

engineers should support (e.g., by becoming members) professional engineering societies' attempts to articulate and interpret the ethical responsibilities of engineers?

The Trueteel Affair is a fictionalized version of circumstances similar to those surrounding the Hyatt Regency walkway collapse. View this video and discuss the ethical issues it raises. (This film is available from Fanlight Productions, 47 Halifax St., Boston, MA 02130. 1-617-524-0980.)

For a detailed account of the walkway collapse, see "Hyatt Regency Walkway Collapse," Engineering.com, October 24, 2006. Also, see "Hyatt Regency Walkway Collapse (Texas A&M University Engineering Ethics Cases)" Online Ethics Center for Engineering, February 16, 2006, National Academy of Engineering, www.onlineethics.org/Resources/Cases/hyatt_walkway.aspx.

CASE 12

*Hydrolevel*⁴⁷

"A conflict of interest is like dirt in a sensitive gauge," one that can not only soil one person's career but also taint an entire profession.⁴⁸ Thus, as professionals, engineers must be ever alert to signs of conflict of interest. The case of the *American Society of Mechanical Engineers (ASME) v. Hydrolevel Corporation* shows how easily individuals, companies, and professional societies can find themselves embroiled in expensive legal battles that tarnish the reputation of the engineering profession as a whole.

In 1971, Eugene Mitchell, vice president for sales at McDonnell and Miller, Inc., located in Chicago, was concerned about his company's continued dominance in the market for heating boiler low-water fuel cutoff valves that ensure that boilers cannot be fired without sufficient water in them because deficient water could cause an explosion.

Hydrolevel Corporation entered the low-water cutoff valve market with an electronic low-water fuel supply cutoff that included a time delay on some of its models. Hydrolevel's valve had won important approval for use from Brooklyn Gas Company, one of the largest installers of heating boilers. Some Hydrolevel units added the time-delay devices so the normal turbulence of the water level at the electronic probe would not cause inappropriate and repeated fuel supply turn-on and turn-off. Mitchell believed that McDonnell and Miller's sales could be protected if he could secure an interpretation stating that the Hydrolevel time delay on the cutoff violated the ASME B-PV code. He referred to this section of the ASME code: "Each automatically fired steam or vapor system boiler shall have an automatic low-water fuel

cutoff, so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest visible part of the water-gauge glass."⁴⁹ Thus, Mitchell asked for an ASME interpretation of the mechanism for operation of the Hydrolevel device as it pertained to the previously mentioned section of the code. He did not, however, specifically mention the Hydrolevel device in his request.

Mitchell discussed his idea several times with John James, McDonnell and Miller's vice president for research. In addition to his role at McDonnell and Miller, James was on the ASME subcommittee responsible for heating boilers and had played a leading role in writing the part of the boiler code that Mitchell was asking about.

James recommended that he and Mitchell approach the chairman of the ASME Heating Boiler Subcommittee, T. R. Hardin. Hardin was also vice president of the Hartford Steam Boiler Inspection and Insurance Company. When Hardin arrived in Chicago in early April on other business, the three men went to dinner at the Drake Hotel. During dinner, Hardin agreed with Mitchell and James that their interpretation of the code was correct.

Soon after the meeting with Hardin, James sent ASME a draft letter of inquiry and sent Hardin a copy. Hardin made some suggestions, and James incorporated Hardin's suggestions in a final draft letter. James' finalized draft letter of inquiry was then addressed to W. Bradford Hoyt, secretary of the B-PV Boiler and Pressure Vessel Committee.

Hoyt received thousands of similar inquiries every year. Since Hoyt could not answer James' inquiry with

a routine, prefabricated response, he directed the letter to the appropriate subcommittee chairman, T. R. Hardin. Hardin drafted a response without consulting the whole subcommittee, a task he had authorization for if the response was treated as an “unofficial communication.”

Hardin’s response, dated April 29, 1971, stated that a low-water fuel cutoff must operate immediately. Although this response did not say that Hydrolevel’s time-delayed cutoff was dangerous, McDonnell and Miller’s salesmen used Hardin’s conclusion to argue against using the Hydrolevel product. This was done at Mitchell’s direction.

In early 1972, Hydrolevel learned of the ASME letter through one of its former customers who had a copy of the letter. Hydrolevel then requested an official copy of the letter from ASME. On March 23, 1972, Hydrolevel requested an ASME review and ruling correction.

