

You
**Wouldn't
Want to...**

BE ON

APOLLO 13

The
history of a
stellar space
mission!

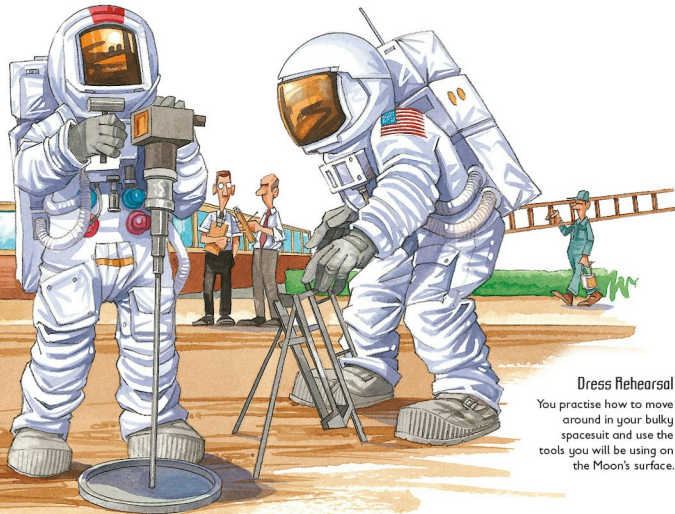


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Practise makes perfect

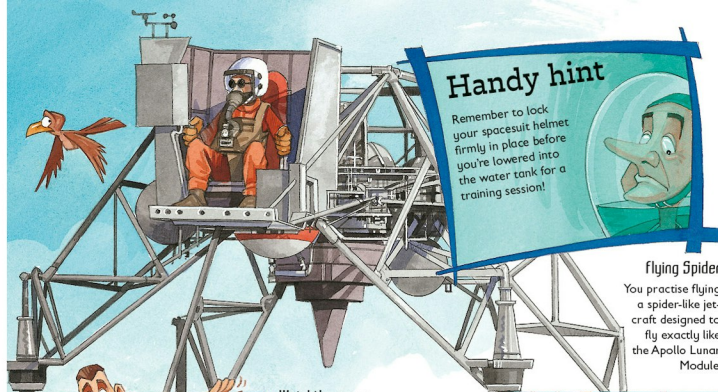
The whole crew practises everything that you will have to do during the mission. You do it over and over again until you could do it in your sleep. You train in simulators that look exactly like the real spacecraft. The mission controllers keep you on your toes by surprising you with all sorts of

emergencies to see how well you deal with them. If you're going to make a mistake, it is better to do it in the simulator than on the way to the Moon. By the time launch day comes, you have to know the spacecraft inside out, be able to fly it perfectly and know what to do in any situation.



Dress rehearsal

You practise how to move around in your bulky spacesuit and use the tools you will be using on the Moon's surface.



Handy hint

Remember to lock your spacesuit helmet firmly in place before you're lowered into the water tank for a training session!



Flying Spider

You practise flying a spider-like jetcraft designed to fly exactly like the Apollo Lunar Module.

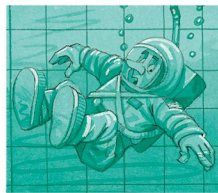


Weightlessness

is simulated in a training aeroplane (left). So many people get airsick in this plane that it's nicknamed the 'Vomit Comet'!

On the Moon

you will weigh only one sixth as much as you weigh on Earth because the Moon has less gravity. You're hung sideways so that you can see what it's like to weigh so little (right).

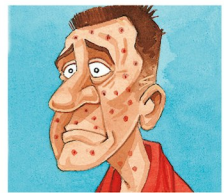


Underwater

You practise making spacewalks in a huge water tank (left). The uplift you get from the water provides the closest thing to weightlessness on Earth.

Bug alert!

Someone on the crew works with catches measles. To avoid becoming ill in space, one crew member with no immunity to it is replaced two days before launch.



We have . . .

When the countdown reaches zero, you start a 12-minute rollercoaster ride through Earth's atmosphere to space. As the rocket leaves the launch pad, the time on the clock at Mission Control in Houston, Texas, is 13.13! Pictures of the soaring rocket and its flight path appear on a big display screen at Mission Control.

Handy hint

Make sure you are strapped tightly into your seat. If you aren't, you'll bounce around the Command Module like a cork in a bottle when the rocket blasts off!

. . . LIFT OFF!

Apollo 13's bad luck first strikes when one of the rocket engines shuts down two minutes early. For a few moments, you don't know if Apollo 13 will make it into space. The remaining engines fire for longer to make up for the fault. Engineers at Mission Control check that there is enough fuel left to send the spacecraft to the Moon.

The 'T' Timeline

T minus 3 minutes, 7 seconds

The Saturn V rocket is given the firing command that starts its automatic launch sequence. Computers start its fuel pumps.

