



Introduction:

Let's open up a can of worms. What's a good recommendation for a headset? As I discovered, it's not so easy to figure this out. Naturally, there are as many opinions as there are pilots - and we've all heard the old saw that opinions are like bellybuttons because every pilot has one! Like many of you, I started off by reading all the manufacturer's headset literature I could lay my hands on. But in the back of my mind was the notion they have a vested interest in what they're saying. Of course, I've also scoured the Internet, but there's an issue with credibility because it is for all intents and purposes anonymous. Add to this the fact there is so much information, which though well intentioned, is often contradictory and occasionally replete with OWT (old wives tales). Enough so that I'm dizzy trying to keep everything straight!

Being an engineer, I know when there's difficulty obtaining good data the only real solution is to gather it myself. Thus, to make an empirical determination I would have to test the headsets before making a decision. However, it quickly

became apparent it was very difficult to create an all-inclusive test, i.e. of every headset on the market because, there are so many different manufacturers making so many different models. My goal was just to determine which headsets to buy for use in my Cessna 172 (Toyota Corolla of airplanes). This paper came about because folks read of my quest on a forum, liked the testing procedure, and more than a few said they wished they had had this information before they bought their headsets. So I've compiled several posts into this one document. Maybe it'll help you.

Terms and definitions:

First, let's ensure we're on the same page and discuss a few terms and definitions. Naturally, the goal of a headset is to protect your hearing and facilitate communication with the tower and the passengers/crew - are we agreed? They're made up of a microphone and speakers in a combination unit. The alternative is to go back to the days of tinny speakers and handset microphones while an engine drones away (destroying the acuity of your ears and fatiguing you in one mind numbing experience)! As I soon learned,



headsets come in several styles be they a full-cushion headset, a lightweight headset, or even an ITE (in the ear) headset. By the way, a full helmet setup is outside the scope of this paper.

Microphones:

The mic (microphone) part of a headset equation is easy. They're usually either dynamic (moving coil) or electret (charged plate) types. Due to a little audio/video production in my background, I know electret microphones are a superior choice for sound reproduction. Boom mounted mics on a headset usually use passive noise cancellation.



This is accomplished by the simple expedient of leaving the back of the unit open. As a result, omnidirectional sounds the mic receives cancel each other out (your voice is directional). This actually works pretty well, however, the mic decision is pretty much moot because what you get with the headset is predetermined by the manufacturer – i.e. the better headsets come with better mics. By the way, some headsets come with an electronic noise canceling electret microphone. These are really, really good!

Headphone:

The second part of the headset equation are how they work to reduce noise in the aircraft while letting us hear what we need to hear – this is the headphone part of a headset. Like ordinary headphones, the headsets have speakers in them. Naturally, because we have two ears they have two speakers! While some headsets have a single volume control, better units have a gain control on each earpiece (gain is a fancy audio term for volume).

Noise reduction - passive vs. active:

The less expensive headsets generally are PNR (passive noise reduction) designs. Passive means what you think. For example, wadding up cotton balls and sticking them in your ears is a passive method of noise reduction. So, for that matter, sticking your fingers in your ears also a passive method of noise reduction . . . though it makes controlling your aircraft more chancy. Basically, you're just blocking the sound.

Where things get interesting is when the audio engineers get involved because they can bring to bear some technology a tad more sophisticated than that. For example, have you ever mistakenly wired your stereo with one speaker hooked up backwards (with the negative wire going to the positive terminal)? It results in a somewhat muted sound. Now in theory, if they were positioned perfectly, the sound from one speaker would actually cancel out the sound from the other. And for what it's worth, I once tried the experiment, but while I never could make it silent, they did sound somewhat crappy! Anyway, this is the basis of an interesting technology called ANR (active noise reduction). These headsets are all the rage amongst pilots and even the well heeled amongst civil aviation passengers! For what it's worth, if this kind of stuff bores you then skip the rest of this section and just think of ANR as practical black magic! Basically ANR headsets use microphones and circuitry to create negative sound impulses (but more sophisticated than the speaker experiment mentioned above) thereby canceling out some of the noise we hear while flying our GA (general aviation) aircraft. This is hot stuff folks! Furthermore, we now even have DNR (digital noise reduction) headsets available. These are a combination of passive, active, and digital noise reduction! Oh and before I forget, remember because the marketing types are involved in selling things, there are also different terms bandied about like ENC (electronic noise canceling), which as nearly as I can figure out mean the same thing as ANR. Regardless of the name, these ANR headsets really work!

