

Your Associate Editor created a top 10 things to see at UH list for this article; Space Unit members are encouraged to visit UH and make their own:

- 10: Boeing 237 Clipper;
- 9: P40 "Flying tiger";
- 8: Caudrom G.4 (given to The Smithsonian in 1917- beautiful!);
- 7: P-51 Mustang;
- 6: Dassault Falcon 20 (First FedEx Plane);
- 5: UH-1 "Huey" (for people of a certain age);
- 4: SR-71;
- 3: B-29 "Enola Gay" (your Associate Editor's father would have been part of the invasion force for Japan);
- 2: Concorde;
- 1: Enterprise!

Both Facilities of the Air & Space Museum are open every day (except Christmas), 10 AM to 5:30 PM. There is no admission charge, but there are extra fees for planetarium shows, IMAX and simulator rides. Recommendation: Skip the shows; there's too much else to see. There is a \$12 fee to shuttle round trip between both facilities, and a \$12 parking fee for UH. It's all worth the fee. There are no shuttles to UH from Dulles Airport or local hotels, but these are being considered. For more information, go to www.nasm.si.edu or phone 202-263-1000.

A final anecdote: Did you ever wonder what happened to all the left over Project Mercury FDC's that the US Post Office made back in 1962? Ten thousand of them were donated to UH, and are being given away free by the docents. They might be gone by the time this is published. ❖

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UNMANNED SATELLITES ON POSTAGE STAMPS 19: PIONEER-SERIES (NON-PLANETARY) MISSIONS Don Hillger (SU 5200) and Garry Toth

This is the nineteenth in a series of articles about un-manned satellites on postage stamps. This article features the earlier non-planetary part of the Pioneer-series of satellites. The later planetary Pioneers will be featured in a future article.

Ten numbered non-planetary Pioneer satellites were launched. The first, Pioneer-0, went up in the same year as Explorer-1 (1958) but failed. Pioneer-1 and 2 also failed, but were still numbered in sequence. Other subsequent Pioneer-series launch failures were not numbered, as it became common practice to delay numbering until a launch was known to be successful. The last of the non-planetary Pioneers, Pioneer-E, was launched in 1969, but failed, and so remained un-numbered. The last successful non-planetary Pioneer was Pioneer-9, launched in 1968.

The non-planetary Pioneers, (Pioneer-0 through Pioneer-E), were primarily lunar, solar, and interplanetary spacecraft. The planetary Pioneers came later:

numbered Pioneer-10 through Pioneer-13. They were for exploration of the planets, including specific missions of two Pioneers to Jupiter/Saturn, and two Pioneers to Venus. The accompanying checklist does not include the planetary Pioneers. Only the earlier non-planetary Pioneer missions are included.

Pioneer-0, 1, and 2 were the first U.S. lunar attempts, but all failed. They were followed by Pioneer-3 and 4 as the first successful U.S. lunar missions. Pioneer-5 provided the first maps of the interplanetary magnetic field. Pioneer-6, 7, 8, and 9 were the world's first solar monitoring network, to provide warnings of increased solar activity: high levels of solar activity can affect orbiting satellites as well as ground-based electrical systems.



Yemen Arab Republic Mi921

The non-planetary Pioneers are featured on a large number of postal items, as listed in the table starting on the next page. In many cases the images are small, but still identifiable. In a few cases the images are larger and contain some detail of the spacecraft. Pioneer-5 is notable philatelically because it was nearly identical to Explorer-6. Both were "paddlewheel" satellites in appearance, and both are featured on several postal items. Through examining reference images as well as images on covers and postal items, the authors discovered that Explorer-6 contained two short antennas on its "top",

whereas Pioneer-5 contained only a single short antenna. This difference, though not documented elsewhere to the authors' knowledge, was the key to differentiating between the two satellites when the Explorer or Pioneer names were not specifically given on postal items.

Readers are referred to the authors' Website for reference images of the satellites in the Pioneer series, as well as images of launch covers and postal items that feature these satellites. As a complement to this article, a checklist that includes the earlier non-planetary Pioneer satellites is presented here and on the Website (<http://www.cira.colostate.edu/ramm/hillger/satellites.htm>) developed by the authors. E-mail correspondence is welcome. Don Hillger can be reached at hillger@cira.colostate.edu and Garry Toth at garry.toth@ec.gc.ca.

