Regarding: WPR13FA294

Michael Huhn of the NTSB asked that I respond to the following questions. I was the pilot-in-command of N4459R that was involved in an accident near Birsdeye, Utah, on June 27, 2913.

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Cell: [redacted]
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Commercial pilot certificate #

1. Total Flight time
   2,527.9 prior to the accident flight.

2. Single Engine Land time
   2,087.6 prior to the accident flight.

3. Time in Type
   Approximately 20 hours since I began flying in 1969.

4. Flight time in N4459R.
   .9 prior to the accident flight.

5. Most recent flight/operation in N4459R.
   May 31, 2013.

6. Synoptic/general 72 hour history of activities prior to accident (include sleep/wake cycles).
   My sleep/wake cycles were typical for me. I usually wake and begin my day about 6:00–6:30 a.m., and did so the mornings prior to the accident. I typically go to sleep about 10:30--11:00 p.m., and also did so the evenings prior to the accident. I slept well the nights prior to the accident, and sensed no particular sleep deficit.

   I woke about 5:15 the morning of the accident, to make a scheduled meeting time of 6:30 at the Spanish Fork Airport (U77) for that morning's flight. My days' activities for the three days prior to the flight were a typical combination of professional office work, and the on-site supervision (including some light labor) at the site of a construction project I was pursuing at the time. The day prior to the accident, June 26, I spent largely doing physical labor at the same construction site, removing a brick wall with an electric chipping hammer.

7. Chronological account (bullet points preferred) of (relevant or possibly relevant) events, actions/results. Span - from first notification of flight to accident. As specific as possible, including dates/times, names, problems/difficulties etc. If possible, please try to include:

7a. Knowledge/awareness of electrical power equipment on airplane; configuration, previous operational history, operating instructions/guidance, etc

*When I first began flying test flights for Imsar in early February 2013, I was instructed on what Imsar-related equipment was in the aircraft, what equipment would typically be brought to the aircraft from Imsar's nearby office, and generally how to mount and connect that equipment. Imsar's flights always include two people, one pilot and one engineer/observer. The engineer/observer generally has responsibilities to either perform or assist with equipment mounting and hookup. Specific operations of the equipment were the responsibility of the engineer/observer. The pilot's job was to get the aircraft to the designated test area, and fly the designated test tracks, as reflected on the panel-mounted guidance equipment.

7b. Engine start and departure times.
7c. Basic outline of flight
7d. First indication of problem (how/who/what/when)
7e. Actions taken (operational, communications (intra- and extra-airplane), fire-fighting)
7f. Results of above
7g. Specifics difficulties encountered (as applicable)

*I was asked, and agreed to fly this particular flight, a day or two (I don't recall exactly how long) prior to the flight. Notification of this flight was typical, coming to me from Eddie Nielsen, Imsar's chief pilot. My last flights for Imsar (prior to the accident flight) were on May 31, 2013, a .9 hour orientation and aircraft check flight in N4459R (my first flight in that particular aircraft), and a 3.6 hour flight in 5285H (a typical Imsar mission flight). Both flights were completely normal, and I was comfortable with both. The orientation in the 172 I'd not previously flown was uneventful; I found nothing about the aircraft or the flight to be unusual, particularly challenging or bothersome.

*I arrived at U77 the morning of June 27, at 6:30 a.m. I waited for the Imsar engineer who would be flying with me, and the equipment he would bring. I pre-flighted both Imsar aircraft (5285H and 4459R) in the hanger while waiting, because I didn't know which aircraft I'd be assigned to fly that morning. Gerald Wilson (the Imsar engineer who flew with me on the accident flight) arrived about 7:00 a.m. He and I installed the test equipment on 4459R. I did a normal start, taxi, run-up and eastbound departure (using runway 12).

*I flew toward Spanish Fork Canyon, using normal (Vy) climb speed, effecting some gentle S-turns to achieve a safe AGL altitude before entering the canyon. This canyon route generally followed Highway 6 until several miles prior to (west of) the junction of Highways 6 and 89 where I turned generally SE toward the area of our assigned flight tracks near Birdseye. As I recall, our assigned altitude (requested by the Imsar engineers on the ground, not by ATC) was 2,500 AGL. Other than typical radio calls on U77's unicom (122.9) announcing taxi, taking runway 12, and departing the area, I don't recall any other radio transmissions until the MAYDAY call I'll mention below in this report. If I'm leaving the Spanish Fork area eastbound, I often don't call Salt Lake Approach on 118.85, and don't think I spoke to them that morning.

*Flying the straight-line tracks required by this test flight took about 2 hours. We completed those tracks, then began flying some orbit tracks, still near the Birdseye area.

*After flying several 360-degree orbits, Gerald said "I smell smoke" (he and I had good communication via the aircraft's intercom system, with both of us wearing headsets). I discontinued the orbit I was flying, looked around the cockpit of the aircraft, including toward the floor, and noticed smoke wafting from the back seats/luggage area of the aircraft, under the front seats toward the front of the aircraft. Since we were flying at a relatively slow airspeed (in the 80–90 knot area), I immediately unlatched both the passenger and pilot's door windows, allowing them to swing open slightly. I also adjusted one of the wing-root air vents (I think on the passenger's side). These actions served to evacuate the smoke out the windows.

*I then looked over my right shoulder to the rear of the aircraft, and saw an open flame (approximately 8" high by perhaps 4" in diameter) on top of one of the pieces of electronic equipment. Gerald was also aware of the fire.

