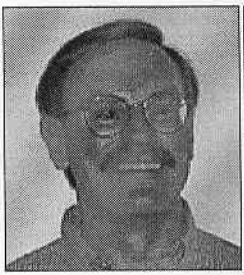
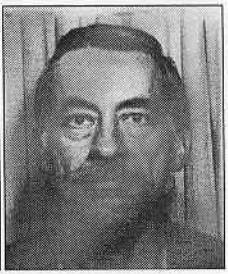
UN-MANNED SATELLITES ON POSTAGE STAMPS: THE TIROS SERIES

Don Hillger and Garry Toth



D. Hillger



G. Toth

This is the first in a series if articles about un-manned satellites on postage stamps. We hope to feature many different satellites in these articles, but will not include any manned space missions. We specialize in scientific, weather, and environmental satellites intended for Earth orbit, and only minimally into inter-planetary satellites when they are part of a satellite series that includes Earth missions, such as some of the Explorer and Pioneer satellites that will be covered in future issues. Although we collect launch covers, cancels, and meters for the satellites that will be featured, these articles will focus on stamps, souvenir sheets, and postal stationery only.

A checklist of postal items that show the featured satellite will accompany each article. Since we do not necessarily have all of the postal items connected with each satellite, we expect that some of the details may be incomplete or incorrect. Some of the questionable material and errors that we have found will be noted. We hope that through this series of articles we will share with others the information we have gathered, and at the same time gain information about these satellites from experts in these areas. We would like these checklists to be as complete as possible.

The First Weather Satellite

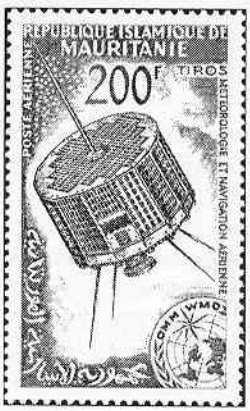
To start this series of articles, we chose the very first weather satellite, the Television and InfraRed Observation Satellite (TIROS). Before TIROS, the only images of Earth's cloud cover were those taken from vertical sounding rockets at much lower altitude. The first TIROS satellite was launched 1 April 1960 and produced very crude visible and infrared wavelength pictures of the Earth from a polar-orbit altitude of 700 km (435 mi.), (http://antwrp.gsfc.nasa.gov/apod/ap000401.html). Satellite imagery has improved

tremendously over the years, but the beginnings were very humble. A total of ten experimental TIROS satellites were successfully launched over a period of five years. This was followed by a series of nine Experimental Science Service Administration (ESSA) operational satellites, with the first launched 3 February 1966. These satellites were named after the U.S. agency then responsible for integrating satellite imagery into weather analysis and forecasting. Ever since then, the entire Earth has been photographed at least once daily continuously.

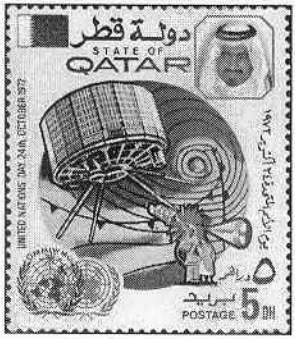
Because these two satellite series, TIROS and ESSA, one experimental and the other operational, are basically similar, they will both be covered in this article. It must be mentioned that the name TIROS continued as part of several generations of follow-up satellites, such as the Improved TIROS series and the Advanced TIROS series. These satellites will not be discussed here, but will be covered in future articles.

Featured Stamps

TIROS, like most satellites, have features that can be used to identify and distinguish them from other satellites. All of the TIROS series have cylinder bodies covered mostly with solar cells. The body is somewhat flattened, shorter than it is wide, less than 0.5 m tall by just over 1 m in diameter. This distinguishes it from many of the early Syncom communications satellites that were teller and smaller in diameter. Another distinction is the lack of a rocket nozzle on the bottom of the TIROS compared to Syncom. In addition, the vertical sides of TIROS form a many-sided polygon, unlike the rounded shape of Syncom. On the top of TIROS is a single vertical rod antenna, and on the bottom are four similar antennae equally spaced and at 45° from the vertical axis. Syncom has similar antennae, so these are not necessarily the best features to distinguish between the two.



