

National Transportation Safety Board

Office of Aviation Safety
Central Region



CEN22FA405

ACCIDENT FLIGHT DATA SUMMARY

ACCIDENT

Location: Tomball, Texas
Date: September 1, 2022
Time: 1707 central daylight time
Airplane: Cirrus Aircraft SR22, s/n 8750, registration No. N420SS

ACCIDENT SYNOPSIS

On September 1, 2022, about 1707 central daylight time, a Cirrus SR22 airplane, N420SS, was substantially damaged when it was involved in an accident near Tomball, Texas. The flight instructor was fatally injured; the pilot and passenger sustained serious injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

FLIGHT SUMMARY

A review of recorded data downloaded from both the airplane's Cirrus Perspective+ system and Recoverable Data Module, along with recorded ATC communications, revealed that the flight received radar vectors to join the visual approach to runway 17R at DWH, as shown in Figure 1. At 1701:36, the flight was cleared for the visual approach and told to contact the DWH tower controller. At 1703:51, the tower controller cleared the flight to land on runway 17R. The airplane's automatic flight control system (AFCS) was engaged during the earlier portions of the approach, and the flight crew used vertical speed mode to descend to and level off at specified intermediate altitudes based on a lateral navigation only (LNAV) instrument procedure, as shown in Figure 2 and Figure 3. Additionally, according to the recorded data, there were several engine power changes (increases/decreases) made during the approach. The recorded data concluded at 1707:00, when the airplane was about 200 ft north of the accident site and about 76 ft above ground level (agl).

