Project # 2 – Research on Case Studies on Engineering Material Failure

Date given: 10-18-17

Date due: 11-27-17

Requirements and Constraints:
- Work in teams of three engineers-to-be.
- Each group will do a 15 min presentation on a case study in Failure Analysis on staggered days.
- We will also have a roundtable discussion on the failure event and each group member is expected to significantly contribute to that discussion. Your group will lead the discussion on your group’s topic.
- A team member who contributes little toward the project will get a lower grade by at least one letter grade.
- Peer evaluation forms will once again be filled out and submitted.
- Grades will be assigned according to the fulfillment of the rubric requirements and expectations listed further below:


Expected discussion items:
- Address the following questions
  - Where and when did the material fail?
  - How did the material fail?
  - Explain the analysis procedures
  - Why did the material fail?
  - Who was at fault for this failure? Why?
  - What does the part do? What types of loads are on the part during service?
  - What material properties were examined?
  - What role did the operating environment play?
  - How would you prevent in the future?
PowerPoint Rubric (70%)

(8) INTRODUCTION: ______________________________________________________________
☐ Introduction to general topic; orientation, involvement of audience
☐ Statement of purpose & thesis proposition or hypothesis
☐ why is this important?

(8) RESOURCES: __________________________________________________________________
☐ Use of additional professional resources to support points made

(8) GRAMMAR: _________________________________________________________________
Precision of vocabulary, engineering terms used correctly verbally and written

(18) INTEGRATION: ______________________________________________________________
☐ Overall depth of understanding of report, answering questions posed above
☐ Logical and efficient use of figures/tables/images
☐ Ability to consistently tie evidence and reasoning to premise

(12) ORGANIZATION: ____________________________________________________________
☐ Logic of sequencing of ideas and argumentation
☐ Use of visual aids to guide audience; signal transitions to next topic
☐ Use of appropriate reference format (ASME)

(8) SUMMARIZATION: ____________________________________________________________
☐ Clarity and relevance of section summaries to help audience “track”
☐ Focus of final conclusions on main purpose & thesis or hypothesis

(8) PROFESSIONALISM: __________________________________________________________
☐ Poise, eye contact, posture, attire, gestures, energy level, enthusiasm
☐ Professionalism as evidenced by attitude, preparation, quality of visual aids
☐ Ability to answer questions

Potential Engineering Discussion items (30% of grade)
1. Be able to explain the various tests conducted and how the authors came to the conclusions they did.
2. Be able to explain any new material science phenomena (how does it work at the fundamental level) or process (how it works) encountered in the paper, even if it has not been covered in class.
3. What are consequences of failure for this part?
4. Are there any change(s) in the design/material selection you would recommend for this application in the future? Why?
5. Discuss any reservations or additional input you may have regarding the authors conclusions and why?
6. Be able to intelligently discuss “what if” scenarios from an engineering perspective, posed by other students or professor.