Some of the better images of TIROS on stamps show the camera used to image the Earth. On early TIROS the camera was on the bottom of the satellite. (When this camera can be seen, these TIROS are designated as Type-A in the table.) For later TIROS models (TIROS-9 and 10), and for all ten of the ESSA series, the camera viewed out of the cylinder wall. (These are designated as TIROS/ESSA in the table.) The change in camera corresponded with a change in the orientation of the satellite as it orbited the Earth. The later satellites rolled as they orbited, making more views of the Earth possible than with the prior con-



figuration. (On the remaining TIROS images the camera cannot be seen in either location, leaving these items unclassified, except for other indications given on the postal items.)

Space permits only a few of the postal items in the TIROS series to be shown. We will mention a few selected stamps with good TIROS images, not those with smaller or hard to discern images of the satellite, or large souvenir sheets that would take up a lot of space. However, images of all of the TIROS items that we have are available on the website mentioned below.

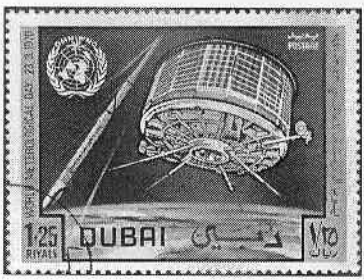
Mauritania issued the first stamp showing TIROS in 1963. Similar large and detailed images of TIROS are available on stamps from the Bahamas, Dominica, Dubai, Ghana, Grenada, Indonesia, Maldives, Paraguay, Qatar and Upper Volta. Other images on stamps are either smaller or much less detailed. The U.S. Postal Service has never issued a stamp showing TIROS, even though the U.S. pioneered the weather satellite. The only U.S.-related item showing TIROS is from a commemorative sheet issued at INTERPEX in 1962.

A New Website Resource

In an attempt to identify and distinguish between various un-manned satellites, we have developed a website dedicated to the display of images of satellites on both launch covers and postage stamps. The URL is as follows:

http://www.cira.colostate.edu/RAMM/hillger/satellites.htm

Through this website we hope to identify and note errors in satellites on stamps. Since this is a work in progress, any corrections or additions are appreciated. For images of the postal items that show TIROS, follow the links to polar-orbiting weather satellites. Then, go to the TIROS/ESSA series.



One of the best resource/reference books that we have found showing numerous unmanned satellite images was written by Giovanni Caprara. It is entitled, *The Complete Encyclopedia of Space Satellites* (Portland House, New York, NY 10003; ISBN 0-517-61776-5, 1986). In addition, there are many resources on the web showing information about these satellites. Our website contains links to many of these web resources. E-mail correspondence with the authors is welcome. Don Hillger can be reached at Hillger @cira.colostate. Edu and Gerry Toth can be reached at garry.toth@ec.gc.ca. []

