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Chapter 18

The Flight That Never Happened: The Story of the First Women's Cosmonaut Team*

Valentina Ponomareva[†] and Debra D. Facktor[‡]

Introduction

The world's first team of women cosmonauts was born, so to say, twice. For the first time, in 1962, five young Soviet women found themselves in the cosmonaut training center where Yuri Gagarin had been shortly before his historic first flight. They trained in secret, their identities hidden from the world, as cosmonaut candidates. One of them would be the first woman to fly in space; on June 16, 1963, Valentina Tereshkova rode in orbit. This team disbanded in 1969, with little or no mention of the other four candidates, their backgrounds, or experiences.

The original team of five returned from non-existence in 1985 due to the efforts of the Scientific Research Center of Space Documentation, when an employee published an article in the magazine *Rabotnitsa*. This signified the team's rebirth: for the first time, the public came to know the original five women cosmonauts who trained at the beginning of the space era. Along with

* Presented at the Thirtieth History Symposium of the International Academy of Astronautics, Beijing, China, 1996. Copyright © 1996 by Valentina Ponomareva and Debra D. Facktor. Published by the American Astronautical Society with permission. This paper contains many personal experiences and recollections of Valentina Ponomareva, a member of the first women's cosmonaut team. Every effort has been made to ensure its accuracy, however, some inconsistencies with other historical references may exist.

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Tereshkova, the identities of Tatiana Kuznetsova, Valentina Ponomareva, Irina Solovyeva, and Zhanna Yorkina were released.

In this paper, Ponomareva, now retired, tells her story to Ms. Debra D. Facktor, a fellow woman engineer and Chief of Russian Operations for ANSER's Center for International Aerospace Cooperation. The story is not only of a young woman cosmonaut in training, but of the history of women in the former Soviet space program, and the myths and realities of women's participation in the early Soviet space missions.

The First Day

The decision to launch a woman into space was inevitable. The Soviet Union and the United States were in the midst of a space race, and the two countries considered space as a front for both global competition and confrontation. It is known that Soviet Premier Nikita Khrushchev wanted to prove that the Socialist system could, quite literally, propel humans to cosmic heights. He wanted to prove that people of simple backgrounds could achieve great success and fame. He wanted to show the world that Socialism allowed men and women to be equals and to have the same opportunities for professional development. This philosophy was embraced by General Nikolai Kamanin, then head of cosmonaut training, in his recently published diaries, *Skritiy Kosmos*. On October 24, 1961, he described the main rationale behind the need to send a Soviet woman into space:

- Women will necessarily fly into space—thus it is better to start training them for this kind of mission as early as possible;
- Under no circumstances should an American become the first woman into space—this will offend patriotic feelings of Soviet women;
- The first Soviet female cosmonaut should become an active advocate of communism like [Yuri] Gagarin or [Vladimir] Titov.

Thus began the story of the first women's cosmonaut team. From March to April 1962, five nervous young women—Valentina Tereshkova, Tatiana Kuznetsova, Valentina Ponomareva, Irina Solovyeva, and Zhanna Yorkina—found themselves in the Cosmonaut Training Center, in a circle of the most famous and loved people on the planet. From this team would be selected the first woman to fly in space, a proud achievement not only for women, but for the Soviet Union as well. Tereshkova would be the chosen one, launched into space on June 16, 1963.

Until October 1969, the other four teammates remained members of the circle of cosmonauts, but the group then dissolved as if it had never existed. The team was selected amid great secrecy, and in fact, their names were not

known to the public until 1985 when a journalist named V. F. Nesterova wrote an article in *Rabotnitsa* (“Female Worker”).

Around the same time, Ponomareva was given a task at the Moscow Institute of History, Natural Sciences, and Technology to declassify old documents relating to the early space program and deliver them to the Museum of Cosmonautics. She learned of a resolution of the Central Committee of the Communist Party of the Soviet Union (CPSU), dated December 30, 1961, and a resolution of the USSR Ministry of Defense #006, dated January 17, 1962, documenting the formation of a team of women cosmonauts. These papers, however, could not be located, and Ponomareva discovered that not only were these documents missing, but films about her team’s flight preparation had been ruined. Ponomareva persevered, however, and found Resolution #621.14.1, dated January 11, 1960, of the USSR Ministry of Defense and the USSR Air Forces Commander General, *On the Formation of the Cosmonaut’s Training Center*, which gave her a place to start her research.

