

**Piute Mountains
Republic F-105D
#61-0059**



On 12/7/67 this Republic F-105D #61-0059 USAF crashed in the mountains south of Lake Isabella in Sequoia Nat'l Forest following a malfunction. The pilot was able to eject safely landing in French Meadow 1.2 miles from the crash site.

From the crash report: The flight, consisting of two F-105 aircraft, call signs Slasher One, piloted by Major William S. Koenitzer, FV3035160, flight leader/instructor pilot, 560th Tactical Fighter Squadron; and Slasher Two, flown by Major Robert F. Delaney, FV3039947, pilot trainee, 560th Tactical Fighter Squadron, was cleared on a VFR flight plan from George AFB to Special Operating Area Number One (SOA-1). Takeoff from George was accomplished at 1155 hours on 7 Dec 67. The flight proceeded uneventfully to SOA-1, the training area to be used for the mission. Upon arrival in the area at 28,000 feet MSL, Major Koenitzer directed Major Delaney to an in-trail formation and proceeded to demonstrate a diving spiral followed by a high "G" barrel roll underneath. The flight then climbed back up to 25,000 feet at which time Major Delaney was placed in the lead position and instructed to execute a diving spiral followed by a high "G" roll underneath. This maneuver was accomplished to the left. Upon completion, Major Koenitzer directed Major Delaney to repeat the maneuvers. The flight still lead by Major Delaney, executed a low "G" climbing 360-degree turn to the right to reposition in the training area. At approximately 22,000 feet MSL, Major Delaney initiated the maneuvers again, this time to the right. The attempted high "G" barrel roll underneath culminated in a nose high flat spin, or spiral, from which recovery was not effected. Major Delaney ejected from the aircraft at an estimated altitude between 11,000 and 14,000 feet MSL. Egress systems and equipment functioned normally. The aircraft has not been located as of this writing due to the rough terrain and snow cover; however, the impact area is expected to be within a ten-nautical-mile radius of coordinates 35o26'N/118o21'W, a mountainous area approximately 35 miles west, southwest from China Lake Naval Air Station, California.



Photo of #61-0059 taken at McConnell AFB in November 1967, one month before it crashed.

Descending Spiral Overview:

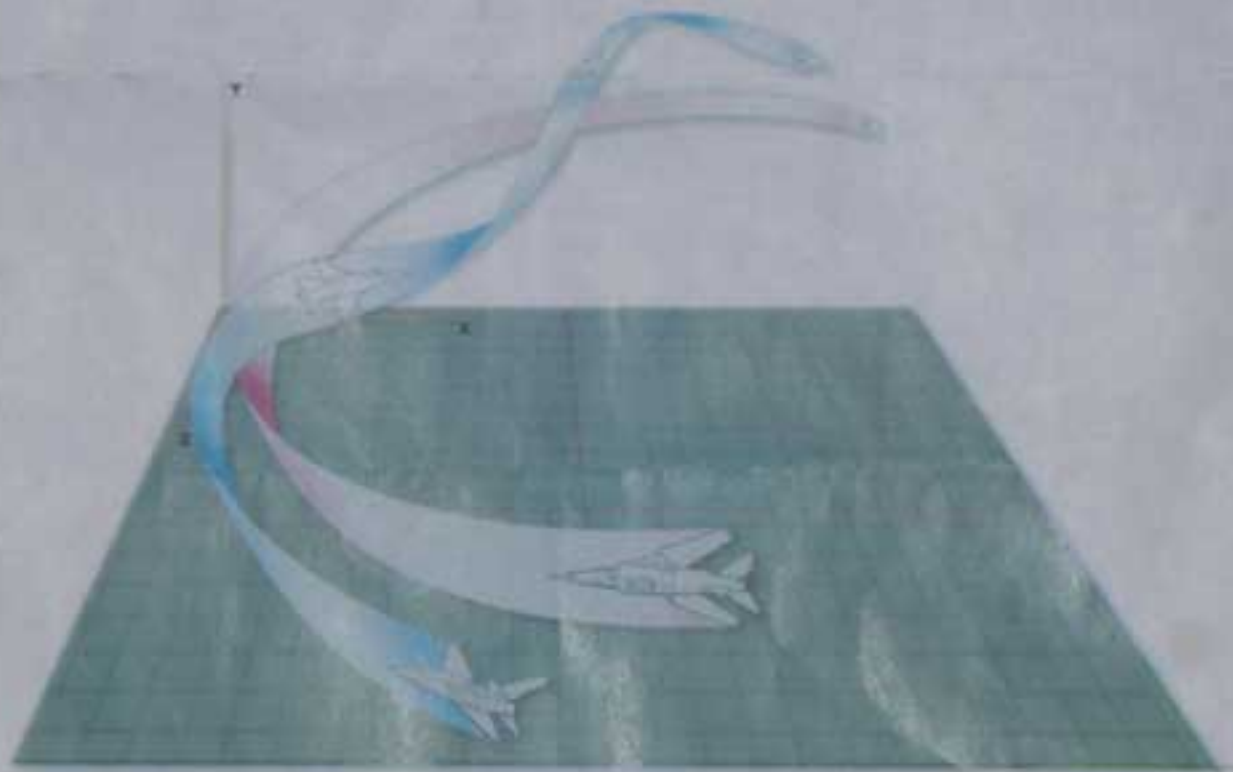
While descending turns are commonly performed by pilots as a standard flight maneuver, the spiral dive is differentiated from a descending turn owing to its feature of accelerating speed. It is therefore an unstable flight condition and pilots are trained to recognize its onset, and to implement recovery procedures safely and immediately. Without intervention by the pilot, acceleration of the aircraft will lead to structural failure of the airframe, either as a result of excess aerodynamic loading or flight into terrain. Spiral dive training therefore revolves around pilot recognition and recovery.

