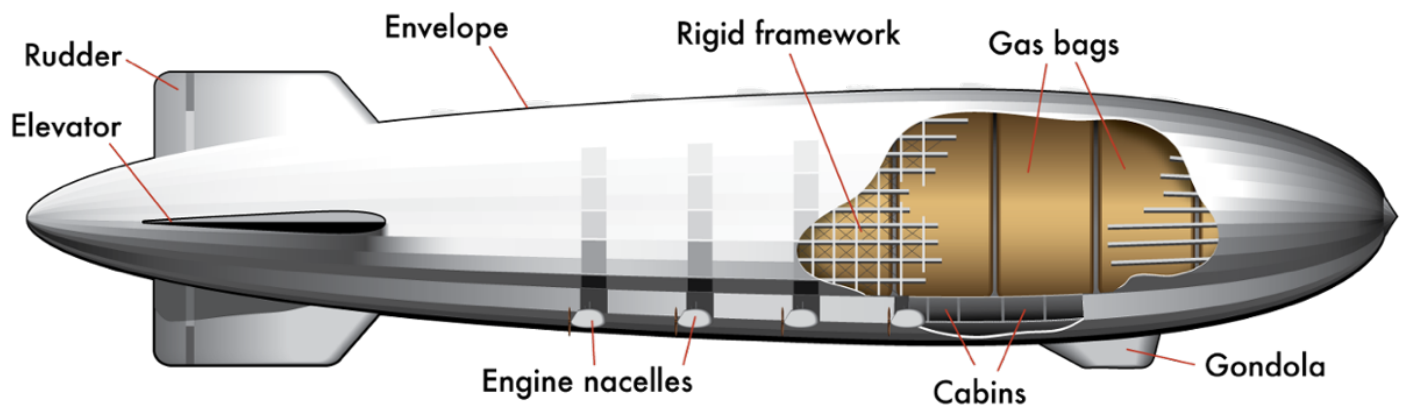




# LZ-129 Hindenburg

The Hindenburg (LZ-129) was a historic marvel of avionic engineering during the 1930's. It was built by the German company, Luftschiffbau Zeppelin who were successful leaders in creating lighter-than-air airships. Construction began in Germany in 1931 and was completed in 1936. It had a length of 803.8 feet, a diameter of 135 feet and weighed approximately 242 tons. It carried 7,063,000 cubic feet of hydrogen gas volume! Her framework was fabricated of a light and sturdy alloy known as duralumin. Sixteen gas cells were positioned throughout the length of the gigantic ship. A fireproof gelatin solution coated each gas cell against potentially permeating hydrogen gas. Four 16-cylinder Diesel engines were positioned in a staggered arrangement, two per side. Each Mercedes Benz engine was capable of 1,300 horse power at take-off; subsiding to about 850 horse power for cruising. The Hindenburg would carry all passengers inside her hull control car, instead of from a protruding gondola section. The control car was secured to the underside of the Hindenburg's body.

