

University of Portland
ME421 – Failure Analysis
Fall 2011, Assignment #1

Answer the following questions regarding the Comet Airplane. All answers should be concise (one or two sentences).

- 1) What were the leading theories as to the cause of failures from the first accident through the last?
- 2) As stated in paragraph 16 (pg 2-11) “all testing is to some extent a compromise.” In what ways was the original fatigue testing not representative of real-life conditions?
- 3) What justification was there for the belief that if the cabin survived undamaged when tested statically to 2P it would not fail in service due to fatigue? (ref paragraph 18).

These are not related to the comet, at least not specifically:

- 4) The new Boeing 787 Dreamliner is the first Boeing Commercial airplane to be constructed almost entirely from graphite/epoxy composites. Do you think Boeing is potentially following in the same path of de Havilland with pushing the limits of aluminum on the Comet? Briefly justify your answer (1 or 2 paragraphs, ½ page maximum).
- 5) Read chapter 6 in “They All Laughed” (link on the course web page). Briefly (1 paragraph, ¼ page max) summarize the main points of the chapter.
- 6) There will be a project this semester where you will conduct a failure analysis of a failed part. This will be a team project with two or three students per team. Please select your own team and provide their names with this assignment.

Homework format: from “problem solving” type assignments, yes, you must follow the standard hw format (given, find, etc.). For all assignments, it must be clear what the question is that you are answering and what your answer is. For example, problem 2 above could be written as:

Q: In what way was the original fatigue testing of the Comet airplane not representative of real-life conditions?

A: *Insert your highly thought-out answer here.*