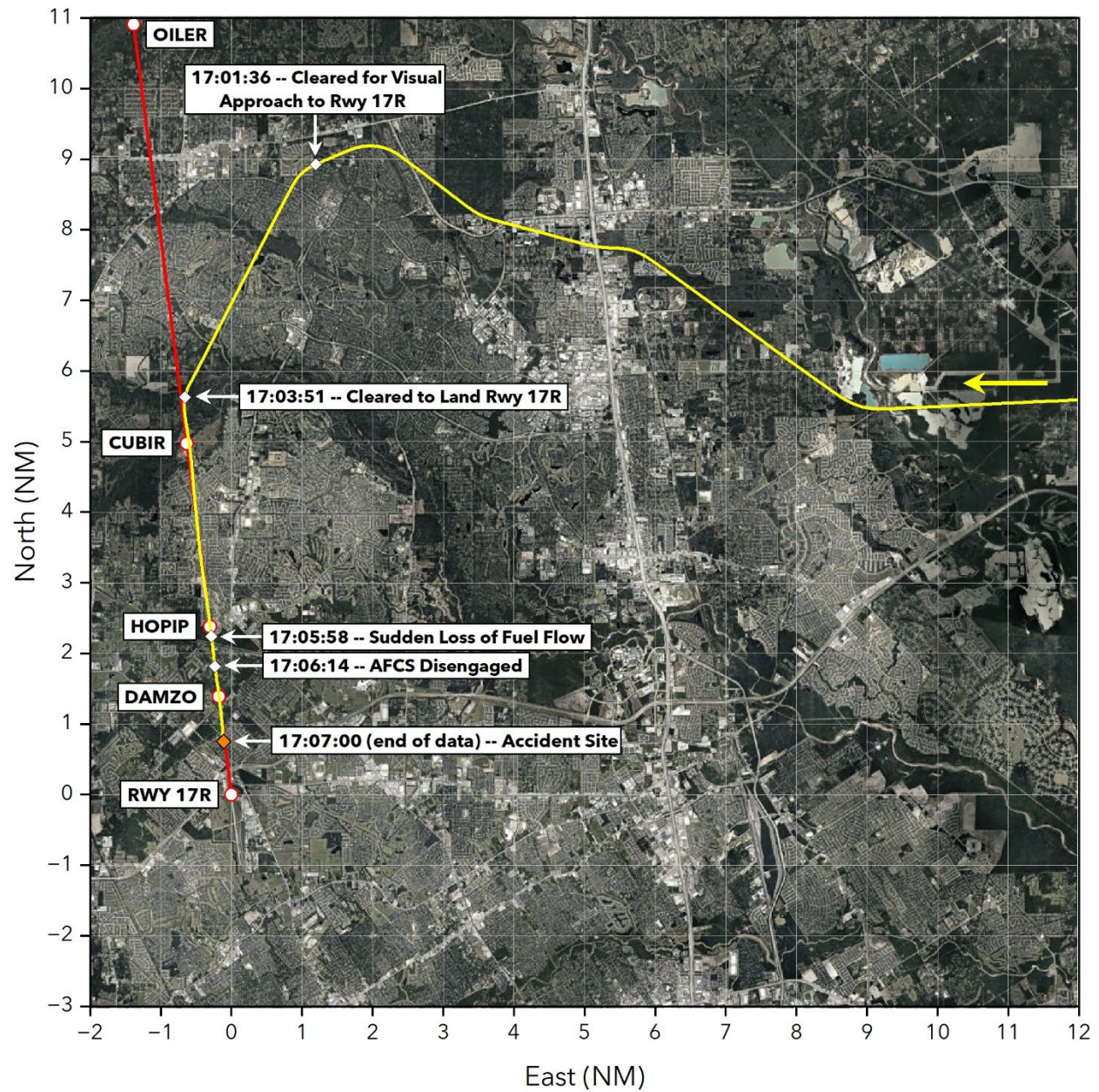


Figure 1 - Plot of the airplane ground track.

