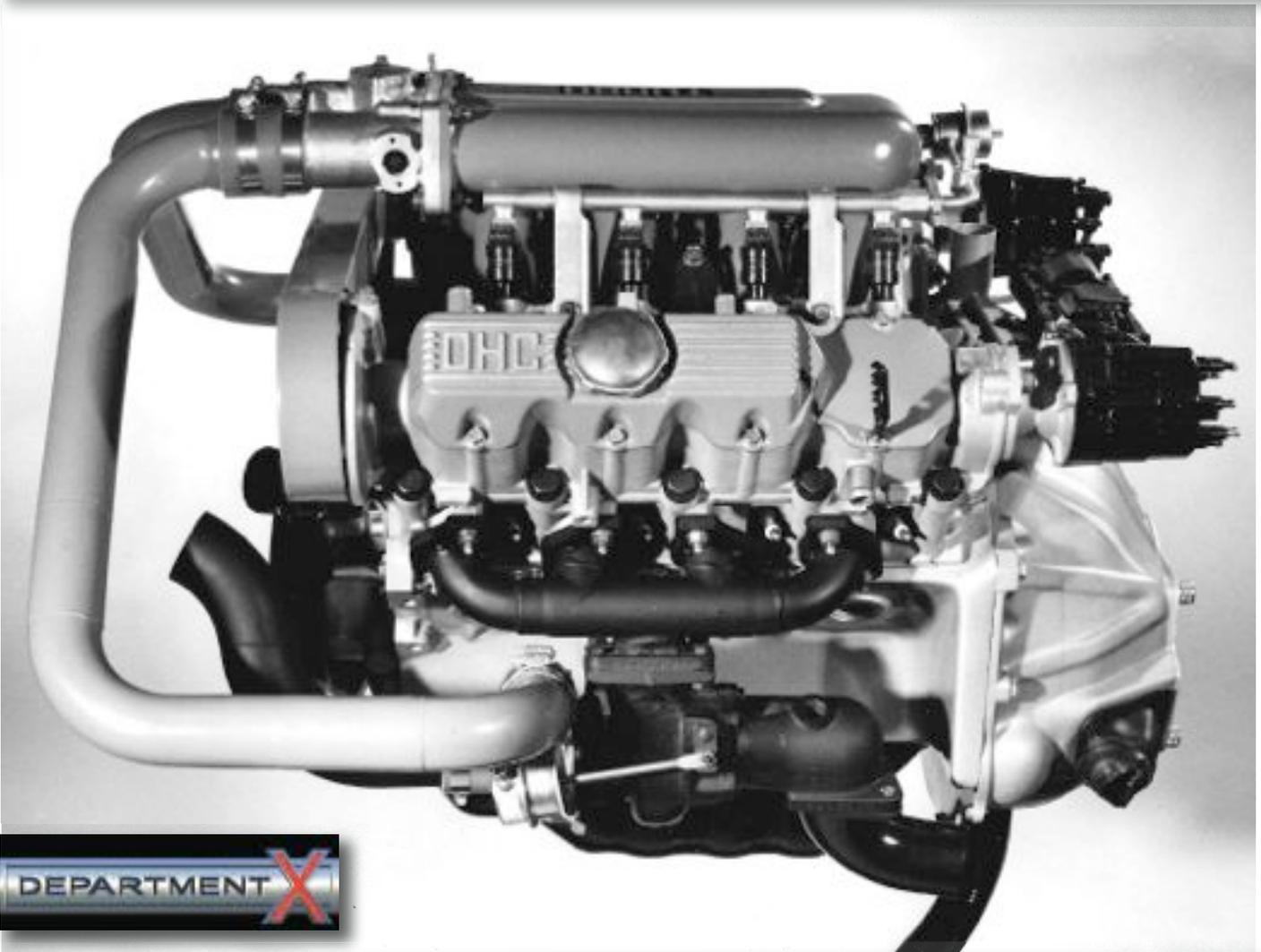


Twin Turbo Terror



By Don Keefe

**Information and color photo supplied by John Paskvan
Black and white photos from the author's collection**

Pontiac always had an eye for innovation and making the most of the technology available at the time. The 1961-'63 Tempest slant four was a cost-effective solution to what could

have been an expensive engine development program. They made a four cylinder by removing the left bank of a 389 V-8 and in the process, came up with a burly and powerful four cylinder that

brought the total cost of the car within budget, even while using the exotic torque tube and rear-mounted transaxle.