Checklist of Postal Items Showing TIROS

Country	Catalog N0.*	Type of Item**	Year	Notes***
Bahamas	346		1973	TIROS (typeA)
Burma	276		1980	TIROS
Chad	707d	Part of S/S of 6	1997	TIROS-6 (typeA)
Czechoslovakia	1295		1965	TIROS
Dominica	354		1973	TIROS launch
Dominica	2238	Part of S/S of 6	2000	TIROS[1]
Dominican Rep.	673		1970	TIROS/ESSA
Dominican Rep.	C178		1970	TIROS/ESSA
Dubai	123		1970	TIROS (typeA)
Ethiopia	663		1973	TIROS (typeA)
Fujeira	Mi77		1966	TIROS
Fujeira	Mi156	Overprint new currency	1967	TIROS
Fujeira	Mi348	Overprint "Apollo 8"	1969	TIROS
Fujeira	BL4	Perf.+ imp. S/S of 2	1966	TIROS
Fujeira	BL8	Perf.+ imp. S/S of 2, overprint new currency	1967	TIROS
Fujeira	BL11A	Perf.+ imp. S/S of 2, overprint "Apollo-8"	1969	TIROS
Ghana	166a	Imp. S/S of 4	1964	TIROS
Ghana	504		1973	TIROS (typeA)
Ghana	507a	Part of S/S of 2	1973	TIROS (typeA)
Grenada	1158	S/S of 1	1983	TIROS/ESSA
Grenada	1250	S/S 1, overprint on 1158	1984	TIROS/ESSA
India	508		1970	TIROS (typeA)
Indonesia	819		1972	ESSA-8
Israel	952		1986	TIROS[2]
Kenya, Uganda, Tanzania	262		1973	TIROS
Korea (North)	Mi1523	Part of S/S of 7 + label	1976	TIROS
Korea (North)	BL29	S/S of 1	1976	TIROS
Korea (South)	858		1973	TIROS
Korea (South)	858a	S/S of 2	1973	TIROS
Liberia	653		1973	TIROS
Malagasy	C78		1964	TIROS (typeA)
Maldives	464		1974	TIROS (typeA)
Maldives	469		1974	TIROS (typeA)
Mauritania	C25		1963	TIROS (typeA)
Mexico	C323		1967	TIROS
Mongolia	363		1964	TIROS (typeA)
Morocco	120		1965	TIROS (typeA)
Niger	C41		1964	TIROS-1 (typeA)
Panama	457C		1964	TIROS-2 (typeA)
Panama	C334a, iC334a	Perf.+ imp. S/S of 2	1965	TIROS (typeA)
Panama	491	Overprint	1968	TIROS
Panama	491A	Overprint	1968	TIROS

Checklist of Postal Items Showing TIROS

Panama	C334a, iC334a	Perf.+ imp. S/S of 2	1965	TIROS (typeA)
Panama	491	Overprint	1968	TIROS
Panama	491A	Overprint	1968	TIROS
Panama	491b	S/S of 2, overprint	1968	TIROS
Panama	492	Overprint	1968	TIROS
Panama	492A	Overprint	1968	TIROS
Panama	492B	S/S of 2, overprint	1968	TIROS
Paraguay	816		1964	TIROS-7 (typeA)
Qatar	327		1972	TIROS (typeA)
Ras Al Khaima	BL7	Imp. S/S of 1	1966	TIROS (typeA)
Ras Al Khaima	BL19	Imp. S/S of 1, overprint new currency	1966	TIROS (typeA)
Rwanda	136	S/S of 2	1965	TIROS (typeA)
St. Pierre and Miquelon	C60		1976	TIROS (typeA)
Salvador, El	781		1968	TIROS
Salvador, El	782		1968	TIROS
Salvador, El	Kessler #1	Aerogramme	1968	TIROS
Salvador, El	Kessler #2	Aerogramme, different value	1968	TIROS
Sharjah	48a	Imp. S/S of 1	1964	TIROS-3 (typeA)
Togo	501		1964	TIROS (typeA)
Togo	503		1964	TIROS (typeA)
Togo	505a	Imp. S/S of 4	1964	TIROS (typeA)
Tonga	786a	Part of strip of 3	1991	TIROS (typeA)
Tunisia	653		1975	TIROS
Umm Al Qiwain	Mi79		1966	TIROS (typeA)
Umm Al Qiwain	Mi90	Overprint new currency	1967	TIROS (typeA)
United States	None	Part of S/S of 4[3]	1962	TIROS-1 (type-A)
Upper Volta	C28		1966	TIROS/ESSA
Yemen Arab Rep	Mi458		1966	TIROS/ESSA
Yemen Arab Rep	BL43	Imp. S/S of 1	1966	TIROS/ESSA
Yugoslavia	871		1967	TIROS
Yugoslavia	1046		1971	TIROS (typeA)

*_Scott_ number unless indicated with Mi or BL for _Michel_
**SS# = souvenir sheet, where # = number of stamps in sheet
***type-A designates early TIROS-1 thru 8 with camera on bottom, TIROS/ESSA have camera thru side; others cannot be determined

[1]not ESSA-8 as indicated on stamp, based on camera on bottom
[2]rocket-like nozzle centered on bottom of satellite is not typical of TIROS
[3]Interpex commemorative sheet []