



## What if the lowly wooden pencil needed approval for use in the cockpit?

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“[expletive removed]! Broke the fool pencil again.”

This chance phrase was spoken into an accidentally open microphone by a poor pilot who was unaware that he was the impetus behind the recent issuance of TSO c7734 (Pencil, Wood, IFR). You see, during a later playback of the ATC center tapes it was determined that the pilot did, in fact, violate the FAR regarding airworthy equipment by having a non-approved pencil in use while operating under an IFR environment.

The FAA naturally concluded that pencils were the weak link in the multibillion-dollar ATC structure, and forthwith issued a press release that, “. . . non-approved pencils may yet cause a serious crash between private aircraft and a jumbo jet.”

In the ensuing hullabaloo, Congressman Pucksuckle ( an aviation expert due to the fact that his father, once in 1922 and again in 1924, lost his lunch when a barnstormer looped the loop with old man Pucksuckle in the front seat) demanded that the airways be cleansed of such damn fool things as non-approved pencils. Hence, the rapid acceptance of TSO c7734.

Which is where I came in, friend, because I now own a full warehouse of TCO'd, PMA'd, approved, blessed and tested pencils. You say you want to fly IFR? Good, because I've got the pencil for you, the only legal pencil to use, and all at the low pilot's discount price of only \$13.85 (each, in packages of 10). And you can't go anywhere else for them, because between the FAA and me, we've got the only game in town.

When the TSO first came out, I estimated that I would buy pencils from the Hawk Pencil and Storm Door Co. of Horse Cave, Ky. for a nickel apiece and sell them as TSO'd for about a dime. This estimate was before I talked to the FAA about the tests and inspections required to launch such a critical-to-flight item as a pencil into the nation's navigable airspace. Did the FAA requirements add anything to the pencil's price? Oh, brother, did it.

First, Hawk Pencil would have to get its incoming inspection procedure up to snuff. No more of this old cut-down-a-pine-tree-and-make-a-pencil procedure. No siree. Each tree is now inspected by a licensed forestry engineer for dry rot, grain straightness, moisture content and compressibility (woodpecker holes are cause for immediate rejection). The company saw is now calibrated to National Bureau of Standards specifications once a week by an FAA-licensed instrument shop, and perfectly good saw blades are replaced every 100 board feet or 10 days, whichever comes first.

The old saw blades are rebuilt and inspected by an FAA-approved repair shop at a cost only slightly over triple the cost of a good, new commercial blade. Do all these procedures cost money? Well, hardly at all when you consider the reliability of the “approved” product. Anyway, Hawk only adds \$2.84 per pencil for these inspections.

Second, although Hawk has produced pencils for a hundred years, the FAA engineer at the local office handling our project (charming young fellow, Bob Gobbler) said that the “standard procedure” is to require a full-time inspector at the pencil factory—at my expense of course. Since these standard procedures are not to be trifled with, I hired a man willing to live in Horse Cave, Ky., (billed as Chicken Manure capital of the World) for the pittance of \$25,000 per year. Plus moving expenses, of course.

Good old Bob said that he personally didn't see any sense in this, but that since he had never really worked in industry, or had any real hands-on experience in flying, he couldn't bend standard procedures or his supervisor might get perturbed. Add another \$1.63 per pencil for our resident inspector.

Now, about this pencil lead problem. Could Hawk prove traceability of the carbon used in making the lead back to the mine that the coal used to

make the carbon was dug from? And exactly what procedures and approved measuring techniques was Hawk following to ensure that the diameter of the lead was within .00001 inch of the TSO specification, as required? Could these tests and reports be done? Of course, for money anything can be done. Add another \$2.25 per pencil for pencil lead reports.

Well, finally we've got Hawk producing pencils to TSO standards. Well almost, and all it has cost us so far is \$6.72 for inspections plus a nickel for the original pencil.

Not quite so fast. We haven't done the engineering test procedure yet. You see, the FAA was concerned that the pencil might not work under any and all environmental conditions, or that the pencil may interfere with other systems on board the aircraft.

For instance, the color was all wrong. Yellow, they insisted, was reserved for a warning light or flag. A yellow pencil may be misinterpreted by the pilot as an unsafe condition and cause the pilot to take unnecessary precautions. Couldn't we paint the pencil pastel green or something? And how about making the paint fireproof? Add another 85¢

How about temperature and altitude? Sigh. Put 100 pencils and me into an environmental chamber and freeze it to -60°, heat it to +180°, run it up to 25,000 feet and see if all the pencils would still write. The pencils all wrote. Me, I caught pneumonia. The price for all this testing and my hospital pills? Hardly a drop in the bucket. Add \$3.16 per pencil.

Aren't we done yet? Not quite. You see, moving a conductor (pencil lead) across an insulator (paper) makes what engineering types call a self-induced charge. The FAA calls it static, and demanded a full-blown EMI (ElectroMagnetic Interference) test to prove that the pencil wouldn't interfere with the radios.

Since the required FAA approved radio shop owner was a friend of mine, he barely charged me anything to do the tests. Well, hardly anything. Add \$3.02 per pencil.

These pencils are now costing me \$13.80 and I'm selling them for \$13.85. After all this, I'm still making exactly what my original estimate called for— a profit of a nickel per pencil. By the way, out of this nickel profit, I've got to take the cost of printing a

full set of installation and operating instructions for each pencil, plus a clearly printed warning that only an A&P mechanic is permitted to sharpen the pencil and then only with an approved sharpener (see TSO c7735 for the sharpener).

By now you may be asking yourself why the FAA didn't require tests on the eraser. Oh, you mean you want an eraser? Well, that's nonstandard equipment and not covered under the TSO, but maybe for a few thousand bucks more we can get an STC.