



SECRETS AND SPURS by Joe Sage

Nissan USA, headquartered in Nashville, Tennessee, is heavily involved in Arizona.

For a taste of the Old West, Nissan Titan Pickup Truck sponsors the Arizona Black Rodeo, held each year at Rawhide Western Town and Event Center on the Gila River Indian Community.

And for a taste of the New West, they have the Nissan Technical Center North America (NTNCA) Arizona Test Center, a proving ground commonly known as simply ATC. The facility is a key component in the complex chain of events that leads to the new vehicles you see in Nissan showrooms, working hard in the chicken-and-egg sequence of goals, trials and adjustments that perfect a vehicle's engineering—a process Nissan calls "total vehicle development," which involves all design, engineering and technical operations.

Nissan's Old and New West came together for us with an immersive session at ATC, bookended by an Arizona Black Rodeo preview lunch one day and then the Rodeo itself the next.

The Arizona Test Center is a 3,050-acre expanse near Stanfield, southeast of Maricopa and about 45 miles south of downtown Phoenix, in the middle of agricultural country. Much land within the ATC is farmed—and not by stealth-trained Nissan farm employees, but rather by area farmers who themselves have learned how to keep a secret. We, on the other hand, handed over our cameras and phones at the gate.

Arizona's low desert terrain is an ideal environment to test Nissan vehicles for hot weather dura-

bility, engine cooling and air conditioner performance, but the purpose-built facility keeps busy with a wide range of duties year-round.

The ATC proving ground has about a dozen different components (11 or 13, as they group a couple of things). The High Speed Oval is a 5.7-mile asphalt-concrete three-lane track, steeply banked so its turns are handling-neutral at 130 mph, the speed at which centrifugal force and gravity even out and take you around the curve hands-free, as we did in a Nissan Titan full-size pickup.

A Durability Test Area breaks into eleven over-all tasks, from frame-twisting to corrosion, Belgian block surfaces, water and mud hazards of multiple depths, off-road testing and curb impact.

A Ride Comfort Course has at least 15 specialty surfaces—including an innuendo-bearing New York Road, railroad crossings, waves, dips, coarse and smooth aggregates (including European spec), asphalt patches, various undulations, impacts, potholes and more. Distinct from the Durability area, these are used to test and develop for ride comfort and for road noise inside the vehicle.

Some Marketability Course features also seem similar to the Durability and Ride Comfort areas, but are engineered to challenge vehicles in a range of North American real world conditions at closer to real world speed and dynamics. Sixteen "road events" include bridge expansion joints, broken concrete, chatter bumps, manholes, off-camber turns, bottoming-out bumps and other challenges of surface, form and condition. There is innuendo here,

too, in a Michigan Harshness stretch, and maybe a compliment in the San Gabriel curves and climbs.

A City Course is mostly about pattern, a system of interconnected squares that can be adapted to numerous urban scenarios.

The Grades area has four concrete slopes of 16, 20, 25 and 30 percent grades. (For perspective, Interstate highways are limited to six percent, or seven in extreme mountains at 55 mph or lower.) Tackling these in the Titan provided a great chance to look around at all the secret terrain, all at once, from the highest point in the facility, but you cannot see in front of you at all as you prepare to descend—much as in many off-roading situations.

A Soak Shed and Wind Breaks (seems like two things, but one by their count) sound obvious, but are actually for testing engine cooling (and air conditioning) in heavy winds from all directions, which can eliminate normal cooling benefits of motion.

Curb impact, addressed in the Durability area, gets very specific in the Structural Strength Pad. If you haven't thought much about curb impact (other than what a mistake may have just cost you), you will after you stand nearby as Nissan engineers slam the 5700-to-7400-pound Titan through wild slide skids to the point of impact with the 100mm Curb. Bam! We take it for granted that we'll drive away with rubber intact and air inside, but this test shows how critically such a detail is addressed.

The Vehicle Dynamics Area, a combination of large and small pads, is adaptable to a number of tasks including lateral G forces and skid dynamics.

The Low Friction/Noise Pass-by Facility is another we'd count as two, with an area of basalt tiles that very effectively represent an icy road and an-

other area with lateral sound-testing equipment.

