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The Space Shuttle Challenger Case:
Ethics and Engineering Dissent

1. The following were considerations were initially given by Morton Thiokol as reasons to postpone the Challenger launch:

- ○ a. Previous launches with the most amount of o-ring blow-by were clustered around the lower launch temperatures
- ○ b. Bench tests showed a delayed response time of the o-rings with colder temperature on the order of milliseconds
- ○ c. The color of the blow-by was darker for blow-by that had occurred at lower temperatures
- ○ d. All of the above

2. The following considerations were put forth by NASA as reasons to question Thiokol's recommendation to only launch at or above 53 Deg F

- ○ a. A launch with a high amount of blow-by had previously occurred at 75 Deg F
- ○ b. Launches at temperatures colder than 53 Deg F were scrubbed for other reasons, and the temperature of those launches was not raised by Thiokol as a factor
- ○ c. Weather couldn't be predicted accurately enough
- ○ d. A and B

3. The following were conclusions of the Rogers report:

- ○ a. NASA technical staff did not understand the seriousness of the o-ring problem
- ○ b. Thiokol gave inconsistent information to NASA
- ○ c. Thiokol would not have insisted on a launch temperature floor if NASA hadn't initiated a discussion the day before the Challenger launch
- ○ d. All of the above

4. Launch temperature was among the specifications given by NASA to contractors designing components of the space shuttle system.

- ○ a. True
- ○ b. False

5. The NSPE code of ethics asserts that engineers are within their rights to notify their employer or client and such other authority as may be appropriate:

- ○ a. In circumstances that endanger life or property
- ○ b. The company is making a bad business decision
- ○ c. The company is hurting its stock price
- ○ d. The company will receive bad publicity

6. When asked by NASA if there was anyone involved in the discussions who disagreed with the ultimate recommendation by Thiokol to go ahead with the Challenger launch, had Roger Boisjoly noted his dissent, he would have been supported by the NSPE code of ethics.

- ○ a. True
- ○ b. False

7. Even though Roger Boisjoly did not dissent to NASA at the end of the discussions, he could still be seen as fulfilling the NSPE code of ethics.

- a. True
- b. False

8. In congressional testimony after the catastrophe, the Morton Thiokol engineer Roger Boisjoly stated that:

- a. He was surprised that the Challenger launch failed
- b. He gave NASA quantifiable evidence that the Challenger launch was riskier than previous launches
- c. NASA managers gave him no opportunity to dissent
- d. He could not quantify his concerns about the launch

9. After Challenger disaster, the Morton Thiokol, the contractor who designed the Solid Rocket Boosters, was:

- a. Fined $10M
- b. Given a $10M contract to redesign the o-ring joint
- c. Disqualified from all future NASA projects
- d. A and B

10. Morton Thiokol's moving of Roger Boisjoly, an engineer who publicly criticized the company's launch recommendation, and Allan MacDonald, an executive who refused to sign the written launch recommendation, to lesser positions after their dissent to the Challenger launch was:

- a. Illegal at the time, and the company was fined for its actions
- b. Legal at the time, and remains so now in many jurisdictions
- c. Viewed by NASA as a reason for disqualifying the company from future contracts
- d. All of the above