"I wonder what will happen when I…"

Operate the Flap Interrupt Switch

By John Morris

When we get bored or think we have it all figured out while enroute, aka, know it all, we might try the "I wonder what will happen when I…" SPT [Special Pilot Trick] procedure.

In this case it's when I move the FLAP Interrupt Switch from the normal "NORM" position to the "INTR" position. Of course since we have all been properly trained (and know it all anyway) we *know* that the Flap System has now been interrupted, therefore the flaps will no longer move, just like the TRIM Interrupt switch function which disables ALL Trim operations while in the "INTR" position. However, we also receive a CAWS amber FLAPS annunciation and gong, unlike the TRIM Interruption procedure, which gives no visual or aural cue, which is what would happen if we were testing the TRIM Interrupt switch (that's another article).

So now that we moved the FLAP Interrupt switch and have gotten the CAWS annunciation and gong, and have alerted the PAX to our boredom, our "procedure" is complete and everything works as we knew it would (except maybe we forgot about the CAWS). It is now time to put the Flap Interrupt switch back to NORM.

FLAP Interrupt switch back to NORM and CAWS annunciation clear, right? Wrong. Why is the CAWS FLAPS annunciation still illuminated? Does this mean the Flaps will not work or is this a fault of the CAWS, and the Flaps are okay? Can I clear the CAWS FLAPS annunciation while airborne?

To answer these questions I want to first give you some history of the PC 12 Flap System and its design. When the PC 12 first entered production it had the TRIM and FLAP Interrupt switches on the center console, left side (see pictures). These

switches are still this way for MSN 101 – 888. The switches were both two-way selectable to the labeled positions of NORM or INTR. On the right side of the center console there were the FLAP and TRIM Alternate Trim switches, both three-way, spring loaded to center OFF. The pilot must press to hold to the other two positions. The labeled positions are UP and DOWN.

The Flap System is driven by a single motor with a drive mechanism, which has flexible cables extending to the left and right wing inner flap actuators (inboard side of actuators). From the left and right inner flap actuators (outboard side) flexible cables extend to the center left and right flap actuators. To protect against the possibility of flap asymmetry due to a flex cable disconnect or jam, Pilatus installed multiple sensors to stop the flap system within 5° of the potential flap split or twist.

Also installed for the Flap System are the Flap Interrupt and Flap Alternate System/switches. The intent is that if Flap asymmetry could be determined to be due to a flexible cable failure the pilot could regain control of the Flap System and manually move the operable flap (wing) to a symmetrical position relative to the failed flap (wing). Where the Flap Interrupt got a little fuzzy, at least to me when I first started teaching the PC 12, was the switch-terminology. If Flap asymmetry warranted the use of the Flap Alternate the pilot would first select Flap Interrupt to "INTR". This would "interrupt" the Flap Control and Warning System fault, which had stopped the flap motor from operating, allowing the pilot to now operate the flap motor by using the Flap Alternate switch to raise or lower the flaps. The fuzziness is due to the Trim Interrupt functions (same labels, different function/result-again, another discussion).

What Flap Alternate switch? There is not a Flap Alternate switch residing next to the Trim Alternate switch now. So where or what happened to the Flap Alternate switch and why was it removed?

The Flap Alternate switch is still in the cockpit but it is no longer accessible to the pilot. Why not? The short answer is that it

was determined that it was not appropriate for the pilot to make the decision about use of this system. This unfortunately came about as the result of a fatal accident that occurred in the Czech Republic in the spring of 1998. For the final accident report go to www.acftservices.com - Training Aids/Known Accidents and click on the Czech Republic accident PDF line.

Shortly after the final accident report, Pilatus issued a mandatory Service Bulletin to remove the Flap Alternate switch from the center console and pull/collar a circuit breaker that powers the Flap Alternate system. Factory production aircraft had the modification done starting at MSN 228. Only maintenance personnel now use the system. It is used to activate the system while testing the fault parameters for proper function and tolerances.

So why is the Flap Interrupt switch still residing next to the Trim Interrupt switch? Is there an Emergency Procedure that includes use of this switch?

The reason the Flap Interrupt switch is still on the center console is so the pilot can have something to fiddle with! Actually, although there is not an Emergency procedure that requires use of the Flap Alternate switch, there is reference to this switch in the Systems section [Section 7] of the Pilots Operating Handbook. It states that operation of the Flap Interrupt switch can be used to stop the Flap system operation.

