped resources, and promising deposits of oil: Venezuela, Mexico, and right along the chronically disputed Ecuador and Peru border. Just as WWII was beginning, Peru and Ecuador declared war upon each other yet again; the United States lost two aircraft and 14 men trying to sort out their border demarcation. As WWII wound down, oil beckoned, “come hither.” By 1954, Eisenhower was said to have sent Jimmy Doolittle, a Shell director, to Shell Mera in Ecuador to check on the CIA activities, affirming the value of the assets and covert operations.⁵⁸

I’m just a daughter, an old lady now with a little girl’s need to understand the life of my parents before I was ever born. Their world of the Depression, Pearl Harbor, Flight Test, postwar China: events and places they experienced firsthand are less foreign to me now. But the confluence of airplanes, oil, and missionaries in foreign lands makes one wonder, “Could a failed aircraft have had a pivotal role in crafting the postwar world we inherited and the brave new world we now inhabit?”

In spite of the RB-1s being a very difficult airplane to fly, the Flying Tigers Line became a most successful freight airline. As late as 1956, even Greg Boyington went back to school to get his civilian pilot’s license and flew executives and passengers in light aircraft for the Flying Tiger Line.⁵⁹ They made lemonade out of lemons. Two generations profited from the airline. In 1989 for \$880 million FedEx became the majority shareholder of the Flying Tiger Line and absorbed the entire fleet.

The first President Bush gave recognition as WWII veterans to the original Flying Tigers who were honorably discharged. The AVG was awarded a Presidential Unit Citation, each non-flying veteran was awarded a Bronze Star and each pilot the Distinguished Flying Cross.⁶⁰

As for the Budd Co., after the war Budd went public and



RB-1 BuNo 39302, msn 011, NC45353, near Alameda, New Mexico. Crashed on November 7, 1945. Pilot and copilot killed, and flight mechanic severely injured. Written Off. (Flying Tiger Line photo from the author's collection)

brought in enough capital to buy the government's factory.⁶¹ It managed to enjoy numerous avatars until all its divisions were absorbed by other companies: Thyssen AG of Germany and Bombardier, Inc. of Canada. Its patents were granted and certain inventions like the cargo ramp and adaptations like the "hatchback" latch caught on. In the 1990s, the Red Lion Road plant was torn down. The acreage was environmentally restored and sold for \$6 million to become a golf course with housing near the fairways.⁶² But this was years away.

If one would like to see an RB-1 Budd Conestoga, I only know of the one that may be viewed. It survived its Icarus moment of a wingless fall or watery end, but is a broken shell awaiting reconstruction. I'm not sure how it managed to survive its lively past. BuNo 39307 [msn # 016] was sold on the civilian market as NC33308 less than six months after construction and was flown in Mexico for years.⁶³ Supposedly it was seized by the U.S. government in the 1960s for smuggling. Said to have sat at Douglas for many years before being auctioned off, it is now at the Pima Air & Space Museum in Tucson, Ariz., awaiting restoration.

No matter if its intended cargo were latex rubber from South America, injured soldiers, sailors or marines from the Pacific, smuggled drugs from Mexico; or California orchids headed for New York City, the randomness of booby-trapping an aircraft disturbs the solemn covenant we share with flight test pilots and engineers. They risk their lives to provide the nation with innovative aircraft the industry wants to provide. The discovery of a saboteur should shut a factory down.

Whether the RB-1 was a target of sabotage or simply an imperfect aircraft, all those who successfully brought one safely to the ground whether private, Marine Corps, Navy or Flying Tiger pilots probably deserved at least a pat on the back. George Gewehr reminded me recently that both the Budd pilots and Patuxent River flight test pilots had a hard time with the aircraft. They were good pilots who were also "acceptance" pilots; the war needed transport aircraft that any 200-hour man could fly with a minimum of instruction. The RB-1 was exploring new ground for transports but was not going to be given limitless time and money, and was figuratively "shoved off the runway by a bulldozer."

