The World's Most Secretive 737 Just Migrated To Oklahoma
Tyler Rogoway - The Drive

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The Air Force's wildly modified NT-43, better known by its call-sign, 'RAT55,' just made a rare flight outside its usual highly-defined operational confines. You see, RAT55 isn't just the strangest 737 flying, it's also the shyest.

It lives and works almost exclusively within the desolate air training ranges that take up large swathes of airspace over south-central California and southern Nevada, often disappearing into Area 51 or the Tonopah Test Range Airport.

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The aircraft is a prized asset that is used as a flying aircraft signature measurement laboratory. It is one of America's unique capabilities that help to make stealthy aircraft as capable and reliable as they are. You can read all about the unique mission, and the shady history of RAT55, in these past pieces of ours linked here and here.

Suffice it to say that whenever RAT55 pops up, either photographed over the Mojave Desert with a B-2 Spirit in tow or on plane tracking software, it always draws a lot of attention. Such was the case on June 1, 2022, when it ventured west on a flight to Ardmore, Oklahoma of all places. Our friend David Honan spotted the flight, with the gonzo-looking jet departing from its presumptive home at the high-security Tonopah Test Range Airport early Wednesday morning.

While the flight is certainly attention-grabbing, the 50-year-old RAT55 needs maintenance – including periodic depot-level work and checks – just like any 737. At this point, it is one of a dwindling number of first-generation 737s still flying, and even though it gets relatively light use and likely extremely good care, the aircraft will only get harder to maintain as time goes on.

Its massive alterations certainly put some kind of unique stress on the airframe. As RAT55 often works at lower altitudes alongside its target 'customer' aircraft, the stress on the air-frame is magnified. With that in mind, it has been spotted at a heavy maintenance center before during its second life as a grotesque-looking but essential flying sensor lab. Ardmore, Oklahoma is home to just such a place.

RAT55 on the ground at Edwards AFB. This was one of a series of images shot by our friends at Phodocu that are the best images ever taken of this shy jet. You can see the full image layout in this previous piece of ours.

King Aerospace's location at Admore Municipal Airport in the city of just 25,000 residents does deep maintenance on aircraft with a particular focus on 737s. The company's website reads:
King Aerospace Commercial Corporation operates a FAA-approved VVIP aviation maintenance facility. We're also certified by domestic and international aviation regulatory agencies. Boeing lists us in its annual Boeing Business Jet Customer Support Handbook, noting us as a provider of both maintenance and paint services.

Aviation photographer @Volgowrath happened to check out the airport to see if they could spot the infamous RAT55. They were in luck, with the resulting image of the jet in one of the King Aerospace's maintenance bays seen at the top of the story and in @Volgowrath's tweet below. We thank @Volgowrath for letting us share this very rare image with our readers.

Beyond routine maintenance, those huge modifications made to the airframe — as well as others that can be attached if needed — intended to hold radar arrays, infrared and other optics, as well as communications gear and associated technology, need to be custom fabricated, altered to accept new technologies, and maintained and tested to make sure they are safe to fly.

The aircraft is truly one of a kind, so it needs folks that are used to doing elaborate but safe modifications to existing airframes for unique mission purposes.

King Aerospace's unique portfolio of heavy maintenance and deep modification work, especially for security-sensitive customers, makes it quite the logical place to send RAT55 for some much-needed TLC and possibly more.

In fact, this is not the first time RAT55 was spotted by plane trackers heading to the Oklahoma airfield. Back in December of 2021, it went there and stayed for about a month before heading back west.

The truth is that RAT55 can't fly forever. It's nearly 50 years old as it is. Eventually, an aircraft, or multiple aircraft, will be needed to take its place. Considering the explosion in low-observable aircraft development as of late, with the Next Generation Air Dominance (NGAD) program well underway, the B-21 about to be rolled out, the RQ-180 in the air, and many other programs, and especially stealthy unmanned aircraft that will need similar services, even an extra airframe or two to supplement RAT55's capabilities is likely needed.

There were a number of major indications that the mysterious 'naked' 737-700 registered to the Air Force's Rapid Capabilities Office under the n-number N712JM was going to be RAT55's replacement or at least one of its replacements.

You can read all about it and its potential relation to RAT55 in this past feature. There has been some speculation that N712JM may have transformed into a uniquely-painted 737 that carries the USAF serial number 21-0024.

That aircraft has been flying out of Waco, Texas, where a major L3 plant that does aircraft modifications is located on what looks like test flight missions around the region, since roughly April.

Whether or not 21-0024 turns out to be N712JM, or is related at all to efforts to replace RAT55, remains to be seen. The Federal Aviation Administration does say N712JM is still registered to the USAF, though its database does not always reflect the reality.

More significantly, the District of Columbia Air National Guard's 201st Airlift Squadron operates at least two militarized 737s, designated C-40Cs, with similarly non-descript paint schemes and serial number placements. The unit's mission is to provide "worldwide VIP airlift operations supporting high-ranking military and government leadership, including U.S. Cabinet members, congressional delegations, governor delegations, and the First Lady of the United States."

Its aircraft have specialized communications systems, among other features, so 21-0024 could be in the process of receiving similar modifications at L3's plant in Waco.

Regardless, the USAF is likely to have requirements for aircraft like RAT55 for years to come. It's possible that some of the work it conducts could be done with podded systems or smaller aircraft with modifications in the future that leverage more recent radar capabilities, as well as with advanced digital modeling.

But in-flight validation of low-observable aircraft will still be needed. This is especially true after modification work is done on an airframe, after the application of new coatings, and to verify the low-observable capabilities of new aircraft in its actual operational environment and from all angles.

Until we know for certain what RAT55's replacement will look like considering the massive modifications to it were designed around decades-old technology, the truly special NT-43A will remain the world's shyest and most unique 737.