

**NARRATIVE  
NONFICTION**  
reads like fiction  
but it's all true

# DISASTER

The incredible true story of three astronauts fighting for survival 240,000 miles from Earth.

BY LAUREN TARSHIS

## APOLLO 13

**1** The command module, nicknamed *Odyssey*

**2** The service module, site of the explosion

**3** The LEM, used to shuttle the astronauts to and from the surface of the moon

# IN SPACE

## AS YOU READ

Think about the challenges the astronauts faced.

**T**he three astronauts of Apollo 13 were doomed.

That's how it seemed on April 13, 1970. Commander Jim Lovell and officers Fred Haise and Jack Swigert were speeding through space when an explosion rocked their spacecraft. The blast tore apart one side of their ship. Within minutes, half their oxygen supply had bled out, and the ship's power was draining fast. ➔

Without power and oxygen, the astronauts would soon die. And they would be stranded in the forever blackness of space.

Apollo 13 was supposed to be a research mission to the moon. Now, it would be a fight for survival hundreds of thousands of miles from Earth.

### A Mission to the Moon

Two days earlier, Apollo 13 had blasted off from Florida's Kennedy Space Center. Lovell, Haise, and Swigert were strapped inside their small spacecraft, which was perched on top of a 360-foot-tall rocket packed with millions of pounds of explosive fuel.

*Five, four, three, two, one . . .*

The rocket **catapulted** Apollo 13 into the sky. The ship streaked through the air at 24,000 miles

per hour—14 times the speed of a bullet. The force strained the astronauts' hearts. It stretched back the skin on their faces until it seemed the skin would rip away from their skulls. The men felt as though their bones might shatter.

But this was normal. In fact, the launch was just about perfect.

The astronauts were on their way. They planned to land on the moon and explore a section called Fra Mauro. Their job was to gather samples of the moon's sandy dirt and 4-billion-year-old rocks.

First, though, they had to get there.

The 240,000-mile trip would take three days. It would not be luxurious. The astronauts were crammed into Apollo 13's command module. This car-sized capsule, nicknamed *Odyssey*,

was part cockpit, part sleeping cabin. Meals were pouches of dried food, prepared by adding warm water and then kneading for three minutes. There were no showers, no sinks, no toilets. (The astronauts urinated into bags, and then released the urine into space through a hatch. Solid waste was sealed up in odor-proof bags to be brought back to Earth.) And, of course, there was no gravity to hold the men down. Floating in their jumpsuits, they looked like big fish stuck in a small tank.

But Lovell, Haise, and Swigert never complained. They felt thrilled and honored to be on this mission. They were sure they would succeed.

After all, they had a team of brilliant flight engineers supporting them back at Mission Control in Houston, Texas. These engineers **monitored** every detail of the flight, right down to each astronaut's heartbeat.

### MISSION CONTROL ▶

It was from this room in Houston, Texas, that engineers communicated with Apollo 13's astronauts—and helped them get home. Inset: Flight director Gene Kranz.

The astronauts and Mission Control stayed in constant contact.

Two days into the journey, the mission seemed flawless. There was no sign of the **catastrophe** to come.

### A Space Race

Just 15 years before the launch of Apollo 13, the idea of humans traveling through space was the stuff of science fiction. Then, on October 4, 1957, Russia shocked the world by launching a **satellite**, Sputnik 1, into Earth's orbit.

At the time, America and Russia (then part of the Soviet Union) were sworn enemies. The countries were **vying** to become the most powerful nation on Earth. Many Americans saw the launch of Sputnik as a national humiliation, a sign that the U.S. had fallen behind.

### ◀ THE ASTRONAUTS

From left to right: Jack Swigert, Jim Lovell, and Fred Haise. America's first astronauts were all white men. Prejudice and discrimination kept women, African Americans, Latinos, and other groups out of many professions through the 1970s. Space exploration was one of them.



**PSSSSST!**

*Odyssey* is also the name of a famous ancient story about a perilous voyage across the sea.



