UN-MANNED SATELLITES ON POSTAGE STAMPS: THE METEOR AND FY-1 SERIES

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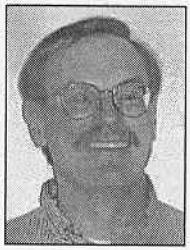
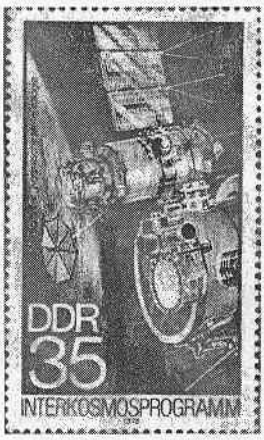


Don Hillger Garry Toth

This is the eighth in a series of articles about un-manned satellites on postage stamps. This article features the low-earth polar-orbiting weather satellites in the Meteor and FY-1 series operated by Russia and the People's Republic of China respectively. Previous articles covered the U.S. polar-orbiting weather satellites in the TIROS/ESSA and ITOS/NOAA series.

The Russian Meteor satellite series is long running and contains a large number of satellites, about 75, many of which carried the Meteor name, as well as a limited number of other satellites that were related to the Meteor series but were named differently. Because early Russian space history is at times vague and sources of information can conflict, it is hard to find conclusive information about the Meteor program. However, some generalizations can be made.



The first Meteor satellites were launched in the mid-1960s under the extensive Russian Kosmos (Cosmos) series. The Kosmos name was used in part to hide the intended purpose of the satellites. About ten of these early Kosmos-Meteor satellites carried experimental upper-atmospheric and cloud-cover imaging instrumentation.

The first satellite actually called Meteor was Meteor 1-01 launched in 1969. The Meteor-1 series consisted of 31 satellites over a period of 12 years through 1981. Some of the later satellites in the Meteor-1 series were the Meteor-Priroda satellites, a variation intended for earth resources monitoring rather than weather analysis and forecasting. The Meteor-2 series were improved versions of the first Meteors and consisted of 21 satellites launched between 1975 and 1993, partially overlapping the last of the Meteor-1 series. The Meteor-3 series were a third-generation Meteor system, with the first one launched in 1985 and the sixth one in 1994. This was followed by a single Metor-3M satellite that was launched in 2001. As indicated by the sparseness of the Meteor launch record since the

1990s, there has been much less weather (and other) satellite activity since the dissolution of the Soviet Union and the downscaling of their space program.

As far as identifying these satellites on stamps, because of their overall similarity there are a limited number of features that can be used. Meteors consist of a cylindrical, almost cannon-like, body with instrumentation on one end that points towards the earth. A pair of solar panels, one on each side of the body, can rotate to remain perpendicular to the sun to supply energy for the spacecraft. As a general rule, the solar panels range from less rectangular for early Kosmos-Meteor spacecraft to more rectangular for later designs.

Among the most distinguishing features are the antennas used to relay the gathered information to earth stations and other satellites. While some sources seem to indicate that Meteor-1 satellites carried one umbrella-like antenna (a distinguishing feature often seen on stamps showing Meteor), both the early Kosmos-Meteors and the Meteor-Prirodas appear to have no such antennas. The Meteor-2 series may have had two such umbrella-like antennas, although this is not confirmed by all sources (and is only seen on a very limited number of postal items). And finally, the Meteor-3 and 3M satellites did not carry these larger antennas, but rather much smaller antennas that are less obvious among the instrumentation on the satellite body.

In general, the most important characteristics that can be used to identify the Meteor satellites are the presence or absence of the umbrella-like antenna and the shape of the solar panels. To a lesser extent, the shape of the spacecraft body and the instrumentation attached to the body can also be considered. The authors have compared these characteristics to available reference images. The uncertainties already mentioned have led us to identify most postal items simply as "Meteor". In cases where we have more confidence, a more specific categorization has been made. Several items labeled "quasi-Meteor" are for items that show satellites with some recognizable features of Meteor, but the depictions are erroneous in other respects.