Background:

While I'm willing to take the manufacturer's word on how much noise reduction their headsets actually buffer (both passive and active), how do I know if it matters to me? How do you? Sure a decision based on the pretty blue color of the Lightspeed is valid, but is it rational? After all, we're working to protect our hearing while simultaneously enhancing communication. There are other issues too. For example; how loud is it inside your aircraft? In fact, even the shape of your head/ears are a factor because after all, comfort is an issue as well. Folks, the fact is we suffer an embarrassment of riches. We've never had it so good due to the wealth of choices available to us. Thus, the question of which headset to buy, because it's replete with many variables (plus a strong component of personal choice, like do you prefer boxers or briefs), is difficult. So it's confusing to evaluate and arrive at a good decision.

Preconceptions:

Naturally, we all have preconceived notions. For example, when I started on my quest I figured it's would be hard to go wrong with Lightspeed headsets. Was it because I was knowledgeable? No, it was because my CFI swears by them! But it seems every movie ever filmed has a pilot with David Clarks! David Clark has been

around forever (ca. 1935). But they make a lot of models, so which one is right for me? Along the way I was told to consider the Bose X headset – but to tell the truth, I kind of gagged at the price – though what price can you put on your hearing? And I do love Bose speakers, but does this translate to making good headsets? Then a CFI friend (whose Dad is a Delta 757 pilot) told me his Dad loved the Lightspeed Mach 1. These are an in-the-ear design and what makes them interesting is I've shot enough video while wearing headphones to imagine how nice it would be to ditch the weight (and the sweaty feeling during hot weather). But they're a passive design, i.e. they are not an ANR headset. Which begs the question; do we even need an ANR design? Anyway, I wear full-cushion headsets (vs. lightweights) while videotaping because it's important for good sound reproduction, so if the weight of a full-cushion headset is the price to be paid, so be it! There are other choices. For example, an old and well-respected manufacturer is Telex. Their headsets are often seen perched on the heads of NFL coaches and their equipment is frequently used in the video production industry. Another well-regarded brand of equipment in the television and film production communities is Sennheiser. I use their shotgun microphones as well as their headphones in one of my business interests. Interestingly, in the many Internet



threads and articles I saw plenty of comparisons, often between folks arguing the merits of top of the range Telex 50D vs. Bose X. Or perhaps it was David Clark H10-13XL vs. Lightspeed Thirty 3G. Plus there was always the odd Softcomm, Sennheiser, or Sigtronics recommendation. But the real problem was in finding a semi-objective person who could give me the straight skinny on what I needed to know, i.e. someone who compared more than one to another. Maybe you've discovered the same thing.

Synthesis of Prevailing Opinions:

Before moving on, let's discuss my synthesis of the prevailing opinions. I arrived at this list by researching, researching, and researching – but bear in mind; it's composed of opinions! Anyway, I present them in no particular order.