Knowing the injuries and deaths that were caused to

unsuspecting pilots and crew, I have mixed emotions about the aircraft that caused my own father a life of discomfort and nightmares for dreams. I'm only a little curious to see it, especially the cockpit in relation to the open cargo area. I'm not sure about helping restore it, although I'm acquainted with someone who does that very work. I asked him about the patents and the stainless steel fabrication. He visibly winced.

I do look forward to an opening of the records and hope that history looks more closely at the checkered past of this little known machine. Wouldn't it be important to understand if it were a pawn in WWII or pivotal in shaping the postwar world in which millions of baby boomers grew up? Wouldn't it be something for a visitor at the Pima Air & Space Museum to be able to say, "Let me tell you all about this plane." Its history deserves to be known. ➔

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About the Author

After her father, Des Canavan, died and her husband became



ill, she took up the only unbidden task her father and mother left her — to write their story. She spent a year sorting all the documents, letters and photos they had saved over a lifetime. She transcribed hundreds of letters and then began the task of putting muscle to the bones, researching and writing.

She has written *Letters From Des: The Life of a Marine Corps Naval Aviator and Test Pilot* and is currently writing *Letters From Des: Korea*.

In addition to her story of the *Budd RB-1 Conestoga*, Heslop's article for the Navy Helicopter Association's journal *RotorReview* was published last year for the 100th Anniversary of Naval and Marine Corps Aviation. Entitled *Desmond Canavan: U.S. Marine Corps Helicopter Pilot No. One*, Heslop introduced her biography, leading to Canavan's tour at the newly established Flight Test Center NAS Patuxent River, Maryland.

Heslop has been published in a number of local journals as well.

Budd RB-1 Conestoga Fleet History

BuNo	MSN	N-number	Notes
39292	001	NX(C)41810	Resume Testing: April 25, 1944. May 8, 1944: Crash on landing after only five flights / 9.4 hours. No one badly injured, minor a/c damage including nose-wheel collapse. Five on board. This a/c was sold to NSF in July 1945. Crashed in Forth Worth, Tex., en route to California. Sold for \$500 as a hamburger stand.
39293	002	NX37097	March 11, 1944, received temporary NX certification at Budd factory due to inherent structural problems. Was flown to NAS Patuxent River for experimental testing by contractor pilot H.W. Holliday at 1800 on March 11. Des' first Flight Test March 15, 1944, 1.5 hrs. [FAA says it was certified February 9, 1944-why?] April 12, 1944: After 12 flights /13.8 hrs. as pilot, crash on takeoff Written Off- Total Loss: one fatality, six injured, one uninjured.
39294	003	NC45347	Des tested May 10, 1944: 1.7 hrs. eight aboard. July 22, 1944, Lt. Cdr. Vantuil suffered a left landing gear failure and crash. Minor damage to right wing tip, bottom fuselage and nose wheel fork. The a/c was sold to NSF in July 1945. Crashed in Bluefield, Va., onto a golf course 1:00 a.m. (Jan.1, 1946) New Year's Eve. Written Off.