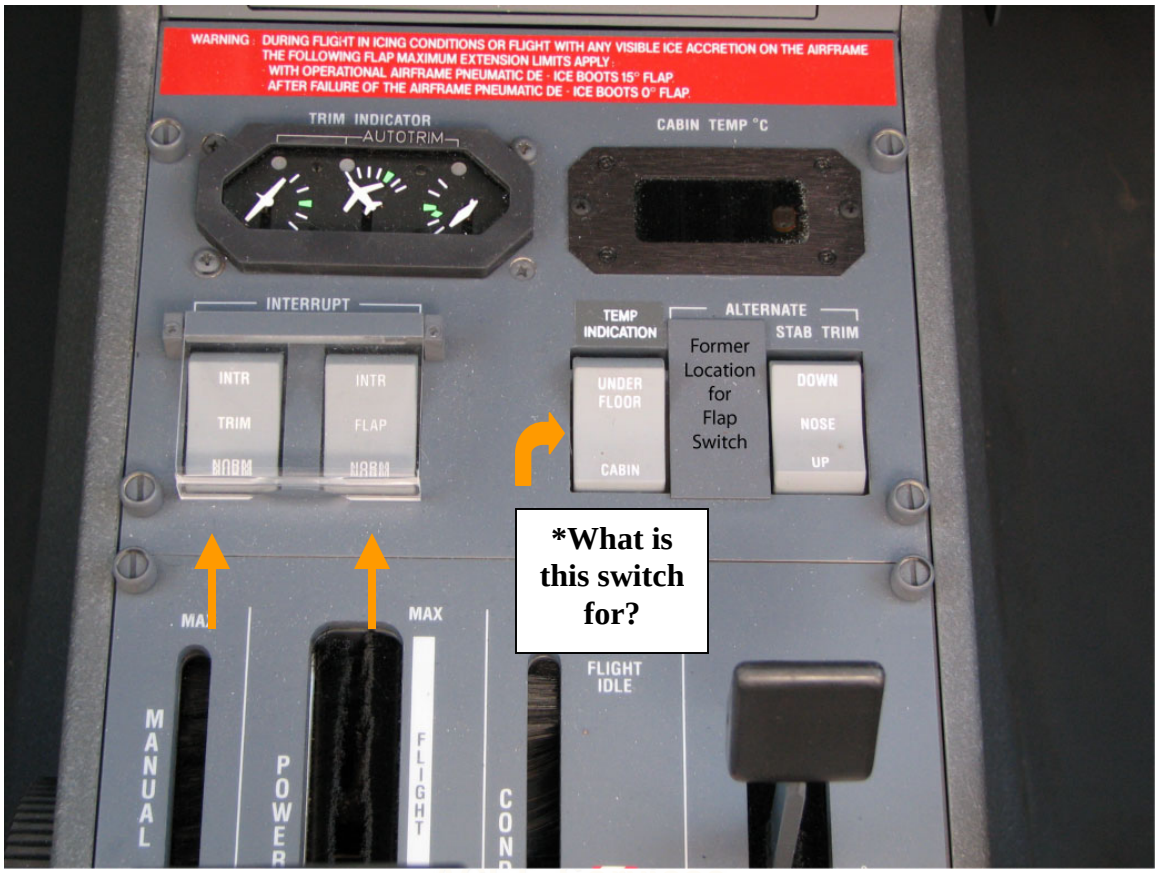
Back to the original intent of this article. So you did it! Will the Flaps work? Answer-NO. Since the intent of the Flap Interrupt was to actually re-activate a faulted (shut-off by the FCWU) motor, moving the switch to “INTR” now has the opposite effect. And setting the switch back to “NORM” has no effect either since, again, the original idea is that something is wrong with the flap system and ***NOBODY*** should be messing with a flap problem, real or not, while airborne. If you did or did not create this scenario, you must deal with it! IF there is no actual problem with the Flaps, after landing, the Flaps can be re-activated by use of the Flap Reset button. This reset button, factory installed from MSN 321 and

Service Bulletin for earlier, is located behind the copilot seat-side wall, on the maintenance panel. If in doubt, call maintenance before attempting another SPT.

Lastly, the Flaps, Actuators and Flex cables are now inspected annually (used to be more frequent until improvements matured). Maintenance is checking for out of tolerance movement in the actuators and cables possibly caused by normal and overspeed stress, as well as panel deformity. Pilatus installed a Flap overspeed visual annunciator (in the Flap indicator MSN 101-888) and aural tone to alert us to this, NG aircraft have multiple indications on the PFD and a voice callout.

Now I know that none of the PC 12 drivers would ever do such a thing [overspeed] but just in case, don't make a habit of extending the flaps above the approved speed for position. You should report these overspeeds when you visit maintenance (note to NG drivers-the CAS-CMS records all!), but if you have short-term memory loss this is one of the reasons why the Feds/Pilatus require checks of Flap Systems like this one.

Overspeed indicator MSN 101-888



PC12 MSN 101-888

PC12 NG
Note: Trim Interrupt/Flap Interrupt Positions and Alternate Stab Trim

*Answer to the Temp Indicator Switch will be at the Training Aids section at www.acftservices.com.

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