

## Surveyor-3 visited by Apollo-12 by Don Hillger and Garry Toth

The Apollo-12 mission, the second in which two astronauts landed on the moon, included a unique event: a visit to the un-manned Surveyor-3 spacecraft which had landed 2 ½ years earlier. Part of the astronauts' mission was to investigate Surveyor and bring back some pieces for later analysis. They also made the usual collection of moon rocks and dust.

Rather than covering the entire Surveyor series, this article focuses on the Surveyor-3 mission. It was the first, and to date only, occasion in which humans have visited an un-manned probe sent to another world. Only postal items showing Surveyor-3 and the visiting Apollo-12 astronauts are included in this article.

### Surveyor-3, third in the Surveyor series

Surveyor-3 was launched on 17 April 1967 and landed on the moon on 20 April. It was the second Surveyor to successfully accomplish a soft landing, following Surveyor-1. Of the seven Surveyors, only Surveyors 2 and 4 did not complete their missions. One of the goals of the Surveyor spacecraft was to return data for selected lunar mare sites in support of the planned Apollo program landings.

The data from Surveyor-3 showed that it had not made a fully-controlled soft landing, but in fact bounced twice before settling down in an upright position. The problem was due to misleading signals from the spacecraft's descent radar caused by highly reflective rocks. In spite of this problem, Surveyor-3 was able to carry out its mission.

Surveyor-3 returned data until 4 May 1967 but unfortunately failed to come back to life after the two week lunar night. It was not until the Apollo-12 mission in November 1969, more than two years later, that Surveyor-3 was again in the spotlight. The Apollo-12 Lunar Module landed less than 200 m from Surveyor-3.

On their second moonwalk, on 20 November 1969, astronauts Charles (Pete) Conrad, Jr. and Alan Bean visited and examined Surveyor-3. (Astronaut Richard Gordon remained in the Command Module, orbiting the moon.) Conrad and Bean took photographs and removed about 10 kg of parts from the spacecraft. They were returned to Earth and analyzed to determine how they were affected by exposure to the harsh lunar environment. The Surveyor-3 TV camera brought back from the moon is on display at the

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Chad (Scott 225Ac, 1970) and Haiti (Minkus 1318, 1973)

Smithsonian National Air and Space Museum in Washington DC.

The returned parts of Surveyor-3 were also examined for living material, since the spacecraft was not sterilized prior to launch. Scientists wanted to know if terrestrial organisms could have survived in space all that time. While one sample that was tested had bacteria, the verdict was inconclusive, as there may have been accidental contamination of the material after being returned to Earth.

Surveyor-3 is shown on a small number of postal items, all of which show the visiting Apollo-12 astronauts. Included here are all of the postal items known to the authors, other than slight variations that will be mentioned.

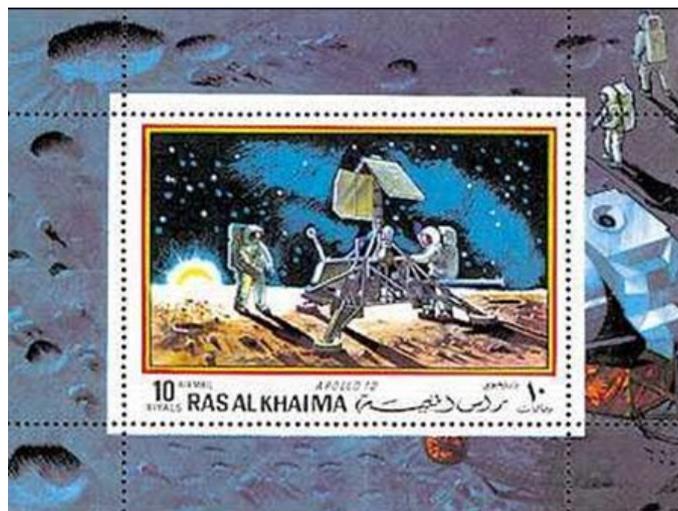
A postage stamp from Chad (Scott 225Ac, 1970), one of a strip of 3 stamps, shows an Apollo-12 astronaut next to Surveyor-3, with the Apollo-12 Lunar Module, Intrepid, in the background. This scene is

based on an actual photograph of Pete Conrad and Surveyor-3 taken by Alan Bean. Surveyor-3 had landed in what was subsequently named the Surveyor crater, and Intrepid is seen beyond the crater rim. This stamp is also available in an imperforated version.