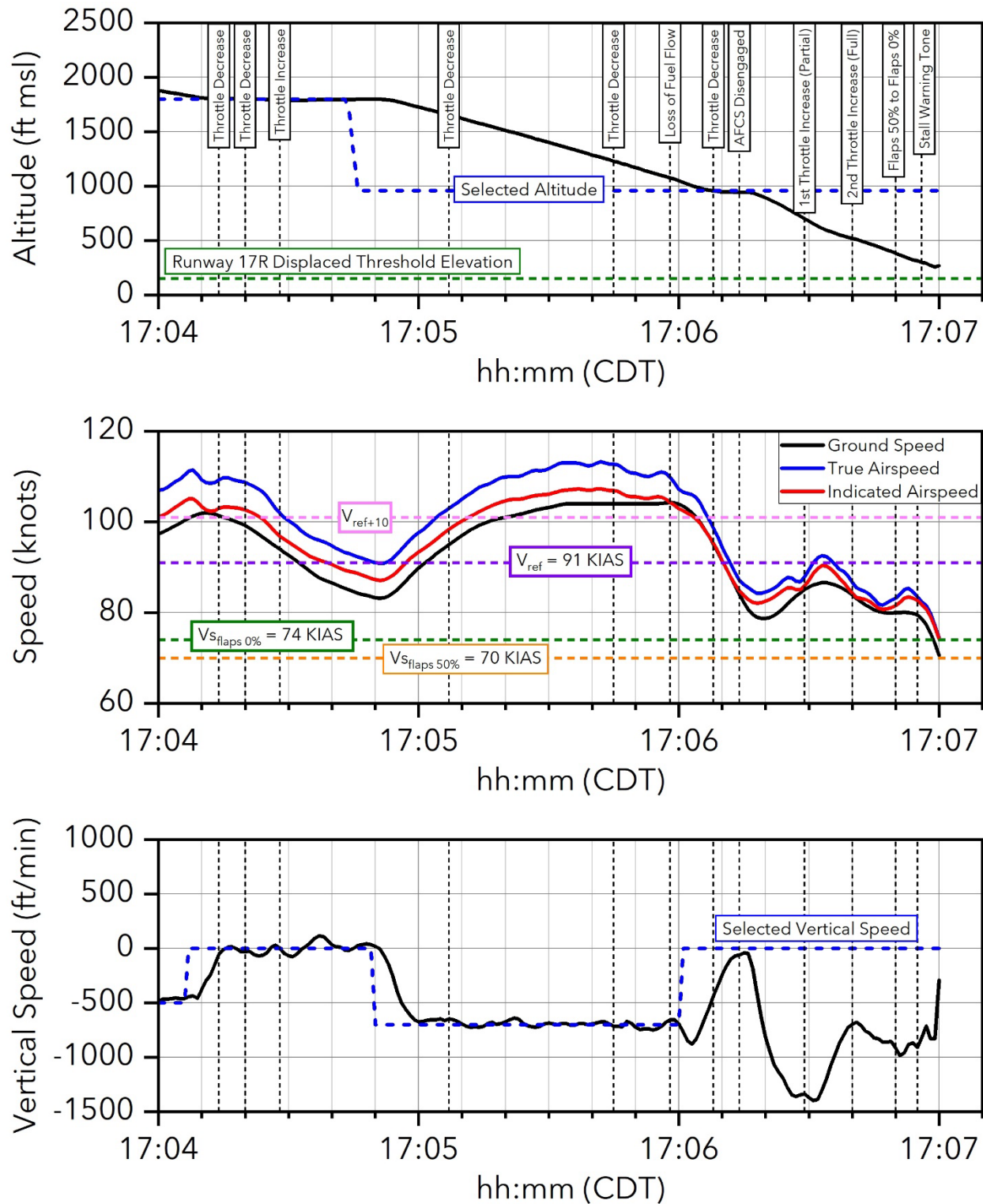


Figure 2 - Plot of airplane altitude, ground speed, true airspeed, indicated airspeed, and vertical speed.

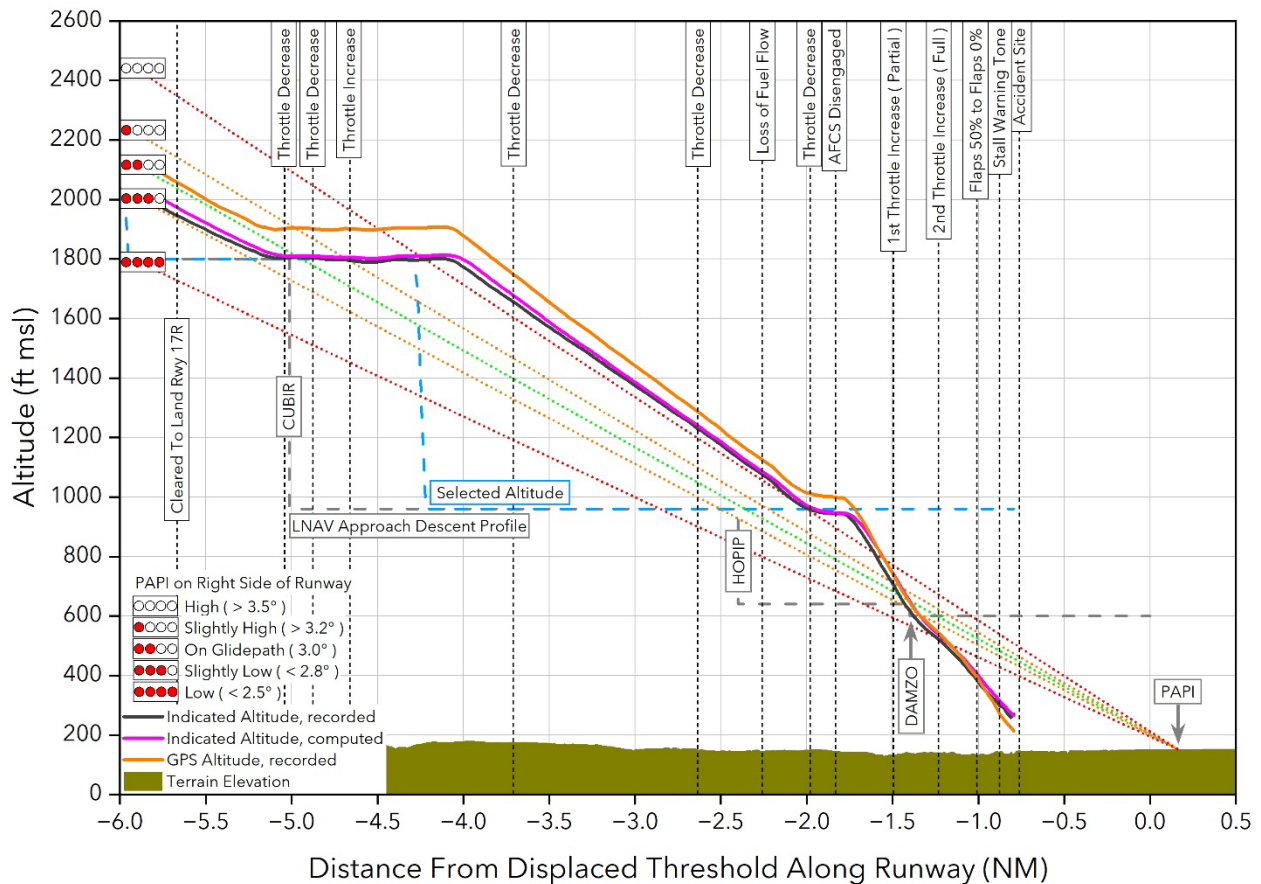


Figure 3 - Plot the airplane's descent profile during the visual approach.

