

# THE BATTLE OF MUFF MOUNTAIN



**VS**

## THE TONE REPORT CIVIL WAR RE-ENACTMENT

WORDS BY  
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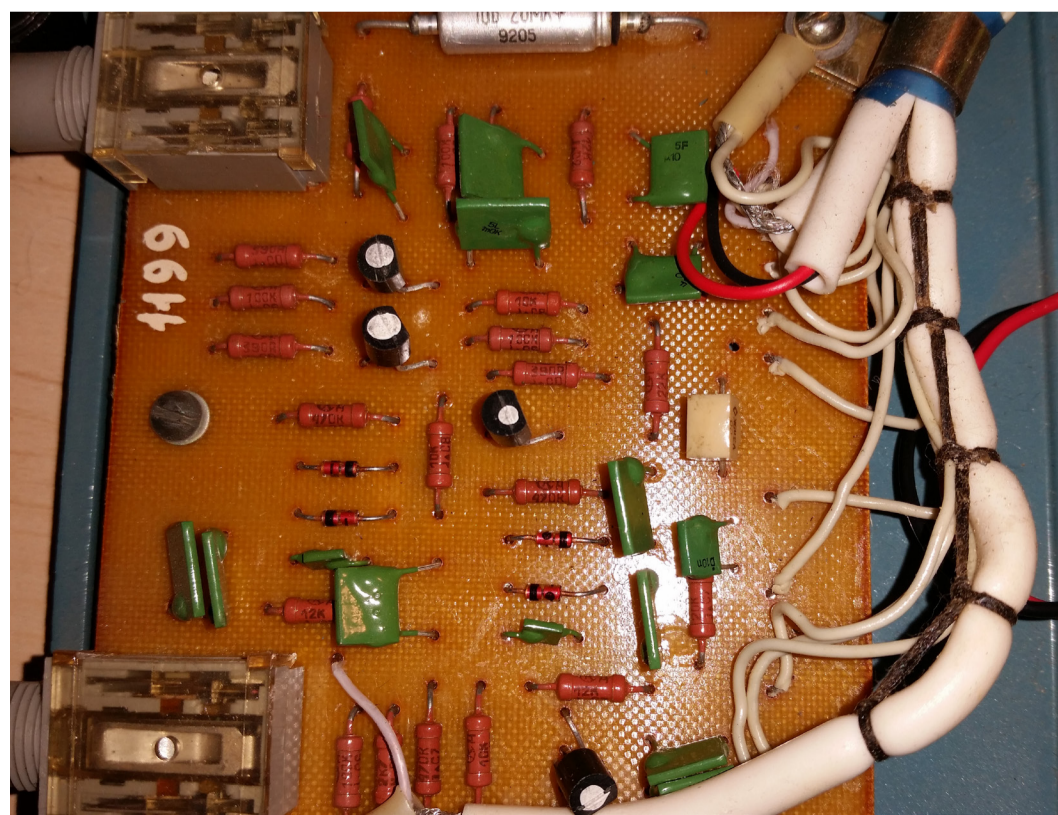
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In life, sometimes opportunities (or in this case, pedals) drop into your hands, and you have a choice. Enjoy it while it lasts, or make the most you possibly can out of them. A few weeks ago was one of those times for me, and I decided to share my experience and experiment with you dear denizens of *Tone Report*. So have a seat, kick up your feet, grab something nice to eat, and enjoy the tale of my journey into the land of post-Soviet Russian electronics.

Scattered throughout this feature you will find clips labeled Pedal A and Pedal B. Each one of these represents either the clone or the real deal. At the end of the feature, the clips will be revealed, but until then, try to give your best guess as to which one is which; and for those of you reading on the blog, feel free to leave a comment as to which one you thought was the real thing and which one you thought was the clone. Now without further a-due, let's dive into some history.

In the mid '80s, Electro-Harmonix filed for bankruptcy in the United States and stopped making pedals due to issues with the Worker's Union. After a couple of years remaining folded in the States, Matthews began a new company, the "New Sensor Corporation" to manufacture vacuum tubes overseas in Russia. Production costs were low and the recently liberated Soviet military

factories were clamoring for any sort of work (most of those Sovtek/New Sensor pedals are made from overstock military electronic components left over from the defunct Soviet Union—part of the reason the pedals look like tanks is because they were designed by Soviet military factories). Russia had the infrastructure to accommodate mass creation of vacuum tubes, so Matthews took advantage of that and began to sell Russian-made Sovtek branded vacuum tubes stateside. Later on, he moved into amp designs (the Sovtek MiG line of amps), and finally into pedals in 1990 under the Sovtek/Electro-Harmonix brand (he had since regained his assets and the use of the company name). Most of the Sovtek/New Sensor/Electro-Harmonix pedals are just recreations of classic EHX effects, such as the Small Stone, Bassballs and Big Muff, albeit with a slightly different twist. As you will see in the image below, the components look very different from modern and vintage US components, and there is a good reason for that.



