

INSIDE STAR CITY, by James Oberg
Inside Star City
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For people of the stars, the Soviets have built a village of the stars and insulated it from ordinary, Earthside Soviet reality. It's called Zvyozdny Gorodok, Russian for "Starry Town," but in English it's usually referred to as the more grandiose "Star City."

As a visitor approaching Star City, you drive along a typical suburban Russian road, past colorful semi-rural homes, picturesque woods and lakes, and occasional tall apartment complexes. You clatter over a railway crossing, through a routine security checkpoint, and past bus stands packed with commuters and shoppers, and suddenly you see a graceful arrow pointing to the right that reads "Zvyozdny." The turn takes you through a birch forest and to another sign, larger and in concrete, that bears the same name. Straight ahead lies the visitors' checkpoint; a road leading to the town's residential section veers off to the left.

Barely 20 miles beyond Moscow's city-circling expressway, Zvyozdny, at first glance, resembles nothing so much as an American military base. There is the same impression of planned access to the many shops (one of each kind), to laid-out parks and well-prepared squares for ceremonial activities, and to approved modes of mass transportation.

As befits an isolated village, Zvyozdny has its own schools, stores, and hotel. But although about 4,000 people -- cosmonauts, instructors, technicians, and their families -- live here, none has made any personal mark on any of the structures of the town. The entire population could be replaced and the town would probably look exactly the same.

In fact, the population of Star City has been changing, in a way both subtle and profound. In response to the specific needs of long space station missions as well as to pressures created by the Soviet economy, a new generation of cosmonaut has been taking hold here - a smaller, younger group with a new style that contrasts with the traditional heroic mold of the past.

While early hero-cosmonauts were an eclectic bunch that included part-time artists, folksingers, UFO enthusiasts, and foreign car buffs, the new generation has to be much more single-minded about its careers. Since the Soviets are no longer recruiting cosmonauts in large numbers, there is greater competition for the fewer openings.

"The only people that should be cosmonauts are those who worked very hard to get there and are very serious about being a cosmonaut," says Sergey Krikalyov, a polite, serious 31-year-old who typifies the newer generation.

From childhood, Krikalyov determinedly pursued his space career, picking his vocation, his university, even his hobby -- sport aviation -- to bolster his chances for space travel.

On February 1, 1988, a three-man crew was assigned to an end-of-year mission to the Mir space station. When the chosen candidate for flight engineer, a classmate of Krikalyov's named Alexander Kaleri, fell ill, Krikalyov was designated to step in. Eight months later he was in orbit, beginning a flight career that could last well into the next century and reach far beyond the moon.

The first of his class to fly and the youngest Soviet in space since 25-year-old Gherman Titov made an orbital flight in 1961, Krikalyov also has the distinction of being the first space traveler younger than the Space Age. He was born in Leningrad on August 27, 1958, almost 11 months after the launch of Sputnik. The 208 men and women who had preceded him into space had all been alive at the time of Sputnik's launch.

For Krikalyov, who says his greatest desire is to participate in another mission as soon as possible, a spaceflight must have been a dream come true. But when a journalist asked him just before his mission if he had any dreams, the cosmonaut replied brusquely, "No. I never dream. There's no time at all."

Dispassionate as his statement sounds, there is some truth to it. The Soviets' space station-based program is making crew training increasingly complex and demanding. The development of new modules that can dock onto Mir requires Soviet crews to learn not only the intricacies of their Soyuz spacecraft and the Mir space station plus any experiments they will perform in space, but also how to operate, service, and repair the new Kvant science modules and new Progress-M freighter module as well.

Soviet officials finally concluded that this was too much for the traditional two-man crew and have decided to add to future flights a third crew member specializing in the modules. Budget constraints, however, have so far prevented implementation of this decision.

With a smaller cosmonaut pool, officials assembling crews have fewer individuals to choose from. No more than 10 experienced cosmonauts are on flight status at a time. NASA, by contrast, has 45 experienced astronauts preparing for new missions, and over 100 active astronauts. Together with about 35 rookies, the total population of active cosmonauts is about 45, the fewest on duty since 1965.

"There are vacancies," admits Vladimir Shatalov, a 63-year-old former cosmonaut and chief of the cosmonaut training center for almost 20 years. "And for the time being we are deliberately refraining from filling them."