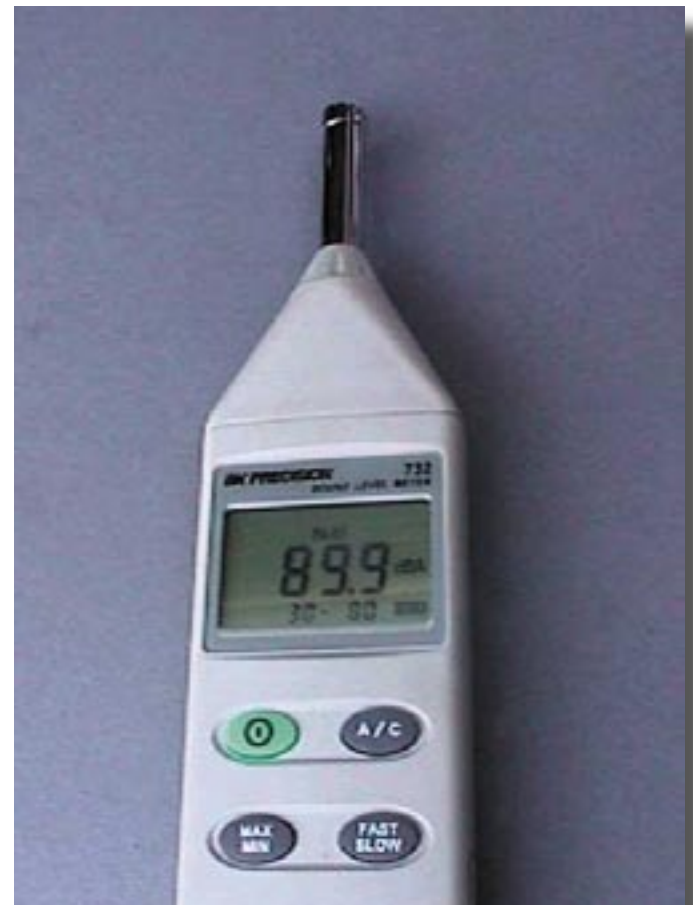
- ANR is money well spent.
- Lightspeed ANR, because of their size, look and feel like Mickey Mouse ears (with apologies to Disney) and will bump into everything. Furthermore, Lightspeed have a superb reputation for service, but you'll need it because they break easy (putatively due to them being cheap pieces of Chinese junk). Plus not much has been written about Mach 1 in piston powered GA aircraft (where low frequency noise is dominant).
- The knock against the Bose (other than price) concerns durability and possibly a fragile feeling. By the way, I saw a lot of, "I'll pass my old headset (presumably a lesser unit) down to my wife, kids, dog." But the fact is my wife's ears/comfort are just as important (if not more so) to me than my own – so the reality is I'm shopping for two sets of headsets.
- Try them on because everyone's head and definition of comfort varies. This especially resonates with me because I tell our customers the same things regarding blades on their helicopters (remote control models). I also use the oft-mentioned comparison of boxers vs. briefs, i.e. it's a matter of taste. Hence, other than for the anal sense of order born within me, the two headsets "don't" have to be the same. Lynn will just have to pick what she likes while I'll pick what I like . . . and yes, the obsessive/compulsive (nee anal) voice within me will be gleeful if they are the same unit!
- Despite an outstanding reputation for good old fashioned American built-like-a-tank design, classic looks, and a fabulous reputation for service, seemingly the knock against the various DC iterations is they may be too "squeeze your head" tight – ever heard the phrase "David Clamp"? However, it's impossible to know if this is a factor until I plant them on my fat melon head and try them for myself! This, plus DC offer a bewildering number of options, i.e. coiled cord vs. straight cord, for example . . . by the way, why would I care about the cord, and is there a consensus? Then there are helicopter vs. fixed wing versions – really. Why?
- Telex adjustable tensioning is great – to keep from having your head squeezed like a grape, I presume. Interestingly enough, a few folks spoke up about the moderately priced Telex units (saying good things).

Here's what matters to me. The fact is most of my flying will be 4-hours, or less. However, I also know the occasional 8-hour cross-country is sure to happen occasionally. Hence, comfort is the major issue (presuming performance is similar amongst all the ANR units) though maybe I'm wrong. Then again, in my vast ignorance, I may be totally wrong to assign comfort such an important rating. Who the heck knows? This is precisely why I opened the can of worms.

Sound Levels:

Any discussion of headsets needs to include a discussion of sound levels as by definition, that's what headsets are trying to do, i.e. protect us from excessive sound levels. Toward that aim I introduce my BK Precision 732 Sound Level Meter. This unit conforms to IEC651 type 2, ANSI S1.4 Type 2 for Sound Level Meters. I mention this so you don't think I'm making a guesstimate of sound levels. This 732 is a precision tool that is expressly designed to meet the measurement requirements of safety engineers, health, and industrial safety officers when monitoring sound control in various environments.

