

Pat installed a new internal wiring harness and replaced two of the apply solenoids as a cheap insurance policy. With the new filter in place, we laid down the pan gasket and made sure all the surfaces were clean and straight.

13



Because we had plenty of clearance under our car, we decided to opt for Level 10's deep aluminum pan for increased fluid capacity and improved cooling. Aside from looking pretty trick, it has a convenient drain plug—a simple feature that GM's Hydramatic guys never offered us for, oh, 60 years or so.

14



With our transmission assembled and ready for installation, we took a moment to replace the rear main seal since it was so easy to get to. It was already leaking a little bit, so we took the opportunity to take this item off our "to-do" list.

15



With the transmission and converter handled, it was time to move to the suspension. Starting with the control arms, we went with Metco's billet aluminum adjustable upper and fixed lowers. As many Caprice and Impala SS fans can relate, GM sent every '94-'96 Chevy B-body out the door with a wheel that was about an inch too far forward in relation to the bodywork. Luckily, Metco's billet arms can be had in an extended-length version that properly centers the rear wheel in the wheelhousing.

16



To get a better hold of the Killer Whale's street antics, we went with a set of Edelbrock's IAS Classic shock absorbers. The Inertia Active System (IAS) has a piston valve design that provides a smooth ride on bumpy roads but a more controlled action on smoother surfaces. With a large 46mm piston and a lifetime warranty, we were sold.

17



Installing the lower control arms is very easy. They bolt right into place and even come with provisions and new hardware to mount the factory rear sway bar.

18

19



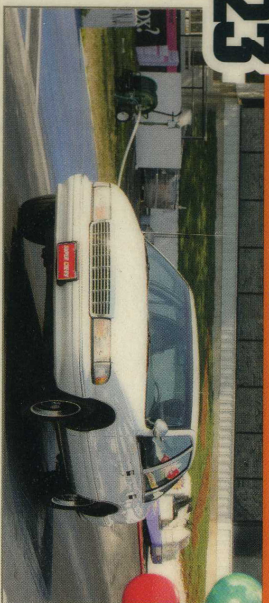
In place of the stock 3.088, we slapped in a set of used 3.735 that we found on eBay. Yes, in keeping with our budget theme, we went with "certified pre-owned" gears. They were original GM parts, so we knew that our chances of a quiet installation were very high. Here, our stock 3.088 are laid out on the table.

20



When buying gears (new or used), make sure you order them for a '91-'96 B-body. There is an ABS reluctor ring pressed onto a shoulder on the pinion gear, and no other versions of the 8.5 have it. In addition, you'll have to get the right reluctor that matches your gearset, otherwise your ABS system will not function. For 3.735, use GM PN 26018946. We found it at our local dealer for about \$30.

23



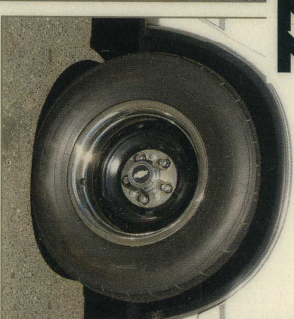
Here, you can see how our new converter and suspension work even with the stock rear tires in place. From our previous best of 15.037 at 91.45 with a 2.224 short time on stock tires, we lopped our a.t.'s to a new best of 14.802 at 91.77 mph with a 2.051 60-foot on the Nitro drag radials. Considering the car's 4,000-plus pound weight (without driver), it's pretty darn impressive considering we haven't even touched the factory air filter. Next month, we'll start throwing some power-enhancing parts at our ride.

21



Here, we propped the rear Edelbrock shocks into place and torqued them down to spec.

22



With the car back on the ground, we were happy to see how the Metco control arms had repositioned our 275/60/15 Nitro drag radials and used truck wheels in the wheelwells. This is how it should have been from the factory.

SOURCES
EDELbroCK
 310/781-2272
 www.edelbrock.com

J&T AUTO
 631/395-3403

LEVEL 10 TRANSMISSIONS
 973/827-1000
 www.levelten.com

METCO MOTORSPORTS
 864/332-5929
 www.metco Motorsports.com

NITRO TIRE NORTH AMERICA
 800/581-2982
 www.nitttire.com



Answering the question that nobody asked, we are proud to present our newest project vehicle. Project Killer Whale. Yes, it's a cop car. And yes, it has an LTI. Our baseline pass was a rather modest 15,251 at 91.11 mph. With 115,000 miles on the clock, it's really not that shabby.