39295	004	NC45348	Des flew 18.5 hrs. in 10 flights before June 16, 1944: Crash on take-off, no one badly injured in an intentional wheels-up landing on the field. The a/c suffered minor damage when the aircraft failed to climb sufficiently to clear obstacles (more trees). The a/c was sold to NSF in July of 1945 and resold to Cuba?
39296	005	No known	Cdr. George Greene with +10 people aboard, August 7, 1944: Landing gear failed to retract upon takeoff, spent 2½ hrs. trying to get it down before making a belly landing on wet grass. Minor injuries and a/c was repairable. August 30, 1944: Cdr George Greene and four passengers flew the repaired 39296 for a few hours when the fuel cut out suddenly from both engines at 800 ft. necessitating a skilled water landing in the Chesapeake Bay. The a/c was struck from the record. Written Off.
39297	006	NC45349	Sold to Shell Ecuador in July 1945. Crashed Shell, Mera – May 15, 1946. (Bar)
39298	007	NC41805	Not listed by Davis: Did Prescott deliver this a/c to Aerovias Azteca.1945? Did the Navy hold back one a/c?
39299	008	NC45350	Sold to Shell Ecuador in July 1945. WFU July 23, 1946 (wing fatigue)
39300	009	NC45351	Sold to Shell Ecuador in July 1945. WFU October 1946 (wing fatigue)
39301	010	NC45352	Sold to Shell Ecuador in July 1945. WFU August 26, 1946 (wing fatigue)
39302	011	NC45353	Near Alameda, New Mexico. Crashed on November 7, 1945. Pilot and copilot killed, and flight engineer severely injured. Written Off.
39303	012	NC45354	This a/c was reportedly sold by FTL to Tucker in 1947, when FTL was selling its RB-1s. The automobile company used it to take its car to various auto shows around the country. The aircraft in fact was later sold by the Trustee for the bankruptcy of Tucker Automobile on April 19, 1949, for \$6,000. It was used to fly shrimp in from Mexico. The a/c was supposedly last seen abandoned in Oakland, Calif.. in 1980 (information from The Tucker Automobile Club).
39304	013	NC45355	Received NC certification July 5, 1945. Said to have been sold by FTL to Cuba Espresso Aero of Havana, CU-C413. Joe Baugher cited Trans Air Hawaii, Ltd. As N5619V. Current status unknown.
39305	014	NC 45356	According to Davis the only aircraft with The Flying Tiger Line (FTL) in September 1947. Davis suggested that this may have been the a/c damaged on landing at LAX and was donated to the LAX Airport Fire Department.
39306	015	NC45357	Davis deduced that this was the a/c that crashed into a Detroit, Mich., graveyard on August 25, 1945. WFU. The copilot was said to have picked up his suitcase and was never seen again.
39307	016	NC33308	Received NC certification March 10, 1945. Sold to Aerovias Azteca.. According to Joe Baugher this a/c might be the one that was flown in Mexico for many years and then was seized for smuggling by the U.S. government. Sat at Douglas, Ariz., for years and then sold at auction to Pima Air & Space Museum for restoration. (Or it was abandoned on its way to Cuba.)
39308	017	NC33330	Received NC certification March 10, 1945. Sold to Aerovias Azteca.1945.

