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# Space mail from Chinese Shenzhou 1 Unmanned Test Spacecraft

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The Shenzhou 1 unmanned test spacecraft was launched by the LM-2F rocket at Jiuquan Satellite Launch Centre on Nov. 20, 1999 at 6:30am, Beijing time, and recovered at Si-zi-wang-qi, Inner Mongolia on the following day, at 3:41am. The spacecraft orbited at 200-351km, with an inclination angle of 42°, and a cycle time of 5392 seconds (approx. 1.5 hours).

It was launched by the LM-2F rocket, developed by the China Research Institute of launch vehicle Technology, which belongs to China Aerospace Science and Technology Group Company. The total length of the rocket is 58.343m, the take-off mass is 479.8t, the diameter of the core stage is 3.35m, the diameter of the booster is 2.25m, the maximum diameter of the rectifier cover is 3.8m. The core stage and booster engine of the rocket use nitrogen oxide and dimethyl hydrazine as propellants.

Si-zi-wang-qi was selected as the return site of the spacecraft, because of seven necessary conditions: the prairie in the territory is vast and sparsely populated; the forest coverage is less than 1%; the terrain is flat; the ground slope is less than 5 degrees; there are no high-voltage lines on the ground; no railways; no buildings above three stories; no rivers. The spacecraft consists of an orbital module, a return module, a propulsion module and an additional segment with a total length of 8860mm, maximum diameter of 2.8m, total weight of 7840kg.

The orbital module is located in front of the return module, where Taikonauts live and work. It contains a variety of test equipment and experimental instruments for earth observation. Both sides are equipped with large retractable solar cell wings, solar sensors, various antennas, and various docking mechanisms.

The return capsule is located in the middle of the spacecraft and is the command and control centre of the spacecraft. It is a closed structure with a hatch at the upper end for Taikonauts to enter and leave the orbital module. It is also the only landing capsule in the spacecraft that re-enters the atmosphere and returns to the ground. The return cabin is bell-shaped, 2.5m high, diameter 2.5m, weight about 3t, and can carry 3 Taikonauts, the outside heat shield is made of high temperature resistant composite material.

The propulsion capsule, also known as the power capsule, lies immediately behind the return capsule and usually contains equipment such as propulsion systems, power supplies, gas cylinders and water tanks to provide support and service functions, both to power the spacecraft, to carry out attitude control, to change orbit and braking, and to provide oxygen and water to Taikonauts.

Additional segments are at the top of the spacecraft for docking with other spacecraft or space exploration.

At the top of the spacecraft is an escape rescue tower 8.35m high, equipped with 10 engines. Between 900 seconds before and 160 seconds after take-off, that is, between 0 and 110km of altitude, the escape life-saving tower can pull the return capsule and orbital capsule away from the rocket and allow it to fall into a safe zone. The Taikonauts on the spacecraft return safely.

The return cabin is equipped with a guiding parachute, a deceleration parachute and a main landing parachute. The main landing umbrella area is 1200 square metres.

Aboard the Shenzhou 1 unmanned test spacecraft different kinds of space mail were embarked

The space mail issued by the China Space Foundation (CSF), used the hand-drawn "17 arch bridge" postal stationery. Only 6 items of this kind exist, and only 5 of them (numbered from 1999 001 to 1999 005) were autographed by 12 out of 14 Taikonauts.





The reverse of the stationery bears a red postmark with the date of the cabin opening: "Beijing 1999.11.24.11 Xibeiwang 1".

The front side of the cover was tied with the "flown-proof" postmark of "China Jiuquan Satellite Launch Centre, M.P.O., Lanzhou 27th Branch post office, 1999.9.9.9 (9 Sep. 1999 9:00 am), loaded in the cabin of spacecraft (Board in capsule)" and with a red cancel of "CSF 1999 Flown Cover", also sealed with the steel seal of "Beijing Notary Public Office".

The 12 Taikonauts who autographed the covers are: Yang Liwei, Nie Haisheng, Li Qinglong, Wu Jie, Jing Haipeng, Zhang Xiaoguang, Liu Wang, Zhao Chuandong, Chen Quan, Pan Zhanchun, Fei Junlong and Liu Boming.