The First Team of Five

So what did it take to become part of this elite team? Yuri Gagarin’s first flight inspired many people, old and young, men and women, from across the Soviet Union, to send letters of congratulations and stating their desires to become a cosmonaut. In Moscow, banners saying, “Yuri, I’m next!” lined the streets.

When the decision was made to select a team of female cosmonauts, aeroclubs all over the country were contacted for candidates as it was thought that a cosmonaut could only have an aviation background. Preference was given to parachutists, because before the landing of Vostok, cosmonauts were catapulted from the spacecraft and landed using parachutes. Four women had significant parachuting experience: Solovyeva and Kuznetsova were members of the Soviet parachute team, champions and record breakers at that; and Tereshkova and Yorkina were members of local flying clubs.

Ponomareva, at 29 the oldest of the five women, brought her expertise as a rocket propulsion engineer and a sports pilot (flying the PO-2 and the Yak-18) to the cosmonaut training center. Then an engineer at the USSR Academy of Sciences Institute of Applied Mathematics, she joined the team on the advice of Mstislav V. Keldysh, her boss and also President of the Academy.

The Medical Commission

To narrow down the applicants, a medical commission began an extensive screening process. An Aeroclub commission traveled around the country collecting medical data and performing tests, followed by a second medical commission from the Central Scientific Research Hospital in Sokolnik. The first

three candidates to be selected during this process were Tereshkova, Solovyeva, and Kuznetsova.

Applicants underwent many tests and were subjected to many detailed examinations of specialists. Tests included the centrifuge, barokamera (pressure chamber), vibration stand, and vestibular and psychophysiological elements. Ponomareva describes the vestibular tests, i.e., a series of rotations in the Barani chair, as the strangest. At the end of the test cycle, the subject felt drowsy and faint, yet had to tell the doctor that she felt fine lest she be eliminated from the process.

With each day of the medical commission, more and more applicants were eliminated or dropped out. An applicant could refuse a test at any moment, and there was not a lot of incentive to continue. Ponomareva recalls, on March 18, 1963, how the medical tests took their toll: "I can be happy now, my skeleton and my internal organs are all in working order, but I would prefer them to find some sort of non-life-threatening illness. Then I would be able to come home." Many women (and men) did not make it through this process. To Ponomareva's own astonishment, she was kept on. The final hurdle was the mandatory commission.

The Mandatory Commission

The mandatory commission, consisting of a large group of military officers, civilians, and even Gagarin, arrived at Sokolnik to conduct a formal, and final, interview with the applicants. The commission retired for discussions while the women waited.

N. F. Nikeryasov, the representative of the Cosmonaut Training Center, presided over the meeting, and confided in Ponomareva that Gagarin had reservations about her candidacy because she was a mother. At the time, there were societal pressures in the Soviet Union about risking the lives of women, especially married women, for new activities such as spaceflight. Ponomareva was the only married woman and mother in the group.

Despite this concern, Ponomareva had the support of Keldysh. Keldysh encouraged Ponomareva's application and shared her love of flying. Ponomareva believes that his support was instrumental in her selection to the first women's team.

Calling for Duty

Along with Ponomareva, Zhanna Yorkina was accepted by the mandatory commission, and the team of five was complete. They were called into the army for immediate service and given only a few days to depart. Tereshkova, Kuznetsova, and Solovyeva had arrived at the Cosmonaut Training Center in the middle of March 1962. Yorkina was next, arriving a few days before Ponomareva,

who was last, arriving on April 12, 1962. The five were referred to as the “female battalion before the advance.”

Ponomareva recalls the reaction of her immediate supervisor when she submitted her resignation, saying she had been accepted into the Cosmonaut Training School. He was really surprised. “Isn’t there already such a school?” he asked. He wished her luck and bade her a fond farewell. The military officer at the Institute was also surprised, and as he gave Ponomareva her military handbook, he warned her to be careful. She remained quiet, as the candidates were warned not to “cause a fuss.”

Training for the First Flight

The first female space flight was originally planned for the end of 1962. Less than eight months remained, however, by the time the team was selected, and the program was very regulated. One of the goals of the early spaceflight missions was to determine if a person was able to live and work in space. In accordance with this, the main training objective was medico-biological experimentation, i.e., the preparation of the human body for a spaceflight and all the unusual forces that the body is subjected to in the course of a spaceflight such as G-forces, weightlessness, isolation and rotation, sounds and choices. Ponomareva’s recollection of these experiences follows.

