

THE NEW RUSSIAN FEDERAL SPACE PROGRAM FOR 2016-2025 (FKP-2025)



Photo by Khrunichev

COMMERCIAL SPACE TECHNOLOGIES LTD



**THE NEW RUSSIAN FEDERAL
SPACE PROGRAM FOR 2016-2025
(FKP-2025)**

**A REPORT IN CONFIDENCE TO
CST MEMBERS, ASSOCIATES
AND CUSTOMERS**



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ATTRIBUTION

Novosti Kosmonavtiki (Fig. 1), Novosti Kosmonavtiki (Fig. 2), Novosti Kosmonavtiki (Fig. 3), Russian MoD (Fig. 4), ‘Energia’ RKS (Fig. 5), Khrunichev SRPSC (Fig. 6), Roscosmos (Fig. 7), Information Space Systems (Fig. 8), mapgroup.com (Fig. 9), Information Space Systems (Fig. 10), telesputnik.ru (Fig. 11), VNIEM (Fig. 12), Roscosmos (Fig. 13), news.sputnik.ru (Fig. 14), tass.ru (Fig. 15), Novosti Kosmonavtiki (Fig. 16), Arctic.info (Fig. 17), Roscosmos (Fig. 18), Roscosmos (Fig. 19), laspace.ru (Fig. 20), strf.r (Fig. 21), NASA (Fig. 22), MAKS-2015 (Fig. 23), Khrunichev GNPkTs (Fig. 24), ‘Energia’ RKK (Fig. 25), Lenta.ru (Fig. 26), Hi-News.ru (Fig. 27), ecorospace.me (Fig. 28), Khrunichev GNPkTs (Fig. 29), technoomsk.ru (Fig. 30), MAKS-2013 (Fig. 31)

ACRONYMS AND ABBREVIATIONS

COSPAS	-	Space System for the Search of Vessels in Distress
CST	-	Commercial Space Technologies
ERS	-	Earth Remote Sensing
ESA	-	European Space Agency
EVA	-	Extra Vehicular Activity
FGB	-	Functional Cargo Block
FGUP	-	Federal State Unitary Enterprise
FKP	-	Federal Space Program
FSU	-	Former Soviet Union
FTsP	-	Federal Purposeful Program
GEO	-	Geostationary Earth Orbit
GLONASS	-	Global Navigation Satellite System
GTO	-	Geostationary Transfer Orbit
HEO	-	Highly Elliptical Orbit
ISS	-	International Space Station
KVSK	-	Oxygen Hydrogen Medium Class
KVTK	-	Oxygen Hydrogen Heavy Class
LEO	-	Low Earth Orbit
MKA	-	Reusable Spacecraft
MLM	-	Multi-purpose Laboratory Module
MoD	-	Ministry of Defence
MOM	-	Ministry of General Machine Building
NAKU KA	-	Automated Complexes for Control of Spacecraft
NASA	-	National Aeronautics and Space Administration
NEM	-	Research and Power Module
NKU KA	-	Complex for Control of Spacecraft in Deep Space
PTK NP	-	New Generation Piloted Transport Ship
RKA	-	Russian Space Agency
ROS	-	Russian Orbital Station
RRK	-	Development of Russian Spaceports
RUR	-	Russian Roubles
SARSAT	-	Search and Rescue Satellite Aided Tracking
TEM	-	Transportation Energy Module
TEO	-	Technical Economic Grounding
TsUP	-	Mission Control Centre
TT&C	-	Telemetry, Tracking & Control
YaEDU	-	Nuclear Power/Propulsion Unit

INTRODUCTION

The Russian civil space activities are being planned for long timescales through specially developed programs, which are considered to be of state importance, being approved at governmental level. Annual budgets to support the development of these space activities, are being allocated from the state budget, in accordance with programs in which funding has been secured, or for which concrete plans are in place, for all their corresponding items. Therefore, these programs provide the main definitive documents for planning this type of space activity in Russia currently, and provide the legislative grounds for them to proceed, including results to be achieved in planned timescales, and levels of funding to be allocated for the planned works during their implementation periods.

The programs come in two types: The main one being the Federal Space Programs (FKPs by the Russian acronym) that cover the main directions of space activity in a single document. This document defines the main organisational statements, and then goes into more detail on the individual directions and features (e.g., risk assessments), and a separate Technical / Economic precis, in which analysis and assessments of required expenditures are presented.