KILLER WHALE, PART 1

FATS WHERE IT'S AT! WE'RE HAVING TONS OF FUN WITH CHEVY'S LAST CAPRICE

By Wynne the Hit Man | Photos by the author and Mike Bahml

Chevy's Caprices, Biscaynes, and Impalas embodied everything that was great about America. These cars offered full-sized American value with glamorous shapes designed by pens and emotion, not by committee. Big chrome bumpers and stadium-sized interiors rested on a rugged full frame to offer a sublime and assured ride that could handle any road—way that came across its cast-iron path.

In the early '90s, full-size cars were still selling briskly despite the temperamental OPEC situation that often relegated larger cars to the used car lots and the bottom of resale value charts. To meet the demands of its customers, in 1977 Chevy introduced an all-new downsized Caprice/Impala set on a shorter 116-inch wheelbase. In a move to improve fuel economy and efficiency, the new car was offered with a 305ci V-8 rated at 140 horsepower, choked by a Rochester two-barrel and a pebble-style catalytic converter. But as the Caprice and most every other GM car during the 1980s began to lose market share to the imported competition, GM felt the traditional Caprice of yesteryear needed a radical makeover. In a rather bold maneuver, Chevy

went for a completely new concept with its replacement and put a rounded silhouette onto its full-framed chassis from model year 1991-'96. Gone were the chrome bumpers and traditional styling cues. In their place came urethane bumpers, higher-quality interiors, and later on, LTI power. Sales went into the toilet. The jellybean shape never caught on with anyone except those responsible for taxi and law enforcement fleet sales. The conventional Caprice buyer no longer paid attention. By the mid-1990s, the damage was already done, and in 1996 the last of the great ones rolled off the assembly line.

Still, these cars have their loyal, faithful fans. To find out what all the hoopla was about, we decided to

TO RACE A CAPRICE IS TO LOVE A CAPRICE

vious experiences with these cars, we expected the factory 260hp LTI to catapult this double-row sofa on four wheels into the mid-15s. But to our surprise, the first pass netted us 15,251 at 91.11 mph with a 2.22 short time. Certainly not bad for our 88-degree test day, but we knew there was more in it.

The first order of business was a trackside exhaust system upgrade. By replacing the factory cat-back and its four mufflers with a larger, freer-flowing Edelbrock system, we were able to benefit from the system's 2.5-inch mandrel-bent pipes all the way to the tailpipes. Also, the sound that we now had bellowing from the rear of our Caprice was more befitting of an

American V-8 icon rather than a plied-in civil service vehicle. Back on the strip, the cat-back was worth .217 seconds, as our timeslips dipped to a 15.037 at 91.45 mph from our previous best of 15.251 at 91.11 mph.

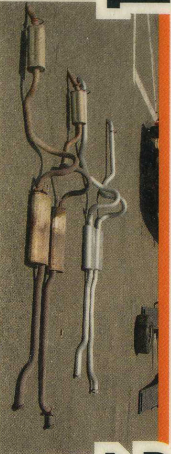
STRATEGIZE AND CATEGORIZE

At this point, many dragstrip enthusiasts start throwing all sorts of horsepower-enhancing parts on their ride. This may sound like fun, and it often is, but it's not the most effective way to drop e.t.s. Instead, it's usually better to concentrate on getting the power that you already have and putting it to the ground by improving efficiencies in the driveline and suspension. With that in mind, our next

round of mods would include a higher-stall torque converter and some mild suspension upgrades.

Because our goal was to have a streetable, strip-capable machine, we wanted a torque converter that would put the engine revs into the meat of the LTI's torque peak without the excessive slippage that would hurt performance or fuel economy. So we kept our goals realistic and headed over to Level 10 Performance in Hamburg, New Jersey, for a new converter. Once we gave proprietor Pat Barrett the detailed intention of our ride, he recommended one of his 10-inch performance converters, and on top of that an internal transmission upgrade because of the dragstrip action our car was going to see.

1



Our first mod: An Edelbrock cat-back exhaust system. While not something we would normally do trackside, we were fortunate enough to have the track rented for our testing exercise. But to our own chagrin our exuberance and enthusiasm were quickly tempered as we wasted the entire day dealing with rusty bolts and broken nuts (figuratively speaking, of course) to get the old exhaust out. Once the new Edelbrock exhaust was bolted into place, we lost out on the weather advantage as the temperature soared from 88 to 91 degrees Fahrenheit, but we did see a drop in time to 15.037 at 91.45, so we gained 0.217 seconds and .34 mph.