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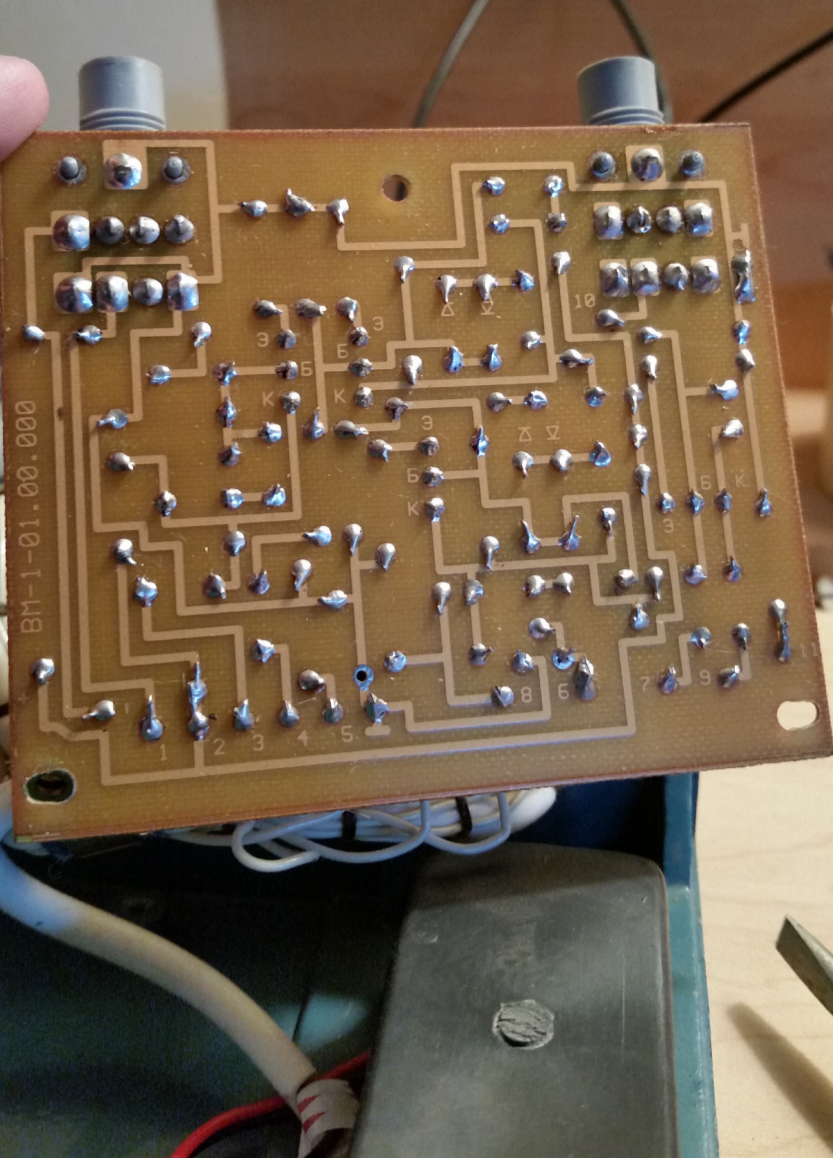
A GUTSHOT OF THE INSIDE OF THE CIVIL WAR. NOTICE HOW ALL THE RESISTOR VALUES ARE WRITTEN ON AS OPPOSED TO COLOR CODED.

Soviet Russia was communist—politically communist, but also economically so. No outside goods came in and out of the Soviet Union, so the Soviets had to create all of their own products; and not only that, they also had to create all their own components for those products. So, a Soviet era toaster was made with 100 percent Soviet parts, from the sheet metal all the way down to the resistors, all produced within its borders. In today's capitalist driven world economy, it's a little hard to imagine something that doesn't have parts from China or Taiwan, but only 30-plus years ago it was all but grim reality for some.

Fast forward to the present day, my friend across the pond recently heard a Civil War Muff that he absolutely fell in love with. One thing led to another, and about a week later I was greeted with a gloriously beat-up piece of Soviet history on my doorstep. It was perhaps the biggest pedal I have ever seen, and I was positively blown away by the sound of the unit. For a short moment, I understood the addiction behind

acquiring vintage effects. It held this mystique and this character, this smell and this vibe to which no clone could ever come close. I played feverishly until the skin on my fingers peeled and my ears rung; I was convinced that this was the endgame, that I would be doomed to a life of chasing eBayers and biting bullets. In the middle of Muff-riddled ecstasy I was having an existential crisis, until a little lightbulb flashed in my head.