Years later, they used the same basic idea and made a four cylin-

Pontiac's Secret 3.6-Liter SOHC V-8 Could Have Been a Game Changer



This shot, from 1984, shows Pontiac Rear Drive Powertrain Manager John Paskvan (in jacket) discussing the prototype V-8 with *Car and Driver* Technical Director Csaba Csere. The sharp-eyed will note the twin ignition coils just above the transmission bellhousing. This engine was non-operational but was meant to generate interest in pursuing the project further. It was subsequently sent to the GM Design Center and the project was quietly dropped. The ultimate fate of this engine is unknown, though it was likely scrapped.

der using the pistons and connecting rods from Pontiac's 301 to produce the 151 cubic-inch "Iron Duke," which was used from 1977-93 in everything from Pontiac Astres to Jeeps to postal

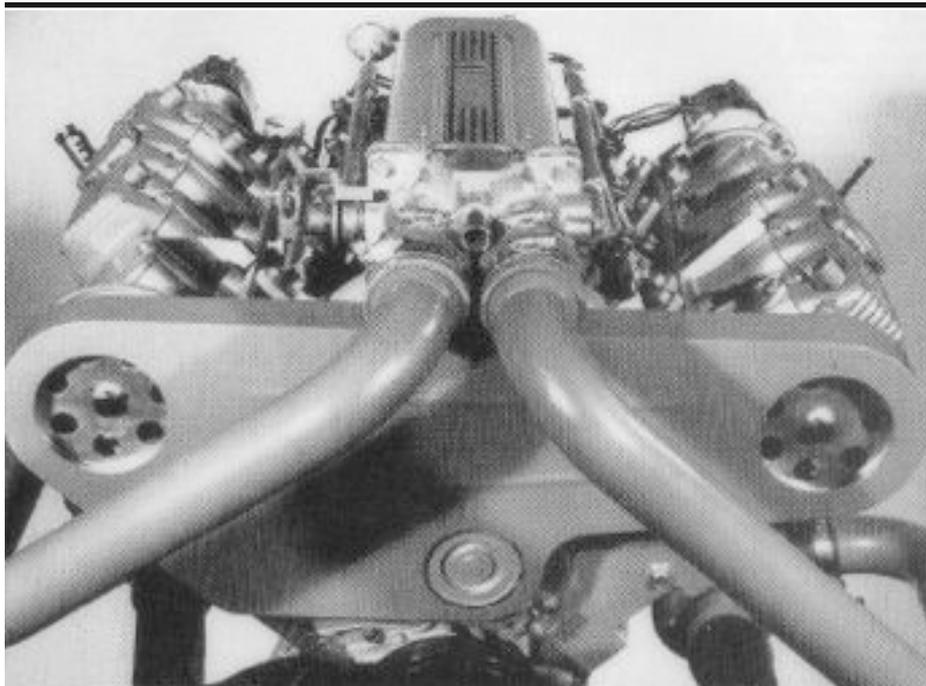
trucks to Firebirds and Fieros.

When the need to develop a small-displacement V-8 came in the 1980s, once again cost, the use of existing technology and interchangeability were needed to

get the approval necessary for production. Pontiac engineers took a chapter from their own history and turned it inside out to come up with a truly innovative V-8 engine.



Custom-fabricated intake manifold housed specific throttle body and stock Sunbird Turbo injectors.



Straight-on front shot shows the cover for the cam drive and the unique twin-throat throttle body, which takes air separately from each turbocharger. No intercooling was used in this version, though any number of designs could easily have been added.

Rather than go with the “half a V-8” route, they went with the “double a four-cylinder.” The engine in question was the turbocharged version of the 1.8-liter turbocharged four cylinder used in the Sunbird GT Turbo models from 1984-86.

“We were looking at possible powerplants for future Firebirds,” said John Paskvan, who at the time was the Powertrain Manager for Rear Wheel Drive Pontiacs. He was also the person in charge of developing the installation for the V-6 engine in the Fiero. “The idea was Ron Ross’ and it grew from there.”

