2 out of 3 Ain't Bad

By Lt. Bryan Coultas

Here's a pop quiz for you hot-shot aviators. How many of you do a thorough review of your unsafe-gear EPs when going out to do a functional check flight (FCF) on a jet for an engine swap? I don't.

Our event started as any other FCF at the boat: An in-depth planning brief and a review of how we were to conduct the mission. The weather was clear and a million. We got a great brief by our maintenance guys on what work had been done, and we hoped to perform a flyby for the troops. I particularly was excited because I just recently had obtained my FCF qual, and I was ready to put it to use for the first time.

The flight began as planned, and the new engine worked as advertised, with all parameters falling well within prescribed limits. We had completed all checks up to the final 5,000-foot checks, where we would test the approach-power compensator (APC). The compensator notoriously never works and actually is not required but is part of the checklist. Checking it meant getting into an approach configuration, so we descended to 5,000 feet and, at 400 KIAS, started a level break. At 250 KIAS, we configured; at this point, things got interesting. The integrated position indicator (IPI) showed two down and locked; the left main indicated the always fun and exciting barberpoled.

What could we do except dutifully start the "Gear Handle Down—Indicates Unsafe" EP checklist? This EP is always a favorite of EA-6B NATOPS instructors in the sim because it's complex, has several branches that make

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Photo by PH1 Brien Aho

the student think, and practically is guaranteed to ignite a helmet fire. I should point out we were 40 miles from the boat, with 25 minutes to recovery and more than 10,000 pounds in gas. While working the checklist, which included slowing to approach speed, checking the circuit breakers, and checking secondary indications of the gear being down (all were negative), we also coordinated with the ship to return overhead at our low holding altitude and got a rep in the tower for us.

While transiting, we continued the checklist, to include the steps for varying the G loading and yawing the jet, none of which affected the IPI in the least. Once we arrived overhead, an S-3, also recovering with our cycle, joined up for a visual inspection. Once joined, we cycled the gear up and then back down for their viewing pleasure. Unfortunately, the S-3 crew reported the forward and aft gear doors were open, the left main was up in the wheelwell, and none of these items moved in the least while the nose and right main cycled up and down.

Comforted that our problem was not merely an indication issue, we continued with the checklist and completed the steps intended to "relieve back pressure" on the hydraulic system. We again cycled our gear, with absolutely no effect. We were fast approaching the end of our EP checklist, and we were down to the final step of "blowing the gear down." This step is a pivotal moment of the checklist. Once done, it can't be undone, and we would be left in a very poor bingo configuration should we need to divert. We were hesitant to do that step until we had exhausted all other options. Fortunately, another Prowler crew had been manning up for the next event, and the skipper was in the back monitoring our progress on button 18. Coordinating an early launch, they joined up with us overhead and relieved our friendly S-3.

On the ship, gears were grinding, and plans also were being laid. Our XO was in the tower, working with the Boss, CAG, and CO of the boat. Diverts were being considered. The closest one was in India, but it didn't have field-arresting gear. The most viable divert option was in Saudi Arabia, more than 1,000 miles away. In the meantime, the barricade was being readied (being the first to barricade a Prowler is not exactly how I'd wanted to make history). All airborne assets were recalled, with the tankers ordered to hold all mission gas.

With all other avenues exhausted, and not wanting to blow down the gear, our CO told us of a procedure performed by an A-6 crew (the Prowler has the same gear) that he had read about in an *Approach* article. The procedure involved applying sustained negative G, while trying to cycle the gear in the expectation the mainmount had fallen off the J hook and was resting on the forward gear door. This negative-G maneuver would take the weight off the gear door, allowing it to open. As stated earlier, both the forward and aft gear doors were open, but the CO thought the gear might be jammed against the forward gear door. So, we raised the gear, accelerated to 250 KIAS, pulled up the nose to 15 degrees then pushed over, and lowered the gear handle while under negative G—with no change. Neither the gear doors nor mainmount moved. We nearly could hear the groans from people on the ship. By now, most everyone airborne was listening on button 18.

The CO asked exactly what we had done; it turns out we did not do what he had intended. He wanted us to try raising the gear and leave the gear handle up throughout the maneuver. Ideally, the negative G would allow the gear to lock in the up position and the gear doors to close. We again set up for the maneuver, accelerating to 250 KIAS, pulling to a full 20 degrees nose up, and pushing over as hard as we could. As the nose passed through the horizon, the gear clicked up and locked. Our wingman closed in to visually inspect the gear-up indications, and then we all held our breath as we again lowered the landing gear. Much to our relief, all three gear transitioned normally and indicated "three down and locked." After confirming all the secondary indications and a visual inspection by our wingman, we detached him and came back to the ship for an uneventful straight-in approach.

Always expect the unexpected, and be prepared to deal with them when, not if, they happen. If you had asked me before the flight to list the most likely EPs we might encounter, this wouldn't have been one. But, everyone was familiar with the EP and handled it competently and professionally.

The PCL is a great tool, but the checklists don't necessarily cover all circumstances. A little corporate knowledge and common sense go a long way, especially in this situation. Had we done the next step in the checklist and blown down the gear, with the gear already jammed, they likely would not have moved, and we would have permanently bought the bicycle configuration: Barricade, here we come.

Finally, *Approach* articles are a great way of preserving corporate knowledge and passing it along. Read 'em. Write 'em. Love 'em.

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