

Energiya-Buran

The Soviet Space Shuttle

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Предисловие

«Энергия-Буран» – самый мощный космический корабль, который когда-либо видел мир, и если бы была дана возможность полностью осуществить программу, это было бы огромной пользой не только для Советских людей, но и действительно для всего мира. Это оказалось невозможным из-за зарождающихся неблагоприятных политических и отчасти экономических условий.

Мне выпала честь стать участником программы и ведущим летчиком-испытателем космического корабля «Буран». В этом качестве я двенадцать раз летал на BTS-002, аналоге «Бурана» по программе испытаний, связанных с полетами «Бурана» в атмосфере. Команда Летно-исследовательского института им. М.М. Громова состояла из самых лучших летчиков-испытателей Советского Союза. Два летчика из этой группы – Анатолий Левченко и я – летали в космос на космическом корабле «Союз» в качестве подготовки для испытаний «Бурана» на орбите. Но до пилотируемых полетов «Бурана» дело не дошло. Программа была закрыта после одного автоматического (беспилотного) полета.

«Буран» до сих пор говорит о талантливости людей в России, и многие гордятся тем, что принимали участие в программе, хотя так и не получили результата, хотя бы одного управляемого полета в космос. На космодроме «Байконур» можно встретить модель «Бурана» у главных ворот при выезде из аэропорта. На могильных плитах инженеров и техников, работавших по программе, выгравирован «Буран».

Становится теплее на сердце, когда видишь, что даже вне России «Буран» еще жив. И я рад, что авторам этой книги удалось написать авторитетную историю «Энергии» и «Бурана», используя подлинные советские и российские источники. Я искренне надеюсь, что эта книга и дальше будет способствовать распространению знаний о программе, которая могла бы принести огромную экономическую пользу миру, если была бы возможность ее осуществить.

Игорь Петрович Волк,
Герой Советского Союза,
Заслуженный летчик-испытатель,
Летчик-космонавт Советского Союза.



Foreword



Energiya–Buran is the most powerful space vehicle the world has ever seen, and, had it been given the chance to fully develop, it would have been of great benefit to the people of the Soviet Union and, indeed, the world. It didn't get that chance, but the political and to some extent economical situation were not ideal.

I had the honor of being selected as the lead test-pilot for Buran. As such, I flew Buran's analog BTS-002 on 12 occasions in the program that tested the atmospheric portion of Buran missions. The team from the Flight Research Institute named after M.M. Gromov consisted of some of the best test-pilots in the Soviet Union. Two pilots from this select group, Anatoliy Levchenko and I, flew in space on a Soyuz spacecraft as part of our preparations to test Buran in orbit. But, after one unmanned flight and before we had the chance to fly Buran ourselves, the program was canceled.

Buran still speaks to the imagination of the people in Russia and many take pride to have participated in the program, even though it never resulted in even one manned mission in space. At the Baykonur Cosmodrome, a model of Buran can be seen at the main gate one passes when coming from the airport. Engineers and technicians who worked on the program and have since passed away even have Buran etched on their headstones.

It is heart-warming to see that, even outside Russia, Buran still lives and I am happy to see that the authors of this book have managed to write an authoritative history on Energiya and Buran, using original Soviet and Russian sources. I sincerely hope that this book will further spread the knowledge of a program that might have yielded enormous economical profit to the world, had it been given the chance.

Igor Petrovich Volk
Hero of the Soviet Union
Merited Test Pilot
Pilot-Cosmonaut of the Soviet Union

A handwritten signature in black ink, which appears to read "I. Volk". The signature is stylized and fluid, written in a cursive-like style.

Authors' preface

This book is about the Energiya–Buran system, the Soviet equivalent of the US Space Shuttle. Originally conceived in 1976, Buran made its one and only flight in November 1988, more than seven years after the inaugural flight of the Space Shuttle. Prudent as the Soviet authorities were, it was conducted in an unmanned mode, a feat not accomplished by NASA in the Space Shuttle program.

Buran was not unique for being a manned spaceflight project that eventually would never carry a man into orbit. There were other Soviet programs that had suffered the same fate, such as the L-1/L-3 lunar program, and the military space station ferry TKS. Unlike these, however, from its conception Buran was a spacecraft without a clearly defined task. It was solely designed and built in response to the Space Shuttle, whose military potential was a source of major concern to the Soviet Union. Unsure what exactly the threat was, the Russians decided to build a vehicle matching the Shuttle's capabilities to have a deterrent in the long run. From the Russian perspective, Buran was just another product of the arms race between the superpowers.