Furthermore, the meter is designed to measure both A-weighted and C-weighted sound pressure levels. A-weighting is for general sound level



measurements and C-weighting is for when you suspect there are large amounts of low-frequency noise. I set the meter for slow response (this way a transient loud noise doesn't spike the reading). The way it works is you use A-weighting and check with C-weighting. Then, if the C-weighting levels are much higher this means there's a large amount of low frequency noise. In a piston-powered GA aircraft, this is the case, i.e. there's a large change between A-weighting and C-weighting. C weighting is showing us what's hurting us in GA if we're flying a piston-powered aircraft; it's the low-frequency noise, which is fatiguing!

In general, the BK Precision 732 portable field instrument is easily of sufficient accuracy to measure actual sound levels in the cockpit. Using it is a tremendous aid in determining what noise levels we're actually experiencing inside the cockpit of a typical GA aircraft such as a Cessna 172. Thus, knowing how loud it is, then subtract the 20-odd dB of passive noise reduction and then subtract an additional 15-20 dB of active noise reduction we can determine whether spending for active noise reduction is due to an actual health issue, or a perceived comfort/quality issue.

Please realize loud noise can result in cumulative (and permanent) hearing loss at chronic exposures (equal to a SPL of 85 dB, or higher) for an 8-hour period. However, because decibels are a logarithmic measure, increasing from 80 dB to 83 dB means we have a doubling of power. Let carry this to a working example: 4 hours at 88 dB is the same as 8 hours at 85 dB, so if the aircraft starts out at 105 dB in the cockpit, and assuming a 20 dB reduction via a passive headset, you're still exposed to damage because 85 dB is considered chronic noise!

By the way, OSHA has a table of permissible noise exposures. The table starts at 8 hours and 90 dB. I've copied it figuring they won't sue me.

Duration per day	Sound level, slow response
8 hours	90 dBA
6 hours	92 dBA
4 hours	95 dBA
3 hours	97 dBA
2 hours	100 dBA
1-1/2 hours	102 dBA
1 hour	105 dBA
1/2 hour	110 dBA
1/4 hour or less	115 dBA

Data:

Inside a Cessna 172P, with three people and the engine not running and the doors and windows closed the meter reading is 50 dBA (A-weighting). There's no change with C-weighting at 50 dBC (note the dBC at the end instead of dBA means C-weighting).

- Start Up, 75 dBA, 100 dBC**
- Taxi (windows open), 75 dBA, 105 dBC**
- Run up (magneto check), 92 dBA, 115 dBC**
- Take Off, 95 dBA, 115 dBC**
- Cruise, 90 dBA, 109 dBC**
- Approach, 88 dBA, 107 dBC**

As you can see, there's sufficient difference between the A-weighting and the C-weighting to support the notion that we're dealing with low frequency noise in a typical piston powered GA aircraft like a Cessna 172P. This information is critical if you're to review and evaluate headsets because when the manufacturer states "this headset reduces sound levels 20 dB" you need to know how loud it is in the first place, understand? Hence, in cruise, at 109 dBC a passive noise reduction of 20 dB means we're tolerating 89 dBC.

However, a quick perusal of the OSHA chart in the previous column shows us that chart (and all charts) uses the A-weighting (slow response, which is also how I measured). According to OSHA's chart, the 90 dBA at cruise can be tolerated for 8 hours a day without long term effects. Personally, I treat this as a guide and while the time in the aircraft while I was switching between headsets wasn't uncomfortable by any stretch of the imagination, I certainly wouldn't want to have that engine droning in my ears sans protection for any longer than it took to switch headsets!

What does 90 dBA in cruise mean (vs. 109 dBC)? Simply this, any headset, which provides 20 dB of passive reduction, takes you into the 70-dBA range, which can be tolerated indefinitely! Hence, by OSHA standards you do not "need" an active noise reduction headset because you're adequately protected with virtually any of the passive headsets out there! Hence, active protection appears to be more a matter of personal comfort rather than a necessity of for protecting your hearing. That said, I take a slightly different view of this issue because I measured a large difference in the C-weighting of the sound pressure measurements. And after switching between active and passive there's NO DOUBT, I want the extra 20 dB of active noise reduction! Hence, with one exception, all the headsets tested, i.e. under my consideration for getting my dollar, are ANR types (i.e. ANR, ENC, DNR, etc.).