Based on recorded data from the airplane, beginning at 1705:58, there was a loss of fuel flow to the engine, as shown in Figure 4 and Figure 5, as the airplane continued in a descent toward runway 17R in visual meteorological conditions. At that time, the airplane was about 1,126 ft msl (988 ft agl) and 2.26 nm from the runway 17R displaced threshold, as shown in Figure 6. About 16 seconds after the loss of engine power, the AFCS was turned off and remained off for the remainder of the flight. With the AFCS disengaged, the flight crew continued the descent toward the runway under manual flight control.

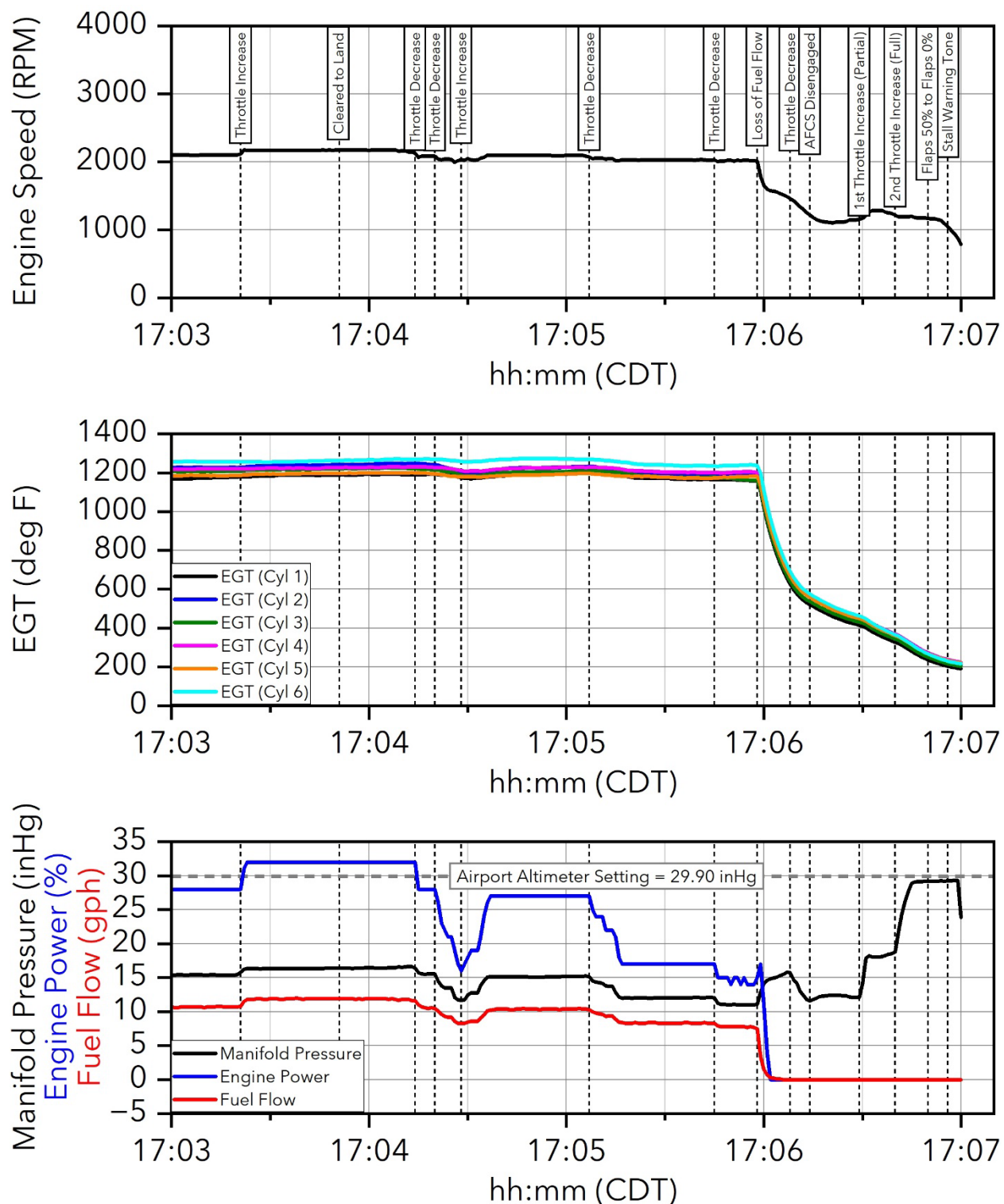


Figure 4 - Plot of engine speed, EGT, manifold pressure, engine power, and fuel flow during the visual approach.