Since the late 1960s the Soviets consistently based their plans on an expectation of significantly more manned flights and so regularly recruited an excess of cosmonaut trainees. More recent economic constraints, however, have forced the Soviets to more tightly focus their program and more realistically assess launch rates. Hence Shatalov does not see an imminent need for more recruits: the expected flight rate is for only two

or three Soyuz missions a year for the next decade or more. He is now training just five two-man teams for near-term missions, each including one rookie and one veteran.

Displayed under the glass of Shatalov's desk in his large office at Zvyozdny is Air & Space/-Smithsonian's Space Explorers poster (April/May 1988). Many of the cosmonauts appearing on the poster owe their hero status to Shatalov's decisions. He sets the policy at every stage: screening, selection, training, winnowing, assigning to crews, medical evaluation, and retirement.

For the past 20 years cosmonaut recruitment has been standardized. Jet pilots in their mid-20s are selected for a decade-long apprenticeship (including university education), while civilian engineers in their early 30s are recruited from the spacecraft industry and the mission control center, having been under observation in those jobs for years.

NASA, by contrast, has made a practice of selecting older pilots with impressive academic and flying credentials. NASA also recruits nationwide, drawing on a much larger talent pool, although candidates with high-visibility space-related jobs have been favored.

The flight engineer of a Soviet mission is almost always a civilian. The commander's seat is usually the only one open to military pilots, so that's where they are assigned -- even on first flights.

NASA's policy, on the other hand, has been to promote only experienced astronauts to the position of mission commander, and in the past 20 years the agency has made only two exceptions. Soviet practice has been the opposite: in the past 20 years, only five Soviet mission commanders in their first command posts have not been space rookies.

There are other major differences. In contrast to the NASA practice of giving everyone a turn -- if they can wait long enough -- the Soviet training process results in a high attrition rate. Of 80 men and women selected in the 1960s, fewer than half eventually made spaceflights; that fraction also held for classes picked in the 1970s. Contrary to widespread Western rumors, few died (and none in the mythical "secret launch disasters"). Most were dropped for academic or psychological weaknesses, or, as their bodies aged, for medical reasons.

Recent Soviet disclosures have identified a few such cosmonauts who spent 15 or even 20 years in full-time training only to fail a final physical exam and be grounded. A few came within a few days of actually being launched into space. Men such as Mikhail Lisun, Pyotr Kolodin, Lev Vorobyov, and Vladimir Preobrazhenskiy might but for a few bad breaks have become world-famous space voyagers instead of little-known footnotes whose decades of expensive training went completely unused.

Shatalov has denounced both the waste and the frustration involved in this feature of cosmonaut training, built into the program at the time he took over. "What is the sense of preparing a large number of cosmonauts if there is almost no chance of them going on a

flight?" he asks. "First class pilots will be taken into the detachment, and their entire life will be spent in vain expectations. But such cases have happened." Some aging cosmonauts are still on active service, still awaiting their first journey into space.

In recent years Shatalov has become point man for the cosmic side of glasnost and perestroika, speaking out candidly about the shortcomings and difficulties of the Soviet space program and reorganizing the bureaucracies where he could. When I visited him in March of last year as part of a television news crew preparing a special report on cosmonaut training, he was vehemently complaining about the inability of Soviet industry to supply his center with even basic essentials such as videotapes. He is also notorious for attacking Soviet industry's inability to apply space-developed technology to the improvement of industrial output.

With the new flexibility recently allowed under perestroika, he has finally begun reshaping the meaning of "cosmonaut." Shatalov cleared the duty roster of veterans of two or three flights, even those still vigorous in their mid-40s. Cosmonauts such as Leonid Kizim, Vladimir Kovalyonok, and Leonid Popov were transferred out; medical screening eliminated Gennady Sarafanov and Vladimir Vasyutin. Half a dozen others (such as Vladimir Dzhaniyev and Vladimir Lvakhov) were given desks to fly.

Most of today's senior pilots are from the relatively recent class of 1976: Anatoli Solovyov, Alexander Viktorenko, Vladimir Titov, and Alexander Volkov. The senior flight engineers were also selected in the late 1970s: Alexander Serebrov, Musa Manarov, Alexander Leveykin, Alexander Balandin, and one old-timer from 1973, Gennady Strekalov.

During my visit, the television crew and I met with two two-man cosmonaut crews then preparing for an April 17 launch to relieve the orbiting Mir cosmonauts. Glasnost had opened many doors, and everywhere we saw its refreshing effect on the attitudes of Soviet officials toward foreigners. At the town's Gagarin Training Center, we were permitted to see the cosmonauts in space station and spaceship simulators, in classrooms, during physical training, and during medical screenings.

