

On June 27, 2016, a Robinson R-44 helicopter (N8325X) was involved in an accident near Calexico, CA at approximately 20:00 PDT. The following day, June 28, 2016, We coordinated with John Reed, owner of Custom Ag, to see the aircraft. We met John Reed, Edward Hoitt (A&P), and later Matthew Sepi (Pilot) at Custom Ag at the Calexico Airport. The aircraft had already been moved from the accident scene, and was on a flatbed truck outside of the hangar.

Both main rotor blades had been removed and were placed under the fuselage. The main rotor blades were substantially damaged, and were somewhat coned upward, with several chordwise creases from hub to tip. There was little to no tip and leading edge damage to the blades. No visual damage was observed on the main rotor blade attachment points.

The right side skid was broken off just forward of the forward attachment point. The skids were otherwise free of any major visual deformities. The tailboom was damaged and buckled just aft of the fuselage attachment point. The tailrotor blades and tail skid had no visual damage. The horizontal stabilizer showed crush deformation, consistent with the aircraft coming to rest on the right side. The chemical spray tank and assembly had been removed post-accident and appeared to be largely intact.

A single cyclic (rightside PIC), dual pedals, and dual collectives were installed. The collective was positioned in the full up position. The cyclic trim was switched "on." The cyclic showed control continuity to the swashplate assembly. The collective was jammed in the full up position, and the pedals were jammed into the full left position. No attempt was made during the inspection to free the collective or pedals with excessive force in order to check continuity.

The cockpit instruments were stationary, and the altimeter set to approximately 29.82. Due to the unknown extent of the damage, master power was not turned on. The clutch switch was in the "engage" position with the guard closed. Both magnetos were turned to "off". The fuel selector was in the "on" position. The carburetor heat was locked in the "off" position. The fuel mixture was in the "full rich" position. All circuit breakers were in with the exception of the directional gyro, loran/GPS, and APDR which were pulled. The rotor brake was released. The Hobbs time was noted as 1241.0.

The main rotor transmission gear box oil was visible at approximately 1/3 of the sight glass. An adjacent "telatemp" temperature recorder sticker was blackened through the 240 F degree box. The flex coupling just aft of the V-belt assembly was intact. All four V-belts were intact; however, the three forward V-belts were displaced forward off of their track. The "telatemp" near the clutch assembly showed zero of the six blocks filled in. Tailrotor gearbox oil was visible through the sight glass. Both main and tail rotor gearbox oil had leaked onto the rotor mast fairing, and vertical stabilizer, consistent with the aircraft coming to rest on its right side. A tailrotor gearbox "telatemp" temperature recorder sticker was blackened through the second of six boxes. The engine oil dipstick showed just less than 7 quarts. The alternator belt was intact.

The left (main) tank was dipped and showed approximately 6" of fuel. The right (auxiliary) tank was dipped and showed approximately 2" of fuel. Both tanks were sumped with no visible contaminants. The color of the fuel was consistent with AV-Gas "blue." Edward (A&P) removed the gascolator, which contained fuel.

The pilot of the aircraft, Matthew J. Sepi (Commercial [REDACTED]) was interviewed regarding the event.

The pilot stated that no anomalies were observed during the preflight inspection. He sumped both tanks, which revealed no contamination, and appeared to be AV-Gas blue. The pilot had added one quart of oil, bringing it to above seven quarts.

During the run-up, both magnetos checked within limitations. The pilot commented that the right magneto usually drops more than the left, but always within limitations. He also noted that the needles split properly, indicating a properly functioning free-wheeling unit.

The pilot stated that under normal circumstances, he would land on a road, behind the truck in order to refuel and load the chemicals. He stated that he normally operates until the aux tank is just below empty (on the fuel indicator). When the aux is empty, he will have between $\frac{1}{2}$ and $\frac{1}{4}$ in the main tank.