### THE LAUNCH ▶

Apollo 13 lifts off for the moon.

The astronauts are in here!



NASA (THE LAUNCH); BETTMANN/GETTY IMAGES (ASTRONAUTS)

NASA VIA CNP/NEWSOM (MISSION CONTROL); FRAMEPOOL (GENE KRANZ)

frontier of space.

Over the next decade, the U.S. and Russia sent dozens of men into space. Most came back safely. There were tragic accidents, though, like the deaths of three Apollo 1 astronauts in a launch-pad fire in 1967.

### Something Unexpected

The space program became a source of great pride to Americans. Many still recall the moment when, on July 20, 1969, American astronaut Neil Armstrong became the first human on the moon. Some 600 million people



## THE AGONIZING WAIT ▶

The entire world was drawn into the drama of Apollo 13. For the families of the astronauts, the wait was especially brutal. Here, Jim Lovell's wife (striped dress), children, and friends watch news reports about what was happening on the ship.



around the world watched on TV as Armstrong's boot made its mark on the moon's sandy surface.

In the months after Armstrong's famous step, however, something unexpected happened: Many Americans lost interest in space travel. At the time, the U.S. had big challenges at home. The Vietnam War was claiming the lives of thousands of U.S. soldiers every year. Millions of people were living in poverty. How could the government spend billions of dollars a year on space travel when there were so many problems to solve here on Earth? Besides, after dozens of successful missions, space travel had come to seem rather ho-hum.

That is, until 55 hours and 53 minutes into the Apollo 13 mission, when disaster struck.

## A Catastrophe

On April 13, 1970, Lovell, Haise, and Swigert were preparing for the moon landing. It was about a day away. To reach the moon's surface, they would use a second spacecraft: the **lunar** excursion module (LEM). The LEM and *Odyssey* were latched together like

LEGOs. When Apollo 13 entered the moon's orbit, the LEM would be detached and used as a shuttle to and from the moon's surface.

The astronauts had just finished inspecting the LEM when Mission Control asked them to turn on the fans inside the oxygen tanks. This was a routine task. Swigert flipped the switch.

Seconds later, there was a loud bang. The spacecraft moaned and shuddered.

"Houston, we've had a problem," Lovell said.

At first, no one knew what had happened. Lovell suspected a meteor had hit them. In truth, faulty wiring in an oxygen tank had caused an explosion. The blast drained the ship's power

and sent the oxygen supply venting into space. Within hours, there would be no air left to breathe, and *Odyssey* would be dead.

News of the accident spread around the world. Predictions were grim. Few believed the astronauts would survive. But aboard Apollo 13, there was no time for **dismal** thoughts. The three men had spent thousands of hours training for this trip. They knew rule number one in an emergency is to focus on the problem. Worry and panic do not help you find a solution. And so the astronauts got to work.

## Scanning the Sky

At Mission Control in Houston, flight director Gene Kranz gathered his engineers.

These men knew Apollo 13 better than they knew their own houses. Now they would do their best to bring the astronauts home. Soon, both Kranz's team and the astronauts had come up with the same idea: to use the LEM as a lifeboat.

The LEM had its own supply of power, oxygen, and water. The astronauts would climb through a hatch into the LEM and stay there until they approached Earth. Then they would get back into *Odyssey* for the final plunge through Earth's atmosphere, during which the ship would be heated to 5,000 degrees. (Unlike *Odyssey*, the LEM had no heat shield. If the men tried to enter Earth's atmosphere in the LEM, they would burn up.)

The astronauts got into the

LEM. But there was a problem. The trip home would take four days, and the LEM didn't have enough power or water to last that long. So the men turned off all but the most **critical** systems, including the heat. Outside, the temperature was 280 degrees below zero. Soon the men were shivering.

More problems arose. The ship kept drifting off course. The LEM's air filters stopped working, and the air became toxic with CO<sub>2</sub>, the gas humans exhale with every breath.