Besides the FKPs, which are being developed and realised under the aegis of the national space agency¹, there are also what are known as special Federal Purposeful Programs (FTsPs by the Russian acronym), that are being developed, approved and realised for some aspects of space activities, with them being realised jointly by different state bodies, - mostly by the same space agency, but also with the participation of the Russian Ministry of Defense (MoD). This gives these Programs a certain dual purpose nature.

Currently, the main FTsPs, are the GLONASS Federal Purposeful Program, which is dedicated to maintaining operation of the Global Navigation Satellite System, and the 'Development of Russian Spaceports' (RRK by the Russian acronym) Federal Purposeful Program, that defines the development of Russian civilian spaceports (the new Vostochny spaceport and, to a significantly lesser degree, Baikonur). Due to this division, these important directions; provision of satellite navigation, and development of spaceports, are not included in the Federal Space Programs, but these Programs contain the planning for all the other directions of civilian space activity.

¹ This has had several different official designations, and has been transformed recently to the 'Roscosmos' State Corporation

It is noted, that there are space activities being regulated in Russia by yet more state programs. These are the Military Space Programs, that define military related space activities over consecutive periods, and they are realised by corresponding units of the MoD. The Military Space Programs have been never published, and, therefore, cannot be used for an assessment of general Russian space activity.

Therefore, the Federal Space Programs are the main interest, and the new Russian Federal Space Program for 2016-2025 (FKP-2025), which has finally recently been approved , forms the subject of this report. This Program is a continuation of preceding FKPs, that can be considered to have formed the foundations for it, whilst the special importance of the current FKP-2025, is because of the necessity to provide space activities with sufficient funding, during the years of economic crisis, and just after the serious re-organisation of the Russian space industry's structure.

In order to understand preconditions for preparation of the current program, laid down by achieving previous Federal Space Program goals, **Sub-section 1.1** of **Section 1**, describes a brief history of Federal Space Programs, before the preceding FKP-2015, and their general results; FKP-2015's main statements, goals and planned results, along with a comparison with achieved results, are briefly described in **Sub-section 1.2**. Exposition of the succession between the FKP-2015, and the current FKP-2025, with its directions and causes, is described there too. Lastly, the development process of the FKP-2025 drafts and revisions, with gradual reduction of the the funding to be allocated, and with corresponding changes of the planned works (that can also be considered the basis for the current Program's final approval) is described briefly in **Sub-section 1.3**.

Section 2 contains a review of the Program's official set of documents, listing their contents, and a description of main general statements of the FKP-2025, including its goals and tasks as they are described in the official documents;.

Section 3 contains brief descriptions of those items and sub-items of the Program, which are of most interest for assessing the planned Russian space activities, with main planned results (in the form of requirements), terms and volumes of funding to be allocated distributed as follows: **Sub-section 3.1** - communications satellites and systems, including broadcasting, relay and search/rescue satellites and systems, but excluding the GLONASS navigation system², **Sub-section 3.2** - ERS satellites, including meteorological and mapping satellites, **Sub-section 3.3** - spacecraft for fundamental space research and for technical research, including scientific

² GLONASS is being developed and operated by a special Program (GLONASS FTsP)

satellites, interplanetary probes and biological satellites, **Sub-section 3.4** - manned astronautics, including the development of new manned spacecraft, and the proposed creation of a new national orbital space station, **Sub-section 3.5** - launch systems and interplanetary transportation vehicles, including, separate to launch vehicles, developments of advanced upper stages, as well as of advanced rocket engines for them, and of nuclear-powered space tugs, **Sub-section 3.6** - ground based TT&C infrastructure and facilities, excluding the development of spaceports, since this will be provided within a special Purposeful Program (RRK FTsP). framework

The feasibility of the FKP-2025, and its most important items, is assessed in **Section 4**, where comments are presented for a number of main items of the Program, from the perspective of assessing their feasibility by analysing the conditions in which this feasibility could be possible.

The **Conclusions** contain a brief summary of the information presented and of the results of its assessment.

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4. <http://tass.ru/kosmos/2747297>, March 17, 2016 (page 31).



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