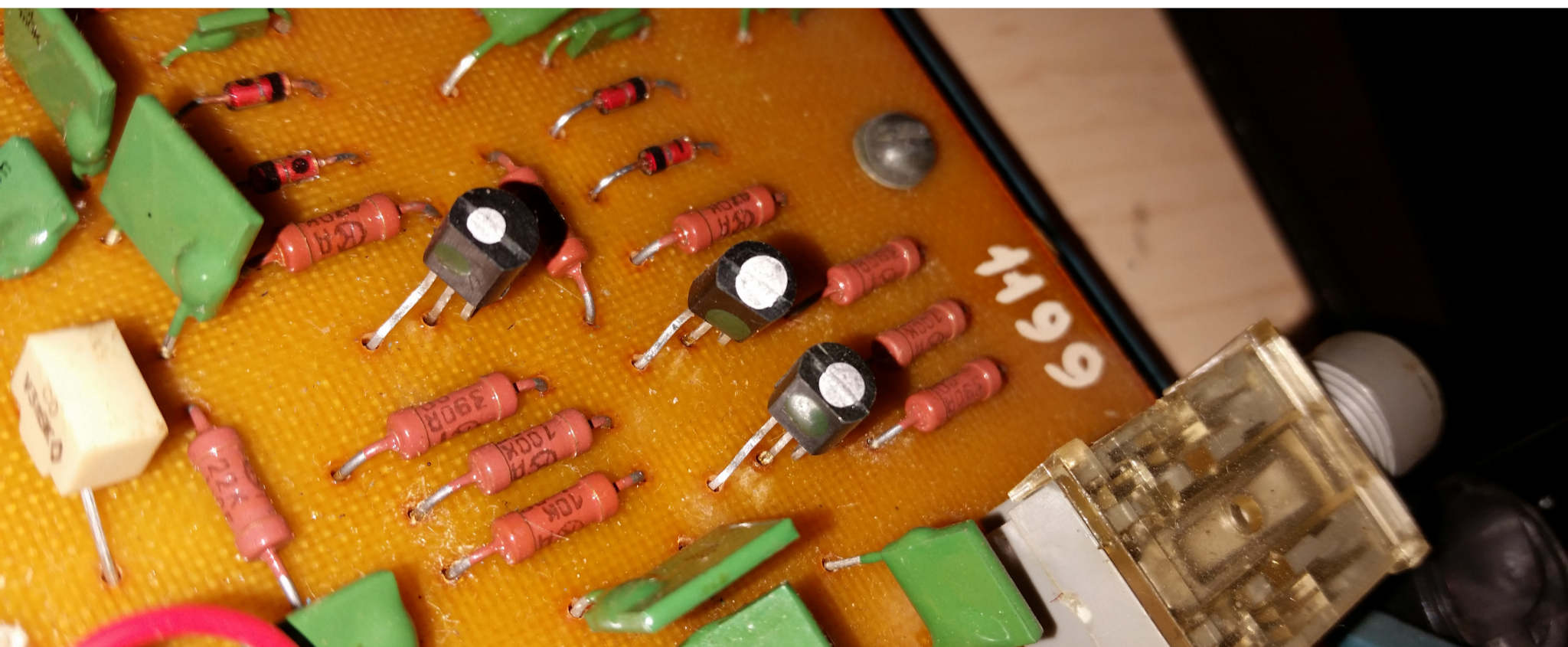
I'm sure most of you know my esteemed colleague, Nicholas Kula. He's our resident electronics genius at Tone Report Weekly, and I bet quite a few of you are fans of his awesome DIY articles. I approached him with a challenge; clone this specific pedal exactly, down to the very last component, and see if our readers can tell the difference. Now when most people clone pedals, they go to great lengths to try and emulate exactly each component, while spending a lot of money in the process. Nicholas and I decided to take a different approach, by getting the cheapest, crappiest off-the-shelf components you can possibly find. This is both a social



THE BACK SIDE OF THE CIVIL WAR CIRCUIT BOARD.