Ron Ross ran a company called I.C.E., which was located in nearby

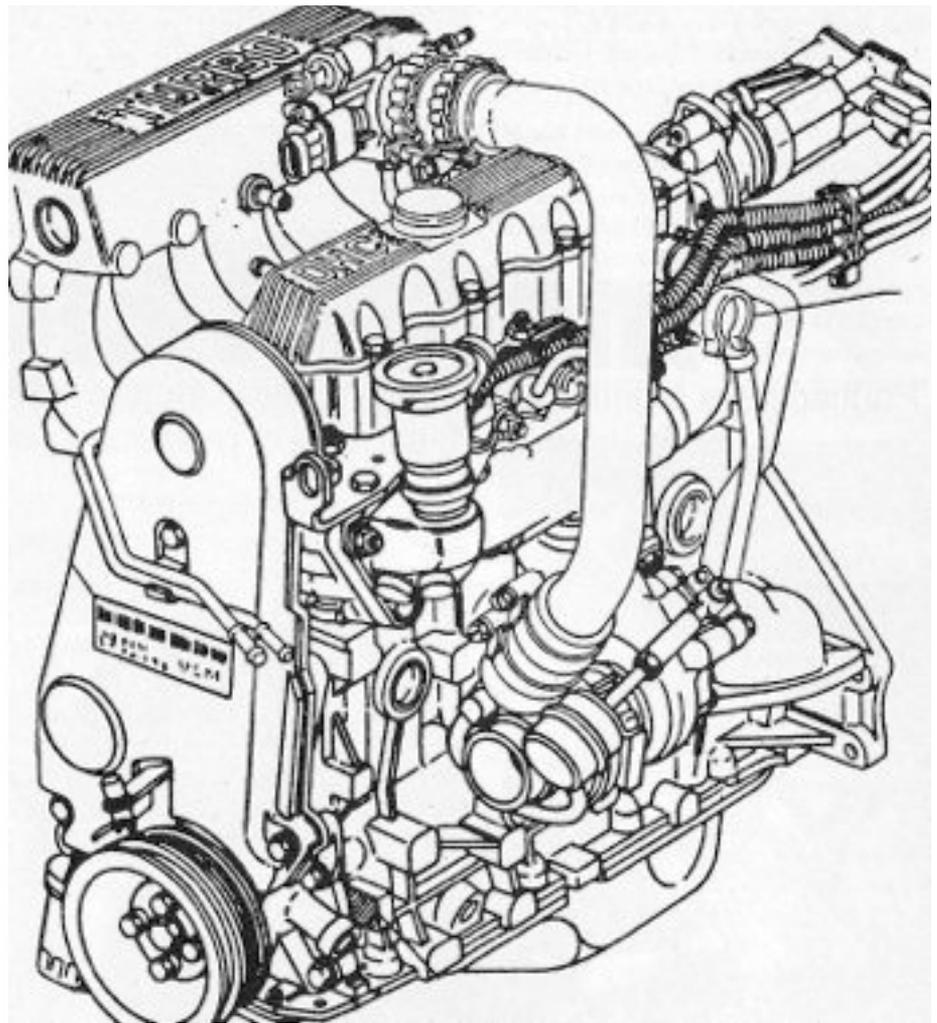
Farmington Hills, Michigan. It was a prototyping firm used by GM and other manufacturers. One of their specialties was building cut-away display engines and the other was furnace-brazing cast iron.

"The Sunbird was a particularly attractive engine to make a V-8 out of, because the ignition and fuel systems were completely integrated," Paskvan explained. "This would make combining two engines into one much easier."

For the time, the "Family II" four cylinders were pretty advanced engines, using an aluminum cylinder head on top of a cast-iron block. The 1.8-liter version was an oversquare design with a bore and stroke of 3.34 inches (84.8 mm) and 3.13 inches, respectively. They also featured a distributor driven directly off of the single overhead cam. The turbo version used a small AiResearch (Garrett) T25 turbo, which produced a maximum eight pounds of boost. At a time when a typical GM 305 V-8 was making similar power, this was big news.