2



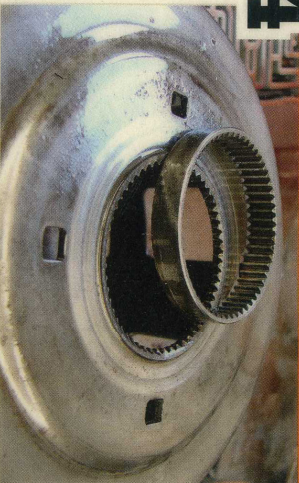
Heading over to Level 10 Transmissions, we looked for some more e.t. by installing one of its high-performance torque converters into our Killer Whale. But when Mike Bonassisa removed our 4L60E, we noticed a lot of play on the input shaft and some wear on the stator support shaft. Level 10's proprietor, Pat Barrett, suspected there was more damage inside and recommended a complete internal upgrade. We took his advice, and once everything was apart, his hunch proved to be right.

3



The stock torque converter on the left is not the original piece. As Pat related, "It's a typical mass-produced rebuilt converter. It was probably installed by the police fleet repair shop at one point or another, and if anything, it would have made your car slower than if you still had the factory torque converter in place." On the right, Level 10's 10.5-inch converter is not only lighter, but it also offers a street/strip-friendly stall speed of 2,400 rpm for stronger launches.

4



Typical of 4L60E transmissions, our reaction sun shell's hub had fractured from fatigue and abuse. Broken right at the base where it meets the main body, it was hard to believe our Killer Whale was still able to move forward with just 10 percent of its teeth still transferring torque.

In addition, the switch to the heavier-duty internals from a later-model 4L65E would ensure greater torque capacity and dependability. With the higher stall converter and the firm shifts provided by the specially modified valvebody, the car felt incredibly crisp—as if it lost 1,000 pounds.

Next up, we looked to the suspension for more e.i. We thought it would be a good time to upgrade our leaky shock absorbers for better wheel control and the rear control arms for better traction. Since the rear control arms are pivotal in controlling that stonking huge 8.5-inch rear axle, we opted for solid billet aluminum units from Metco Motorsports. They replace the flimsy factory stamped steel units and eliminate all the rubber bushings at each

contact point for better control. In their place, stiffer yet pliable polyurethane bushings do a much better job of positively locating the rear axle. Even better, Metco offers these control arms in factory or extended length versions; the latter relocates the axle housing rearward about an inch to properly position the rear wheel within the wheel-well housing, which is a problem that has plagued all Caprices with full-traction rear wheelwells from 1994-96. We opted for the extended-length units.

To match the improved performance the new control arms would provide, we then installed a set of Edelbrock's IAS shock absorbers on each corner of our Killer Whale. These shocks replace the factory units perfectly and offer much improved control over slow- and high-speed maneuvers thanks to an internally variable valve that varies firmness based on shaft velocity.

Because the Killer Whale was a former highway patrol vehicle, it was geared with rather tall 3.08s. We knew that for better e.i.'s we had to step up the gearing a bit for greater torque multiplication to get this two-ton titan out of the hole. While we were tempted to go with 4.10s, we decided to install 3.73s to maintain good fuel economy on the highway. When you go shopping for a gearset, make sure it's for a '91-96 B-body, as it must have the proper pinion shaft size to accept an ABS toner ring. Speaking of which, that's another expense, so plan to spend another \$30 for the sensor

ring because it's not included with the gearset that you'll buy.

A quick search on eBay revealed a plethora of used gearsets from various sellers. We found a set of used OEM 3.73s, purchased a new ABS toner ring from our local Chevy dealer, and brought everything over to our local GM performance experts at J&T Auto in Huntington Station, New York.


With our suspension and rear axle parts installed by Matt Prospisilli and John Mounoudros of J&T Auto, we soon returned to the track, and to no surprise we were hurried by traction woes. Because police-spec Caprices came with steel 15x7 wheels with a 5x5 bolt pattern, our tire choices for a drag radial are limited to a 245 section-width tire. Since it was hardly a step up

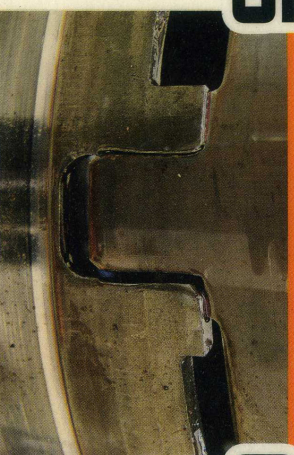
from our existing 235s, we looked for wider 15x8-inch wheels that would allow us to mount a much wider 275-section-width tire. We wanted wheels that would still look stealthy enough to match the factory steel wheels, so we started to look for a pair of older 2WD GM pickup trucks. Because they were equipped with a 5x5 bolt pattern and an 8-inch wheel, we began looking for a set, and to our delight, we found a pair for \$50 on the Internet. The best thing about these wheels is that they are hubcentric and have the proper offset. What a steal!

