"The Failed Mission of the First Aero Squadron in Mexico"

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In partial fulfillment of course requirements for History 1103

Webster, M.L. “Curtiss Flying Jennies Pursue Pancho Villa Across Northern Mexico,” (ref. 1)

In his January 2013 message to “Airmen and Airpower Advocates,” General Mark Welsh III wrote of how the United States Air Force provides “Global Vigilance, Global Reach, and Global Power” (ref. 2). But that has not always been the case. In the years before World War One, a time in aviation history that has long interested me, the initial deployment of U.S. military aviation revealed deficiencies that far outweighed capabilities. Though it was barely eight years after the Wright brothers made their first public flight, not only was it the airplanes of the First Aero Squadron that were put to the test but also the pilots, mechanics, and all the logistics needed to successfully augment Army operations outside the United States.

The squadron’s primary mission was “… to provide aerial reconnaissance for the six assigned cavalry regiments” (p. xi, ref. 3) of General Pershing’s Punitive Expedition. On March 9, 1916, Pancho Villa had attacked the town of Columbus, New Mexico, killing 19, and President Woodrow Wilson gave orders to capture him dead or alive.

Three days later, the First Aero Squadron, led by Captain Benjamin D. Foulois (Fuh-LOY), was on its way. Unfortunately, less than five weeks after entering Mexico, the First Aero Squadron limped back to the U.S. Of the eight planes that departed, only two returned and, after landing, Captain Foulois burned both to ashes. To explore why the mission ended this way I will look at seven factors: (1) Army and Congressional support, (2) the mission the squadron was called on to perform, (3) the officers and men of the squadron, (4) the aircraft of the squadron, (5) their operating environment, (6) the maintenance and logistical difficulties, and (7) the challenges of flying in Mexico.

Captain Benjamin D. Foulois (ref. 4)
Each aspect will contribute to explaining why the 1st Aero Squadron failed to provide the ordered reconnaissance support.

Support by the Army and Congress

What was the state of Army aviation in 1916 and how did it get that way? Todd Phinney, in “Airpower and Terrorism,” wrote,

“... in 1913, just three years prior to the Mexico campaign, when “[compared] to what other governments invested in their military air effort . . . the United States came in thirteenth in the world rankings.” (ref.5, p. 6)

Such a poor showing was due to a lack of support within the War Department (now the Department of Defense) and Congress. In his memoir, Foulois recalled,

“The War Department was in the process of estimating the budget for fiscal year 1916 when war broke out in Europe. An Army request for a little more than $1 million for the Aviation section of the Signal Corps was submitted to Secretary of War Lindley M. Garrison, who promptly reduced the estimate by $600,000 and sent an estimate for $400,000 to the Congress. This was done at the same time that Germany appropriated $45 million; Russia, $22.5 million; France, $12.8 million; Austria, $3 million; and Great Britain $1.08 million. Even Italy had appropriated $800,000 for military aviation in its prewar budget. ... The Congress ... on March 4, 1915, only $300,000 was slated for military aeronautics.” (ref. 6, p. 118)

Further clipping the wings of the Aviation section were the staffing constraints put in place by Congress two years before Villa’s raid:

“One of the most troublesome provisions of the Act of July 18, 1914, was that specifying that only unmarried lieutenants of the line under thirty years of age could serve in the aviation section. The result was that the section was being filled with young, inexperienced second lieutenants, leaving no one with age and experience to command an aviation organization. Still another irrational proviso was one that required an officer on aviation duty to return to troop duty as soon as he was promoted to the grade of captain ...” (ref. 6, pp. 118-9)

Supporters of Army aviation clearly understood the situation. This editorial cartoon was published in Aerial Age Weekly on the same day First Aero Squadron aircraft began to arrive in Mexico (ref. 7, page 25).

General Funston, who commanded General Pershing to take the First Aero Squadron into Mexico, is considering the U.S. Aviation Corps. From its neck hangs the sign, “Wings Clipped in Congress” and on its left leg is a ball.
Mexico’s volatility is represented by a simmering volcano and armed Mexicans can be seen along the ridge line between the Rio Grande River and the volcano.