The Chinese FY-1 (Fen Yung or "Wind-Cloud") polar-orbiting satellite series began in 1988, with four satellites launched to date, the most recent one

in 2002. Unlike the Meteor series, but like the current U.S. polar-orbiting weather satellites, FY-1 satellites occupy sun-synchronous orbits, allowing a single satellite to obtain nearly full coverage of the earth every 12 hours as the earth spins underneath the satellite. (With the non-sun-synchronous orbits of Meteor series, three satellites were needed to obtain full coverage of the earth every 6 hours.)

FY-1 satellites have a box-shaped body with instrumentation on one end that points toward the earth, and a pair of rectangular solar panels, one attached on each side of the body. Unlike the much longer history and large number of postal items that show Meteor, only two postal items are known to show the FY-1 series, one from China and the other from Benin.

A table and images of several postal items showing these satellites are presented both here and on the website developed by the authors: http://www.cira.colostate.edu/ramm/hillger/satellites.htm. E-mail correspondence with the authors is welcome. Don Hillger can be reached at hillger@cira.colostate.edu and Garry Toth at garry.toth@ec.gc.ca. []

Checklist of Postal Items Showing Meteor and YF-1

Country	Cat. No.*	Type**	Year	Notes
Meteor (Russia)				
Altai Repub.	Local (350 value)	Cuba 2502 ovpt. On 4xRussia 4517	1996	Meteor
Altai Repub.	Local (800 value)	Cuba 2502 ovpt. On 4xRussia 4517	1996	Meteor
Altai Repub.	Local (350 value)	Cuba 2502 ovpt. On 4xRussia 4520	1996	Meteor
Altai Repub.	Local (800 value)	Cuba 2502 ovpt. On 4xRussia 4520	1996	Meteor
Altai Repub.	Local (350 value)	Cuba 2502 ovpt. On 4xRussia 5727	1996	Meteor
Altai Repub.	Local (800 value)	Cuba 2502 ovpt. On 4xRussia 5727	1996	Meteor
Cambodia	778		1987	Meteor
Cuba	1592		1971	Kosmos/Meteor
Cuba	2186		1978	Kosmos/Meteor
Cuba	2324		1980	Kosmos/Meteor
Cuba	2502		1982	Meteor
Cuba	2587		1983	Meteor
Czechoslovakia	2304		1980	Meteor
Germany (East)	1364	MSI	1972	Meteor
Germany (East)	1900		1978	Meteor
Guinea Bissau	469		1983	Meteor-1

Country	Cat. No.*	Type**	Year	Notes
Komi	Local (450 value)	Cuba 2324 ovpt. on 4xRussia 4519	199?	Meteor
Komi	Local (950 value)	Cuba 2324 ovpt. on 4XRussia 4519	199?	Meteor
Komi	Local (450 value)	Cuba 2324 ovpt. on 4XRussia 4521	199?	Meteor
Komi	Local (950 value)	Cuba 2324 ovpt. on 4XRussia 4521	199?	Meteor
Komi	Local (450 value)	Cuba 2324 ovpt. on 4XRussia 5724	199?	Meteor
Komi	Local (950 value)	Cuba 2324 ovpt. on 4XRussia 5724	199?	Meteor
Komi	Local (450 value)	Cuba 2324 ovpt. on 4XRussia 5724	199?	Meteor
Komi	Local (950 value)	Cuba 2324 ovpt. on 4XRussia 5724	199?	Meteor
Korea (North)	Mi2523		1984	Meteor-Priroda
Laos	784		1987	Kosmos-Meteor
Liberia	C201	In margin of S/S-1	1974	Quasi-Meteor
Mariael, El	Local	Ovpt. On Russia 4517	1994	Kosmos-Meteor
Mongolia	C78		1976	Meteor
Mongolia	C90		1977	Meteor
Mongolia	1686		1988	Meteor
Nicaragua	1657		1987	Kosmos-Meteor
Romania	2422		1973	Meteor
Russia	Unknown	Stamped envelope	1971	Meteor
Russia	3860		1971	Kosmos-Meteor
Russia	Unknown	Stamped envelope	1974	Meteor
Russia	Unknown	Stamped envelope	1974	Meteor
Russia	4175		1974	Meteor
Russia	4428		1976	Meteor
Russia	4595	In margin of S/S-1	1977	Meteor
Russia	4665		1978	Meteor
Russia	Unknown	Stamped envelope	1981	Meteor
Russia	Unknown	Postal card	1982	Meteor
Russia	Unknown	Stamped envelope	1984	Meteor
Russia	Unknown	Stamped envelope	1984	Meteor
Russia	Unknown	Postal card	1984	Meteor
Russia	5298		1984	Meteor
Russia	5299	In margin of S/S-1	1984	Meteor
Russia	5355a	In margin of M/S-8 x(5355)	1985	Meteor
Russia	Unknown	Stamped envelope	1992	Meteor
Russia	Unknown	Stamped envelope	1999	Quasi-Meteor
Russia	6505	S/S-1	1999	Quasi-Meteor
Russia	6577	In margin of S/S-1	2000	Meteor
Sri Lanka	1234		1998	Meteor
Xhakasia	Local	Cuba 2502 Overprinted on 4xRussia 6061	199?	Meteor