Indoor activities at the Vehicle Dynamics Lab include K&C (kinematics and compliance) testing for suspension, a four-post shaker for body rigidity and vibration, and many more things we either couldn't see or could but can't tell you about.

We've driven the Nissan Titan at a number of award-granting comparo events, multiple times (where it has sometimes taken the top prize)—the Texas Truck Rodeo, Mudfest Outdoor Activity Vehicle of the Year Awards in the Pacific Northwest and the Active Lifestyle Vehicle Awards in Arizona—but ATC is the original ultimate challenge, the original bar-set-higher-than-high, the place that works hard to assure the trucks should breeze through our competitive courses in other locations.

Having scrutinized the Titan before, we concentrated more on the world outside at this event, as we drove on nearly every one of the above courses in one busy afternoon. We did get to check out the new Nissan Titan King Cab for the first time—a neat combination of the high-utility extended cab from their small trucks of the '70s and '80s, crossed with the full-size half- and heavy-half-ton capabilities of the Titan—and look forward to some dedicated drive time in it again before long.

We've driven other top secret development and track sites with other manufacturers, including two of the Detroit Three's truck- and/or off-road-specific test facilities. It's always enlightening. While you might find yourself thinking these vehicles are built to conquer the test track—sort of like studying in school just for the exam—it's more the other way around. These facilities are built to conquer the vehicles, and it's not until a vehicle comes out

on top that it's ready for final manufacture and sale.

Overall, the process of developing a new vehicle is mind-bogglingly complex. The fact that people will camp out in line for a new smartphone that has maybe one new feature each year is laughable in the face of vehicle development, which includes the equivalent of that smartphone as just one of hundreds or thousands of details that all have to work in concert, as multiple tons hurtle down the highway at 100 miles an hour, while protecting the lives and safety of those inside. Multiply this by about 350 or more vehicles available in the marketplace each year (all in far stiffer competition than a handful of phone brands). Multiply that by also having new models each year, which also have to meet ever-evolving external regulations. The fuse burns at both ends in the vehicle design process, as styling, engineering, market positioning and budgetary goals all collide with and ultimately benefit from all this developmental testing.

Each vehicle starts as an idea and a sketch, but the real world throws up a range of challenges. When a new vehicle is released and some colleague or enthusiast inevitably says, well, they ought to make a hatchback (or offer a different transmission, or some other variable), it's interesting to grasp just what a complex process such a seemingly simple demand would precipitate.

NTCNA nationwide employs over 1,200 people, many at the Arizona Test Center, and represents an investment of \$238 million. Other Nissan facilities include the NTNCA home base in Farmington Hills, Michigan; a research center in Silicon Valley; an e-Powertrain Center in West Sacramento; and Nissan Design America studios in San Diego. ■

ARIZONA BLACK RODEO

The ABRA-sanctioned Arizona Black Rodeo is one of the largest and most popular African-American events in Arizona, attracting more than 9,000 rodeo fans across a week-end of Western experiences. The event is committed to keeping the contributions of African-American western heritage alive by offering a fun, family-oriented event for residents and visitors alike. The Arizona Black Rodeo continues to build its reputation as a unique cultural and educational experience for an audience of all ages.

The Arizona Black Rodeo is sponsored by Nissan Titan Pickup Truck, who also invited us to lunch with Cloves Campbell—publisher of the *Arizona Informant*, Arizona's largest African-American newspaper, and chairman emeritus of the National Newspaper Publishers Association (NNPA)—for an overview of the Black Rodeo. The Arizona Black Rodeo Association (ABRA) has six core values: Youth, Community, Agriculture, Education, Health and Entertainment. The Rodeo evokes African-Americans' heritage in shaping Arizona and the West—an estimated 20 percent of late 19th century cowboys were African-Americans—with special emphasis on family values and a way for youth to gain new hands-on experiences.

Next was our Nissan Arizona Test Center tour, then an evening of BBQ at American Legion Post 65, hosted by Campbell, with personal introductions to the cowboys and cowgirls who would perform the next day.

On Saturday, it was off to Rawhide Western Town for a pre-show tour, contestant and VIP introductions, then the rodeo itself. More than 9,000 fans enjoyed a seriously fun event on a perfect Arizona spring day.

For more information, visit: azblackrodeo.wixsite.com/azbr ■