Computer Engineering Ethics Lecture 3: Responsibility

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Meanings of " being Responsible"

- Obligations, *actions that are morally mandatory*

- Accountable, *capacity to understand and act on moral reasons, being answerable for meeting obligations*

- Conscientious, *diligently try to do the right thing*

- Blameworthy / Praiseworthy, *especially Blameworthy*

Example:
The Challenger Explosion

Mission 51-L

NASA

January 28, 1986

- On the cold freezing morning of January 28, 1986.
- The 20th flight of Orbiter Challenger. The 25th NASA space shuttle. (21/7/2011 was the landing of the last NASA space shuttle, ending a 30-year era)
- One of the most publicized launches because it was the first time that a civilian, a school teacher, was going into space.
- The launch of Challenger had been delayed five times due to bad weather... and January 28 was the coldest day that NASA had ever launched a shuttle.
- Seventy three seconds into flight, the Orbiter Challenger exploded, killing all seven of its crew.
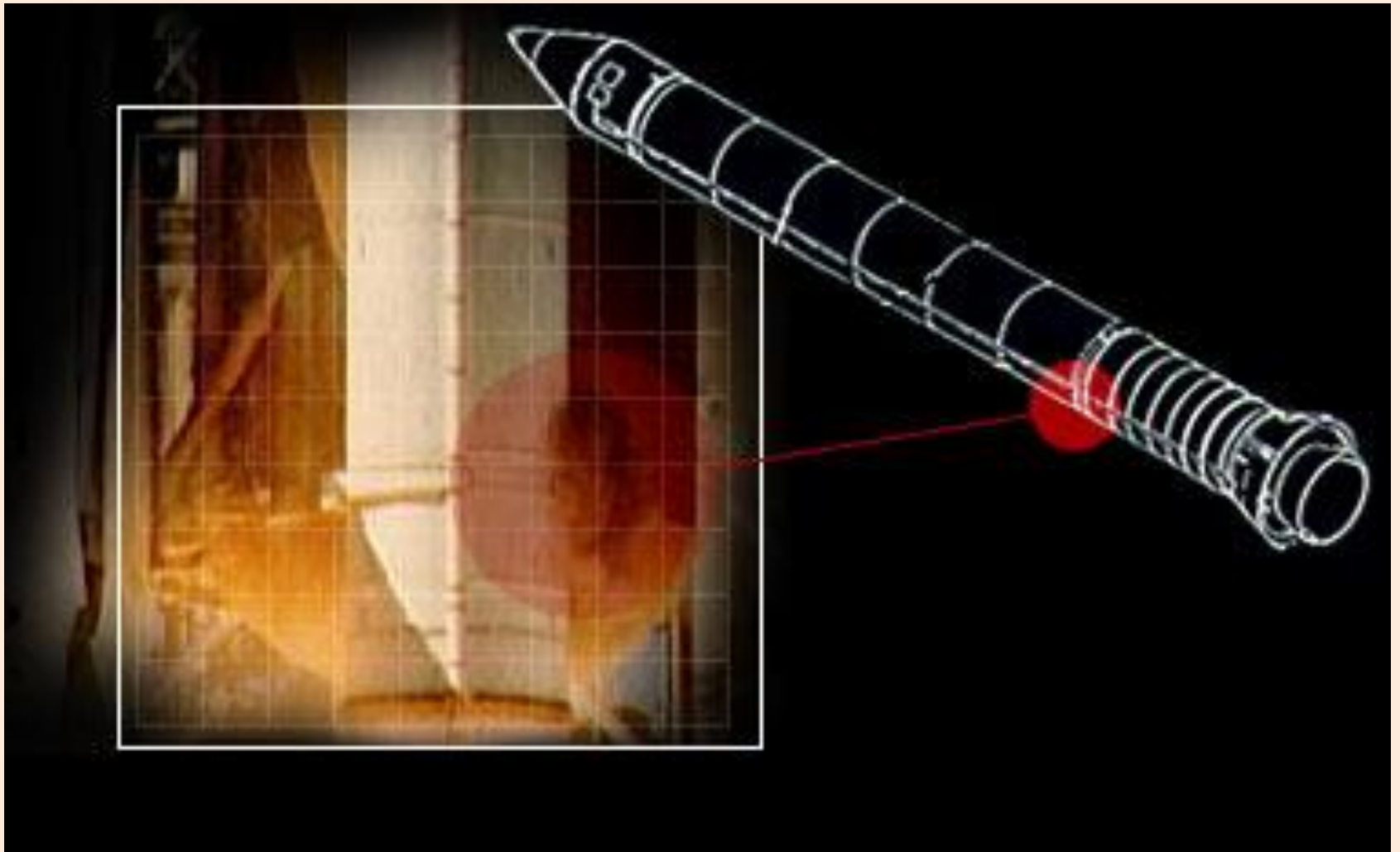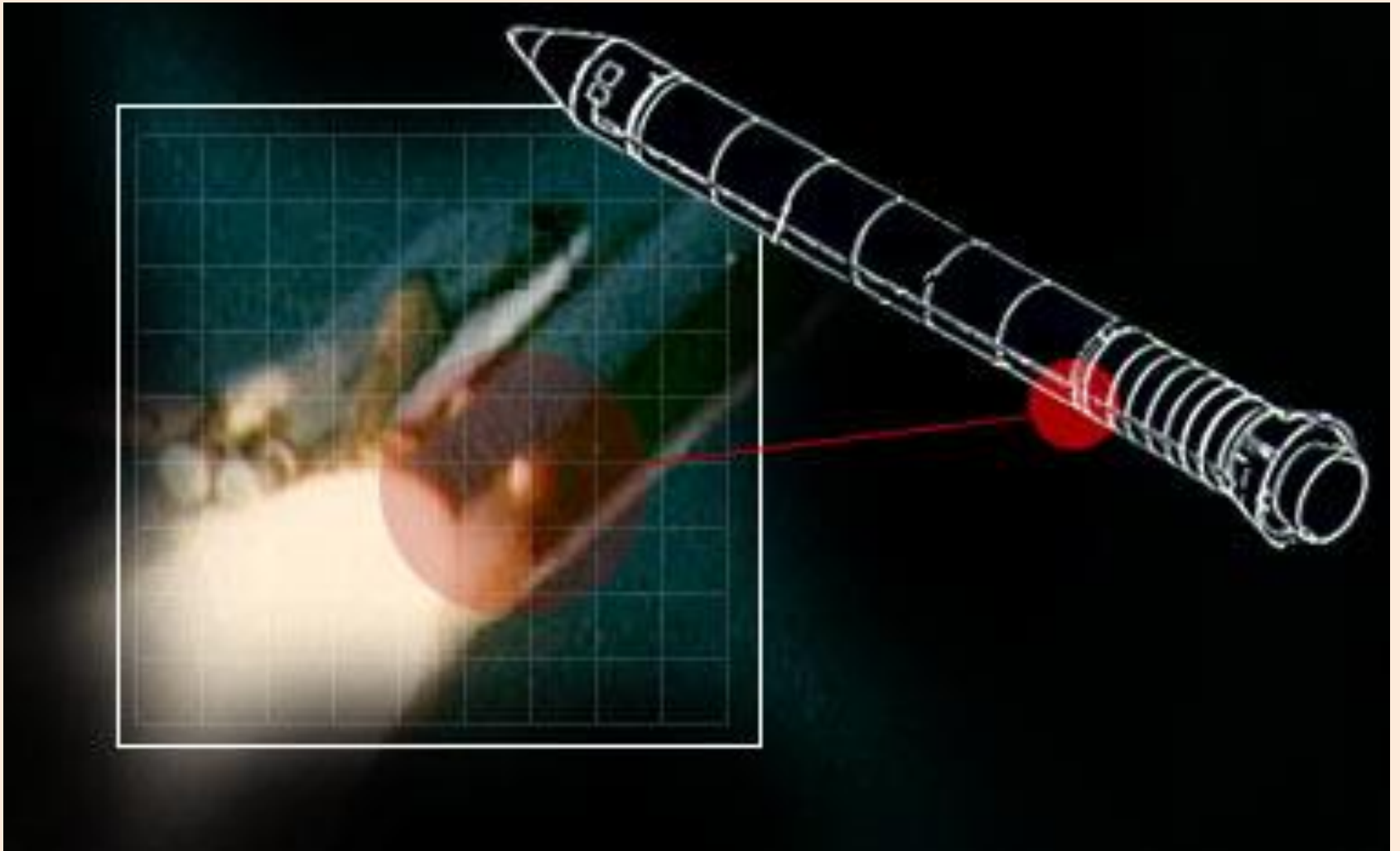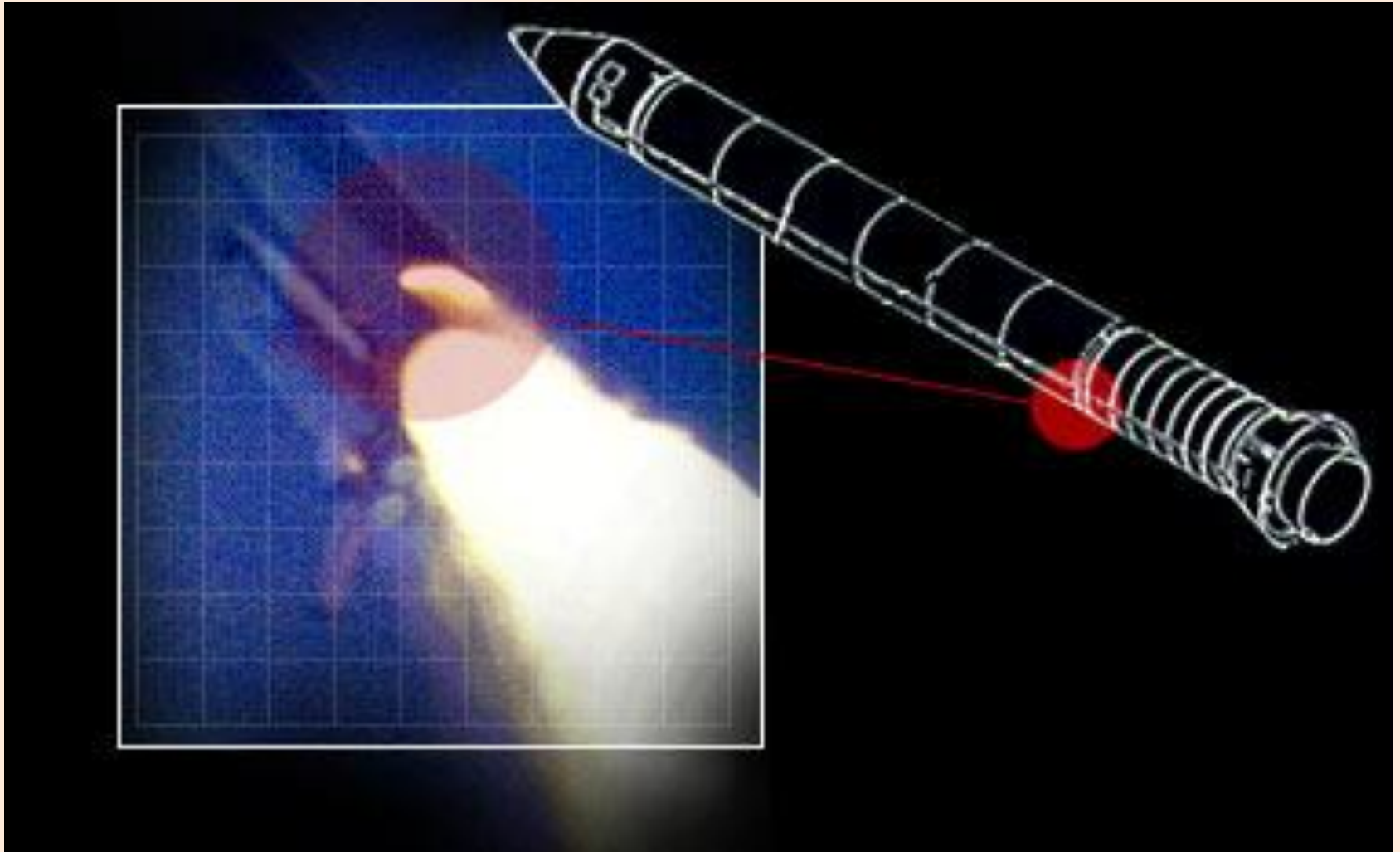
News coverage