Haiti (Minkus 1318, 1973) shows an Apollo-12 astronaut and Surveyor-3. An extendable motor-driven scissors-arm of the surface soil sampling scoop, first used on Surveyor-3, is very apparent in this stamp as well as in the Chad stamp already mentioned. The arm was designed to manipulate the soil around Surveyor, within the view of the TV camera. It was used to dig 4 trenches in the lunar soil. Chemical analysis of the soil was performed by an alpha-scattering instrument, and pictures of the soil were transmitted back to Earth. The same stamp was also later overprinted (Minkus 1377, 1974) for the centenary of the Universal Postal Union (UPU).

On the next stamp, from Hungary (Scott C304, 1970), both astronauts are shown along with Surveyor-3. This was an impossible picture, as no camera-shutter self-timer was available to the astronauts. Most other postal items show only a single astronaut, such as a stamp from Mali (Scott 1036d, 1999), which is part of a souvenir sheet of 4 stamps.





A stamp issued by Ras Al Khaima (*Michel* 392, 1969) again shows both astronauts inspecting Surveyor-3. The Ras Al Khaima stamp is also available as a souvenir sheet, both perforated and imperforate. Another souvenir sheet of one from Ras Al Khaima (*Yvert* PA49, 1970) again shows both astronauts. This item is not listed by either *Scott* or *Michel*. Also, Togo (*Scott* 743, 1970) shows a single astronaut and Surveyor-3. This item was later overprinted (*Scott* 748, 1970) with an inscription to welcome the Apollo-12 astronauts back to Earth from their lunar visit.

images was good enough to show all of the major remains from the mission, including Surveyor-3, the Intrepid Descent Stage, the nuclear-powered Apollo Lunar Surface Experiments Package (ALSEP), and even the footpaths of the astronauts. The ASLEP returned scientific data directly to Earth for over seven years after the Apollo-12 mission. The LRO image mentioned ([http://www.nasa.gov/mission\\_pages/LRO/multimedia/lroimages/lroc\\_20090903\\_apollo12.html](http://www.nasa.gov/mission_pages/LRO/multimedia/lroimages/lroc_20090903_apollo12.html)) can be found on the Web.



**Additional online information**



Special event cover cancelled at Vatican City with (KimCover) cachet showing Surveyor-3 and Apollo-12 astronauts.

A checklist of postal items showing the Surveyor series satellites (<http://rammb.cira.colostate.edu/dev/hillger/Surveyor.htm>), including the Apollo-12 items highlighted in pale yellow, is available as part of the Website developed by the authors for many different un-manned satellites (<http://rammb.cira.colostate.edu/dev/hillger/satellites.htm>).

The authors are aware of only one postal cover commemorating the astronauts' visit to Surveyor-3. The KimCover cancelled on 20 November 1969 shows the impossible picture of both astronauts with Surveyor-3, and Intrepid in the background. As with many postal items, what is depicted can often be attributed to artistic license, showing what must have happened, rather than being based on actual photographs.

Other postal covers must exist for the Apollo-12/Surveyor-3 interaction, and the authors would appreciate receiving scans of them.

**Lunar Reconnaissance Orbiter evidence**

In 2009, forty years after the Apollo-12 visit to Surveyor-3, the Lunar Reconnaissance Orbiter (LRO) obtained images of the Apollo-12 landing site. The spatial resolution of the

Users of the website are asked to provide missing or additional information or images that they may have. The online information will be updated whenever new details are provided to the authors.