Country	Cat. No.*	Type**	Year	Notes
Xhakasia	Local	Cuba 2502 overprinted on 4xRussia 6063	199?	Meteor
Xhakasia	Local	Cuba 2502 overprinted on 4xRussia 6065	199?	Meteor
Xhakasis	Local	Cuba 2502 overprinted on 4xRussia 6066	199?	Meteor
Xhakasia	Local	Cuba 2502 overprinted on 4xRussia 6066A	199?	Meteor
Xhakasia	Local	Cuba 2502 overprinted on 4xRussia 6067	199?	Meteor
Xhakasia	Local	Cuba 2502 overprinted on 4xRussia 6068	199?	Meteor
FY-1* (Peoples Republic of China)**				
Benin	1171 in selvedge	Part of S/S-8 (1177a-h)	1999	FY-1
China (PRC)	3066		2000	FY-1

*Scott number, unless indicated with Mi or BL for Michel
**S/S# = souvenir sheet, M/S# = miniature sheet, where # = number of stamps in sheet, and the numbers in parentheses are the catalog numbers of the stamps in the sheet.
***The Chinese FY-2 series are geostationary weather satellites.

(Continued from page 151) ***The 1931-32 Struthers Ohio Rocket Mail Covers - Paul Roales***

None of the four signatures on EZ-1 match any of the three signatures on EZ-2 and EZ-3, so a different group of people were involved in the two launches. But John Kiktavi, Jr. is the link between the two events. Based on the above information, it seems that he was probably an interested spectator for the launch of EZ-1 and a prime organizer for the FDC EZ-1 and the Rocket Mail launch of EZ-3. Also, he probably printed the "Miniature Airways" stamps used on EZ-2 and EZ-3. So what happened to him? A search on the Internet gives some interesting clues. There are two pamphlets written and printed by a John Kiktavi in California in the late 40's. They are: Kiktavi, John *How To Preserve Baby Shoes;* Publisher: Los Angeles.; Kiktavi Company; 1947; and Kiktavi, John *How To Grow And Cultivate Miniature Living Trees*; Published and distributed by Living Ming Trees, National Nursery Supply, Inglewood, CA; July 1949. Is this John Kiktavi, Jr. the printer who created the Rocket Mail covers grown up and practicing his trade in California? []

Visit my Rocket Mail website at: www.ionet.net/~paroales/ROCKET.HTM

NEW ASTROPHILATELY WEBSITE BY BFV COSMOS

A new website devoted to space philately has been inaugurated by BFV Cosmos (Belgian Philatelic Society Cosmos). Go to **www.bfvcosmos.be** and you will see news of space and space philately and a launch list for 2003. Their quarterly *Cosmos Express* publication is available in either English or Dutch. Meetings are held monthly in Gent, Belgium. Contact Dr. Stefan Bruylants, President, at s.bruylants@pandora.be for information on membership. []