- https://www.youtube.com/watch?v=yibNEcn-4yQ

The Explosion

3 Seconds

59 Seconds

CBS News.Com Interactive Challenger Disaster

64.7 Seconds

Report of the Presidential Commission on the Space Shuttle Challenger Accident

- In view of the findings, the Commission concluded that the cause of the Challenger accident was the failure of the pressure seal in the aft field joint of the right Solid Rocket Booster. **The failure was due to a faulty design unacceptably sensitive to a number of factors.** These factors were the effects of temperature, physical dimensions, the character of materials, the effects of reusability, processing and the reaction of the joint to dynamic loading.

- **"The decision to launch the Challenger was flawed."**

History of O-ring failures

Extrapolation of damage curve to the cold Challenger launch: 31° forecasted temperature for January 28, 1986

Dots indicate temperature and O-ring damage for 24 successful launches prior to Challenger. Curve shows increasing damage is related to cooler temperatures.
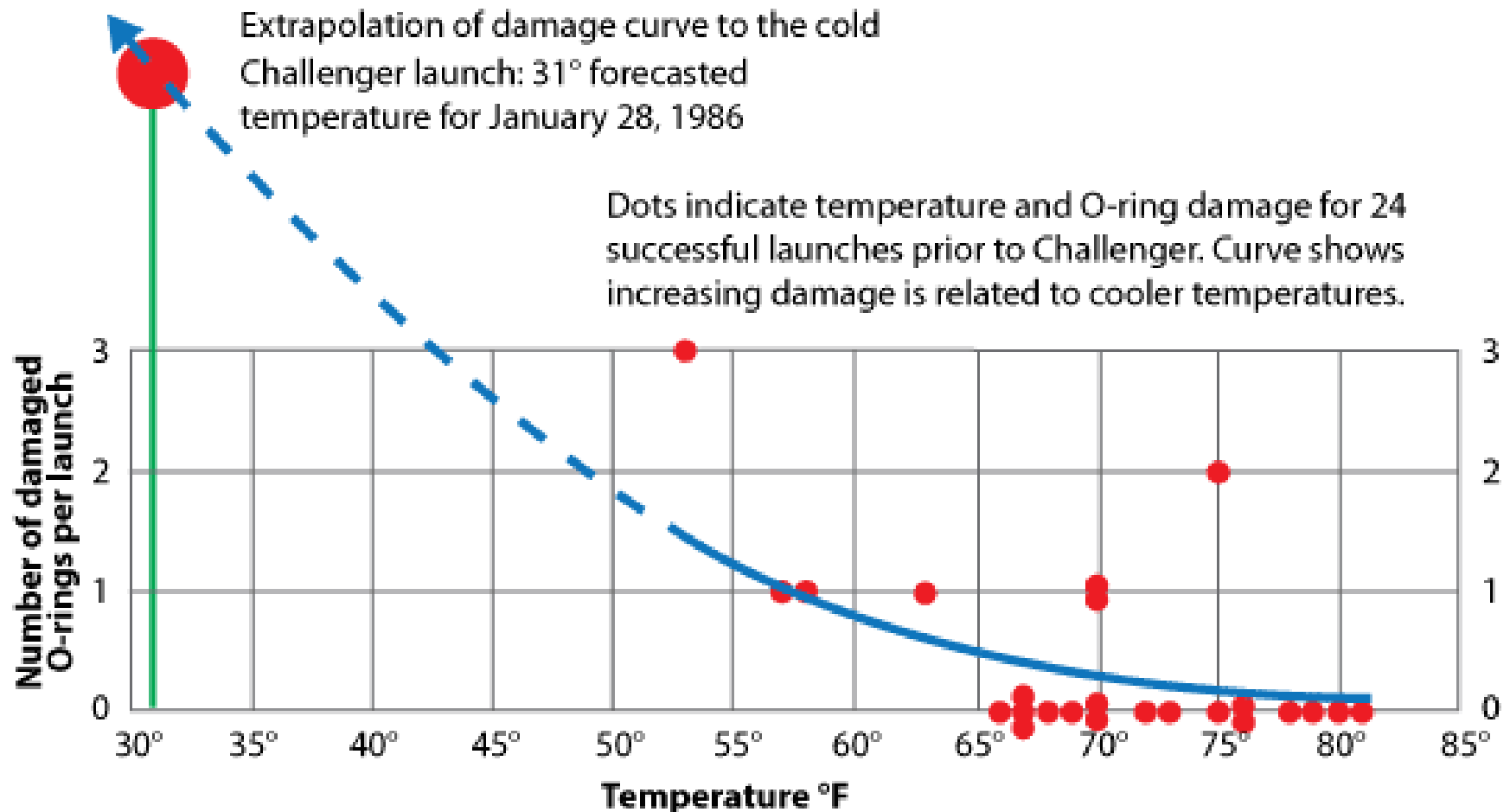
http://www.jlhs.nhusd.k12.ca.us/Classes/Social_Science/Challenger.html/Challenger.html

Discussions the night before launch

- https://www.youtube.com/watch?v=eXcDrmW-rds

Q1

- What is the moral justification for not launching the shuttle?

Q2

- What is the moral justification for launching the shuttle in spite of engineering advice not to?