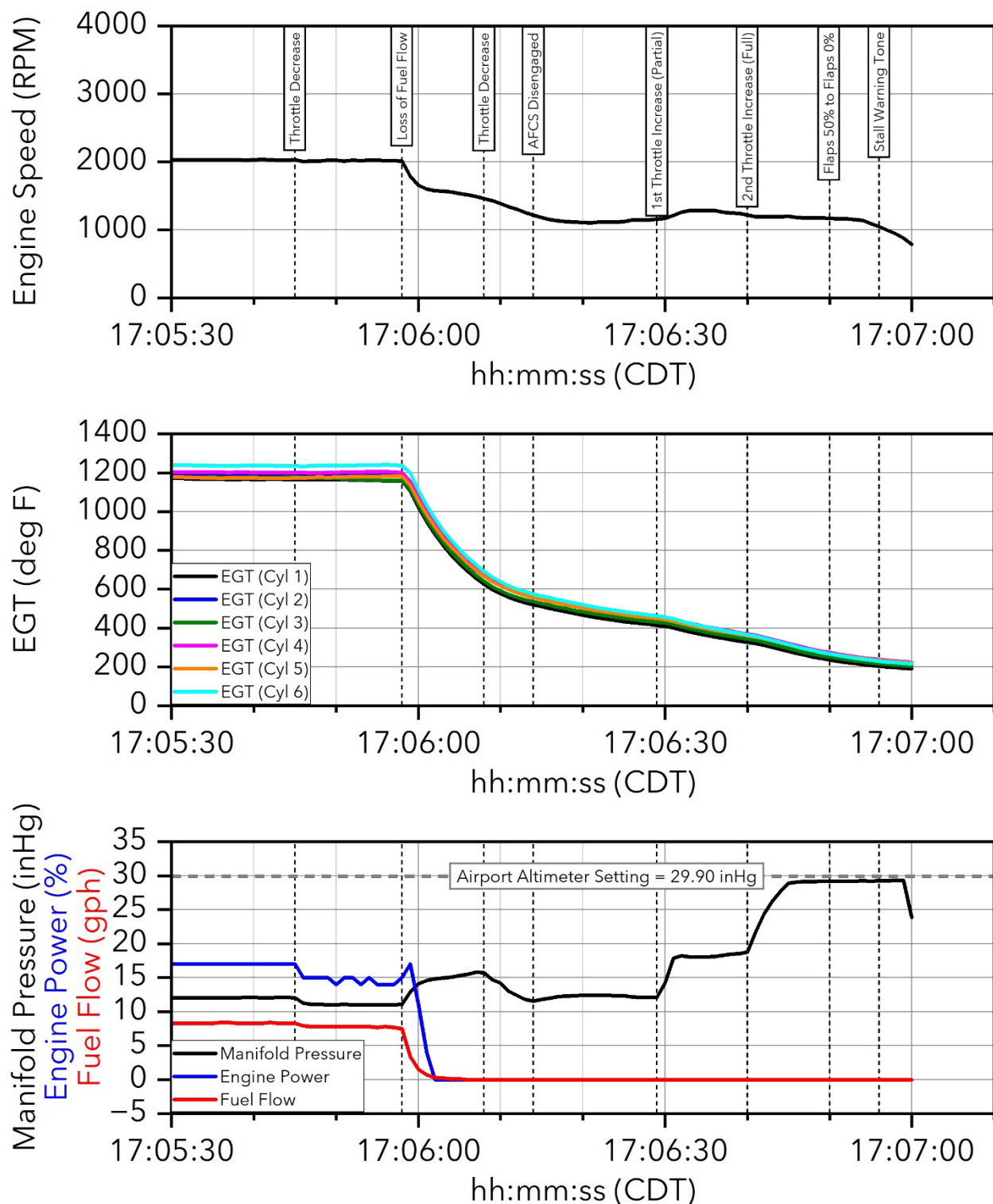


Figure 5 - Plot of engine speed, EGT, manifold pressure, engine power, and fuel flow at the end of the flight.