A second type of flown cover (below) was issued by BITTT (the Beijing Institute of Tracking and Telecommunication Technology), 351 flown covers of which type exist, numbered from 00001 to 00351. The covers bear a special label tied with a red cachet of "1999.11 BITTT in commemoration of the first loading flight of the experimental spacecraft".

On reverse of the cover there is a red postmark with the date of the opening of the cabin: "Beijing 1999.11.24.11 Xibeiwang 1".



A third type of flown cover (below) was issued by the China Academy of Launching Technology. 366 such covers were flown, numbered from 9911001 to 9911366. On the reverse there is a red postmark on the day of the opening of the cabin: "Beijing 1999.11.24.11 Xibeiwang 1".



The China Academy of Space Technology, flew 820 space covers (numbered from 000001 to 000820), tied with the red cachet of "CAST in commemoration of the launch of the China experimental spacecraft" and sealed with the steel seal of "the 5th Research Institute of the China Space Technology Corp." Also on the reverse of these covers (above) postmark of the opening cabin date: "Beijing 1999.11.24.11 Xibeiwang 1" was applied in black.

China Space Foundation (CSF) serviced 827 flown covers (numbered from 00001 to 00827). The cover (below) carried a "Manned Space Engineering Vignette" special label issued by CSF. On reverse it bears the red postmark of the opening cabin date: "Beijing 1999.11.24.11 Xibeiwang 1".



China Satellite Launching & Tracking General (CLTC), flew 1023 space covers (numbered from D2-0001 to D2-1023), tied with the red strike of "CLTC in commemoration of the launch and recovery of Shenzhou spacecraft". (below) On reverse it bears the red postmark of the opening cabin dated "Beijing 1999.11.24.11 Xibeiwang 1".





Jiuquan Satellite Launch Centre, flew 1078 space covers (below) (numbered from 9900001 to 9901078), bearing a green warranty label of “JSCL M.P.O.” with the inscription “For spacecraft authorized use only”, to guarantee its authenticity. There is no postmark on the reverse side of this cover.



China National Philatelic Corporation, flew a total of 3191 space covers (numbered from 000001 to 003191).

The front side of the flown cover, instead of canceling with the postmark of “China Jiuquan Satellite Launch Centre, M.P.O., Lanzhou 27<sup>th</sup> Branch post office, 1999.9.9.9, loaded in the cabin of spacecraft”, was tied with a spacecraft-like cachet of “in commemoration of China Shenzhou spacecraft first flight, 1999.9.9.9., China Jiuquan”.

Instead of the recovery postmark with the “Beijing 1999.11.24.11 Xibeiwang 1” on the reverse side of the cover, (below) a red cachet “in commemoration of the recovery of the return module of the China Shenzhou spacecraft, 1999.11.24.11, China Beijing” was put on the front side of the cover.

The front side of this flown cover was also tied with a rocket-like cachet of “China LM-2F rocket in commemoration of the first launch of Shenzhou spacecraft, 1999.11.20 6:30 China Jiuquan” and a red strike of “in commemoration of the China Shenzhou spacecraft, 1999.11.21 3:41 China Inner-Mongolia”.



Also carried onboard the Shenzhou 1 were 200 labels issued by the Shanghai Aerospace Bureau (numbered from 000001 to 000200). On the upper right hand corner of the flown labels was applied the black postmark “Beijing, 1999.11.24.11 Xibeiwang 1”. The label (below) was also sealed at the bottom with the steel seal of “Beijing Notary Public Office”.



Finally a set of 2 stamps. (below) 1996-27 commemorating the 47th IAF Conference (see note 1 below) was loaded onboard on behalf of the Shanghai Aerospace Bureau. A total of 1400 sets of flown stamps exist (numbered from 000181 to 000200, and 000401 to 001780).

On the back of each set of stamps, a blue identification label was printed with a red number with the logo of Shanghai Space Administration (SAST).

The logo was split into two parts which were divided equally: one part was pasted on the back of the stamps, and the other part was kept in the Notary Office of Beijing.



(Note 1) Two stamps (Scott 2731-32, Mi.2768-69) were issued by China to commemorate the 47<sup>th</sup> annual International Astronautical Federation Conference, held in Beijing from October 7 to 12, 1996.