Headset Testing:

First things first; I needed to check out what was available in the way of headsets, both passive and active. So I headed over to Air Orlando, the very well equipped pilot shop at KORL.



Once there I quickly discovered why this is considered a "must stop" establishment that is highly regarded by folks who travel to Sun-N-Fun. The fact is I found a superb selection of headsets and pilot equipment in a store where it would be easy to spend an entire day. Bernardo Roman, the manager, has in effect created an experience which is akin to being in a toy store! Anyway, they have a great selection of headsets. But I quickly discovered (as you would expect) that a minute's testing in the store is not long enough to evaluate comfort . . . or effectiveness.



By the way, if you look closely you'll see a funny looking egg-shaped chair with a CD of airplane noise. In my opinion you can forget about using it because ultimately nothing beats doing it in the air (no comments, please). Anyway, I forked over for a pilot and a 172 and off we went with a bunch of different headsets! Bernie not only

didn't mind me doing this, but he actually encouraged it! Basically, the idea was to give the headsets a real operational test. That's due to my education as an engineer, which means I'm a strong believer in empirical testing! Anyway, what follows are my thoughts on each of the headsets (in the order in which they were tested, i.e. went on my head).

1. David Clark H10-13X – 18 ounces, 23/20 dB (passive/active), \$625. Quality and an overall good feel are outstanding. At 17 ounces I soon began to feel them on the top of my noggin (I'd left my cap in the truck). Interestingly, flipping the switch between passive and ANR makes the choice of ANR a no-brainer in my opinion.



One thing I didn't care for was how I soon felt "sweaty" around the gel ear cup/seals. Frankly, I think it's a function of the shiny plastic material against my skin, which is going to promote this sweaty feeling no matter what. The instructor mentioned David Clark offers cloth covers for them as an option. This unit has dual gain controls (one on each ear cup), which worked well. Anyway, the high overall feel of quality left no doubt I'd be getting my money's worth.



2. Lightspeed Thirty 3G – 15 ounces, 12-22/28-30 db, \$595. These had one of the most comfortable ear cups of all the headsets I tried, even better than the highly regarded Bose X. The



ear cup/seal is made of fine calfskin type leather instead of the shiny plastic material used on some. The ear cups are also triangular in appearance instead of the standard oval of the others. That said, the seal wasn't the best and hence, the passive noise reduction wasn't as good as any of the others (as a direct consequence of the material). And I think this would become a factor if, for example, I tried the cloth accessory for the David Clark cups/seals (and others with shiny material). Anyway, construction/quality appeared to be good – not up to the David Clark or Telex standard, maybe as good as Bose, maybe slightly below. However, bearing in mind the many, many comments on the Internet about the poor construction quality of Lightspeed headsets (and their lack of durability) I must wonder if I'm being deceived. Are they cheap Chinese junk as some claim, or if this is an tale based on earlier examples of the product line. By the way, my wife nicknamed these the Princess Leia headsets (reference to Star Wars) while I have heard them referred to as Mickey Mouse – because of their appearance (ears come to mind, but possibly it's because of the quality issue). Unfortunately, engaging the ANR function (about as effective as the other headsets sampled) also introduced a rather distinct "alternator" whine. I don't know if it is really alternator whine, or not, but if we were driving down the highway and hearing alternator whine over the stereo of my car I'd be looking for the source of the problem (or placing a capacitor across the power leads of the car stereo). In short, the whine ruined what was a pretty good feeling for the Lightspeed Thirty 3G headset. By the way, the whine was also present when

plugged into the back seat when my wife tried them on (Lynn tried them all as well). One nice thing about the Lightspeed units was the battery module incorporates a cell phone and iPod interface (via a special cable). While this is a nice touch, I was willing to deal with the alternator whine and took them off in disappointment.