With support like this, the squadron faced an uphill struggle to succeed even before they arrived at Camp Furlong in Columbus, New Mexico.

The Mission

“On 12 March, the Army ordered Foulois and the 1st Aero Squadron to deploy to Columbus in support of Pershing’s expedition” (ref. 8, p. 28). Seven days after Villa’s raid, Foulois and his deputy, Captain Townsend Dodd, made the first aerial reconnaissance by United States military aircraft ever made over foreign territory, the first of few successful missions. Orders came soon after that flight to deploy to Casas Grandes, about 125 miles south of the border.

This was the first of several deployments that would split up elements of the squadron, as shown in the map (ref. 3, p. xii). Each deployment required packing equipment and personal gear, driving on roads many today would consider rough even for off-road vehicles, setting up the squadron and re-establishing operations. These moves, mandated to support the mission, kept any sort of consistent operational tempo from developing. The result was that efficient practices and procedures never had the chance to be established or mature.

This constant commotion is an important factor in understanding why the squadron failed in its mission.

The Officers and Men of the Squadron

To get reconnaissance information to General Pershing, Captain Foulois relied on 11 officers, 82 enlisted men, one civilian mechanic and a medical officer with three hospital corpsmen. (ref. 6, p. 126). Not enough can be said in praise of the non-flying members of the squadron and their efforts to keep the airplanes in the sky. His officers, all pilots, were similarly dedicated. However, that could not overcome
their aviation inexperience. If we were to judge Pershing and his pilots by today’s standards, at the time they left for Mexico, none would have passed a modern private pilot exam.

Their commander, Foulois, learned to fly using “… mailed instructions from the Wright Brothers in a Wright Model A (Signal Corps No. 1) biplane …” (ref. 3, p. 9).

Of the other eleven pilots, only one had night flying experience, a shortcoming that made itself known on the squadron’s first flight into Mexico.

Captain Foulois recalls:

“On the morning of March 19 I received telegraphic orders to move the squadron to Casas Grandes, a small town about 125 miles south of the border, for immediate service. By five thirty that afternoon all eight planes were in the air headed for Ascension, about 60 miles to the south, where we planned to stay overnight. ... By the time we reached Ascension, the sun had gone down and I could see only four planes in my formation. ... By the time the fourth plane landed, it was dark.” (ref. 6, pp. 126-7)

That no other planes arrived at Ascension also speaks to their limited formation flying skills as several planes got separated from the rest. Planning and executing a cross country flight was another hard lesson not entirely learned by recent experience when, in the weeks before the Expedition, the squadron flew from Oklahoma to Texas. They got lost on the way.

Experience is the best teacher, but its lessons are often expensive and harsh. Fortunately, none of the aviators were seriously injured while deployed but the First Aero Squadron eventually lost all its planes.

The Aircraft of the First Aero Squadron

To give some perspective on the maturity of aviation, when the squadron deployed, not even eight years had passed since the Wrights made their first public flight in 1908. The industry in the United States hadn’t grown much since then for reasons outside the scope of this paper. That lack of maturity revealed itself in the planes they flew, Curtiss JN-3’s. One is on display at the Pancho Villa State Park in Columbus, New Mexico (ref. 9).

The JN-3 on display at the Pancho Villa State Park, Columbus, NM (ref. 9)
Numerous problems with the aircraft became obvious very quickly:

- “Each plane carried a different type of compass ...” (ref. 10)
- They “… could not fly over the 12,000-foot-high mountains, nor could they withstand the gusty winds, rain, hail and snow that were prevalent in the area.” (ref. 10)
- “Their wheels bogged down in the deep sand, and the hot, dry air quickly dried out the wooden planes. Especially troublesome were the propellers, which delaminated in the dry heat ... and only a propeller laboriously carved from dried native wood proved successful. The pilots soon learned to carry a spare propeller, stored in a humidity-controlled box strapped to the side of the fuselage, on every mission.” (ref. 10)
- On one flight from the city of Chihuahua, when “Lt Dargue attempted to (take off), the top of the fuselage came off and he was forced to land.” (ref. 11, p. 195) “On another flight, as “… they attempted to take off, the top of the fuselage blew off, damaging the rudder.” (ibid., p. 196)”
- The engines were unreliable. It was not uncommon that they failed in flight and over ground that often resulted in landings better called controlled crashes.
- The propellers, so essential to flight, soon became a flight risk. The hot, dry air dried out the glue holding the laminated wooden blades together, making them useless for flight. Another kind of failure occurred twice, the first “… almost resulted in tragedy when one blade of his plane's propeller flew off, immediately throwing his machine out of balance. The excess torque nearly ripped the engine from its mounting with only a few wires below the machine holding it in place.” (ibid., p. 196).