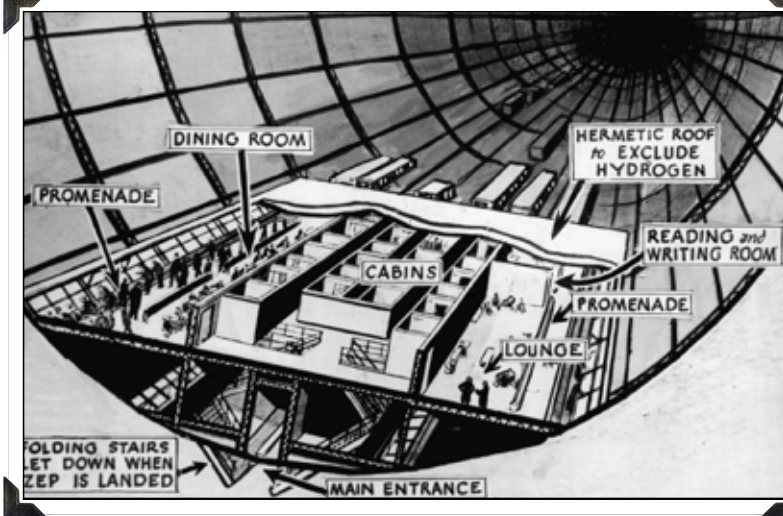
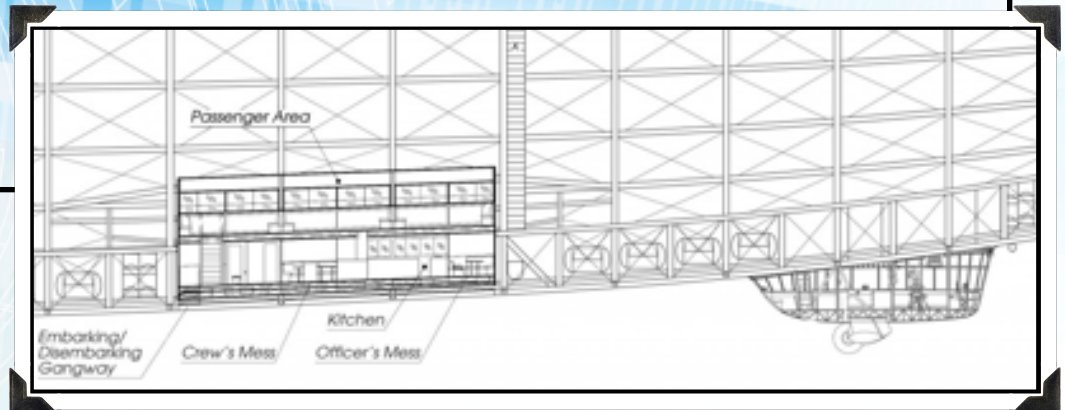


**Do you remember the story of the Hindenburg?**

# Luxury aboard the Hindenburg

The interior spaces on the Hindenburg were divided into three main areas:

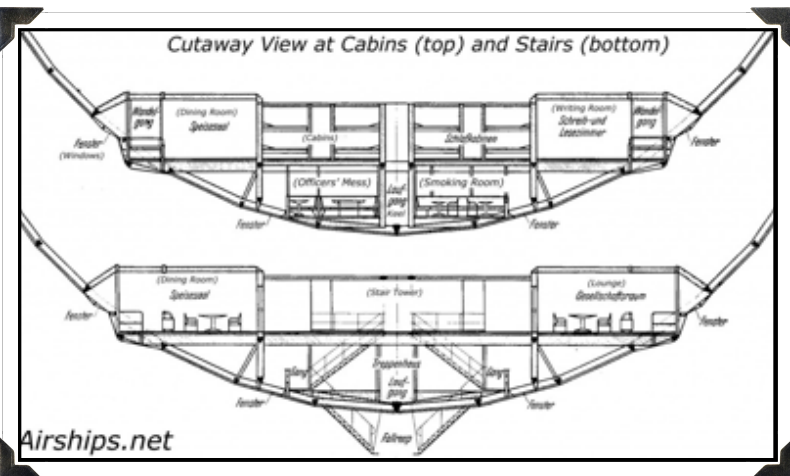
- Passenger Decks
- Control Car
- Crew Areas



## Passenger Decks

The passenger space was spread over two decks, known as "A deck" and "B Deck."

"A" Deck" contained the ship's dining room, lounge, writing room, port and starboard promenades, and 25 double-berth cabins. The passenger accommodations were decorated in the clean, modern design and the passenger areas on Hindenburg were heated, using forced air warmed by water from the cooling systems of the forward engines.



## Dining Room

Hindenburg's dining room occupied the entire length of the port side of A deck. It measures 47 feet in length by 13 feet in width. It was decorated with paintings on silk wallpaper depicting scenes from Graf Zeppelin's flight to South America. The tables and chairs were lightweight aluminum with red upholstery.