Spiral dive accidents are typically associated with visual flight (non-instrument flight) in conditions of poor visibility, where the pilot's reference to the visual natural horizon is effectively reduced or prevented entirely, by such factors as cloud or darkness. The inherent danger of the spiral dive is that the condition, especially at onset, cannot be easily detected by the sensory mechanisms of the human body. The physical forces exerted on an airplane during a spiral are effectively balanced and the pilot cannot detect the banked attitude of the spiral descent. If the pilot detects acceleration, but fails to detect the banked attitude associated with the spiral descent, a mistaken attempt may be to recovery with mere backpressure (pitch-up inputs) on the control wheel. However, with the lift vector of the aircraft now directed to the centre of the spiral turn, this erred nose-up input simply tightens the spiral condition and increases the rate of acceleration and increases dangerous airframe loading. To successfully recover from a spiral dive, the lift vector must first be redirected upward (relative to the natural horizon) before backpressure is applied to the control column. Since the acceleration can be very rapid, recovery is dependent on the pilot's ability to quickly close the throttle (which is contributing to the acceleration), position the lift vector upward, relative to the earth's surface before the dive recovery is implemented; any factor that would impede the pilot's external reference to the earth's surface could delay or prevent recovery. The quick and efficient completion of these tasks is crucial as the aircraft can accelerate through maximum speed limits within only a few seconds, where the structural integrity of the airframe will be compromised.

For the purpose of flight training, instructors typically establish the aircraft in a descending turn with initially slow but steadily accelerating airspeed—the initial slow speed facilitates the potentially slow and sometimes erred response of student pilots. The cockpit controls are released by the instructor and the student is instructed to recovery. It is not uncommon for a spiral dive to result from an unsuccessful attempt to enter a spin, but the extreme nose-down attitude of the aircraft during the spin-spiral transition makes this method of entry ineffective for training purposes as there is little room to permit student error or delay.

All spiral dive recoveries entail the same recovery sequence: first, the throttle must immediately closed, second, the aircraft is rolled level with coordinated use of ailerons and rudder, and third, backpressure is exerted smoothly on the control wheel to recover from the dive.

High g Barrel Roll



This maneuver is used against an attacker closing fast from astern. It starts with a break, then a roll in the opposite direction to the break. The fact that it is a high g maneuver means that quite a lot of speed is lost, up to 100 knots in some cases, particularly if performed "over the top".

If the attacker is closing fast and is caught by surprise he may easily fly through and end up in front, the positions reversed. If he attempts to follow the barrel roll, he will probably end up high and wide of the defender who can then turn in towards him, forcing him down and in front. But woe be the defender who attempts a barrel roll in front of a slowly closing attacker who will follow him through the maneuver, ending on his tail in easy gun range. His only recourse in this event is to jink.

The High G Barrel Roll is a difficult maneuver to execute successfully, and is in fact easy for the attacker to counter. It will only work if the attacker has been led into, or is in, a high angle-off, high overtake situation.

The High G Barrel Roll can be very effective against an attacker closing fast from astern. Commencing with a break turn to put the attacker in a high angle-off position, the roll is then carried out in the opposite direction to the turn.

