

April 11, 1970 - [Apollo 13 was launched](#), but nearly ended in tragedy when there was a fire and an explosion on board that substantially damaged one side of the spacecraft. Saved by quick thinking, teamwork, and training of the astronauts and ground command allowed the astronauts were able to return to earth safely. Alas, they were not able to carry out their lunar landing mission.



The Apollo 13 movie directed by Ron Howard (stars Tom Hanks, Kevin Bacon, Bill Paxton, Gary Sinise and Ed Harris and Kathleen Quinlan) won several Oscar awards. Clips from this movie could be used along side a case study of the Apollo 13 incident as an example of multiple disciplinary [teamwork](#) under pressure. The NASA movie clip (click on image on the right above) highlights their archive of the incident: “Apollo 13: Houston, We’ve Got A Problem,” featuring the critical period when the mission was just to get the crew home safely.

Earlier, the Apollo 12 mission had almost failed at launch due to a leaking hydrogen tank; fortunately launch crew managed to change it before takeoff. The failure of the television camera was caused by Alan Bean, who had accidentally pointed it directly at the Sun causing the optics to burn out. The two astronauts spent over seven hours on the lunar surface and successfully retrieved parts of the Surveyor lander and returned it to Earth.

A total of eight Apollo astronauts travelled to the moon in five more Apollo missions with the final manned lunar landing of the Apollo 17 mission accomplished in December 1972. NASA maintains extensive online resources associated with the [Apollo missions](#), including logs of the [flight](#) and [lunar surface journals](#) of the astronauts.

The high cost of the Apollo manned space exploration program led NASA to focus more on unmanned flights in future years. Much to the surprise of the public, President Bush in January 2004 announced a new program to send American astronauts to the Moon by 2020 as the launching point for missions to Mars and further into space. It is not clear whether NASA will be able to stay the course on this program with the changeover in NASA administration and presidential elections.

Apollo 13 Study Guide

1. The opening scene of movie Apollo 13 is where what movie (released in 1983) ends?
2. What famous newscaster--whose nickname was “Uncle Walt” who was voted the most
3. trusted man in the USA numerous time--does everyone chooses to watch at Neil
4. Armstrong walk on the moon at Jim Lovell’s moon-walk party?
5. What does Ken Mattingly say to Fred Haise about their chances of getting to the moon at the party?
6. What does Marilyn Lovell suggest they do instead of cleaning up the house?
7. What was Jim Lovell doing when he was holding up his thumb eclipsing the moon?
8. What does Jim Lovell mean by the statement, “It’s not a miracle, we just decided to go.”
9. How many times had Jim Lovell flown? What flights?
10. Who said, “Give me a lever long enough, and I’ll move the world.”?
11. While giving a senator a tour of the VAB, Jim Lovell replies he’s scheduled for Apollo
12. When is the senator’s response to this?
13. What is the one of the most frequently asked questions of astronauts about their space flights?
14. Deke Slayton, who was in charge of flight assignments, was one of the original 7 astronauts called the _____.
15. What caused Jim Lovell’s crew to get bumped up into Apollo 13?
16. While explaining how they are going to get to and land on the moon, Jim Lovell’s young son asks his dad if he knew the astronauts in the fire. Why?
17. What does Jim Lovell say went wrong with the fire?
18. What was the sports car of choice of the Mercury 7 astronauts?
19. Marilyn Lovell has anxieties about the flight, not all of which are superstitious in nature.
20. When she intimates she is thinking of not attending the launch because of the kid’s school schedule, what is Jim Lovell’s response?
21. What does Jim Lovell do to spark his wife’s imagination to motivate her to go to the launch?