Flying Tiger History says that two FTL Budds were sold to "South America" in 1956. Did they regain the Tucker aircraft and sell it to Columbia? Was the unlisted RB-1 (BuNo 39298, NC41805) not sold to Aerovias Azteca as I proposed. Did they only sell two instead of three to Mexico as Davis believed. That would allow for the two sold to Columbia and one to Cuba.

There is some confusion about the Pima, Ariz., aircraft. Davis theorized that if this a/c BuNo 39307 was being flown, along with CU-C-495 or CU-C-496 and the other ex-Azteca BuNo 39308 were on the way from California to Cuba, but was abandoned on the Arizona/ Mexico border.

Sources: John M. Davis, from a list found among the Flying Tigers information on their website, Joe Baugher, FAA records, Benjamin H. Kristy, Aviation Curator at the USMC Museum at Quantico, Capt. H. J. Hendrix, USN, Director, Naval History & Heritage Command...

Endnotes

- 1 *Letter from Des to Marion Carl*. Dated February 26, 1988.
- 2 Harold M. Cobb. *The History of Stainless Steel*. p.166.
- 3 *Pilot's Flight Operating Instructions for Army Model C-93 Navy Model RB-1 Airplanes*. February 15, 1944. pp.8 & 36.
- 4 Note: Dr. Michael Watter, R. Montgomery, Albert Dean, and G.D. Pagon applied for numerous patents as inventors for the assignee The Edward G. Budd Co. Patent No.'s: 2425972, 2425499, 2437574, 2418060, 2390761, 2416245, 2421960, 2376745, 2407614.
- 5 Frank J. Cameron. *Hungry Tiger* © 1964. McGraw-Hill. p.39.
- 6 U.S. Navy. *Analysis of Aircraft Accident April 12, 1944, RB-1, #39293*, NAS Patuxent River, Md. Document # 44 13116. Lt. Col. D.E. Canavan, Pilot.
- 7 Budd Aircraft. *Pilot's Flight Operating Instructions for Navy Model RB-1 Airplanes*. February 15, 1944. p.23 & Appendix II (p.60).
- 8 U.S. Navy. *April 24, 1944, -Administrative Report - Crash of RB-1: 39293 (NX 37097)*.
- 9 FBI. *Reports of Cut Bolt Investigation of plane No. 10, Edward G. Budd Manufacturing Co., Philadelphia, Pa., March 10, 1944.* (3/11, 14,15, 16, 20, 21, 23, 29 & 4/ 6, 8, 10, 22 / & 5/ 8, 9, & 13/ 44).
- 10 Jack McKillop. Budd RB Conestoga. p.1.
- 11 *Des Canavan's Log*: May 29-30, 1942.
- 12 *Des Canavan's Log*: May 29-30, June 1942 and May 1943.
- 13 National Archives. *Accident Report March 24, 1943*, NAS Anacostia. R5C-1.
- 14 Dr. Michael Watter. *Speech of October 15, 1966*, to AAHS.
- 15 Jack McKillop. *Budd RB Conestoga*.
- 16 Michael Watter. *Speech of Oct. 16, 1966*, reprinted *AAHS Journal* 1967, p.60.
- 17 Note: 1943 Patent application for the structure for supporting fuel-tanks in aircraft wings was filed by co-inventors Robert Montgomery and George W. Shane assignors to the Budd Co..
- 18 Dr. Michael Watter. "The Budd RB-1" Speech of October 15, 1966, p.60 ©1967 *AAHS Journal*.
- 19 U.S. Navy. *Aircraft Trouble Analysis, April 12, 1944. RB-1 BuNo 39293*. p.2.
- 20 *Des Canavan's Log*. April 25-26, 1944.
- 21 *Des Canavan's Log*: May 8, 1944.
- 22 U.S. Navy. *Aircraft Trouble Analysis, May 8, 1944. RB-1 BuNo 39292*. Lt. Col. D. E. Canavan, Pilot.
- 23 *Flight Log of Herman Leidel*, Budd Flight Test Engineer. "May 11, 1944. NH-1: 49918. To Puctauxent (sic) 1hr.: 20 min. Ferrying/ May 11, 1944, RB-1:001 (39292) Puct [sic, Pax] to Phila. 1hr.: 30 min."
- 24 Dr. Michael Watter. "The Budd RB-1" Speech of October 15, 1966, given for AAHS, 1967, p. 59.
- 25 U.S. Navy. *Aircraft Trouble Analysis, June 16, 1944. RB-1: BuNo 39295*. Lt. Col. D.E. Canavan, Pilot.
- 26 Note: One year later it was sold to the Flying Tiger airfreight line, National Skyway Freight. On July 5, 1945, it crashed in Fort Worth, Tex., on its first flight, en-route with the newly formed cargo-fleet to California.
- 27 U.S. Navy. *Aircraft Trouble Analysis. July 22, 1944. RB-1 BuNo 39294*. Lt. Cmdr. R. N. Vantuil, Pilot.