The pilot stated that the main tank will sometimes have a dirty brownish color for the 1st inch or so of the fuel sample, but after that it's clear. I asked the A&P, Edward Hoitt, if this had been addressed. He stated that they had looked into it, checked the truck and fuel sources, which were clear, and came to the conclusion that dust/dirt was entering through the tank vents, as they operate in the desert.

The pilot had mentioned that this particular R-44 had always run a little rough at approximately 70%, then normally at 100%. When asked about this issue, mechanic Edward stated that some vacuum hoses and spark plug leads had been replaced, and that was the last he had heard of it.

When asked about the fuel on the day of the accident, the pilot stated that he had departed with about $\frac{1}{2}$ tank in the main and $\frac{1}{4}$ tank in the aux. According to the Robinson R-44 RFM, the main tank capacity is 30.6 gallons (usable) and the auxiliary tank is 18.3 gallons (usable). He stated that he normally just fills the aux tank (right side), as this side faces the fuel truck, and that the aux tank gravity/cross feeds the main tank. This day, he was anticipating about 8 chemical application loads.

The pilot stated that he had departed the Custom Ag ramp at Calexico Airport (CXL) at approximately 19:30 PDT and headed to a field north of Holtville, CA. This field is approximately 15 miles NNE of CXL. He was planning to do a 137 application job, and departed with the chemical tank empty. The tank has a 92 gallon capacity. One of the

company fuel/chemical trucks was waiting at the field. This would be the first flight of the day, for both pilot and aircraft. He was to do one job at that location, which he had done 5-6 times before.

The pilot stated that he was enroute to the field at approximately 400 feet AGL. His power setting was approximately 23" MP, and cruising at about 70 KIAS. He was on a NNE heading. He suddenly felt vibrations through the airframe. He stated that it sounded like the engine was "bogging." He said that the low-rotor RPM horn sounded, and he lowered the collective to enter autorotation. He was able to recover and stabilize rotor RPM (RRPM). As the wind was out of the SSE, he initiated a shallow right turn into wind, and began looking for a suitable landing area. He saw a field to his right, and a dirt road beside a drainage ditch. He aimed for the dirt road, which was oriented east-west. Once established in the autorotation, he noticed that the engine RPM was sitting at approximately 60-65%. He also noted that engine oil pressure was still within limitations. Seeing that the engine was still idling, he increased the throttle and was able to rejoin the needles (ERPM/RRPM) at approximately 100% while in autorotation. He was now initiating a "mini-flare" at about 50 feet AGL. As the needles were joined, he raised the collective, but the RPM decayed rapidly. He tried to flare hard, pushed the collective back down a little (altitude permitting), and leveled the aircraft with forward cyclic. Prior to touchdown, he noticed that the dirt road he was to touch down on was inclined slightly to the right. Therefore, he decided to touch down on the right portion of that road, which was more level. He said that he had a relatively fast ground run. During the ground run, he slid off the side of the dirt road into soft soil, which grabbed the right skid, causing the aircraft to pitch nose down. The main rotor blades contacted the ground and the aircraft rolled onto its right side. The main-rotor blades came to rest after a couple rotations, and the aircraft came to rest on its right side, nose to the east. Once the aircraft came to rest, the engine was no longer running, and the low-rotor RPM warning horn was still sounding. He added that he had never practiced touch-down autorotations.

The pilot's logbook was reviewed and a valid 61.56 flight review was endorsed on December 28, 2015.

After inspecting the aircraft and interviewing the pilot at Custom Ag, we were led to the accident site by the pilot. The location was confirmed with an on-site photo that was previously taken by John Reed. Ground scaring was not readily apparent due to the recovery activity. The dirt road was hard-packed, and when looking east, had an approximate inclination of 8 degrees, dropping from left to right. Off to the immediate right of the road was a dirt shoulder, which was slightly less compacted, and more level. This shoulder is where the pilot says to have made the initial touchdown. Off to the immediate right of the shoulder freshly tilled, soft soil, which the pilot says to have slid into, causing the right skid to catch and roll the helicopter.

This concludes the Record of Visit.