THE 100K SOVIET POTS

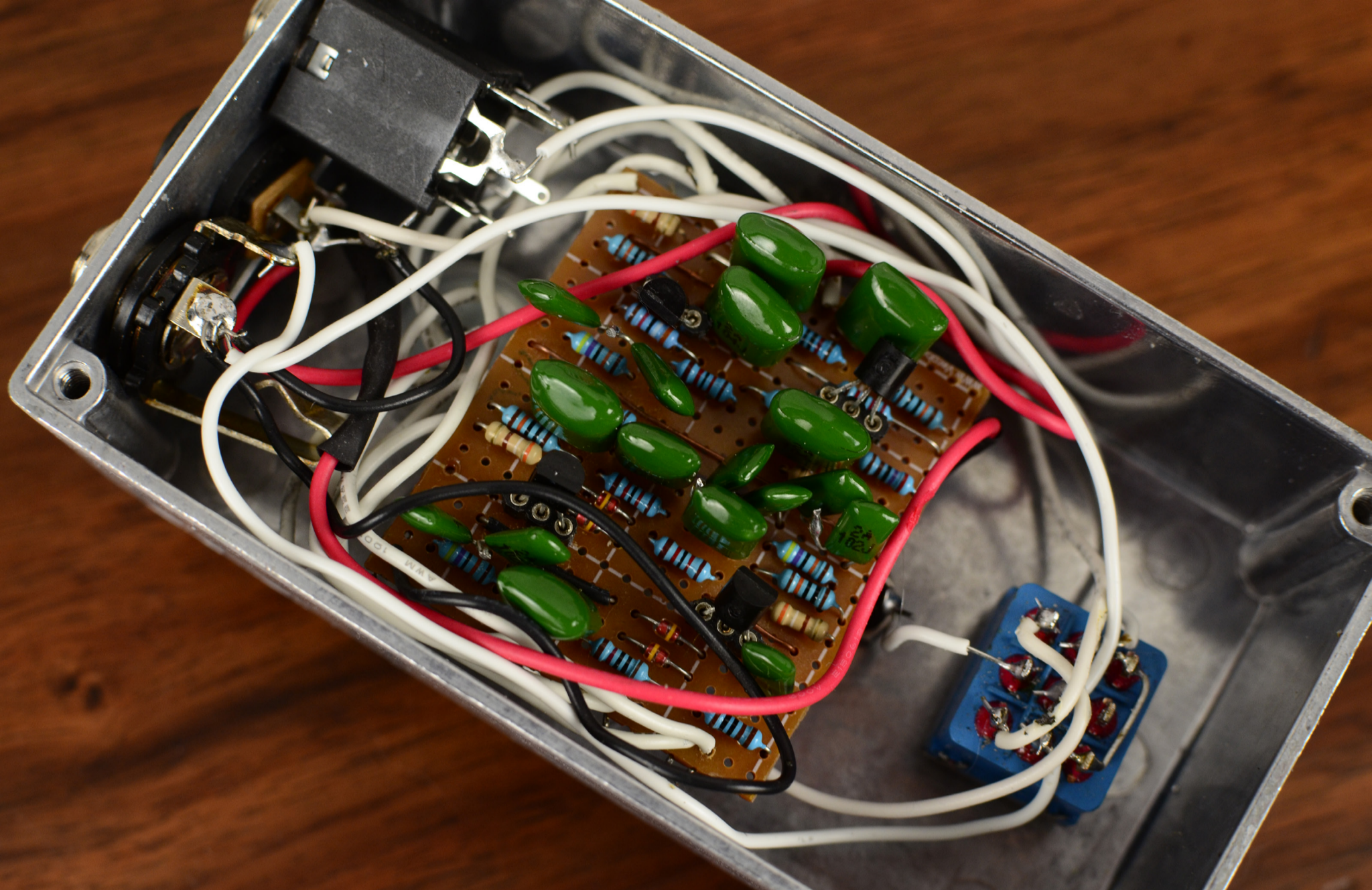


THE RARE SOVIET ERA KT3102E TRANSISTORS

and (slightly) scientific experiment, and you guys (and gals) are the guinea pigs. I now turn it over to Nicholas on the low down and dirty of this Civil War:

“When putting together this Civil War reenactment, there was just one goal:

make several compromises. All too often, boutique manufacturers will take great care in explaining to the masses exactly what goes into each pedal, including component brand names and the like. Unlike most, the aim of the