## The Lounge

The lounge was located on the starboard side of deck "A." It was 34 feet in length and decorated with a mural depicting the routes and ships of various explorers such as Captain Cook and Christopher Columbus. The furniture was also lightweight aluminum but the chairs were upholstered in brown fabric. During

the 1936 season, the lounge contained a 356-pound baby grand piano. It was removed before the 1937 season.

## Writing Room

Next to the lounge was a small writing room. The walls of the room were decorated with paintings depicting scenes from around the world.



## Passenger Cabins

Hindenburg was originally built with 25 double-berthed cabins at the center of deck "A" accomodating 50 passengers. After the 1936 season, 9 more cabins were added to deck "B" to accomodate another 20 passengers. The cabins were small but were comparable to railroad sleeper compartments of the day. The cabins measured 6.5 feet by 5.5 feet. The walls and doors were made of a thin layer of lightweight foam covered by fabric. Cabins were decorated in one of three color schemes – either light blue, grey or beige. Each cabin had call buttons to

summon a steward or stewardess, a small fold down desk, a wash basin with hot and cold running water, and a small closet. None of the cabins had toilets, it was only available on "B" deck. Since the cabins were located in the center of the ship, they had no windows.

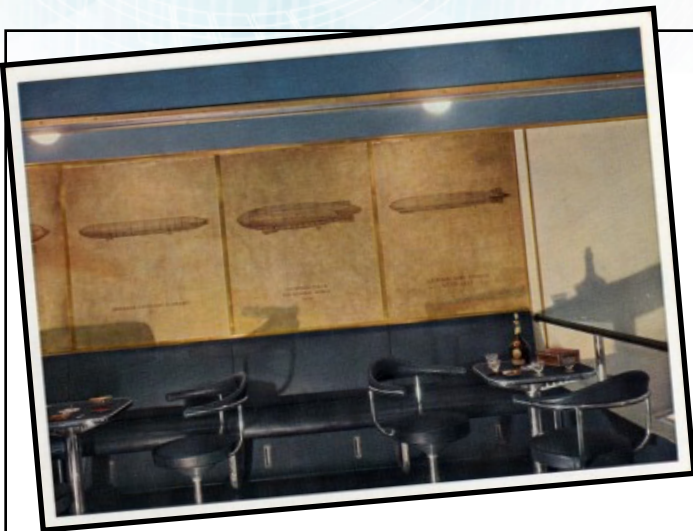
**Would you travel on a floating airship?  
Do the accommodations seem like a great way to travel?**

## Promenades

On either side of deck "A" were promenades, featuring seating areas and large windows which could be opened in flight.



"B" deck on Hindenburg contained the ship's kitchen, passenger toilets and shower facilities, the crew and officers' mess and a cabin occupied by Chief Steward Heinrich Kubis (containing a door to the keel corridor, which was the only connection between passenger and crew spaces).



## The smoking room

Perhaps the most surprising aboard a hydrogen airship was a smoking room! The room was kept at higher than ambient pressure, so that no leaking hydrogen could enter the room, and the smoking room and its associated bar were separated from the rest of the ship by a double-door airlock. One electric lighter was provided as no open flames

were allowed aboard the ship.

## The Bar

The Hindenburg's bar was a small room between the smoking room and the air-lock door leading to the corridor on B-deck. This is where the bartender served up frosted cocktails, but most importantly, it is where they monitored the air-lock door to ensure that no-one left the smoking room with burning cigarettes, cigars, or pipes.



**How safe would you feel knowing you are flying on an explosive gas filled airship and people are smoking right inside?**