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CHECKLIST OF POSTAL ITEMS SHOWING PIONEER-SERIES (NON-PLANETARY) SATELLITES

(Pioneer-0 though Pioneer-E only, not including planetary Pioneers)

Country	Catalog Number*	Type of Item**	Year	Notes on Content
Belgium	None	In margin of cinderella of 2 imperforates	1967	Pioneer-5
Bhutan	406	SS1	1984	Pioneer-5
Bhutan	407	SS1	1984	Pioneer-5
Burundi	133		1965	Pioneer-5
Burundi	133a	Perforate and imperforate SS2 (131+133)	1965	Pioneer-5
Cameroun	C84		1967	Pioneer-6 (Pioneer-A) with folded antennas, date for Pioneer-1
Cuba	1800		1973	Pioneer-3/4 ²
Fujeira	Mi70		1966	Pioneer-5
Fujeira	Mi149	Mi70 overprinted new currency	1967	Pioneer-5
Fujeira	Mi348	Mi70 overprinted "Apollo-8"	1969	Pioneer-5
Ghana	164		1964	Pioneer-0/1/2 ¹
Ghana	165		1964	Pioneer-0/1/2 ¹
Ghana	166		1964	Pioneer-0/1/2 ¹
Ghana	166a	On stamp and in margin of imperforate SS4 (4x (166))	1964	Pioneer-0/1/2 ¹ , Pioneer-5
Ghana	186		1964	Pioneer-0/1/2 ¹
Ghana	186a	MS12 (12x (186))	1964	Pioneer-0/1/2 ¹
Ghana	187		1964	Pioneer-0/1/2 ¹
Ghana	187a	MS12 (12x (187))	1964	Pioneer-0/1/2 ¹
Ghana	188		1964	Pioneer-0/1/2 ¹
Ghana	188a	MS12 (12x (186))	1964	Pioneer-0/1/2 ¹
Haiti	m1310 (Y723)*		1973	Pioneer-6/7/8/9 ³
Haiti	m1369*	m1310 op	1974	Pioneer-6/7/8/9 ³
Mongolia	C6		1965	Pioneer-5
Montserrat	891	SS1	1996	Pioneer-5
Nigeria	143a	In margin of MS12 (12x (143))	1963	Pioneer-0/1/2 ¹

Nigeria	144a	In margin of MS12 (12x (144))	1963	Pioneer-0/1/2 ¹
Panama	C334a (BL36) iC334a (BL37)	In margin of SS2 (C333-C334), changed colors on imperforate	1965	Pioneer-0/1/2 ¹
Panama	C336a iC336a	In margin of SS2 (C335-C336), changed colors on imperforate	1965	Pioneer-0/1/2 ¹
Paraguay	922 (Mi1522) i922 (Mi1530)	Changed colors on imperforate	1966	Pioneer-0/1/2 ¹
Paraguay	926 (Mi1526) i926 (Mi1534)	Changed colors on imperforate	1966	Pioneer-0/1/2 ¹
Paraguay	926a (BL79) i926a (BL80)	SS1 (926), changed colors on imperforate	1966	Pioneer-0/1/2 ¹
Qatar	448		1975	Pioneer-5
Rwanda	136	SS2 (136a-b)	1965	Pioneer-0/1/2 ¹
Sharjah	44		1964	Pioneer-5
Sharjah	44A	44 overprinted new currency	1967	Pioneer-5
Sharjah	48a	Imperforate SS1	1964	Pioneer-5
Sharjah	Mi1000		1972	Pioneer-3/4 ²
Yemen Arab Republic	Mi921 Mi928	Perforate and imperforate. Changed colors on imperforate.	1969	Pioneer-4, Pioneer-5

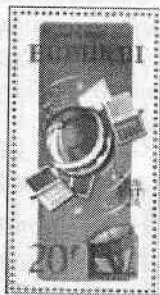
* Scott catalog number, unless prefixed with Mi or BL for *Michel*, or m for *Minkus*, or Y for *Yvert*, "i" prefix denotes imperforate version.

** SS# = souvenir sheet, MS# = miniature sheet, where # = number of stamps in sheet, and the numbers in parentheses are the catalog numbers of the stamps in the sheet.

¹ Pioneer-0, 1, and 2 are all basically identical.

² Pioneer-3 and 4 are basically identical.

³ Pioneer-6, 7, 8, and 9 are all basically identical. ❖



Top row (l-r): Qatar 448,
Mongolia C6, Haiti m1310,
Burundi 133.

Lower row:
Bhutan 406,
Montserrat 891,
Fujeira Mi70