The Centrifuge

G-force testing was done in the centrifuge at the Zvezda plant, the manufacturer of the pressure suits. These tests were very difficult, and initially worried Ponomareva. At first, the women were given an introductory session of 4 and 6 G-loadings, lasting two minutes each. Ponomareva recalls that after the 6 G test, she thought she would pass out, but to her extreme surprise, she survived the 6, 8, and 10 G tests quite well.

Weightlessness Training

Demonstrating weightlessness on the earth’s surface is difficult. One simulation is to reproduce weightlessness for a short time, during repeated experiments, using a Tu-104 aircraft. During each flight, Ponomareva and her crewmates would achieve weightlessness four times, for around 40 seconds each time. What can one do in the space of 40 seconds? To Ponomareva, she would “swim” around the plane, and it was then she began to understand the physical sensation of weightlessness.

Physical Training

Much attention was given to physical training to improve strength, endurance, and cardiovascular capacity. This both complemented the weightlessness and the centrifuge training and increased morale. The men and women cosmonaut candidates played many sports at the training center, including gymnastics, volleyball, and basketball. The favorite sport of the cosmonauts in those days was ice hockey, but only the men played. When winter passed, and the ice had barely melted, the summer soccer games began, enjoyed by both men and women.

Flying and Parachute Training

The flying training was spent in a symbolic manner. Ponomareva recalls a time when the candidates had to get serious and achieve their flying quota, since without a flying qualification, the cosmonaut training would not have been taken seriously. The MiG-15 UTI training aircraft was used for flight experience.

The Il-14 transporter provided the venue for parachute training. During the training period (nearly a full year), the women made between 70-80 jumps and the program was followed with great interest. Later, the training program was reduced to 8-10 jumps per year because a parachute return to Earth was no longer used after the Vostok series of spacecraft. Parachuting, however, was the one part of the training that instilled a bravery and an ability to perform tasks under stress, and therefore remained an important element of the program.

In keeping with that theory, young cosmonauts today make parachute jumps, not as the early cosmonauts made them in simple freefall, but with various tasks to perform at the time of the jump and at the time of the freefall. For example, on a certain signal at the aerodrome, they are made to estimate the length of the free fall. One could not think up a better test to determine whether a candidate had the necessary professional characteristics.

The cosmonauts also trained in the Vostok spacecraft, itself, simulating various flight profiles, emergency situations, landing in hostile territory, and crash landings.

Ocean Training

Perhaps the most difficult of all the training for Ponomareva was the ocean training to test the pressure suits. The women headed out to sea on a launcher and it had all started so well—the sun, breeze, and ocean were warm and welcoming. Then, the trainers wrapped the candidates up in the pressure suits, put them into the water back first, and gently edged them away from the launch. Then the struggles began with getting used to the environment and conducting the training exercises. Ponomareva says what has stuck in her memory

was the unending battle with the pressure suit and the equipment, since everything was still under development.

Technical Studies

From the theoretical disciplines, the women cosmonauts read celestial mechanics, astronomy, geophysics, space rocket techniques, and navigation. Compared to the physical training, much less time was spent in the classroom. Virtually all the lectures were given by people from academic institutes and from institutes specializing in space technology development.

The construction of the Vostok spacecraft was carried out by a group of young engineers from OKB-1 (later NPO Energia), who took care of its construction and consequently became cosmonauts themselves. To name a few, Alexei Eliseev, or Oleg Makarov arrived, or Georgi Grechko or Vitaly Sevastyanov, and each talked about one system or another, and what this system did. The Vostok spacecraft was fully autonomous, and the cosmonaut could take control only in an emergency.

Final Exams

In November 1962 the women cosmonauts completed their training, and in December they started the governmental exams. Ponomareva recalls that everyone was very anxious. The men showed their support mostly in the form of gifts and humorous jokes. The exams all went smoothly, and all five received good marks. Afterward, they were promoted from the position of candidate-cosmonauts to full cosmonauts. The women were asked if they wanted to remain civilian members of the team or to become military officers (as the men were). The women elected to become officers and were awarded the title of Junior Lieutenant of the Soviet Air Force. An interesting fact is that Tereshkova held the rank of an officer, but the Soviet press reported that a “Soviet citizen” had flown in the Vostok-6 spacecraft.