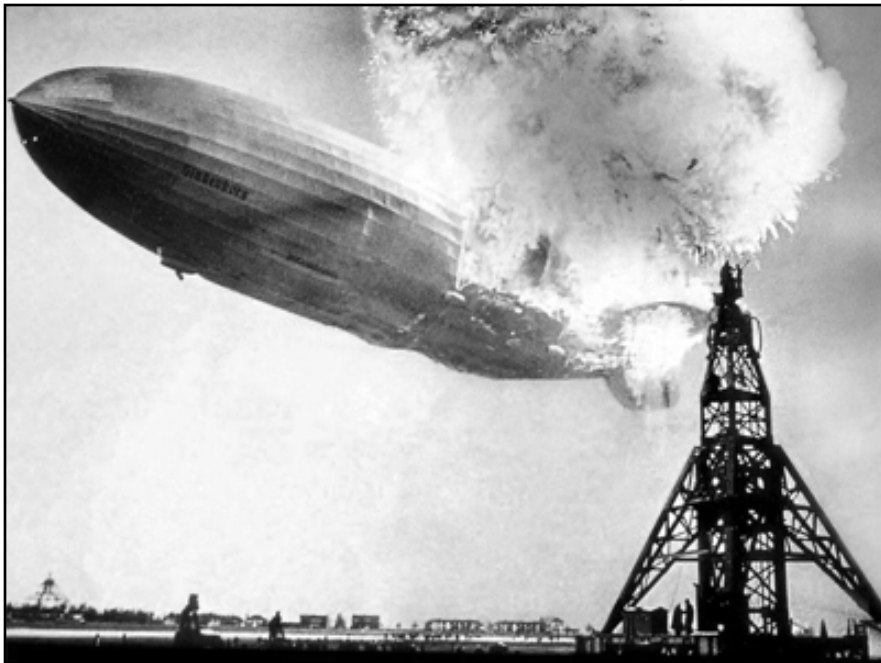


# The Hindenburg Disaster

On May 3, 1937, the Hindenburg set sail from the Zeppelin's new terminal in Frankfurt Germany and her final destination was Lakehurst Naval Air Station. Aboard the ship were 36 passengers and a crew of 61. Delayed by unrelenting head winds, the Hindenburg did not reach the Lakehurst area until late afternoon on May 6. A day behind schedule. At 7:00 pm EST, a recommended immediate landing was released – by 7:21 pm, the first mooring line was dropped. An eerie, hazy glow illuminated the massive airship's swastika emblem. As an expectant crowd of people and the media calmly looked up 200 feet in wonder, the



Hindenburg suddenly burst into fire and horror. The hydrogen fire originated at or near the stern (back) of the ship, while carnage and mayhem scattered below her. Bodies could be seen falling to the sandy field from her burning canvas body. Thirty-six lost their lives: 22 crewmen, 13 passengers and 1 civilian member of the ground crew. The fire had spread so quickly – consuming the ship in less than a minute. Survival of the passengers was based mainly on where the passengers were located when the fire broke out.



Passengers and crew members began jumping out the promenade windows to escape the burning ship, and most of the passengers and all of the crew who were in the public rooms on "A" deck at the time of the fire – did survive. Those who were deeper inside the ship, in the passenger cabins at the center of the decks or the crew spaces along the keel, generally died in the fire.

**Have you seen the news video of the Hindenburg disaster, when the reporter, Herbert Morrison states "Oh the humanity" as the airship crashes to the ground?**

# Hindenburg Disaster Theories

The exact cause of the disaster is still unknown. What do you think caused the disaster?

## Clandestine Communists Theory

One suggestion was that the airship could have been destroyed by a secretive group of communist and anti-fascists. A declassified letter written by FBI special agent G N Lowden highlighted remarks made in Communist Party of America newspaper, the Daily Worker. Lowden said the article caught his attention after reports in the US press about the "possibility that the Hindenburg was sabotaged". He claimed the Daily Worker carried an article a week before the disaster claiming that German seamen were being recruited to do "perilous underground work aboard giant Reich liners plowing between New York and Germany." Although Lowden said he found no evidence of this, it raised the possibility that there were clandestine groups preparing to sabotage transport systems associated with Nazi Germany.



