

# the ToneQuest Report

The Player's Guide to Ultimate Tone

## LIKE A HURRICANE

### Category 5 Amps

Category 5 is a relatively new company based in Frisco, Texas that has wasted no time in developing twelve distinctly unique, hand-wired designs ranging in power from 15W–100W, while aggressively placing amps with touring players like Joe Bonamassa, Tab Benoit, Jimmy Thackery, Gary Moore and one of our favorite Texas Burstbusters, Jonn Richardson (Otis Taylor), among others. The company's strategy for quick and lasting growth is fairly obvious with a quick scan of their website – build hand-wired tube amps to the highest standards of custom manufacturing, and offer a range of power and tone shaping options that will meet the needs of virtually any player, from low-volume home and studio applications to 100 watt pro rigs suitable for cavernous venues and big stages. When it comes to fully understanding the intention of *Cat 5* amps, you'll need to do a little homework on each model, many of which are named for famously wicked hurricanes. We've done all the work for you on the two models reviewed here....

#### Andrew



We received a 1x15 version of the 40 watt *Andrew*, which is also available in 2x10, 2x12 and 4x10 configurations. The 1x15 is equipped with our favorite current production 15" – the *Eminence Legend* – along with dual 5881 power tubes and an

interesting combination of two separately voiced input channels.

Channel 1 is described as having been inspired by the '61 *Fender* brown *Deluxe*. Having owned a dead mint example of this very amp, we can tell you that it possessed a remarkably toneful and middy snarl, but very little usable clean headroom, which is why we ultimately let it go. Channel 1 in the *Andrew* produces an equally "brown" sound – rich with midrange and none of the typically scooped tones of the blackface era. Channel 1 is designed with a single



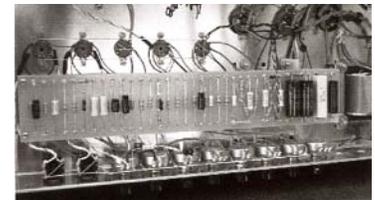
tone control to shape EQ, plus the global reverb and "voltage" controls for the internal *variatic* circuit. Of course, the reissue *Tung-Sol 5881* tubes

create a much more formidable voice than our brown *Deluxe* could ever must, which we consider to be a tremendous improvement to anything inspired by the brown *Deluxe*. We all experience



and embrace varying sounds quite differently, so we won't offer this as an absolute, universal truth – but to our ears at least, we prefer the tone and attitude of *Andrew's* Channel 1 combined with snappy single coil pickups that can impart a

stronger attack on the bass strings and happily frolic in the midst of all that midrange. Otherwise, what you hear is the sonic equivalent of a chocolate-chocolate chip double fudge cookie in the style of a late '50s *Gibson GA40* – a very good thing with single coils or *bright* replica *PAFs*. Dialed in with the sole tone control, you can create a very old-school tone in Channel 1, and that does seem to be its purpose, so mission accomplished. A more nimble and versatile range of blackface tones are found in Channel 2.



Channel 2 offers a full range of tone-shaping EQ, with bass, treble and midrange controls, plus the global reverb and voltage controls common on both channels. We asked Steven Scott, head of product development at *Category 5* to explain....

**TQR:** Does the voltage control essentially function as a *variatic*, dropping voltage to the power section, or is something else involved (most people have heard of power scaling but have no idea what it really does)?

Power Scaling is another name for voltage control. We don't use the same circuit as London Power and have not licensed the trademarked name, so we can't call it Power Scaling. The voltage control makes the B+ voltage variable from about 60VDC to about 450VDC, which

allows you to dial the amp from about 5W to about 45W. This allows you to more or less keep the same tone once you've dialed it in, then scale it to the size of the venue. This is the feature that our customers rave about the most. The tone really does stay pretty consistent until you take the voltage way down below about 11:00 on the dial. Then it starts to brown out as the tubes are operating well below their intended point. Another advantage of this technology is it greatly improves tube life as the bias drops as the voltage is turned down. It differs from using a variac in that only the B+ voltage is affected, meaning filament voltage stays the same and no damage to the tubes such as cathode stripping can occur.

## Voltage

And *Category 5's* voltage control works very well in its ability to deliver variable levels of smooth and subtle to crunchy distortion at lower volume levels. You may still hear a subtle difference in intensity and urgency between a smaller 20 watt amp being naturally pushed into distortion and a bigger amp like the *Andrew* being attenuated with the B+ voltage lowered, but short of running two amps with an A/B switcher, the *Andrew* scores big points for narrowing the gap significantly without any regrettable compromises. We should also note that while this amp utilizes super-fast FREDS (fast recovery epitaxial diodes) rather than a tube rectifier, it does not sound as hard and unforgiving as some other silicon diode rectified *Marshall* and *Fender* amps.