After an afternoon of sanding and painting with some fresh semi-gloss black rattle-can paint, we had J&T Auto mount on a pair of 275/60/15 Nitto NT555R Drag Radials. Nitto's

drag radials have proven to work well for us on the dragstrip, and because they tend to wear longer on the street, it would be perfect for us, because swapping the tires at the track is no fun when each combo weighs 80 pounds. We could have gone with the shorter 275/50/15, but we liked how the taller profile looked on our heavy Chevy.

All said and done, our Caprice was back on the starting line, and after a hellacious burnout to break them in, we were rewarded with a 14,802 at 91.77 mph, for a drop of .235 seconds.

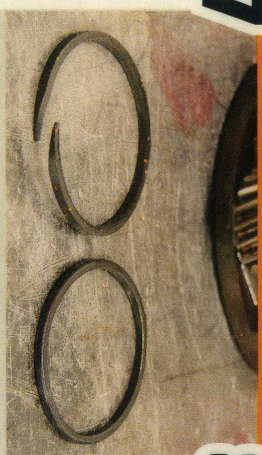
This just reinforces our earlier point that by improving the chassis and driveline, we were able to drop over two tenths without adding any more power. 



5 Our tranny also suffered from a heavily worn coupling between the reverse input drum and the reaction sun shell. This is caused by putting the car into reverse before coming to a complete stop at engine speeds above idle.



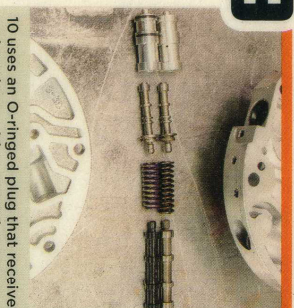
6 Using four-pinion planetary gearsets, 4L60E transmissions can handle a good amount of power and torque. But with the increased torque from our planned engine mods and the Caprice's portly weight, Pat recommended a 4L65E gearset, which incorporates five pinions in each assembly. This offers as much as a 25 percent greater torque capacity.



7 GM used conventional circumferential seals in many places to separate the apply and release circuits within a shift. When new, they were probably fine, but Level 10 replaces them with high-performance scarf seals that can expand or shrink in any condition, improving performance and reducing the internal fluid hemorrhaging that would reduce shift quality.



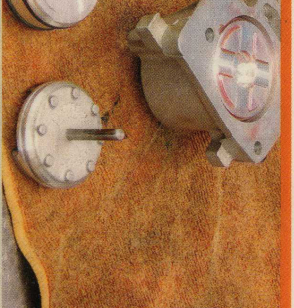
8 Brand-new clutches and steels are used throughout. Level 10 uses high-performance pieces and contributes the total torque capacity of a 4L60E/4L65E to the quality of the clutches and how well the valvebody and front pump are modified. Because our reverse-input drum was badly worn, we had to replace it with a new one. No worries for us, as Level 10 is used to this kind of carnage and promptly pulled one off its shelves and put it on our tab.



9 10 uses an O-ringed plug that receives a higher-rate spring along with a coated pressure regulator valve to bump up internal line pressure to high-performance specifications. Barrett mentions that this alone will greatly improve transmission performance and service life.



On 4L60E and 4L65E transmissions, the weak link is the front pump and its variable output design that relies heavily on the line pressure regulator. On the bottom, we see that Level 10



The second Gear Accumulator provides standby pressure for the 1-2 shift. For stock setups, its calibration is fine, but if you want firm 1-2 shifts, you'll need one of these—Level 10's billet aluminum accumulator with a double O-ring for a better seal.



Here, Pat works his magic and tackles the toughest part of the rebuild—the installation of the input drum/reverse input drum assembly. Aside from engaging seven clutches discs, he has to engage the interlocking tabs on the outer shells to the receiving ends inside the transmission. A few jiggles and a couple of minutes later, everything was lined up and the 2-4 band was wrapped around the whole shebang.



After modifying our valvebody with a Level 10 street/strip shift kit, Pat bolts it into place, keeping track of where the bolts go because there are essentially two lengths that look awfully similar. If you put the longer into the wrong hole, it will go right into the gears. His many years of experience mean he has all the bolt locations committed to memory.