![What a First Aero Squadron propeller looks like after failing in flight (ref. 12, p. 781)](image_url)

It should come as no surprise that, of the eight JN-3’s deployed from Camp Furlong, only two returned about 30 days later. On their return, Captain Foulois stripped them of all useful parts and then burned them to ensure no one would be able to fly them ever again. It’s no wonder he recalls in his memoir, “Pershing ... said that he would have no quarrel even if my officers had expressed public disapproval of the old wrecks we had to fly. “They have already too often risked their lives in old and often useless machines which they have patched up and worked over in an effort to do their share of the duty this expedition has been called on to perform,” he wrote.” (ref. 6, p. 134)”

Without airplanes, the First Aero Squadron could not have existed. But with the planes they had, even the few successes they experienced were not enough to call their mission accomplished.
The Weather

To say the environment in which they flew was brutal is an understatement. The planes, “...on account of their low power, could not climb fast enough in case of emergency, the Mexican atmosphere being so rare ...” (ref. 7, p. 24f). Why was this? The density of the air at the altitudes they had to fly robbed the aviators twice. First, the propellers could not grab as much air as at the lower altitudes common in the U.S. This reduced the ability of propellers to create thrust. Then, the engines lost power as the reduced oxygen in that thin air meant less fuel could be burned. Hence, the engines could not make their rated horsepower.

Winds were another factor. They proved to be a threat to flight safety:

“... one of the airplanes crashed on landing because of high winds, injuring its pilot and damaging the airplane beyond repair.” (ref. 8, p. 29f)

More than thin air and high winds worked against the JN-3’s. Foulois recalled these circumstances:

“I looked up just in time to see Lieut. Tom Bowen get caught in a vicious whirlwind just as he touched down, and end up in a pile of splinters and cloth. He suffered a broken nose, cuts, and bruises; the plane was a total wreck.” (ref. 6, p. 128)

“The dust in the air was so thick that the snow was actually brown by the time it hit the ground. ... Between March 27 and 31 ... we all encountered severe rain, hail, and snowstorms. By the end of our first ten days of operations it was obvious that our six planes were incapable of fully performing the task assigned. Their low-powered engines and limited climbing ability with the necessary military load made it impossible to operate them safely in the vicinity of the mountains.” (ref. 6, p. 129)

The struggle of planes of the First Aero Squadron to fly in the high Mexican air made mission success just as much a struggle.

The Maintenance and Logistical Challenges

The dedication and ingenuity of the seven men needed to keep each plane flying cannot be praised enough. To protect against damage from the sun, “wetted canvas tarp[s] (were) draped over the engine and its propeller for protection from the sun.” (ref. 3, p. 47). Invention overcame
necessity as “… Curtiss did not design the propellers for a hot, dry climate … the squadron developed a method for manufacturing its own propellers on site. American aircraft companies later used those techniques for all future wood propellers.” (ref. 8, p. 31). One of the tricks they used was to develop, in the field, an Airplane Propeller Storage “Humidor” (ref. 3, p. x). Just as the humidors used by the Albuquerque Isotopes keep the baseballs from drying out, the squadron’s humidor preserved the propellers, at least for a little while.

To keep them flying, however, the mechanics needed spare parts but the supply line for those parts proved to be shaky. For one thing,

“As the Squadron planned to maintain its own supply lines during the operation, it was assigned 12 trucks and one automobile for transportation purposes. However, all of these vehicles soon fell prey to either the demands of the Quartermaster Corps or the guns of Mexican bandits.” (ref. 13, p. 190).

