The Great Night Engine Failure

Contributed by HSL-35

SOMETIMES there are rewards being the squadron NATOPS officer – the hard-nosed stickler for details that many people avoid. The following letter was received in my office following a night episode which happened on one of our deployed detachments.

The letter is from the det OinC, the HAC during the ill-fated flight, and gives details and personal insights into what occurred, things which never show up in message incident reports.

The reason for this letter is to discuss a few crew coordination items in hope that "Maybe the saga will convince some of our young guys and HACs-to-be that there really is a reason for reading the blue book (NATOPS) and listening in training lectures." I hope that the humor adds to, rather than detracts from, that goal.

Squadron NATOPS Officer

Dear ELF:

Thought I would write and give you the real story of "The Great Night Engine Failure" so if there were any lessons to be learned you could pass them on to the wardroom.

My copilot and I had hot seated around dusk to bag some dopplers and half moon pink time so the squadron Ops boss would think we were night flying. We had done about six dopplers, four low vis approaches, rigged one merchant, and even flew through a couple of clouds and rain showers. I decided we'd tempted fate long enough, so we came in to get a couple of bounces and call it a night. The weather was fine: good visibility, a few scattered showers, and a solid horizon. The moon was fair, but you didn't need your dark visor down to kill the glare. Of course, when I tell the story a year from now it will be severe dark, in thunderstorms, sea state seven, pitching deck – you know, real DFC stuff.

My copilot was in the final phase of a port to starboard approach at 80 feet AGL, 15-20 knots, when he called waveoff because the ship had not cleared us with a green deck. If you remember my NATOPS lecture, I told you the T-58 compressor only stalled during a decel. (I'll bet you believed it too.) Well – I LIED! My copilot had just pulled collective when it happened. The left engine started sounding like a 20mm machine gun, shaking like a wet cat in a windstorm, and making lots of sparks. Muffled explosions (as per NATOPS)? NO WAY! Well, instantly I knew something was amiss, especially when round fireballs about one bellmouth in diameter came out the front of the engine.

My copilot froze the collective, lowered the nose, and got the aircraft flying again at 40 feet AGL. A beautiful job for a rookie. This must reflect on my outstanding training program. One lesson; if he hadn't done the right thing right then, it was happening so fast, I'm not sure I would have caught up in time to be of any use. Even so, we drooped to 98 percent N_T before it started flying halfway normally. If there had been an efficient way to convert adrenaline to horsepower, we could have **outclimbed an F-4.**

I took control of the aircraft about 40 feet AGL and started a slow climb. (A fast climb wasn't really an available option.) Of course the engine was still acting like a spastic sparkler, and the noise was ruining my concentration. The copilot was watching T_5, I was watching N_T and altitude, and the crewman was making his worry beads smoke. About this time, T_5 was 830 to 840°C, N_g – 52 percent and torque – 0. The copilot commented that maybe it was time to secure the engine. I don't know if it was 9,000 briefs, previous training, or self-preservation, but we both touched the No. 1 ECL before he pulled it back, to agree it was the correct lever, then I blocked No. 2 ECL. He went to IDLE first, but it made absolutely no difference in the stall. At last, a *legal* chance to *single-up*, so off it came. Boy did it get quiet!

We were working 60 degrees starboard winds at less than 5 knots on the approach, and in a calm, cool, logical voice I asked the ship to maneuver to get port winds at 20-25 knots. The HCO offered a green deck with winds 60 degrees starboard at 2 knots. I declined that option and the OOD did a great job of getting the ship steady on course. *Voila* – wind 30 degrees port at 25 knots!

While the ship maneuvered for winds, we decided to prepare for landing. I directed the jettison of the auxiliary tanks but demurred when the copilot mentioned they had been empty for an hour. Undaunted, I ignored him and told him to jettison the 12 sonobuoys onboard. He didn't have a good argument for that, so he started pushing buttons. NO JOY! I recalled that sonobuoys have something to do with landing gear, and sure enough the landing gear were down. Somehow I forgot to raise the gear during waveoff. *Must have been distracted.* Since I knew that the armament circuit disarm bypass switch is somewhere forward of the relief tube, we raised the gear instead. The launcher worked as advertised.

I knew you would get all huffy if we didn't look at the NATOPS PCL, so we started a search for one. We finally found an old one in a helmet bag wedged in the tunnel belonging to a lieutenant (junior grade) (now a senior lieutenant commander). Good enough for me.

The PCL didn't give us any new ideas except trying a restart. We decided against that because my previous experience with a restart (don't ask) caused generators to drop off the line, and I wasn't too enthusiastic about being single engine, having a hot start in progress, dropping generators, RAD ALT and ASE, and losing my chance to be a hero. We were going to check in the Single Engine Airspeed chart, but that's pretty tough to find in the dark when your main interest is **staying dry**. I had a fairly good feel for what V_{se} would be in those conditions, so I acted confident and my copilot bought it.

We set up our approach to hover at 200 feet AGL behind the ship per the CO's "That's the way we did it in the old days" method. Surprise; it works, and is a valid confidence builder. It also gave us a chance to check power and topping. Of course, you have to stifle any preconceptions you may have about the dead man's curve. You know, what the XO (a TPS graduate) calls the "H-V diagram." I guess that's TPS talk?

I set up the approach to be a steep, almost precision approach, then briefed the copilot to call torque and N_T, and told the crewman to keep the worry beads smoking. The approach seemed fairly comfortable. As we passed through about 60 feet AGL, the nose came up, which made us uncomfortably slow, but we worked out of it with no sweat. Crossed the deck edge slightly hot and made the circle with no problem.

We let the engine cool down and started to check it out. No external FOD was noted but when we turned it up, it sounded like a broken beer mug was inside the turbine. Now we are waiting for a new engine.

Lessons Learned

1. To fly at night laughs in the face of common sense and the gods will get even at the earliest opportunity. If flying at night is absolutely necessary, send two expendable lieutenants (not really a valid suggestion).

2. In-close to the ship (below 100 feet AGL), if something goes wrong, the "young" guy flying will have to take appropriate action **immediately** because it takes too long for **"old guys"** to work our magic and make the recovery.

3. Slow flight checks at or above 200 feet AGL for power and topping checks are a good idea. If nothing else, it forces you to think of something else besides impending water entry.

4. The steep approach idea is good only if you practice it and are comfortable with it. A slightly fast profile is probably as good an answer.

5. A strong copilot isn't a bad guy to have helping you in an emergency. They talk a lot but seem to say the right things.

6. It *CAN* happen to you.

Must run now to make my tee time reservations in Cubi. Will have one, possibly two, San Miguels for you.

Fondly,
BOB