3. Lightspeed Mach 1 – 1 ounce, or some such, 29 db, \$499. These were the headsets I had the most curiosity about. Anyway, I brought along the standard silicone ear seals as well as the blue-foam ear seals and the larger yellow-foam seals. The foam ear seals are the same type



of thing we've probably all encountered in a disposable hearing protector, i.e. memory foam you roll between your fingers before inserting into the ear canal – after which they regain their original size (thereby promote the seal in the ear canal). Unfortunately, I couldn't establish an adequate seal in my left ear canal (the one with the boom mic) and thus, passive reduction was compromised. The one in my right ear fit fine with any of the three foam-types. The silicone one sealed best and reduced sound pressure levels better vs. any of the foam-type seals (they also offer custom molded ones). Naturally I could fork over for a set of custom fit silicone seals – but I made do because what would I do with 500 bucks worth of Mach 1 if they still didn't satisfy me? Anyway, despite a claimed rating of -29 dB of passive reduction I would have to say they were about the same as, or perhaps not quite as quiet an experience as any of the full-cushion over the ear headsets when their respective ANR "was not" active (i.e. just in their passive mode). In active mode all the ANR headsets beat the pants off the Mach 1. Basically they felt more like a -20 dB headset and I can buy those for 100-bucks if I'm willing to live with -20 dB of passive reduction (though



giving the Devil his due, they wouldn't be as comfortable as the Mach 1). Also, the cords were something of a pain in the butt but I'm sure I could learn to live with this. However, the real catch is that while the communications inside the aircraft was decent, the quality of tower communications, i.e. "understandability", was far inferior to all the other headsets.

4. Telex Stratus 30XT – 18 ounces, 21/14 dB, \$499. These were a pretty decent headset, and though they're every bit as heavy as the David Clark units, they were more comfortable to wear. At about 500 bucks, these were middle of the road price wise amongst all the ANR headsets. Subjectively, the ANR was every bit as good as



the David Clark ANR . . . but then it's hard to tell a difference between "any" of the ANR units. Why? Because it generally takes 6 dB to discern a change in "loudness" in a noisy environment while technically, it only takes 1 dB to discern it in a controlled environment. Regardless, when compared to PNR, there's a distinct difference

when the ANR is engaged! Remember, for all intents and purposes, turning off the ANR makes all the headsets into PNR. My wife liked them more than all the others largely because you can make a simple adjustment for "tightness". You see there's an ingenious cam-action block on each earpiece making it trivially easy to adjust for



the width of the head. That's a real plus for her because she has a slender face. Also, you can plug in either a cell phone or an iPod! Frankly, the Telex Stratus 30XT delivers quite a lot of bang for the buck in the ANR headset marketplace.

5. Lightspeed QFR XCc – 14 ounces, 24-26/10-12 dB, \$375. These were decent. The instructor piloting the 172 said he prefers these in a passive headset where they're called a QFR SOLOc instead of XCc (and they come in at 12 ounces). I rather suspect the 2-ounce difference is entirely in the battery box vs. on my head. Anyway, I'm not certain they are really the same thing but I wasn't feeling argumentative and they do indeed appear similar. I also agree with him they worked very well in passive mode. In active

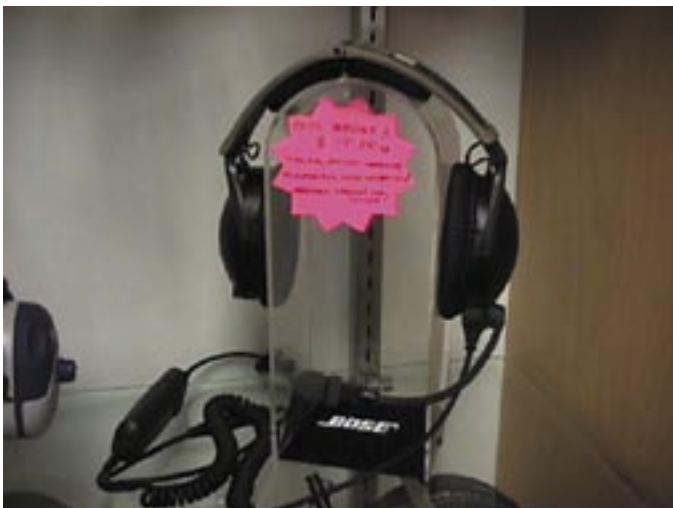


mode they weren't quite up to snuff, i.e. the David Clark units (or the Telex Stratus 30XT) in my opinion, but nonetheless, pretty decent.