The overall sound of *Andrew's* channel 2 is rich in musical fidelity like a great blackface *Fender*, but void of the ice pick treble of, say, a *Super Reverb*. Expect beautiful tones enhanced by the presence of a midrange control, and lush reverb that avoids responding with hair-trigger sensitivity or too much runaway "springiness" in the 'verb. We suspect that many players will prefer the sound of the reverb in the *Andrew* over that of a vintage amp. Under the hood you'll find loads of toneful *Mallory 150* coupling caps, *Carling* switches, *PEC* pots, *Cliff* jacks, *Mercury Magnetics* trannies, and top-notch *Analysis Plus* speaker cable. Additional features on the back panel include a 4, 8 and 16 ohm selector, extension speaker jack and line out. Cabinets are made from 11-ply Baltic birch, and yes, we would love to experience this amp in a lightweight pine cabinet. The only niggling complaint we can make about the *Andrew* (and the *Tempest* that follows) are the tight corners where the front chassis mounting screws are located. Pull the chassis and you'll discover that getting the washers and nuts threaded back on the front screws in each corner requires a one-finger contortionist act unless you happen to own a nut driver with a sufficiently long shaft. That aside, we love everything about the *Andrew*.

## The Tempest

This is *Category 5's* unapologetic nod to vintage 45 watt *Marshall* tone enhanced with reverb, and once again we're treated to two separately voiced and very worthy channel inputs – the first a warm *JTM45* voice, while channel two delivers slightly more aggressive and brighter *Plexi* tones. Like the *Andrew*, the *Tempest* features a

single tone control in channel 1, and bass, mid and treble EQ in channel two with global reverb and voltage control. We noted some unfamiliar technical references and features on the *Category 5* website that seemed to beg further explanation, so we went back to technical director Steven Scott for clarification....

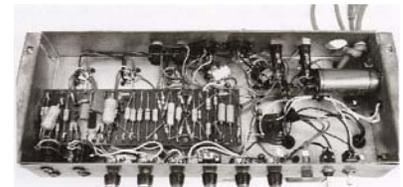


**TQR:** Can you describe the difference and benefits of “plate driven tone stacks” and “passive channel mixing”?



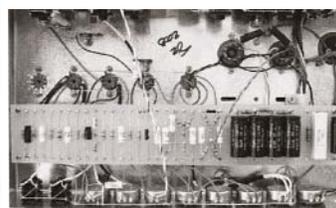
One type of tone stack is not necessarily better than the other. Each has its pros and cons and is selected for its performance in the circuit being developed. Plate-

driven tone stacks are driven by high impedance and usually occur early in the circuit like after the first gain stage. They normally have more success at shaping the overall tone of the amplifier and are best when used with cleanish circuits (with the notable exception of the *Trainwreck* amps). The drawback is the high impedance property invites noise and parasitic oscillations to play havoc with the circuit, so they must be very carefully designed. This is the type of tone stack associated with blackface *Fender* amps. Cathode driven tone stacks are driven by the low impedance cathode follower in the last gain stage of the circuit. They usually occur late in the circuit and shape the overdriven sound, however their effect on tone shaping is somewhat limited.



This type of tone stack is found in *Fender* tweed amps and almost all *Marshalls*.

Active channel mixing is where you mix the two channels inside a tube instead of just using mixing resistors. Each channel is fed into one side of a preamp tube, where their signals are summed at the plate and output to the next gain stage or phase inverter. The benefit to doing this is a lower noise floor and fewer components in the signal chain to make it as short as possible. Passive channel mixing is where you mix the two channels using series mixing resistors. This is how mixing is accomplished in mixing



boards. Its main benefit is that it is simple and cheap to do. Its drawback is that adding series resistance to a signal path adds shot noise which manifests itself as hiss. It also adds

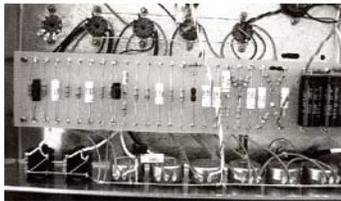
a tiny bit of compression, which may or may not be desirable.

**TQR:** The *Tempest* is described as a 2-channel *JTM45/Plexi*. What are the most significant differences between the two circuits and how closely did you choose to follow the original circuits for these amps?

This is a bit of a misnomer. We have found that customers like to have a reference to a familiar amp when considering a purchase, so we use circuits to sort of describe what they can expect from a specific channel on a given amplifier. Channel 1 (volume, tone) is thicker and meatier than Channel 2, just like the *JTM45* is thicker than the *Plexi*. Channel 2 is tighter and brighter, similarly to what you might expect from a 1968 *Plexi*. Both channels are more or less volume matched to make them compatible with each other, but they are not in a clean/dirty configuration.