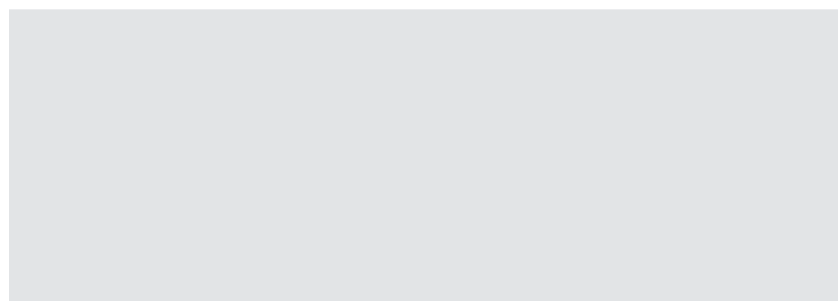
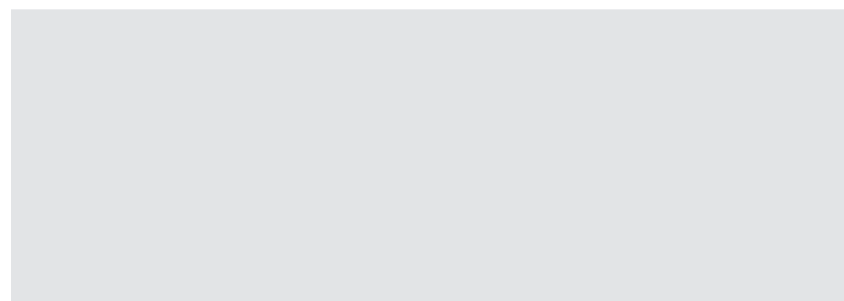
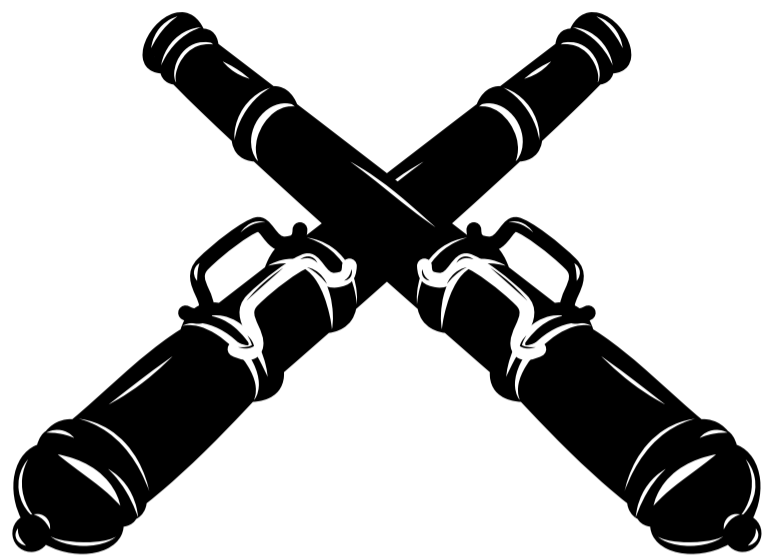
project was to construct a replica of the second-generation Civil War Muff as the everyman—the kind of folks who don't hold WIMA capacitors and Burr-Brown semiconductors in hallowed reverence (yet). The project started when my fellow *Tone Reporter* sent me a large compressed file full of detailed pictures of the circuit board. Despite my familiarity with Cyrillic, I needed all images from the packet to transcribe the capacitor values, and I spent a great deal of time deciphering the resistor values, regardless of the tricky lighting. After drafting the schematic, the next step was component choice, and this is obviously where I tried to cut as many corners as possible with regards to

part quality. Almost every component in my Civil War box is reclaimed from other projects—half the capacitors, one-third of the resistors, two transistors and all the diodes were new. The remaining components—including the potentiometers—were all used. Every component in the audio path was as cheap as possible: every capacitor is green Mylar film, every resistor is thin-lead metal film. I did no transistor  $h_{fe}$  testing, no diode forward-voltage measurements. 99 percent of the component values were accurate to the photos, including two 1nF caps in series (making 500pF) in the feedback paths of Q2 and Q3.

In the true spirit of DIY, I was forced

to wire two capacitors in series to approximate the 3.9nF tone cap; I believe the value ended up reading 3.81nF. I kept the 1.5kΩ current limiting resistor but switched the LED; but the LED I used was a 3mm blue diffused with 3.0 forward voltage, as opposed to the original red diffused part which has a forward voltage of 1.75. Apart from the LED and the aforementioned (closely-substituted) capacitor, I believe this recreation to be accurate to the best of my abilities.”

I would like to extend a special thanks to Phil Robinson for letting me use his Civil War for this feature, and Nadav Laytin for his wonderful work on the new enclosure for the clone.



**SIGNAL PATH: D. ALLEN ECHOES LOADED STRAT > MUFF > TC FLASHBACK (ON LEAD CLIP ONLY) > HI-TONE DR-30 > SHURE SM-57**



**VS**



RESULTS: PEDAL A: CLONE PEDAL B: REAL CIVIL WAR MUFF