6. Bose X – 12 ounces, \$995. These felt delightful on top of the old noggin. They were light; the sheepskin pad was soft plus it didn't get hot at all (it was 91°F that day and we were only at 2500 AGL). However, I suspect wearing my ball cap would make this a non-issue. Meanwhile, the passive noise reduction was the worst of all headsets tested (excepting the Lightspeed Mach 1 ear



bud style). The crinkly material of the cup/seal is, I suspect, the reason but I also suspect it won't last too long before it starts to flake, or peel off. I could be wrong but I've got professional head phones that we use with my video company which do this after a few years. Regardless, I didn't have the Bose X on long enough to get



uncomfortable (so yes, this is an opinion – and as you know, we all have one). Nonetheless, with the ANR engaged the Bose X are a pretty darn

good headset . . . as I would expect given their cost (and the earpieces are surely replaceable making this issue merely a maintenance item). One thing though, it bugs me Bose do not give specs on noise reduction! After all, this is what we're buying (though with ANR engaged, all the headsets were pretty decent in reducing noise). Anyway, the Bose X unit has far and away the slimmest design of them all so they'd be the cat's meow in a tight cockpit, most especially as compared to the Lightspeed Thirty 3G unit (Princess Leia) headset! Are they worth more than the David Clark H10-13X at 625 bucks or the Telex Stratus 30XT at \$500? Hmmm, I gotta ponder this.

7. Telex Stratus 50 Digital – 18 ounces, 24/26 dB, \$699. After experiencing the Stratus 30XT I was expecting good things and I wasn't disappointed. Though large (nearly as large as Princess Leia), and heavy (as much as the 30XT or the David Clark units), they felt great. What's



more, the material used for the ear cups is a very soft mat-finish material, which looks like they will



wear well. The passive reduction was better than the Stratus 30XT (as was the active noise reduction). Overall I'd have to say the Stratus 50 Digital are a pretty darn good headset, maybe the best overall. But are they worth \$699, or about \$200 more than their sibling, the very good Telex Stratus 30XT? It really depends on the noise in your airplane. Regardless, these headsets are most definitely a contender!

8. David Clark 10-13XL – 18 ounces, 23/20 dB, \$665. Essentially this is the same thing as the H10-13X except the battery module is removable instead of being integrated onto the cord, i.e. there are multi-pin plugs for the wires going into and coming out of the battery module.



This means I could use a panel mount instead of relying on batteries. Also, while I rather think I'd prefer a coiled cord vs. a straight cord, it turns out that's a heli-only option. By the way, helicopters use a different plug than what's used in GA aircraft, a U-174/U connector; it's a single plug while GA aircraft use two plugs (a .250" for the headphones and a .206" for the microphone). One thing, unlike the H20-10XL, for adjusting the headset placement this model (just like H10-13X) uses a machine screw and nylon-locking nut to set the drag for adjustment. It's a very simple mechanical system that works.

9. David Clark 20-10XL – 19 ounces, 22/20 dB, \$698. Basically 35 bucks more than the H10-13XL, these feature plastic parts where the H10-13XL has stainless steel. The ear cups are shaped differently but worked very well. The material wasn't quite as shiny on the set I tested but soon felt sweaty like the others. A tad heavier at 19 ounces - but it's hard to tell a difference. They have a far easier to adjust fit (for the top of the head) as it's press down on a lever (on

each side) adjust and let go. One caveat, if you fly with limited headroom; they will be an issue because the suspension system sticks up much higher than "any" of the other headsets. I'm only 5'8" tall but being long in the waist put me eye level with much taller men when sitting. In the 172 it wasn't an issue but in a Bonanza it may well be. You've been warned.