I-4 + I4 = V-8

I.C.E. was eager to do the job—they were looking to show off their skills to Pontiac and in doing so, offered to perform the conversion from two four-bangers to one V-8 without charge. A typical job like that would have easily run up to \$70,000 in 1984, so Paskvan approved it without going through the normal channels, turning this program into a back-door project.

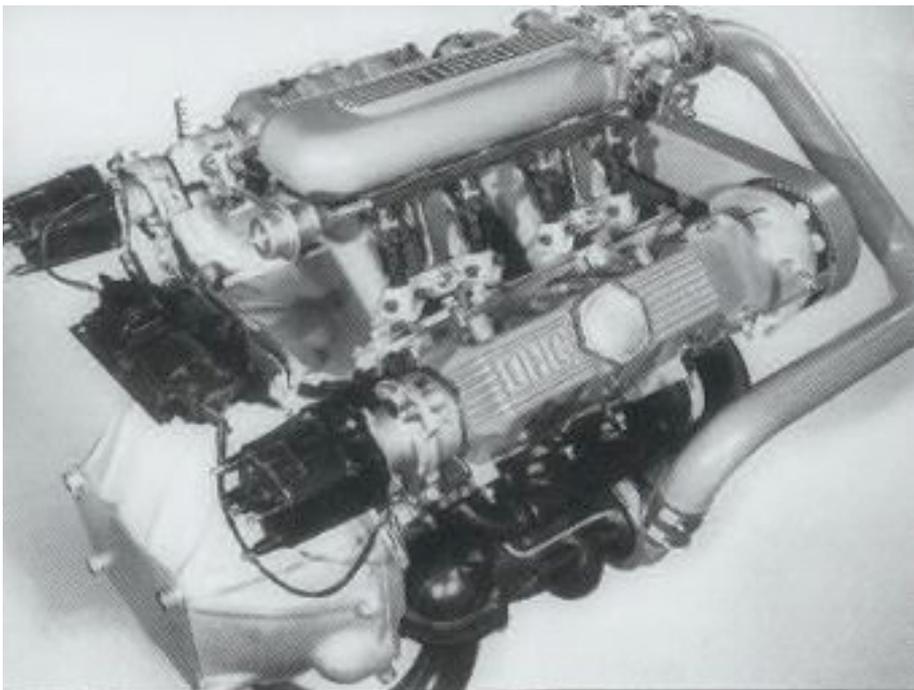


The OHC V-8 was based on the turbocharged 1.8-liter inline four that powered the Sunbird GT Turbo from 1984-86. Rated at 150 horsepower, it grew to an even 2.0 liters in 1987 and developed 165 horsepower. It was built until the 1989 model year but a 1.6-liter normally-aspirated version was used in the Korean-built Pontiac LeMans and was later used as an industrial engine that used gasoline or natural gas. Interestingly, this was the last engine that legendary Pontiac engineer Malcolm R. "Mac" McKellar was involved with prior to his 1982 retirement.

There was quite a bit to do in order to make the conversion a success. In addition to the block modifications, there was also the need to fabricate an intake manifold that would accommodate the stock injectors and a custom twin-throat throttle body. The throttle body used the internals of the stock Sunbird Turbo in a custom housing that used one throttle control but two sets of

sensors, to work with the two engine-management computers. Each computer could work with some level of autonomy, as knock sensors were retained for each bank and ignition and fuel could be optimized for maximum performance. Like the four cylinders it was based on, the V-8 used a camshaft-driven distributor on each side.