Final Crew Selection

Tereshkova, Ponomareva, Yorkina, Kuznetsova, and Solovyeva were now all ready for launch and awaited the decision of who would be the primary and backup candidates for the Vostok-6 mission. The launch, originally scheduled for the fall of 1962, was delayed because of a problem with either the spacecraft or the pressure suits. As a result, at the beginning of December 1962, the cosmonauts took a vacation. After the recess, they resumed the training and testing schedules, and by summer 1963, they were ready. The flight was scheduled for the beginning of June.

The final crew selection decision was administered by the State Training Commission. In practice, it informed the cosmonauts of their decision just before they left for the Cosmodrome. Before the first female flight, however, this delegation arrived at the center. Tereshkova was selected as the primary crew, with Solovyeva and Ponomareva as back-ups.

The selection of the first female cosmonaut was different from the selection of the first male cosmonaut. While male cosmonaut candidates knew that sooner or later most of them would fly, female cosmonaut candidates realized that those who would not make it now would have no chance to fly in the foreseeable future. It made their interpersonal relationship quite complex.

The selection of female cosmonauts also reflected an internal struggle among interest groups within the Soviet aerospace sector. As reported by Yaroslav Golovanov, Korolev (head of the Energia design bureau) supported Tereshkova—he liked her decisiveness. Then Chief of Star City Evgeny Karpov, head of cosmonaut training General Nikolai Kamanin, and sky diving instructor Nikolai Nikitin supported Tereshkova as well. Representatives of the Institute of Aviation Medicine, Yuvenaly Volynkin and Vladimir Yazdovsky, and chief theorist of Soviet cosmonautics and President of the Soviet Academy of Sciences, Academician Mstislav Keldysh, supported Ponomareva.

Yuri Gagarin did not have any preference for a while, but “rebelled” against Keldysh, who was pressing him in order to make him a supporter of Ponomareva. As a result Gagarin also started supporting Tereshkova. According to Karpov, if Keldysh and Yazdovsky had not been advocating so hard for Ponomareva, she could have become the first woman into space. The issue was resolved by Premier Khrushchev. When he looked at the pictures of female candidates, apparently he liked Tereshkova better than anybody else. Further, Tereshkova, more than other candidates, was a “working class representative” and fit with his ideals of the socialist state.

Would There Be A Second Flight?

For a while, after the Tereshkova flight, it seemed that the team of women cosmonauts had a real future. Grandiose plans were discussed: in 1966, there were to be 9 space flights on the Voskhod spacecraft and 5 on the Soyuz; in 1967, 14 flights; in 1968, 21 flights; in 1969, 14 flights; and in 1970, around 20 flights. On August 3, 1964, the Central Committee and the Council of Soviet Ministers made the decision to fly to the moon. But as a result of many different circumstances, no plans existed for the women cosmonauts. It was well known to all that the men would fly, but the women were excluded from all of the groups. As Ponomareva says, this attitude was consistent with the stereotypes of professional men and women in the Soviet Union, i.e., that women were not permitted as equals in dangerous and difficult professions, such as

cosmonautics, even though it appeared to the outside world that equal opportunities were possible.

Some did not perceive the women as specialists, capable of working as professionals, but rather only as specific candidates who were there to break a record. Once the record was broken, there seemed to be no need for the women. It was not so easy, however, to disband the women's team, since they were all trained and qualified as cosmonauts and held the rank of Air Force officers.

Support from Kamanin

Kamanin, however, continued to support the women and proposed various flights for them. In his journal on April 2, 1965, Kamanin wrote:

“The crew of Ponomareva and Solovyeva with a wider-ranging program of research, but maybe with the use of the funds for moving in space, would provoke no less a response from the rest of the world than the flight of Voskhod-2.”

But, no funds existed for a second space flight.

Kamanin also suggested preparing six cosmonauts at the start of 1966, with the female team as the main crew and the male team as back up, with the possibility of having a mixed gender crew. Up until then, a mixed crew was absolutely unheard of. The idea of a second female flight into space was supported by Keldysh, Vershinin, Rudenko, and then, after some persuasion, Korolev, too. The women began preparation. Here follows a page from Kamanin's journal, dated April 17, 1965:

“Despite the ire of the [male] cosmonauts, I gathered the management of the Central Government Committee and informed them to form a team of cosmonauts in accordance with the wishes of Korolev and Vershinin. Before I left the center, I spoke with Ponomareva and Solovyeva. I told them that there were those who were not convinced that women were up to flying into space, yet I was sure that they were more than capable. It only remained to strengthen my opinion before the time of the flight itself. Ponomareva and Solovyeva promised to prove that they would deal with the task ahead no worse than men would.”