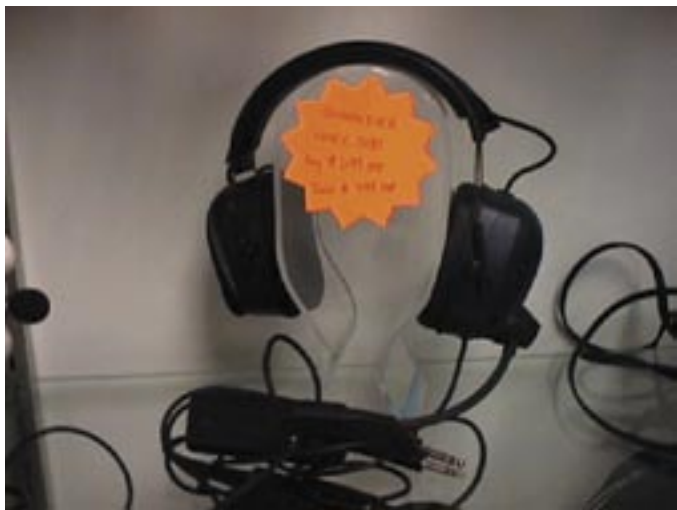
10. Lightspeed Twenty 3G – 15 ounces, 12-22/28-24 db, \$475. Virtually a carbon copy of the Thirty 3G, but 120 bucks cheaper, the headset is quite comfortable to wear. Unfortunately, these headsets had an issue with a screech in the headphone. It was intermittent and likely in the cord, but it made for a frustrating experi-



ence. I quickly got tired of screwing around with them and chucked them back into the bag. It's a shame that two Lightspeed headsets, both showing so much promise, both had an issue. And believe me while there are folks who swear at them, the vast majority swears by them. Anyway, it's a shame, but I call them like I see them and am reporting my experience.

11. Sennheiser HMEC-350 – 13 ounces, 25/16 db, \$520. These were a pleasant surprise. The





rich blue color was attractive, the matt-finish material for the ear cups looks like it would wear well. As usual, the plastic material induced a sweaty feeling quickly. This headset provided superb passive and active reduction . . . perhaps the best passive reduction of them all (i.e. when we flipped the switch to the ANR off position). However, the ear cups, however, were a tad small for my liking (and nobody has ever called me big ears, or jug head). Basically I felt like I had to adjust my ears within them. However, once this was done they were fine fit with a bare sensation of touching occasionally. I rather suspect this would fade in time as they molded themselves to fit my head. Lynn like these as well and they're a nice headset (perhaps underrated).

Conclusion:

Final decision? Yes, and it was surprisingly easy. The David Clark H10-13XL at \$665 had a great look and feel on my "quality meter". The Sennheiser preformed nicely but simply didn't fit my ears very well. Partly because I don't need to impress anybody on the flightline, but mostly because they didn't perform well enough for the price premium (plus they felt fragile), I just couldn't bring myself to pay 1000 bucks each for the Bose X. Various problems kept me from considering either the Lightspeed Twenty 3G or the Thirty 3G units, and while their \$375 QFR Xcc headsets were quite decent they had no way to adjust for different head widths. In due course, performance, features, and comfort (that unique Telex ability to adjust for head width) became the deal maker. The \$500 Telex Stratus 30XT became the standard because you can adjust the "clamping" force on your head (not just vertical placement like the others). Naturally, this begs the question, "What about Telex's Stratus 50D Digital?" Frankly, they're superb, and if I flew a noisy airplane like a Husky, they would be a no brainer. But for me they weren't worth the extra 200 bucks. A final factor was Telex headsets are Made in USA while most brands are foreign (for example, Lightspeed units are Made in China). Ultimately, I went for the Telex Stratus 30XT headsets due to their best overall performance, i.e. great sound when communicating with the tower (or passengers), adjustability and comfort, plus I can plug in an iPod or cell phone. This proved to be an unbeatable combination.