22. During the pre-launch interview/photo session, the astronaut team jokes around making light of the situation until a reporter asks Jim Lovell “Does it bother you that public regards the mission as routine?” How does Jim Lovell respond?
23. Why was Jack Swigert bumped up from the backup to the prime crew days before the launch?
24. Why were Fred Haise’s kids not allowed to hug their dad the night before the launch?
25. Who is Gunter Wendt?
26. Ron Howard was lambasted by film critics for including a scene where Marilyn Lovell drops her wedding ring down the shower drain as cheap dramatization. Was their criticism valid?
27. What are the silver cases the astronauts carry from the van on their way to rocket?
28. What tradition does Gene Kranz have before the launch?
29. The movie shows Ken Mattingly getting out of his yellow Corvette to watch the launch. Why is this unrealistic?
30. What does Jim Lovell mean when he says “A few bumps, and we’re hauling the mail!”
31. The movie shows the swing arm of the launch tower releasing it’s grip arm by arm. Is this authentic?
32. The flame of the launch appears to be sucked back into the launch pad as the rocket lifts off the pad. Why?
33. The movie shows the clock running on the rocket with green LED’s. What’s not authentic about that?
34. Bits of ice fall off the rocket as it clears the tower. What causes so much ice to form on the surface of the rocket before launch?
35. Although not shown in the movie, water is sprayed on the flames as the rocket launches. Why?
36. The Saturn V rocket is 351 feet tall and assembled in the Vertical Assembly Building
37. (VAB) and then transported to the umbilical tower via a crawler-transporter. What holds the rocket to the crawler?
38. Shortly after launch the rocket begins to pitch sideways. Why?
39. During the launch, Lovell admonishes his fellow astronauts for “ al little jolt”. What causes the jolt?
40. What is the purpose of “Les Motor Fire”?
41. What happens to the center engine (#5)? What this common?
42. When does weightlessness begin after launch?
43. Why do the astronauts remove their helmets as soon as they are in orbit?
44. How did the moviemakers create the illusion of “zero g”?
45. What did Fred Haise’s young son’s have to say about the launch?
46. Marilyn Lovell has been through this before—this is her 4th launch and has knows the importance of telling the press what they want to hear. What words of advise does
47. Marilyn Lovell give Mrs. Haise?
48. What happens to Fred Haise’s breakfast shortly after being orbit?
49. What is a BarBQ roll? Why is it necessary?
50. What rock group broke up at this period of time?
51. Why was the broadcast of Apollo 13 not aired on networks TV?
52. What was evidence of the boredom of the support crew?
53. When Jim Lovell’s mother can’t find her son on TV, she blames it on the _____.
54. When _____ comments “That’s no joke—they’ll jump on him—“ what governmental agency is he referring to?
55. Who is asked by ground control to stir the oxygen tanks?
56. What does an instrument failure mean?
57. What do the bangs and shimmy’s indicate to ground control?
58. One possibility is that they were hit by a meteor. Why did Lovell immediately rule out that possibility?
59. Of all they problems their controls and switches indicated they had, nothing compared to

“something venting into space . . .”

60. What is the consequence of shutting down the fuel cells?
61. How long does it take to power-up the LEM by the book? How long will their oxygen last in the Command Module?
62. What is a slide rule?
63. When her young son asks why there are so many people at their house, she tells him something has gone wrong with his daddy’s spaceship. He immediately asks, “Is it the _____?”
64. What was the name of the LEM?
65. What was the name of the Command Module?
66. Why was the name for the Command Module chosen?
67. Since the Command Module had to be shut down, they had to use the LEM as a life raft. Even so, it was necessary to conserve enough power to make it back home and had to cut back power consumption on the LEM to the bare minimum. They even had to shut down their computer. What did Jim Lovell mean when he said “We just put Sir Isaac Newton in the driver’s seat.”
68. Without power, the spacecraft got pretty cold—about 38 degrees—just a few degrees above freezing. To make matters even worse, Fred Haise developed a _____.
69. When their CO₂ levels began to rise to unsafe levels, they had to mate a pair of CO₂ scrubber together. What was the problem mating them?
70. What did Jim Lovell mean when he asked Ken Mattingly “Are the flowers blooming in Houston?”
71. What does Jim Lovell’s mother, Blanch, have to say about her son’s ability as a pilot?
72. In order to get back to earth; they had to make a mid-course correction by firing the engine
73. on LEM, which was designed to land on the moon. What did the astronauts use to maintain the correct orientation of the spacecraft during this manual burn?
74. Jim Lovell’s cockpit lights shorted out on his jet fighter when he was trying to land on an aircraft carrier in the Sea of Japan. The landing lights on the carrier were off. How did he land the jet?
75. Who sat with Blanch during the re-entry?
76. What did Blanch ask Neil Armstrong and Buzz Aldrin when introduced?
77. Jack Swigert states powering up the Command Module is “like driving a toaster through a car wash. “ Why does he say that?
78. Just before re-entry the, the astronauts are asked to transfer ballast into the Command
79. Module because a lack of weight was causing them to come in shallow on the entry
80. corridor. What caused the spacecraft to be light?
81. Where did Lovell’s son, Jay, hold vigil as they re-entered the atmosphere?
82. As if anything that could go wrong did go wrong, what happened to the weather site as they were about to land?
83. When they jettisoned the Service Module, they saw the one entire side of the spacecraft had been blown off. It was then they realized how fortunate they were.
84. When Jack Swigert was asked to jettison the LEM, Jim Lovell noticed a piece of paper with the word “NO” scribbled on it taped to the switch. Why did Swigert put the note on the switch?
85. What was the name of the recovery ship?
86. The entry “interface” is when the space capsule encounters the earth’s atmosphere. The speed at the point entry is 35,245 ft/s. How many miles per hour is that?
87. What causes the radio blackout during re-entry?
88. Did Fred Haise fly again after Apollo 13?
89. What about Jack Swigert?
90. Did Ken Mattingly ever contract the measles?
91. Did Ken Mattingly ever fly again?

92. Student Response: What did you like best about the film? The least?