## The Acrobat Theory

Commander Charles E Rosendahl, who was in charge of Lakehurst Naval Air Station on May 6, 1937, told FBI investigators he saw sabotage as a "logical cause". The FBI notes that "due to various happenings that have been called to his attention" Rosendahl is "of the opinion" that the fire in the gas shaft was started by an individual. One account stands out. The



manager of the Zeppelin who was interviewed after the incident stated that passengers were not suppose to be allowed out of the passenger quarters unless in company with a member of the crew...was not strictly enforced. Suspicions fell on a passenger named Joseph Spah, who had been allowed to tend to his dogs in a freight room below the Hindenburg's gas tanks. Spah was an acrobat, and according to FBI Rosendahl, he could have conceivably used his abilities to reach the fuel area. The theory was not substantiated and came to nothing.



# Hindenburg Disaster Theories

## Media Theory

One of the more bizarre theories was that the members of the press had orchestrated the disaster for financial gain. US Air Force Colonel Harold E Hartney passed on a letter on the issue to the FBI dated May 11, 1937. The sender's name and address was edited. The person wrote that



"logical" thinking pointed towards the press as culprits, although the letter's sender admitted to not having "direct evidence for my conclusions." This person believed that this accident was photographed from every single angle, to them it seems a possibility that a bunch of photographing racketeers would frame an accident of this kind, as they would any other big

## The Bullet Theory

Suggestions that the Hindenburg brought down by gunfire was also widely mentioned. The bullet theory was led by Senator Royal Copeland of New York to contact the FBI on May 8, 1937. He also asked about speculation of mysterious footprints being found in a field near the crash site. The FBI responded by saying that their agents investigating the area were "not impressed" with the prints. The declassified documents reveal the footprints later were identified as children's and suggested that they had been left a day after the Hindenburg explosion.

## The Incendiary Paint Theory

A retired NASA scientist Addison Bain, who had years of experience working with hydrogen, presented a new idea that the fire was initially fueled by a special paint used on the Zeppelin's skin. The varnish compound included chemicals such as iron oxide, which can be used as rocket fuel. Bain also pointed out that the hydrogen inside the cells had been given a garlic scent, to help crew members detect a leak, but no one reported smelling garlic at the time of the explosion. He said that a fire fueled by hydrogen would produce a blue flame, but the fire was bright red. In his scenario, the mystery spark would have ignited the varnish rather than leaking hydrogen – meaning that a design flaw, rather than the inherent risks of hydrogen, had caused the disaster. This theory has been debunked when scientists proved the composition of the paint had no relationship to rocket fuel.

# Hindenburg Disaster Theories

**Which theory so far sounds like it could be the cause?  
Can you think of any other causes for the disaster of the  
Hindenburg?**

## **The Static Spark Theory**

The Hindenburg was making a high landing, known as a flying moor, and would have dropped its landing ropes and winching cable so it could be winched down the mooring mast. A popular misconception is that when the ground crew members ran to take the landing ropes, they effectively 'earthed' the airship, causing a spark. However, the Hindenburg did not burst into flames for another four minutes. Besides the ground handlers would have known to wait for the landing ropes to touch the ground to allow any charge to flow to Earth or risk electrocution. However there might have been a build-up of static electricity on the airship caused by friction as it moved through the air, the so-called triboelectric effect. (The ship might have become charged with static as a result of the electrical storm and broken wire or a sticking gas valve that was leaking hydrogen). The skin of the ship was separated by ramie (a flowering plant) lacing cords, which is an electrical insulator so a potential difference could have been created between the skin and the frame and a spark between the two could have ignited the leaking hydrogen.

## **The St. Elmo's Fire Theory**

Mark Heald of Princeton University saw a glow, known as St. Elmo's fire, flickering along the airship's back before the fire broke out. The glow is an atmospheric phenomena where continuous electrical spark called a 'corona discharge'. It is caused when strong electrical fields turn neutral gas into plasma: positive ions and negative electrons. As the electrons fall back into nitrogen and oxygen atoms, photons corresponding to blue or violet light are emitted, leading to the glow observed by Heald. St. Elmo's fire is often associated with thunderstorms and it is well documented that storms had postponed the airships landing.



# What brought the Hindenburg down?

Even after 80 years have passed since the Hindenburg disaster, speculation still swirls about what happened on that fateful evening in May, so what is it that brought down the Hindenburg?