T minus 8.5 seconds

The first-stage engines fire. The rocket is held down on the launch pad until all five engines are running.

Zero

Apollo 13 and the 3,000-tonne Saturn V launch-rocket gently lift off the launch pad.

T +3 minutes, 20 seconds

The launch escape tower's rockets fire, carrying the tower and boost protective cover away from the top of the spacecraft.

T +2 minutes, 44 seconds

The empty first stage falls away and 2 seconds later the second-stage engines fire.

T +3 minutes, 53 seconds
Three seconds later, the third-stage engines fire.

T +12 minutes, 35 seconds

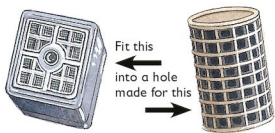
The spacecraft is safely in orbit around Earth. Time to check that everything is working properly.

R.R.RROARRR!!!!

Cold, wet and stuffy

Keeping warm is not as important as getting home alive, so the spacecraft heaters are switched off to save electricity. The temperature falls to just above freezing. Moisture from your breath condenses on the cold instrument panels, walls and windows. The whole spacecraft is wet. It is dark too, because most of the lights are switched off. It gets very stuffy – the Lunar Module was designed for two astronauts, not three, so it can't purify the air fast enough. The breathed-out carbon dioxide in the air rises to a dangerous level. If it continues to rise, you will lose consciousness! You have to do something about it.

A bit of do-it-yourself



The Command Module

has air purifier canisters that could freshen the air, but they are square. The fittings in the Lunar Module are round. You make them fit by using pieces of hose, sticky tape, plastic bags and rubber bands (right). It works! The amount of carbon dioxide in the air starts falling.

A wee problem!

The crippled spacecraft is so hard to control that you have to stop dumping urine overboard. When it sprays out into space it pushes the spacecraft off course. So you have to save it all in plastic bags and store them inside the spacecraft!



Handy hint

You might feel like doing some physical exercise to keep warm in the cold spacecraft, but try to keep still so that you use up less oxygen.



Brrrr!

Shiver

Shiver

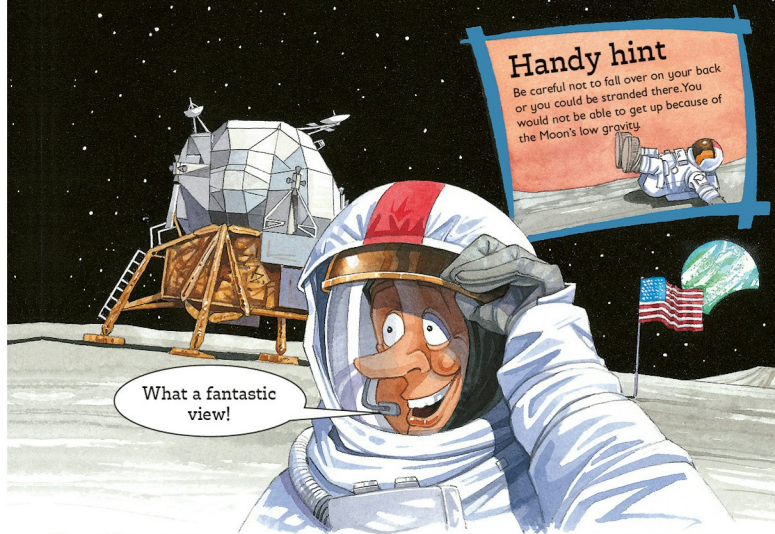
Lost mission

If everything had gone as planned, Apollo 13 would have landed on part of the Moon called Fra Mauro. Apollo 11 and 12 landed in the Sea of Tranquility and the Ocean of Storms. The ground there was flat because lava had flowed over it. Scientists wanted samples of older rocks from the hills and mountains that hadn't been covered by lava, but these places are more dangerous to land. The earlier missions proved that astronauts could fly the Lunar Module manually and choose a safe landing spot. It was decided that Aquarius from Apollo 13 would land in the Fra Mauro hills.



SPACESUIT

The spacesuit you would have worn on the Moon (right) has extra-tough gloves, boots and a visor over the helmet to keep your head cool. You would also have worn a backpack with oxygen and a radio.



Handy hint

Be careful not to fall over on your back or you could be stranded there. You would not be able to get up because of the Moon's low gravity.

If nothing had gone wrong...



MOON ROCKS

You would have collected lots of Moon rocks and brought them back to Earth.



HEAT FLOW

You would have collected samples of the Moon's surface to test how heat flows through it.



SOLAR WIND

You would have collected samples of the solar wind – particles that stream out of the Sun and hit the Moon.



PHOTOGRAPHY

You would have taken thousands of close-up photographs of dust, rocks and craters on the Moon's surface.



MOONQUAKES

You were planning to put instruments on the Moon's surface to detect the vibrations of moonquakes.



LONE ORBITER

While two astronauts explored the surface, the third would orbit the Moon alone in the Command Module.