With many systems damaged or powered down, the engineers had to get creative. To correct the ship's position, they told the astronauts to fire the engine in short bursts. To clean the air, the engineers designed a fix for the air filters using cardboard from the flight manual, duct tape, and tubing from extra spacesuits.

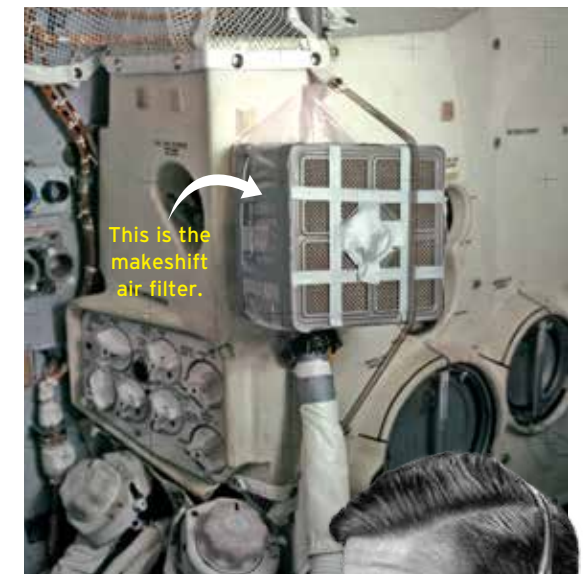
Days passed. The

astronauts barely slept. The LEM grew cluttered with trash and full urine bags. On Earth, people scanned the sky and prayed for Apollo 13.

## Free Fall to Earth

Apollo 13 approached Earth on the morning of Friday, April 17. The astronauts were about to face the most dangerous part of their trip.

What if *Odyssey's* electrical system couldn't be powered up? What if the heat shield had been damaged in the explosion? What if the



## THE DRAMA ▶

Right: Jules Bergman of ABC News shows viewers an Apollo 13 model. Top: The filter the astronauts made to keep themselves from being poisoned to death by the toxic air.





### ◀ THE LANDING

The Apollo 13 astronauts moments after landing in the Pacific Ocean. Note how small the command module is!

“*Odyssey*, Houston standing by, over.”

Still nothing.

*Five minutes.*

Engineers fought back tears.

Then, a voice crackled over the radio.

“OK, Joe,” said Swigert.

Joy and relief flooded the room. Kranz pumped his fist.

Inside *Odyssey*, Lovell, Haise, and Swigert watched the sky outside the

windows turn from red to pink and then to blue. Their speed slowed as the air thickened.

*Pop.*

*Odyssey*'s parachutes opened.

The ship floated down to Earth, feather-like. It came to rest in the warm waters of the Pacific Ocean.

The Apollo 13 mission was over. Although the mission failed, it would go down in history as one of NASA's greatest successes.

Lovell looked at Haise and Swigert. “Fellows,” he said, “we're home.” ●

parachutes didn't open?

Luckily, *Odyssey* was ready to go. Even with frozen wires and walls dripping with condensation, the electrical systems were soon humming.

But what about the heat shield? If it failed, the ship would burn up.

The world would know the fate of Apollo 13 in four minutes. That's how long communication with *Odyssey* would be blacked out as it fell to Earth.

“Gentlemen,” Lovell said to the others. “We're about to reenter. I suggest you get ready for a ride.”

The men tightened their seat

belts. They began their 25,000 mph free fall to Earth. Through the windows, all they could see was fiery red.

At Mission Control, the command room was packed with engineers and visitors. The room was silent. No one said a word.

The minutes ticked by.

*One minute.*

*Two minutes.*

*Three minutes.*

*Four minutes . . .*

NASA's Joe Kerwin tried to make contact. “*Odyssey*, Houston standing by, over.”

Nothing.

“Try again,” Kranz barked.

### WRITING CONTEST

The Apollo 13 mission was called “a successful failure.” Why might that be? Explain. Be sure to use text evidence to support your answer. Send your response to **APOLLO 13 CONTEST**. Five winners will each get *One Small Step* by P.B. Kerr. See page 2 for details.

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