From a safety perspective, there was always problems with airships, they are big, unwieldy and difficult to manage. They are very affected by the wind, and because they need to be light, they are also quite fragile. On top of that, the airship is filled with hydrogen, which is a very dangerous and highly flammable substance.

Scientific investigations and reconstructions, confirmed it was the hydrogen combined with inclement weather at Lakehurst that took the airship down. They believe that hydrogen was leaking and that it was ignited probably by an electrostatic discharge caused by the weather – there was a thunderstorm at the time of the landing.

The only mystery of the Hindenburg disaster is the cause of the leaky hydrogen.

Conspiracy theories die hard, and to this day scientists, theorists and general enthusiast argue what caused the Hindenburg disaster. No evidence was every found of sabotage and no convincing theory of sabotage has ever been advanced. But research continues!



# Suprising Facts about the Hindenburg.

1. Survivors of the Hindenburg disaster far outnumbered the victims. Anyone that has seen the graphic newsreel video of the Hindenburg plunging to the Earth in flames may be amazed to know that of the 97 passengers on board, 62 survived. Many survivors jumped out of the Zeppelin's windows and ran away as fast as they could.
2. The Hindenburg disaster wasn't history's deadliest airship accident. The Hindenburg disaster is the most famous airship disaster because of the film footage and the emotional eyewitness account of the radio operator. However, the deadliest incident occurred when the helium-filled USS Akron, a US Naval airship, crashed off the coast of New Jersey in a severe storm on April 4, 1933. Seventy-three men were killed, and only three survived.



3. The Hindenburg disaster wasn't broadcast live on radio. Morrison was on the scene to record the arrival of the Hindenburg, but he was not broadcasting live. His wrenching account would be heard in Chicago later that night, and it was broadcast nationwide the following day. His audio report was synched up with the separate newsreel videos in subsequent coverage of the Hindenburg disaster.
4. Dozens of letters carried aboard the Hindenburg were ultimately delivered. The Zeppelins pioneered airmail service across the Atlantic, and the Hindenburg carried approximately 17,000 pieces of correspondence on its final voyage. Amazingly, 176 pieces stored in a protective container survived the crash and were postmarked four days after the disaster. The pieces, charred but still readable, are among the world's most valuable artifacts.
5. Goebbels wanted to name the Hindenburg for Adolf Hitler. But Eckner was not a fan of the Third Reich, so he named the airship for the late German president Paul Von Hindenburg. The Fuhrer, never enthralled by the great airship, in the first place, was ultimately glad that the Zeppelin that crashed in a fireball didn't bear his name.



# Engaging Questions!

1. Do you remember the story of the Hindenburg disaster?
2. What theories about why it burst into flames did you hear growing up?
3. Why do you think they used helium even if it was explosive?
4. If you had the opportunity to fly on the Hindenburg, would you have? (Of course before the disaster happened)
5. Which theory do you support the most for the cause of the disaster?
6. What effect did the Hindenburg disaster have on future Zeppelin airship travel?
7. Germany decided to use Hydrogen gas instead of helium gas because the United States refused to sell helium to Nazi Germany. The US feared they would use the helium for military purposes. Do you think this was a good choice?
8. Do you feel that Hindenburg Zeppelin flight was a safe way to travel?



Curious Dragonfly LLC  
Trina Terrell  
[www.curiousdragonfly.com](http://www.curiousdragonfly.com)  
303-903-5319

Information obtained from: [airships.net](http://airships.net): [history.com](http://history.com): [usatoday.com](http://usatoday.com):  
[popularmechanics.com](http://popularmechanics.com): [thevintagenews.com](http://thevintagenews.com): [thoughtco.com](http://thoughtco.com): [rt.com](http://rt.com):  
[smithsonianmag.com](http://smithsonianmag.com): [eic.rsc.org](http://eic.rsc.org): [dailymail.co.uk](http://dailymail.co.uk): [unmuseum.org](http://unmuseum.org):  
[livescience.com](http://livescience.com):