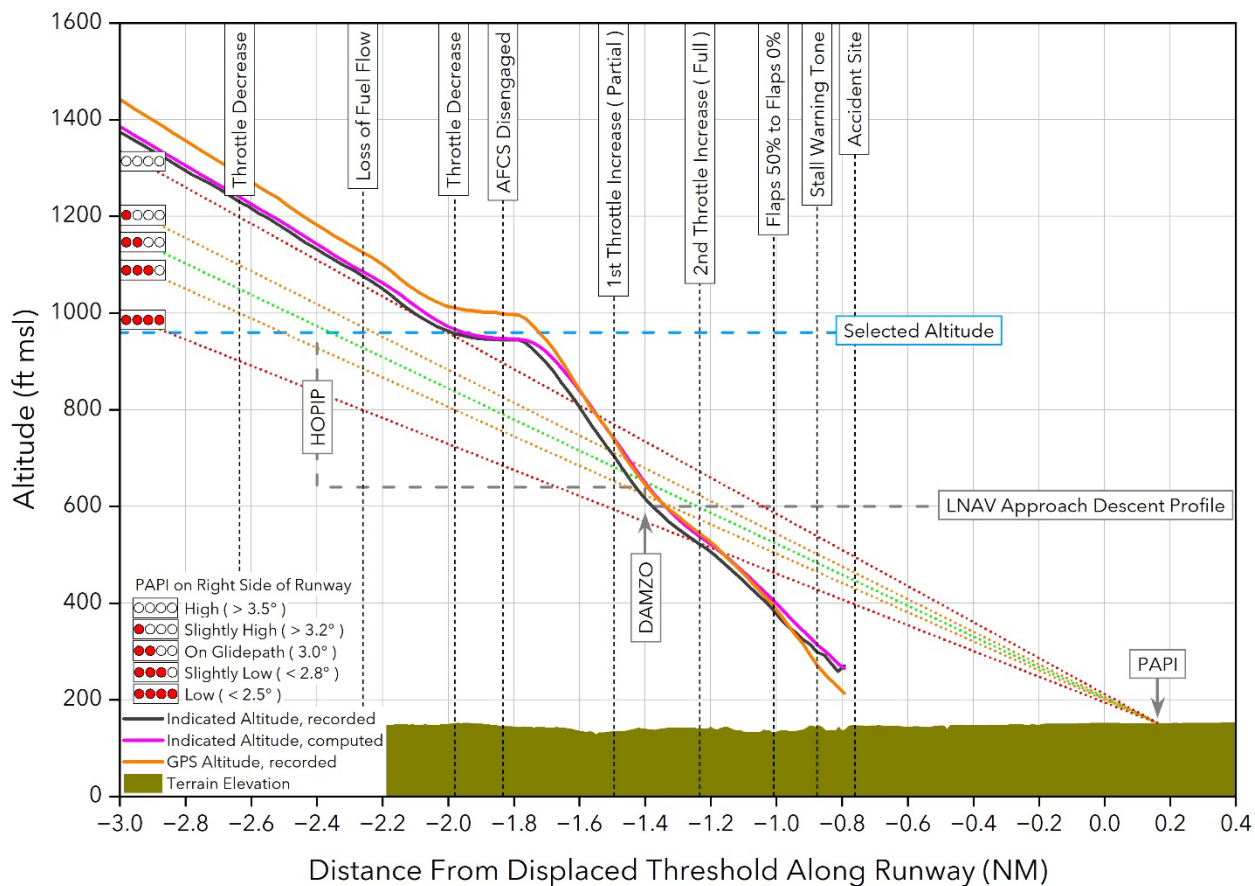


Figure 6 - Plot of the airplane's descent path at the end of the flight.

Based on recorded engine manifold pressure values after the total loss of fuel flow to the engine, the power (throttle) lever was decreased once and then increased twice. The first, partial, increase of throttle began at 1706:29 as the airplane descended through 738 ft msl (602 ft agl) about 1.49 nm from the runway 17R displaced threshold. About 11 seconds later, the second throttle increase, likely to the full throttle position, occurred as the airplane descended through 544 ft msl (407 ft agl) about 1.23 nm from the displaced threshold.

