AVIATING with EVANS

"Pacer" flight with a Douglas DC-8 breaking the sound barrier

Those of you who have read the August 2011 "Air & Space Smithsonian" magazine probably saw the article about the Douglas DC-8 breaking the sound barrier. Above is the picture of the DC-8 with an F-104 flying on its wing. I will relate the rest of the story which was not included in the Air & Space article.

I have written in previous "Aviating with Evans" articles describing one of the very important jobs of the Fighter Test Operations Pilots at Edwards Air Force Base which was that of flying safety chase flights on military and civilian aircraft undergoing high risk experimental testing. Another requirement for the USAF Test Pilots was flying "Pacer" flights. These were flown in specially equipped aircraft that were used to calibrate other planes airspeed and altimeter systems. The "Pacer" aircraft were equipped with specially calibrated instruments that provided true indications of those parameters. The "Pacer" aircraft was flown in exact formation with the test aircraft and the correct airspeed and altitude reading given to the test aircraft so the readings reported in the test report could be correct to the accurate reading as provided by the "Pacer" pilot. There generally were no special pilots assigned to perform the chase missions and most of the Fighter Test Pilots were authorized to fly the "Pacer" missions. It just happened to be my name on the schedule when Bill Magruder called to brief on his scheduled record making flight.

We arranged a rendezvous point and he told me he would be very short of fuel so as to allow him to climb as high as possible to make reaching Mach-1 easier. For those who aren't aware, the higher your altitude the lower the indicated airspeed required to reach the higher Mach numbers. I wondered why in the world anyone would want to take a conventionally designed jet transport aircraft to exceed Mach "1". (The speed of sound). It wasn't for me to question the reason but I had concerns that the aircraft was not designed for super-sonic speeds. After all, I was going to have to be sitting just off his wingtip and anything that to the big aluminum overcast while going to a place it was not designed to go could result in a very uncomfortable spot for me to be in.

As this was to be a record setting flight I had to record it with our instrumentation package which was part of the "Pacer" aircraft's package. Flying the wing position on another aircraft which you are recording accurate airspeed and altitude information requires the pilot to be able to fly perfect formation maintaining exactly the same spot relative to the aircraft on which he is providing accurate data. With a large aircraft such as the DC-8 there is a fairly large vortex area off of the wing tips and the formation position by the "Pacer" must maintain a position just outside that area so as to provide accurate readings.

The mission also required a second USAF chase aircraft with a photographer to take pictures of the record making flight. Another of our active Valiant Air Command members, Al Crews was flying the F-100F that carried the photographer in the rear cockpit. Al's aircraft was flying off to my right when his photographer took the picture of my F-104 on Magruder's right wing while we were climbing to altitude prior to beginning the record making dive which appeared in the article.

Al and I joined up in the air over the southwest edge of the Edwards Restricted Test Area and positioned our aircraft for the dive through the "Speed of Sound". I moved to Bill's left wing while Al positioned his F-100F off to the right so the photographer could get good pictures of the gaggle. As I recall it didn't take very long once we reached the maximum altitude the DC-8 could reach before Bill called informing us that he was starting his dive. I was in position with my F-104 just off his left wingtip while Al flew off to the right and as we pushed over into the dive I remember some of the concerns that were running through my mind. I was holding my position as though my aircraft was welded to the large transport aircraft. The first few thousand feet in the dive was as expected but as the DC-8 steepened his dive the flexing of the large airframe and engine nacelles began to become apparent. Being as close as I was renewed

my prior concerns as to what effects of the shockwaves forming in front of all the DC-8's airframe extrusions were going to have on the control and structural integrity of the aircraft.

The good thing about gathering and recording required data in a flight test, whether in the test aircraft or flying close proximity to it, was the concentration required to get the required data also required ignoring what could go wrong and to concentrate on just getting the data. In my case it was to monitor the airspeed and make certain that I was at the exact same speed as the DC-8. Magruder continued to push the nose of the big transport steeper and it didn't seem to take long before I was seeing wisps of condensation forming on the air around the nose of the engine nacelles and wing tips. This was a clue for me to rapidly rotate my eyes from the transport aircraft to my mach meter in my cockpit. Suddenly I observed my mach meter jump to 1.02 Mach which was a positive indication that the three aircraft had all exceeded "Mach 1".

As I recall Bill called and asked if my instruments had confirmed he was supersonic and I "Confirmed" that he was. I don't remember how long we stayed at super-sonic speed but I know it wasn't very long but there was no question that all three aircraft had exceeded Mach "1" and the DC-8 was still in one piece and was under control. The flight was fairly short and the DC-8 made a gradual pull out of the dive and headed for the factory back at Long Beach Airport.

I think Al flew along with the DC-8 until if safely landed at Long Beach and I returned directly back to Edwards and accomplished whatever was required for me to confirm that the world's first Super-sonic flight by a jet transport aircraft had been safely accomplished.

It was surprising that Douglas Aircraft Company didn't make a big announcement about the record making flight as the competition for jet transports between the Boeings 707 and Convair 880 was intense at the time. My guess was that the marketing folks at Douglas decided it was not something that would help sell the aircraft to the public.

Bill and I remained friends for many years and when he was Vice-President of Operations for Piedmont Airlines in Winston- Salem, North Carolina and I had my Flying Service in Roanoke, Virginia, we often saw each other. Piedmont had airline service into Roanoke and the airport fixed base services were provided by Piedmont Air Services. Bill visited Roanoke several times and I visited him in Winston-Salem a few times. We managed to play a few rounds of golf together. He died much too young and tragically of a heart attack while playing golf which was one of the things he really enjoyed next to flying.

*Post Script: The article writer stated that Chuck Yeager was flying the F-104 but the September copy of the magazine corrected the error and states Bud Evans was the pilot.

note: The "Pacer" F-104 was a standard flight test configured aircraft with the weapons system replaced by a calibrated instrument photo-panel. It incorporated a YAPS HEAD airspeed boom attached to the nose of the aircraft and calibrated airspeed pick-ups on the wing tips. The Pacer is flown in exact formation with the test aircraft on which it is calibrating the instruments. The pilot in the pane being calibrated stabilizes his aircraft on an airspeed and altitude. The Pacer pilot reads off his readings and punches a button that records a blip on the photo panel Both the pilots readings and the test instrumentation readings are checked after landing and the test engineers to extrapolate all the test aircraft's readings to the true readings acquired from the Pacer aircraft's correct readings.