

Zond 5

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Zond 5, a member of the Soviet Zond program, was an unmanned spacecraft that in September 1968 became the second ship to travel to and circle the moon, and the first to return safely to Earth. Although unmanned, Zond 5 carried the first Earthlings to reach the moon, including two tortoises, mealworms, wine flies, plants, and other lifeforms, and was also the first to return moon travelers safely to Earth.

Zond 5, a version of the Soyuz 7K-L1 manned Moon-flyby spacecraft, was launched by a Proton-K carrier rocket with a Blok D upper stage to conduct scientific studies during its lunar flyby.

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The moon flight

After Zond 4's partial success in March 1968, a follow-up was launched on April 22. The launch failed however when the LES sent an erroneous abort command at T+260 seconds and shut down the Proton booster's second stage. The escape rocket fired and pulled the descent module to safety. In July, another 7K-L1 was being prepared for launch when the Blok D stage exploded on the pad, killing three people, but leaving the Proton booster and spacecraft with only minor damage.

Zond 5 launched on September 14 and became the first spacecraft to circle the Moon and return to land on Earth. On September 18, the spacecraft flew around the Moon. The closest distance was 1,950 km. High-quality photographs of the Earth were taken at a distance of 90,000 km. A biological payload of two Russian tortoises, wine flies, mealworms, plants, seeds, bacteria, and other living matter was included in the flight.^[1]

On September 22, the reentry capsule entered the Earth's atmosphere but could not perform a skip reentry due to a failure of the guidance system.^{[2][3]} Landing was supposed to occur in Kazakhstan, but instead Zond 5 splashed down in the Indian Ocean and was successfully recovered by the USSR recovery vessels *Borovichy* and *Vasiliy Golovin*.^{[4][5][6]}

Although the ballistic reentry would have been bad for human occupants, it did not appear to affect the biological specimens, all of which were alive and well when the descent module was finally opened four days after landing. It was announced that the tortoises had lost about 10 percent of their body weight but remained active and showed no loss of appetite. This spacecraft was planned as a precursor to a manned lunar spacecraft.

The USS *McMorris* was shadowing the Soviet recovery ships, collecting intelligence information.^[7] Photographs taken by the *McMorris* of the descent module bobbing in the ocean aroused concern at NASA that the Soviets were planning a manned circumlunar flight soon, especially since the United States had been tracking Zond 5 for its entire flight, and was a catalyst for the decision to launch Apollo 8 to the Moon in December instead of its originally planned mission of testing the lunar module in high Earth orbit.

The Zond 5 return capsule is on display at the RKK Energiya museum, in Russia.

See also

- Animals in space
- Splashdown (spacecraft landing)

References

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4. "Zond 5, Recovery Ship, Miss Distance" (https://books.google.com/books?id=QdBP8E4di0sC&pg=PA320&lpg=PA320&dq=zond+5+Borovichy&source=bl&ots=kgIETdSo70&sig=BefzLjM5VnjTGUaIEG9yToip_RQ&hl=en&ei=UEn_TO2qK5TksQPvqIWwCw&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBUQ6AEWAA#v=onepage&q=zond%205%20Borovichy&f=false), *Red Moon By Michael Cassutt - page 320, Recovery Ship and Miss Distance*.
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7. "Chasing the Zond" (<http://www.thespacereview.com/article/1302/1>), by Dwayne A. Day. *The Space Review*, February 9, 2009

External links

- Zond-5 in astronautix.com (<https://web.archive.org/web/20100201094836/http://astronautix.com/details/zond5908.htm>)

This article was originally based on material from NASA (NSSDC) information on Zond 5 (<http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1968-076A>)

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Categories:	Missions to the Moon	Zond program	Spacecraft launched in 1968	1968 in the Soviet Union	Life in space	Lunar flybys	Animals in space
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Zond 5	
	
	Zond 5
Names	Soyuz 7K-L1 s/n 9
Mission type	Lunar flyby Spacecraft test
Operator	OKB-1
COSPAR ID	1968-101A
SATCAT no.	03535
Mission duration	5.7 days
Spacecraft properties	
Bus	Soyuz 7K-L1
Manufacturer	OKB-1
Launch mass	5,375 kilograms (11,850 lb)
Start of mission	
Launch date	14 September 1968, 21:42 UTC
Rocket	Proton-K/D
Launch site	Baikonur 81/23
End of mission	
Recovered by	Soviet vessels <i>Borovichy</i> and <i>Vasilyi Golovin</i>
Landing date	September 21, 1968
Landing site	32°38'S 65°33'E Indian Ocean
Orbital parameters	
Reference system	Geocentric
Regime	Low Earth
Semi-major axis	6,613 kilometres (4,109 mi)
Eccentricity	0.00604
Perigee	202 kilometres (126 mi)
Apogee	282 kilometres (175 mi)
Inclination	51.83°
Period	89.29 minutes
Epoch	13 September 1968
Flyby of Moon	
Closest approach	September 18, 1968
Distance	1,950 km (1,210 mi)
Zond	