**TQR:** How did you perhaps improve upon the original *JTM45* and *Plexi* designs?

The circuit itself has very little in common with either the *JTM45* or *Plexi*. The *Tempest* does not use negative



feedback where both *Marshall*s do. Its phase inverter is also quite different, and since there is no negative feedback, we are able to feed the signals from channel 1 and 2 into one side of the

phase inverter and feed the reverb into the other side to keep them isolated from each other, which contributes to the organic sound of the reverb circuit. Honestly, the only similarity between the *Tempest* and the *Marshall*s in question is the preamp of channel 2, where we use the same basic topology, but none of the same component values. You'll find that our tone stack gives you more tonal flexibility and has a much more useful bass control.

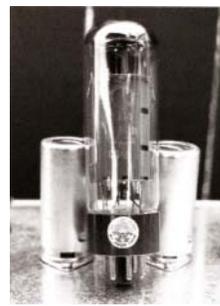
**TQR:** Are there any other unique and noteworthy features of the *Tempest* (or any of your other models) you'd like to mention (transformers, components, layout, durability, etc.)?

We generally use as many American made parts as we can. That is difficult in the electronics industry, but we buy American as much as possible. We are exclusively using *Mercury Magnetics* transformers now because they are the most consistent and reliable transformers we have been able to find. I've found the quality and size of iron plays a very important role in how an amp sounds, so we use the largest and highest quality iron available. Our chassis are made from high grade aluminum and are laser punched and welded by a local shop in Dallas. Everything is designed and made to be as durable as possible to make the finished product a workhorse for touring musicians. We quite simply try to overbuild everything. Electronic components are simply the best we can find, and our 11-ply Baltic birch cabinets are built by one of the finest cabinet builders in the U.S. We have learned a great deal in the past few decades about circuit design and layout. Our primary focus when we design a new amplifier is to make the signal path

as short as possible with the fewest components possible. We want signal wires to be short, neat and tidy, and we space components carefully to eliminate every extra inch of wire, which means that our layouts look a bit strange when compared with other amplifiers.

### “Better” than a *Marshall*?

A broad, sweeping question to be sure, but having played enough to know, we'll give the 45 watt *Tempest* this.... It sounds every bit as good as a vintage *Marshall* played through our 4x12 *Avatar* cab loaded with British-made 25 watt greenbacks with a few huge exceptions... the EQ controls on channel two are completely superior to any vintage *Marshall* amp you will ever hear, both channels are graced with *Category 5*'s outstanding reverb, and you've got the volume control to back down volume without losing all the good stuff you got by turning the volume up in the first place. For *Marshall* fans, this is a major feat not to be overlooked.



Channel 1 on the *Tempest* is intended to reprise the original sound of an early *JTM45*, and it does, with a warmer, less gritty and trebly tone that typifies Ken Bran's original effort to construct a “British” tweed *Bassman*. These early amps were hardly gain monsters, and while you can overdrive the *Tempest* from the first input, you'll experience a

much deeper, warmer voice that, like channel 1 on the *Andrew*, thrives especially well with single coil pickups – which is not to say that our humbucking guitars are off limits... but in channel one they do sound best on the bridge pickup.

Channel 2 is pure *Plexi*-ville circa 1968, with much more treble presence supporting the notes, but none of the thin sharpness we've heard in early '70s vintage *Marshall*s like the 100 watt *Lead* we acquired and reviewed last year. The amp sounded great, but only after we had managed to knock down some of the crispy treble.... The *Tempest* sounds smooth and musical with a very *Fendery* tone stack complementing the drive, touch-sensitivity and sweet sustain of a great *Plexi* amp. Like the *Andrew*, the *Tempest* also responds to varying pick attack with fluid dynamics that are missing in most amps lacking tube rectifiers, and the volume control gracefully reduces volume while maintain the fidelity and rich, thick tone all the way down to somewhere in the 10 watt range. This amp just sounds incredibly musical, burned-in, round and happy from the first chord without the dominant midrange notch and murky muddiness of a typical old *Marshall* in the bass frequencies. The level of distortion available with the volume and voltage cranked is easily sufficient to support weak *Stratocaster* pickups, but true to form, there is also plenty of room for the addition of a boost pedal for more intense, overdriven sustain, and rolling back the volume on your guitar with the *Tempest* set at higher “voltage” levels above 2 o'clock produces cleaner rhythm tones. We also noted a pair of cryogenically treated “Flying C” Russian EL34s, but we aren't going to suggest

that you need to begin buying tubes that have been frozen for 48 hours quite yet.... The *Tempest* also offers an effects loop, subtle mid-boost toggle on the back panel, reverb footswitch, ohm selector, and extension speaker jack.

One last thing.... At 45 watts, we played the *Tempest* through our 4x12 cab with pre-Chinese, British 25W greenbacks and a *ClearSonic* plexi baffle, and even fully rippin' it wasn't as painfully loud as a blackface *Super* on "7." Our 2x12 cab loaded with *Hellatone* 30 and vintage *Celestion* G12H silverback was equally club friendly – just so you know. Do not fear the mighty big note – just

play more so you've nothing to hid, step up, and as always, boldly *Quest forth*....

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