Making a Case

In early January 1966, Ponomareva recalled that the flight preparations proceeded very quietly until the idea of a second female space flight was raised once again, thanks to Kamanin.

From January 17, 1966 on, the women were ready for a space flight that would last from 15 to 20 days, and a space walk option was raised by Kamanin. Until that time, the longest space mission was only 5 days. Unfortunately, as Ponomareva remembers, “Just as I had imagined, our training ended very abruptly as they sent us off on holiday and everybody forgot all about it.”

The women's team went on like this until the autumn of 1969. As cosmonauts, they were considered to be "VIPs" and as such decided they needed to make their wishes known. Ponomareva recalls that Kamanin suggested the women write a letter to the Central Committee. Ponomareva describes the letter:

"The letter spoke about how we had already been in the cosmonautics training center for a long time, and over this time we had been keeping our form and were ready at any moment to begin final preparations for a space flight. The government had spent much money on our training and preparation, and it would be a true shame if this expenditure was to be in vain. 'We want to serve the motherland and we are well capable of doing so.' They put us in the main square and said that they all appreciate our great efforts to serve our country, but, unfortunately, our country does not need us right now."

Twenty Years Later

Tereshkova's flight became the only female space mission for almost twenty years not only for lack of funds or "male chauvinism." One main reason for skepticism about female space flights was the perception that Tereshkova failed her mission. During the flight, she got tired and sick and had difficulty understanding the ground controllers' instructions. Valery Bykovski, the cosmonaut flying Vostok-5 while Tereshkova was flying Vostok-6, was tasked to communicate with her once in a while, and had an impression that she was crying. She did not manage to perform experiments involving manual orientation of her spacecraft and used almost all the fuel for both experiments and for emergency. Tereshkova's flight was cut short, and everybody was happy when she finally landed safely.

In his memoirs, Yaroslav Golovanov says Korolev was extremely upset and swore never to have anything to do with women cosmonauts in the future. He speculated that if Svetlana Savitskaya, the second Soviet woman to fly in space, originally was in the place of Tereshkova, the conclusion about female performance in space could have been different. In the beginning of the space era there was a general tendency to "overinsure" the safety of space flights, and Tereshkova's seemingly "failed" mission apparently discouraged further experiments with female cosmonauts, at least for the time being.

Nearly twenty years after Tereshkova's flight, Svetlana Savitskaya wanted to become a cosmonaut. She had impressive credentials and connections: in addition to being a test pilot at the Yakovlev design bureau and a world record aerobatics holder, she was also the daughter of the chief marshal of the Soviet Air Force.

The original team of Tereshkova, Ponomareva, Yorkina, Solovyeva, and Kuznetsova were cited as possible candidates for such a flight, but the military

was not interested in another flight of female military officers. Therefore, it would be done by civilians.

A second team of women cosmonauts was selected in 1980, including Savitskaya, Irina Pronina (first backup), Elena Dobrokvashina, and Yekaterina Ivanova. On August 19, 1982, Savitskaya began her first space flight; she performed a second flight in 1984 during which she became the first woman to perform an extravehicular activity (EVA) and welding in outer space. Yelena Kondakova, of NPO Energia, became the third Soviet woman to fly in space, flying onboard the Mir space station in 1994-1995, setting a duration record for women.



Valentina Ponomareva and Hervé Moulin having a discussion at the 47th IAF Congress held October 7-11, 1996, Beijing, China.

1996: A New Record for Women

Since Tereshkova's first flight in 1962, space flight by women has come a long way. U.S. astronaut Shannon Lucid has recently returned from the longest spaceflight by a woman, surpassing not only Kondakova's record but the record for American men as well. She spent more than six months (188 days) aboard the Russian space station Mir as part of a U.S.-Russian cosmonaut-astronaut exchange. Kondakova, in fact, is now preparing for another spaceflight, this time as a U.S. space shuttle crew member.

These flights are only the first steps looking toward long-term and broad-based space activities by men and women alike. Expansion of space exploration is impossible without projecting into space the cultural, physiological, and psychological harmony of human society.

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