FROM RUSSIA, WITH TEETH

On a little-known incident, Soviet machinists at Mil Helicopter worked in 1988 and 1989 on a special project to be used against Americans.

They were given the work by a gear engineer, Boris Zakoldaev, who now uses a different name.

Working at Mil's Panki factory, the machinists made only the metal parts. The composite pieces were made 25 miles away, in Moscow.

The completed machine was later transported by air into America's heartland, arriving at Chicago's O'Hare International Airport. The machine was taken to Milwaukee, WI, and unleashed against Americans—at a competition for human powered vehicles.

The machine was a reclining bicycle with an egg-shaped shell.

Human powered vehicles include bicycles and other vehicles—trikes, rickshaws, pedal boats—that are powered by people, not motors or engines.

"The attempt was to beat the Americans," says Zakoldaev, now Stepan Lunin, a transmission engineer who works in Chesapeake, VA, for Volvo Penta of the Americas Inc.

Lunin's bicycle didn't win its race.

Ridden by another Soviet man, the bicycle wasn't suited for the race course. The bicycle's shell had a narrow slot for its steering wheel, so it needed race courses with very gradual or no curves. The race course had sharper curves than the bicycle could easily manage. Also, the bicycle was pushed around by the wind.

The bicycle was designed with an egg-shaped shell to decrease its aerodynamic resistance. It was made as a reclining bicycle to reduce the shell's front area, further decreasing its aerodynamic resistance.

But, the bicycle wasn't in the shell—it *was* the shell. The wheels and large sprocket were mounted on the composite shell, with no conventional bicycle frame.

Lunin recalls the shell's drawbacks: little space, danger and no cup holders.

His bicycle was the product of Soviet generosity. Lunin explains that the Soviet Union was very enthusiastic about building high-speed bicycles 15 years ago. So, he got money for his bicycle and three others through grants from three private businesses involved in developing new ideas in sports.

He recalls receiving a budget of about 350,000 rubles. At an exchange rate of 60 cents a ruble, the sum amounted to about $210,000. He next hired a manufacturer to make the bicycle's main metal parts.

"I went to my own company," he says, "and they did the job for me."

The major plastic parts—the shell pieces—were manufactured at a location in Moscow: Lunin's garage.

"I had experience with the composites," he says, "so I did that myself."

Lunin made four molds for creating complete shells. He then combined the plastic parts with the metal parts: the sprocket set, the large sprocket's bearings, two aluminum beams (one for holding the large sprocket, the other for holding the first beam), and a fork for supporting the steering wheel. Standard bicycle parts, like brakes and brake levers, were also added.

Each bicycle weighed about 77 pounds. Each large sprocket weighed a little more than 2 pounds—"definitely heavy for a bicycle," Lunin says.

Despite the bicycle's weight, Lunin reached a speed of 80.6 miles per hour on it in the summer of 1988, in Moscow. He held that speed for about 7 seconds, setting a 200-meter speed record in the Soviet Union.

Lunin's speed and time that day were recorded by the Sport Committee of the Soviet Union, an official government committee.

Stepan Lunin rides one of his four specially-made bicycles. Aeroflot, a Russian airline, was a sponsor, providing Lunin with free flights and cargo delivery of his bicycles for international races.

Each of Lunin's bicycles had a 21" diameter, 131-tooth sprocket with involute teeth and round roots. The large sprocket combined with a 13-tooth sprocket to create a speed increaser with a 10:1 ratio.

Today, Lunin's too busy for bicycling. Among other things, he's building his own house in Chesapeake, VA.

Regarding his name, Lunin explains that Boris Zakoldaev was probably listed with the KGB because of his work at Mil. So, he used his dead maternal grandfather's name to more easily obtain a travel visa. Becoming a permanent U.S. resident, he Americanized that name slightly to Stepan Lunin.

As for his bicycles, he recalls that one is in a showroom of Flevobike Technology in Holland. Another is in the Washington, D.C., area. The other two bicycles disappeared from a Moscow warehouse, along with part of the grant money.

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