Much of the training center is familiar to anyone who's been to NASA's equivalent compound south of Houston. Cosmonauts train in simulators hooked to computers that display data from actual flights. The medical screening facilities are like those you'd see anywhere. Classrooms are handsomely paneled. Oriental-style carpets are common, often covering recessed cable trays in the concrete floors. The gymnasium's exercise rooms and pools are first class.

It has been long-standing Soviet practice to withhold the names of spaceflight candidates until they actually fly, but recent advances in glasnost have made such a policy impractical. At Star City we happened to spend some time in the gymnasium's locker room, and there, of all places, I learned the previously secret identities of future cosmonauts: most of the fine wooden lockers had their names on them. Some were familiar: Alexander Kaleri (Krikalyov's class-mate) and the space doctors Valeri

Polyakov (then in orbit) and Gherman Arzamazov (his Earthbound backup), as well as physical trainers Victor Skovorodnikov and Igor Fetisov. Some we'd heard of from other sources: Nikolay Grekov, the rookie cosmonaut pilot; Ivan Bachurin, who has taken part in space shuttle testing. And some were completely new: N. N. Fefelov, V. N. Dezhurov, V. G. Korzun, I. F. Chekirda, and A. P. Artsebarskiy among them.

If the past is any guide, half of these men will fly in space in the 1990s, while the others will never be heard of again - that is, unless Shatalov's more realistic cosmonaut population allows them all a chance.

One locker label in particular caught my eye: "V. Illarionov." Valeriy Illarionov and I had met in Houston a decade and a half earlier during the Apollo-Soyuz Test Project. While I marveled at the other hitherto-unknown names, a towel-draped Illarionov himself came out of the sauna, eager to catch up on the doings of NASA personnel he'd met.

An active-duty Air Force colonel, Illarionov had been a cosmonaut for a quarter-century, and at the age of 50 he was still awaiting his first launch. A few weeks after our meeting he learned how Gorbachev's military cutbacks would affect him personally; while remaining an active cosmonaut, he was being reclassified a civilian.

After the news was made public, Illarionov told a Soviet newspaper that he believed older men such as himself were well suited for training as cosmonaut crew commanders. He suggested that a group of demobilized lieutenant colonels in their mid-40s be considered for selection as cosmonauts. As for the younger candidates, he said, they could take a turn waiting a few more years.

Whether Shatalov follows this recommendation remains to be seen. Virtually all the other assignments he has made speak of an accent on youth. And yet last year he selected an ace test pilot named Gennady Manakov to begin spaceflight training at the advanced age of 38, with the aim of an orbital mission sometime this year.

Shatalov says that bureaucratic infighting has made his job more difficult. "As the ones who have to do the job, we should pre-select people for specific programs, train them, and place orders for simulators which can't be produced quickly," he told a Soviet journalist a little over a year ago. That would require anticipating mission requirements years in the future, a capability Shatalov despaired of ever having. "We have no programs. Today I have no idea what we will have to do tomorrow or the day after. And even the current tasks are changing all the time."

Referring to the recent abrupt rescheduling of the Soyuz-TM 8 mission, whose crews we had videotaped, Shatalov complained bitterly: "There we were, having trained two crews for a scheduled expedition to the Mir station. Then we had to stand down. Now these crews have to undergo further instruction and be trained to do work with additional instrumentation modules which will be docked to Mir. But we still have no program for specific training for, say, next year, never mind the more distant future."

His outburst was probably an exaggeration produced by frustration, since we saw some facilities for long-term training being built at Zvyozdnyy, including a large new pool for spacewalk training and a building devoted to space shuttle training.

Frustration is evident among the cosmonauts as well. Sergey Krikalyov was slated for several spacewalks from Mir early in 1989 to set up equipment for the arrival of an add-on section. When the module's launch slipped a year, the preparatory spacewalks were deleted from the schedule. But no one got around to informing the orbiting Krikalyov of the change before a newsman in an Earth-to-space interview casually asked how he felt about the cancellation. Caught by surprise, Krikalyov dropped his poised demeanor and blew up at mission control for allowing him to be blindsided by a newsman's innocent question.

It was a minor, if bitter, disappointment, and it's only temporary: young Krikalyov and his classmates have a lot of space-flying ahead of them, and the completion of Mir is only the first step. Glory and disappointment, triumph and failure, exultation and endurance all lie ahead, and the new Soviet space team is preparing to pick up the torch. If, as Shatalov intends, they prove to be as dedicated and talented as Sergey Krikalyov, they will be equal to the task.