The orbiter resembled its American counterpart to the point that they were aerodynamic twins, but there were important differences between the two systems as well. The most notable one was that Buran did not have main engines and was carried into orbit by a powerful launch vehicle (Energiya) that could be adapted for other missions as well. Despite the copying that unquestionably took place, the Russians still had to develop the technology, the materials, and the infrastructure all by themselves and in doing so often followed their own, unique approach. Building upon the lessons learned from their star-crossed manned lunar program, they brought the project to a state of maturity that allowed them to fly two successful launches of the Energiya rocket and one of the Buran orbiter. This was a remarkable feat, irrespective of whether the expenditures were justified or not.

After the maiden Buran flight in 1988, plans were drawn up for another mission in which the orbiter would again go up and land unmanned, although this time it would be briefly boarded in orbit by a visiting Soyuz crew. Only after the second mission had

proven the system to be reliable, would a crew have been allowed to be launched on board the orbiter.

Unfortunately, it would never come to that. As the Cold War drew to a close and the Soviet Union collapsed, the program largely lost its *raison d'être*. In a time where funds allocated to large space undertakings were getting scarcer and scarcer, here was a program that was devouring more and more of that money. Slowly but surely, more and more space program officials began to oppose Buran, emphasizing that all this money was disappearing into a bottomless pit, without anyone being able to give a clear answer to that one question: what do we need Buran for?

Finally, the program died a silent death. It was never officially terminated by a government decree, but those who were involved knew the signs. The cosmonauts who had been training for the manned missions began returning to test flying in their respective institutes, transferred to the Soyuz and Mir program, or tried their luck in private industry.

Hardware was scrapped, stored, or offered for sale. The full-scale test model used for the approach and landing tests was sent to Sydney, where it was put on display. Later it was to be shipped to a museum in Germany, but didn't make it beyond a junkyard in Bahrain, where it still sits at the time of writing.

Another full-scale test model ended up as a tourist attraction in Gorkiy Park in Moscow, while a third has been parked outdoors at Baykonur for several years, where it has been left exposed to the elements. The only Buran orbiter that flew in space was put in storage in the Energiya assembly building, but was totally destroyed when the building's roof collapsed in May 2002.

In spite of the sad fates of these Buran orbiters, the program was a source of great pride for everyone who participated in it, from engineers to prospective cosmonauts. In many places models of the orbiter, or the entire vehicle, were erected, sometimes as monuments, sometimes just to embellish the streets in which they stand. As Buran's lead test pilot Igor Volk says in his foreword and as maybe the ultimate sign of pride, many who were involved in it have the vehicle etched on their gravestones.

Despite cancellation of the project, the technology developed for it has not all disappeared down the drain. The rocket engine of Energiya's strap-on boosters is still being used today by the Zenit rocket and its Sea Launch version and scaled-down versions of the engine currently power the first stage of America's Atlas rockets and will also be employed in a new family of Russian launch vehicles called Angara. The docking hardware originally developed for Buran was used in the Shuttle/Mir program and is now actively used on the International Space Station.

Perhaps Buran was born under an unlucky star, but since the program ended those who designed and built it have gone to a lot of trouble to make sure that the Soviet/Russian counterpart to the US Space Shuttle will be remembered as a state-of-the-art spaceship that was launched by one of the most powerful launch vehicles the world has ever seen. With this book, we hope we can contribute to that endeavor.

Bart Hendrickx
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April 2007

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This book is a cooperative effort by two authors, but would probably not have come about without the initiative of David Shayler, who originally came up with the idea to write the book but in the end could not participate in it due to other commitments.

Of particular help in preparing the book were several people who were either directly or indirectly involved in the Energiya–Buran program. Thanks are extended to Buran lead test pilot Igor Volk for his foreword and also to the numerous other Buran test pilots who granted interviews to Bert Vis during his countless travels to Star City, Zhukovskiy, and other locations. Lida Shkorkina was instrumental in arranging many of those interviews and also acted as interpreter during most of them. Thanks are also due to Emil Popov, a veteran of the Military Industrial Commission, who shared recollections of the meetings and discussions in the early 1970s that eventually led to the decision to go ahead with Buran. Nina Gubanova, the widow of Energiya–Buran chief designer Boris Gubanov, provided an original copy of her husband’s hard-to-obtain memoirs.

Our special thanks also go to those who gave the authors access to some rare primary documents, most of them from the archives of the late Ernest Vaskevich, who headed the coordination and planning department of the Departmental Training Complex for Cosmonaut-Testers (OKPKI) in Zhukovskiy, which acted as the Flight Research Institute’s own cosmonaut training center. Many of those documents offer unique insight into the training program of the Buran test pilots as well as crewing issues and flight plans.

The authors also wish to thank several researchers who supported them while writing the book. First and foremost among those is Vadim Lukashevich, the webmaster of the *www.buran.ru* website and without doubt Russia’s leading expert on the history of Buran. Vadim never got tired of answering the authors’ frequent and challenging questions and also kindly granted permission to use many of the pictures and illustrations on his website and CD-ROMs. The book would not have been what it is without his dedication, advice, and continued support.

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