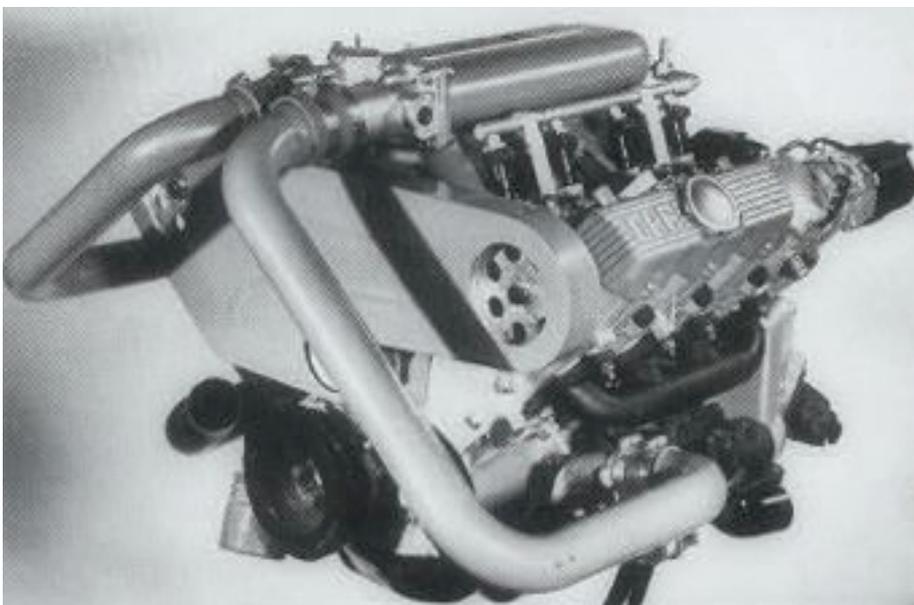
Synchronizing the two banks of



Though the engine's displacement was on the smallish side, just under 220 cubic inches, it was a fairly large engine in terms of external dimensions. Packaging the engine in a Firebird would have presented some challenges, particularly in the rear, where the distributors would no doubt have conflicted with the firewall.

cylinders was simple, as the Sunbird four-cylinder engines used a timing belt, so a cogged crank pulley was used, along with a belt-driven fuel pump that doubled as a belt tensioner.

"This development ended up being a 'back-door program,' since no money was allocated for the project," Paskvan explained. "When Chief Engineer Jay Wetzel saw the engine, he asked, 'Who



The turbo packaging was lifted directly from the four-cylinder and was very close to the exhaust ports, increasing efficiency.

allocated the money for this project?' I replied that I.C.E. did it for us for free. He then said, 'Good, put it in my office.'"

As much promise as the OHC-V-8 engine had, with a possible 350+ horsepower in 3.6-liter form or 400 with a bump up to 4.0 liters (the Sunbird Turbo four was enlarged to 2.0 liters in '87), there was still the task of getting it to fit in a chassis. Though the engine only displaced 219 cubic inches, its external dimensions were fairly large. Of particular concern was the twin distributors, which hung off the back of the engine and could interfere with the firewall.

The engine, which was not operational due to the fact that a custom crankshaft had not been fabricated, was sent to GM Design Center, where it was received by legendary Firebird designer John Schinella.

Schinella, who later went on to be the Director of GM's Advanced Concepts Center, tried to incorporate the engine into some of the existing Firebird prototypes that were being developed at the time.

As it turned out, the distributors ended up being the problem. While they were not an interference issue as a transverse-mounted four cylinder, they were a substantial obstacle in a rear-drive layout. A modern reluctor wheel system like what is used on modern GM engines would have solved that problem but those were years away from production.

At the time, there was also a development program for a front-



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wheel-drive replacement for the Firebird and Camaro. This might have been a better fit for the engine compartment, though there was no transaxle available at the time to handle anywhere near that level of power. Fortunately, the idea of a front-drive Firebird faded away as the 1980s drew to a close.

So, the question looms- what happened to the engine? Though it was more than a mockup, it didn't have a functional rotating assembly, which would have required a custom crankshaft to mate the inline fours into a V-8.

Obviously, the stock Sunbird Turbo pistons and rods would have worked but there is no record that the engine ever progressed past that stage. A crank-

shaft would have been possible to fabricate in-house but the real purpose of the engine was to entice GM into investing in a true development program that would have produced a specific block and crank for the purpose.

Paskvan said that he never saw the engine once it was sent to Design Center and never heard about what happened to it.

Though it didn't get past the early prototype stage, this OHC V-8 is another example of Pontiac engineers making the most of what was available to them at the time. One could only imagine what a fantastic image-builder it would have been for Pontiac if their engineers had a chance to work through the packaging issues and brought it to market.

Without a doubt, the sound of a rev-happy, 400-horse, 4.0-liter V-8 would have brought many would-be foreign buyers to Pontiac showrooms. This would have made the Trans Am a very different car than the Z/28 and would have offered an affordable alternative to cars from Jaguar, Maserati and Ferrari. **PP**

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