

**University of Portland**  
ME 421 – Failure Analysis  
Fall 2011

1. Read Ch 15 in They All Laughed (link on course web page). Write a concise paragraph to summarize it.
  
2. Alan Shepard became the first American in space with a 15 minute suborbital flight on May 1, 1961. On May 25, 1961 President Kennedy made an audacious statement to congress; perhaps the most audacious public statement ever made. Watch the youtube video of this statement (<http://www.youtube.com/watch?v=TUXuV7XbZvU&feature=related>).
  - a) Write 1 concise paragraph (4-6 sentences) about how you would have voted (and why) if you were a member of congress asked at that time to financially support this request (try to ignore hindsight). This does not have to be a highly researched answer.
  - b) With hindsight, explain in 1 concise paragraph why you think the decision to support this endeavor was or was not appropriate. Keep in mind; the space program existed in very tumultuous times – including several assassinations (JFK's, etc.), “Chappaquiddick” (google it if you don't know what it is), riots, civil rights movement, and the Vietnam War. This does not have to be a highly researched answer.
  - c) On September 12, 1962, President Kennedy gave a talk at Rice University. Was it a hot day or cold day? Briefly justify your answer (watch the following 2 minute historic video): [http://www.youtube.com/watch?v=FYb\\_mhiE-qU](http://www.youtube.com/watch?v=FYb_mhiE-qU) (hint: there is no real point to this question other than to encourage you to watch the video).
  
3. In January 1968, less than two years before the end of the decade, the first manned Apollo rocket sat on the launch pad with three astronauts onboard. The training exercise was referred to as Apollo 204 – they were training for the first launch (Apollo 1). A fire broke out in the space capsule killing all three astronauts. A thorough investigation as to the cause of the accident was conducted and numerous changes resulted. Two of the more significant resulting changes were:
  - a) The capsule was redesigned to have a mixture of O<sub>2</sub> and N<sub>2</sub>.
  - b) The hatch was redesigned to open outward (the inward opening hatch took many minutes to open – the astronauts would have to move around in the capsule to make room to open the hatch).

Skim through the review board report:

(<http://www.hq.nasa.gov/office/pao/History/Apollo204/find.html>)

For each of these two changes (environment and hatch) discuss how these could have introduced greater risk rather than less. One concise paragraph for each – give this some thought.

Watch the following just because it's a great video:

<http://www.youtube.com/watch?v=3uVYM7KodDQ>