According to the recorded data, at 1706:50, about 394 ft msl (258 ft agl) and 1.01 nm from the displaced threshold, the wing flaps were retracted from 50% to 0%. About 6 seconds later, the stall warning tone activated as the airplane decelerated below 82 knots indicated airspeed (KIAS). At 1707:00, the final recorded data, indicated that the airplane had descended to 214 ft msl (76 ft agl) and decelerated to 74 KIAS, as shown in Figure 7. According to the Cirrus SR22 Pilot Operating Handbook (POH), the airplane's wings-level aerodynamic stall at maximum gross weight is 74 KIAS. The airplane subsequently impacted trees and terrain about 0.76 nm from the runway 17R displaced threshold.

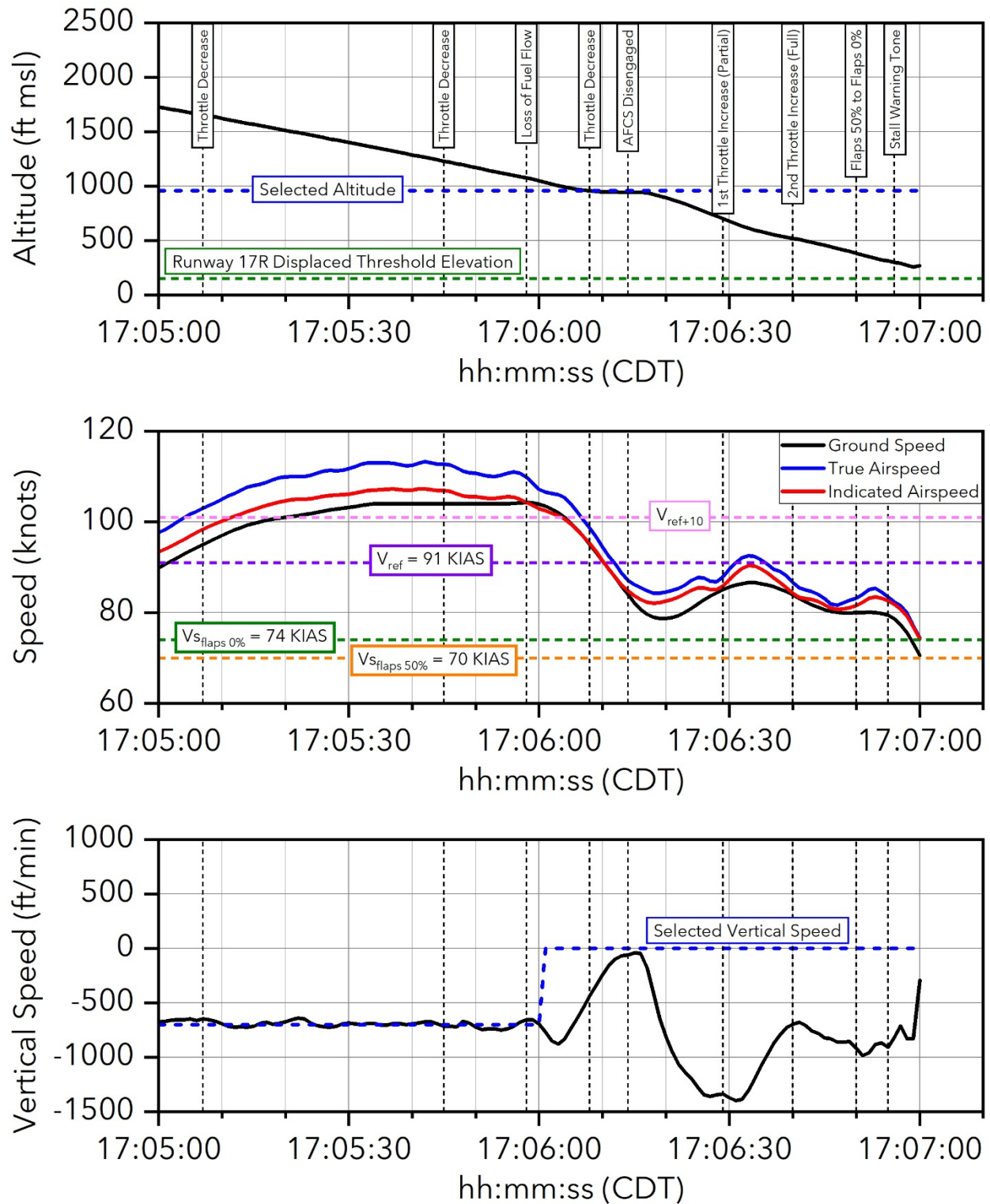


Figure 7 - Plot of airplane altitude, ground speed, true airspeed, indicated airspeed, and vertical speed at the end of the flight.