Case 5. *Roger Boisjoly and the* Challenger *Disaster: Disloyal Employee or Courageous Whistle-Blower?*

In the winter of 1985 Morton Thiokol Inc. engineer Roger Boisjoly conducted postflight analysis on the rocket boosters from NASA's STS 51-C Discovery. Morton Thiokol managed the reusable rocket booster program for NASA's space shuttle program, and

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Boisjoly was one of their leading rocket experts. The booster rockets were designed to be reusable like the shuttle itself. After each launch the rockets would detach from the shuttle and its external fuel tank and parachute back to Earth, landing in the ocean, where they would be recovered by special ships. Experts at Thiokol would then examine and refurbish the rockets so that they could be used again. On this occasion Boisjoly discovered a problem. The rockets from STS 51-C exhibited signs of failed O-ring seals and what is known as "hot-gas blowby," which occurs when ignited fuel leaks from joints in the rocket assembly. The leaking fuel acts as a blowtorch on either the shuttle itself or on the giant liquid hydrogen fuel tank. Alarmed by these findings, Boisjoly wrote to his boss, R. K. Lund, Vice President of Engineering for Morton Thiokol, and reported that "we stand in jeopardy of losing a flight."[1] A five-member Seal Erosion Task Force was assigned to address the problem. Boisjoly and the other members of the task force concluded that lower launch temperatures greatly affected the reliability of the O-ring seal. Further evidence of hot-gas blowby was detected on STS-61-A *Challenger* in October 1985. This evidence convinced the Seal Erosion Task Force that it was not safe to launch until the O-ring problem was resolved.

On January 28, 1986, STS-51L *Challenger* was scheduled for launch with a predicted temperature of 18°F at the launch pad. This mission would carry a seven-person crew including Christa McAuliffe, a New Hampshire school-teacher, who had been selected from 11,000 applicants to be the first "teacher in space." Thousands of U.S. school children would watch the launch live from their classrooms and school auditoriums. That evening, during his State of the Union address, President Ronald Reagan planned to congratulate McAuliffe and her fellow astronauts. On January 27th Boisjoly and other engineers succeeded in persuading Thiokol management to scrub the launch. This decision angered NASA rocket booster manager Larry Mulloy, who applied pressure on senior managers at Thiokol. Mulloy argued that it was not reasonable for Thiokol to change their judgment about the launch parameters of the rockets they had built for NASA. A Morton Thiokol management team composed in part by Lund; Jerry Mason, Thiokol's Senior Vice President of the 7,000-employee Wasatch Operations in Utah; and Joe Kilminsiter, Vice President of Space Booster Programs, voted to override the judgment of their engineers and gave NASA permission to launch. On January 28th, approximately 73 seconds after launch, hot-gas blowby from failed O-ring seals resulted in a catastrophic explosion and the loss of the *Challenger* and her crew. The prediction of Boisjoly and the Seal Erosion Task Force team had come true.

President Reagan appointed a commission to look into the reasons for the disaster. The Rogers Commission interviewed nearly everyone involved in the decision to allow the *Challenger* to launch, including Roger Boisjoly. During their interviews with the commission, Boisjoly and fellow engineer Arnie Thompson truthfully reported the sequence of events leading to the disaster. In so doing they repeatedly contradicted the testimony of senior Morton Thiokol managers including Kilminister. Because Boisjoly believed senior management was engaged in a cover-up, he provided copies of memos and activity reports to the Rogers Commission that supported his and Thompson's version of the events preceding the *Challenger* launch. Boisjoly justified his actions as follows: "I thought it was unconscionable that Morton Thiokol and NASA wouldn't tell the whole truth so that the program could go forward with proper corrective measures."[2] As a result of the

testimony of Boisjoly and Thompson, Morton Thiokol was roundly criticized by Congress, the Roger's Commission, and the press. Senior Morton Thiokol management chastised Boisjoly and Thompson for airing the company's dirty laundry and for being disloyal employees.

When he returned to work at Morton Thiokol Wasatch Operations, Boisjoly found that he was ostracized by management and removed from responsibility for the redesign of the rocket booster. He could not understand why his expertise was not being utilized in the redesign effort. Eventually he discovered that he had been intentionally isolated from NASA on the orders of Edward Garrison, Morton Thiokol's President of Aerospace Operations. Boisjoly felt that his work environment had become hostile toward him. Eventually, the psychological strain became too great, and he took sick leave and eventually resigned from Morton Thiokol.

NOTES

1. "Memo from Roger Boisjoly on O-Ring Explosion," Morton Thiokol Inc., July 31, 1985. Online Ethics Center for Engineering August 29, 2006, National Academy of Engineering. Available at http://www.onlineethics.org/CMS/profpractice/exempindex/RB-intro/Erosion.aspx.
2. Roger M. Boisjoly, "Post Disaster Treatment" in "Ethical Decisions—Morton Thiokol and the Space Shuttle Challenger Disaster." Online Ethics Center for Engineering 5/15/2006, National Academy of Engineering, p. 1. Available at www.onlineethics.org/CMS/profpractice/ppessays/thiokolshuttle.aspx.

Questions

1. Do you regard Boisjoly as a disloyal employee or a heroic whistle-blower? Why?
2. Did Morton Thiokol treat Boisjoly fairly? Why, or why not? Explain.
3. What, if anything, ought Morton Thiokol managers have done differently? Explain.