The aviators were able to work around this liability, ferrying supplies in the empty observer’s seat. Those supplies that didn’t fit in the forward cockpit were, as shown, tied to the outside of the planes! (ref. 14, p. 52)

Foulois described another of the difficulties:

“During the entire Mexican campaign one of the most frustrating conditions under which we operated was the refusal of the Carranza government to let us use the railroads for transportation or visit the villages for supplies. The available motor-truck and pack-train supply was far from adequate, to put it mildly.” (ref. 6, p. 129)

Ingenuity and creative techniques are key to success but doing more and more with less and less does not result in being able to do anything with nothing. If an army marches on its stomach, airplanes fly with their parts. An unpredictable supply line compounded the squadron’s lack of success.

The Challenges of Flying in Mexico

Before any flight can occur, a pilot needs to know two things: where they are and where they are going. Again, Foulois wrote,

“We went down there to perform a service we knew nothing about, with no maps and with no knowledge of the situation whatsoever.”
The one map that there was of the area was next to useless. It was made by the Mexican Central Railroad in the late 1880's (ref. 8, p. 29). The First Aero Squadron adapted and overcame by putting the camera intended for reconnaissance to another use:

“Owing to the lack of topographical maps for Chihuahua, Mexico, the squadron's aircraft photographed the terrain with aircraft mounted Brock Automatic Aerial Cameras. These sequential, glass-plate negatives were enlarged and printed on paper; and then they were pieced tougher to form a mosaic map.” (ref. 3, p. 49)

Planning a Reconnaissance Mission, San Geronimo, Chihuahua, Mexico, April 1916 National Archives

Working in barely primitive conditions, they developed the negatives and printed maps in the field.

The Mexicans themselves presented another challenge. There were three groups, those fighting for Villa, those fighting for Carranza (who had asked President Wilson for help in capturing Villa), and the non-combatants. All of them opposed the American presence in Mexico. On a diplomatic flight to Chihuahua City, Foulois was captured and taken to jail by a mob who wanted to kill him. I leave it to the reader to learn of his adventure from his memoir (ref. 6). More than once mobs threatened to destroy aircraft that had landed away from their bases and on at least four occasions the 'non-combatants' used First Aero Squadron vehicles and their operators for target practice. Not only that, the forces supporting Carranza were also seen as threats. One of the successful reconnaissance flights showed that rumors of his forces moving to attack a smaller US Army column were just that, rumors.

Hostility from those the US was trying to help has its modern parallel. Both then and now, it made success hard to achieve.

Conclusion

Todd Phinney, in his thesis, nicely summed up the situation of the First Aero Squadron:

“Untested aviation procedures, maintenance problems, crashes, a hostile climate, and an indigenous population proved formidable obstacles.” (ref. 5, p. 6).

These obstacles were so significant that on April 20th, Foulois and the squadron were ordered back to Columbus. After barely a month of operations, their mission was ended.

Though the First Aero Squadron did fail to consistently provide reconnaissance information to the Punitive Expedition, their failure led to significant positive outcomes:
“... the War Department and Congress increased the FY 1917 aviation budget from the initial April 1916 request of $1.2 million to $13.9 million, which the president signed into law on 29 August 1916.” (ref. 8, p. 32)

- The technological shortfalls revealed in Mexico were documented and presented to aeronautical engineers and scientists at a meeting of the Society of Automotive Engineers in 1917 (ref. 15). Those lessons learned were taken back to the airplane designers and manufacturers to improve the safety and performance of the next generation of aircraft.
- The experience gained by the aviators and maintainers of the First Aero Squadron was applied less than a year later in France as part of the American Expeditionary Force.

There is no shame in failure but there is shame in failing to learn from it. The disappointments experienced by the First Aero Squadron were learned both by the Army and Congress. As a result, the banner of the First Aero Squadron can proudly be included as a part of an Air Force that today provides “Global Vigilance, Global Reach, and Global Power.”

What is believed to be the original Standard for the First Aero Squadron (ref. 16)

Bibliography