*I made an immediate decision to get the aircraft on the ground, as soon as possible. I had a very brief thought of returning to the Spanish Fork airport, and had even begun a south-to-north turn to do so. But I quickly realized that was a poor plan, and thought to myself, "We could be a flying torch by the time we get to Spanish Fork." My attention and intent then turned to possible landing spots in our immediate area.

*A survey of the fields within gliding distance showed none that I judged to be of suitable terrain or length. Highway 89 was comfortably within our range, however, and I decided that the highway was our best option for an emergency landing spot. My training, and subsequent orientation, is that fields are better emergency landing options than roads, primarily because of the proximity of utility lines near roads. In this case, however, I felt my only reasonable option was Highway 89, in spite of power line possibilities, and I saw a straight stretch that I judged to be of sufficient length for landing.

*My initial impression was to effect a "straight in" landing, northbound, on 89. Further assessment of my altitude and the proximity of 89 lead me to change my decision to fly a northbound downwind leg (I believe on the west side of 89), flying a right-hand landing pattern. Since fewer than about 15 or so seconds had elapsed since I discovered the fire, I estimate we were still about 1,500–2,000 AGL.

*While establishing my "downwind" leg, I dialed 121.5 into our comm radio, and transmitted a MAYDAY broadcast, including our N number and location near Birdseye, Utah. I received a response almost immediately from a SouthWest Airline flight, and told him our N number, our location, that we had an open flame on board, and of my intent to land on Highway 89. I recall then deciding to forgo any further radio communication, in favor of focusing on flying the aircraft.

*From this point forward, my memory of events is limited to a few very brief glimpses of what happened. Given that I was by this time at roughly 1,500 AGL, it's my estimate that it was three minutes until impact (assuming a descent rate of about 500 feet per minute).

*Given my style of both teaching (as a CFI), and practicing emergency situations in aircraft, I would like to think that I gave specific instructions to Gerald to handle the fire issue, while I handled getting the airplane on the ground. Gerald was a highly-capable engineer, and I'd like to believe I used him as a resource. That is all speculation, however; I have no specific memory of what he did, or what I did to deal with emergency procedures. The fact that the fuel I'm told leaked from the aircraft following impact did not ignite, encourages me that between his actions and mine, we dealt with the fire successfully. Again, that is strictly speculation on my part.

*I have a very brief (less than a second) memory of my right index finger on the aircraft's flaps switch.

*My next (also very brief) memory is of seeing a power line in front of the aircraft while I was on short final over Highway 89, perpendicular to my flight path, slightly below the level of the spinner. I then recall hearing the sound of impact. (Ugly sound. Very ugly.)

*I recall (whether seconds, or longer, after impact, I have no idea) coming briefly to consciousness, and thinking to myself: "I am terribly uncomfortable. I can scarcely breath," thinking I was probably hanging face-down in my seat and shoulder belts. "Can I wiggle my toes? No. Can I wiggle my fingers? No. I need to call for help. I can't make a sound." I then seemed to have lost consciousness.

*My next memory is of hearing a voice from somewhere generally to my left, yelling, "There's a Sawzall in my truck! Get the Sawzall!" I also heard the sound of someone crashing through weeds or brush.

*My next memory is of hearing what I recognized as idling helicopter blades above me, and realizing I was lying on my back, and could breath more comfortably. [redacted]

*My next very brief memory is the sound of enroute helicopter blades.

*My next memory is of looking at an acquaintance from my neighborhood, Robert Clark, who is an x-ray technician at Utah Valley Regional Medical Center, and was taking x-rays of me. I greeted him, asked him how he was doing, and he said he was much better than I was. Than blank again.

*The following week or so is generally a mental blur with some scattered memories of brief portions of various conversations. I have some intermittent memories of being transferred to Aspen Ridge rehabilitation center on July 4. (I remember it being July 4, because the fireworks noise that night was bothersome.)

8. Recollection(s)/knowledge regarding on-board fire extinguisher

*I know that I preflighted both aircraft, as mentioned above. I have no memory of whether or not fire extinguisher/s were on board either.

9. Any previous history of mechanical problems/discrepancies with N4459R

*Beyond the fact that N4459R was recently acquired by Imsar, and had been in the hanger being brought up to Imsar's mechanical requirements, I'm not aware of any mechanical problems or discrepancies with the airplane. I had flown it several days earlier, trying to detect any problems. I found no particular problems during that preflight or the pre-accident preflight. Both runups were normal. The aircraft performed properly on both flights (until we impacted the ground, that is).

10. If he could do things differently to change the outcome of the flight, what would they be?

a. Conduct emergency practices more often, and–most importantly–take those drills very seriously, realizing they will create valuable "muscle and mental" memory. I have taught, and practiced emergency procedures frequently. But they can be done more frequently, and should be thought of as actual "dress rehearsals" for actual emergencies, not just drills.

b. Consider opting for a landing on what seemed to be a less-than-acceptable field, rather than attempting to land on the highway. The stories we hear about power lines are true.

c. Insist that the aircraft be equipped with a better restraint system, both pilot and passenger seats, before flying it.

d. Make myself specifically and consciously aware that a fire extinguisher was on board, was in fresh working condition, and its exact location.

e. Conduct a very specific passenger briefing prior to engine start, and come to agreement on division of responsibilities in the event of an emergency. Passengers, especially bright engineers, can/should become a huge asset, if instructed properly by the PIC. I did a passenger briefing, as I always do. But I'd now do it even more thoroughly.

11. Is there anything else he has subsequently recalled or would like to add that would be of value to the investigation or in preventing similar future occurrences?

Items a, b, c, d & e in #10 above.

Thanks for requesting my input. Feel free to communicate with me any time if I can be of further help.

N. Gregory Soter