- 28 *Pilot's Flight Operating Instructions for C-93 - RB-1 Airplanes*. Section IV. p.33.
- 29 Le Vern Moldrem. *Tiger Tales: "The First Tiger Aircraft, The Budd Conestoga."* ©1996, Flying M Press. p.12.
- 30 U.S. Navy. *Aircraft Trouble Analysis, August 7, 1944. RB-1 BuNo 39296*. Cmdr. George Greene, Pilot.
- 31 Note: The *Aircraft Trouble Analysis*, the word "Strike" is under the BuNo 39296.
- 32 U.S. Navy. *Aircraft Trouble Analysis, August 30, 1944. RB-1 BuNo 39296*. Cmdr. George Greene, Pilot.
- 33 Note: *Leidel's Log* cites as notes "exp. after major repair, forced landings, broken engine oil lines, excessive amounts of oil from front breather (7 gal.), right magnetos on both engines out 15:00hrs."
- 34 www.airfields-freeman.com *Budd Factory Airfield, Philadelphia, Pa.*, p.3.
- 35 David Leidel. August 3 & 11, 2013.Emails: FBI investigations at Budd Aircraft Co.
- 36 Department of the Navy, Judge Advocate General's Office. *Letter of May 13, 1944, to CNO, BuMed, BuAer, BuPers. Concerning the Administrative Report dated April 24, 1944, on the Crash of RB-1.*
- 37 Col. Gregory Boyington. *Baa Baa Black Sheep* © 1958, Bantam Books. p.10.
- 38 Note: Boyington had returned to the Marine Corps at the end of 1942. He formed the Black Sheep Squadron in 1943 and had been shot down over Rabaul in January 1944. Presumed dead, in fact he had been kept secretly as a "special prisoner." He and Des were reunited on Guam in September 1945.
- 39 Daniel Ford. *Flying Tigers: Claire Chennault and his American Volunteers*, 2007, p.344. Note: Ford cites Martha Byrd's *Chennault: Giving Wings to Tigers*, pp. 277-278
- 40 National Archives. *Records of the War Assets Administration, Real Property Disposal Case Files for Maryland, 1944-1949.*
- 41 Vern Moldrem. *Tiger Tales: "The First Tiger Aircraft, the Budd Conestoga" 1940s*, p.1.
- 42 Frank J. Cameron. *Hungry Tiger*, McGraw-Hill, 1964, p.49.
- 43 Moldrem. *Tiger Tales*. p.3.
- 44 Robert W. Prescott. *Letter to Reconstruction Finance Corporation, May 31, 1945.*
- 45 www.joebaugher.com: Note: For a while I thought BuNo. 39298 (NC 41805) [Budd #007] might have been the third aircraft. Joe Baugher listed these three aircraft as having gone immediately to civilian registry without being sold to National Skyway Freight.
- 46 Frank J. Cameron. *Hungry Tiger*. McGraw-Hill, 1964, p.40.
- 47 Frank J. Cameron. *Hungry Tiger*, McGraw-Hill, 1964, p.45.
- 48 Note- Asiatic Petroleum's Headquarters in Shanghai was still under the control of the Japanese in July 1945. Royal Dutch Shell would soon reenter China.
- 49 www.wikipedia.com. *Budd RB Conestoga. "Operational History"* pp.3-4.
- 50 Note: WFU is a military acronym for "withdrawn from use."
- 51 Vern Moldrem. *Tiger Tales, "The First Tiger Aircraft, the Budd Conestoga"*, p.2.
- 52 John M. Davis. "RB-1 Budd Conestoga Fleet - Flying Tiger Airlines". May 27, 2002.
- 53 Le Vern Moldrem. *Tiger Tales. "The First Tiger Aircraft, the Budd Conestoga"*. p.12.
- 54 Vern Moldrem. *Tiger Tales: The First Tiger Aircraft RB-1*, p.13.
- 55 Daniel Ford. *Flying Tigers: Claire Chennault and his American Volunteers*. p.346.
- 56 Tucker Automobile Club. RB-1 sold by FTL to Preston Tucker of Tucker Automobile Company.
- 57 Vern Moldrem. *Tiger Tales: "The DC-3 Era,"* p.1.
- 58 www.wikipedia.com. *Ecuadorian-Peruvian War Rio Protocol, Asiatic Petroleum Co., Shell Mera*. p.15.
- 59 Bruce D. Gamble. *Black Sheep One*. Presidio Press, 2000. p.410.
- 60 Daniel Ford. *Flying Tigers*. p.349.
- 61 Hagley Museum and Library. *The Budd Company Historical File*, Accession 2411. pp.1-4.
- 62 Ibid. p.4.
- 63 Joe Baugher. *U.S. Navy and U.S. Marine Corps BuNos: 30147-39998. Budd RB-1 Conestoga BuNos: 39292 / 39308.*