ASME’s Heating and Boiler Subcommittee had a full meeting to discuss Hydrolevel’s request, and it confirmed part of the original Hardin interpretation.

James, who had replaced Hardin as chairman of the subcommittee, refrained from participating in the discussion but subsequently helped draft a critical part of the subcommittee’s response to Hydrolevel. The ASME response was dated June 9, 1972.

In 1975, Hydrolevel filed suit against McDonnell and Miller, Inc., ASME, and the Hartford Steam Boiler Inspection and Insurance Company, charging them with conspiracy to restrain trade under the Sherman Antitrust Act.

Hydrolevel reached an out-of-court settlement with McDonnell and Miller and Hartford for \$750,000 and \$75,000, respectively. ASME took the case to trial. ASME officials believed that, as a society, ASME had done nothing wrong and should not be liable for the misguided actions of individual volunteer members acting on their own behalf. After all, ASME gained nothing from such practices. ASME officials also believed that a pretrial settlement would set a dangerous precedent that would encourage other nuisance suits.

Despite ASME arguments, however, the jury decided against ASME, awarding Hydrolevel \$3.3 million in damages. The trial judge deducted \$800,000 in prior settlements and tripled the remainder in

accordance with the Clayton Act. This resulted in a decision of \$7,500,000 for Hydrolevel.

On May 17, 1982, ASME’s liability was upheld by the second circuit. The Supreme Court, in a controversial 6-3 vote, found ASME guilty of antitrust violations. The majority opinion, delivered by Justice Blackmun, read as follows:

ASME wields great power in the nation’s economy. Its codes and standards influence the policies of numerous states and cities, and has been said about “so-called voluntary standards” generally, its interpretation of guidelines “may result in economic prosperity or economic failure, for a number of businesses of all sizes throughout the country,” as well as entire segments of an industry. ... ASME can be said to be “in reality an extra-governmental agency, which prescribes rules for the regulation and restraint of interstate commerce.” When it cloaks its subcommittee officials with the authority of its reputation, ASME permits those agents to affect the destinies of businesses and thus gives them power to frustrate competition in the marketplace.⁵⁰

The issue of damages was retried in a trial lasting approximately one month. In June, the jury returned a verdict of \$1.1 million, which was tripled to \$3.3 million. Parties involved were claiming attorney’s fees in excess of \$4 million, and a final settlement of \$4,750,000 was decreed.

Following the decision, ASME revised its procedures as follows: In the wake of the Hydrolevel ruling, the Society has changed the way it handles codes and standards interpretations, beefed up its enforcement and conflict-of-interest rules, and adopted new “sun-set” review procedures for its working bodies.

The most striking changes affect the Society’s handling of codes and standards interpretations. All such interpretations must now be reviewed by at least five persons before release; before, the review of two people was necessary. Interpretations are available to the public, with replies to nonstandard inquiries published each month in the Codes and Standards section of ME or other ASME publications. Previously, such responses were kept between the inquirer and the involved committee or subcommittee. Lastly, ASME incorporates printed disclaimers on the letterhead used for code interpretations spelling out their limitations: that they

are subject to change should additional information become available and that individuals have the right to appeal interpretations they consider unfair.

Regarding conflict of interest, ASME now requires all staff and volunteer committee members to sign statements pledging their adherence to a comprehensive and well-defined set of guidelines regarding potential conflicts. Additionally, the Society now provides all staff and volunteers with copies of the engineering code of ethics along with a publication outlining the legal implications of standards activities.

Finally, the Society now requires each of its councils, committees, and subcommittees to conduct a “sunset” review of their operations every two years. The criteria include whether their activities have served the public interest and whether they have acted cost-effectively, in accordance with Society procedures.⁵¹

Conflict-of-interest cases quickly become complicated, as the following questions illustrate:

- How could McDonnell and Miller have avoided the appearance of a conflict of interest? This applies to both Mitchell and James.
- What was T. R. Hardin’s responsibility as chair of the B-PV Code Heating Boiler Subcommittee? How could he have handled things differently to protect the interests of ASME?
- What can engineering societies do to protect their interests once a conflict of interest is revealed?
- Was the final judgment against ASME fair? Why or why not?
- Have ASME’s revised conflict-of-interest procedures addressed the problems fully? Why or why not?

CASE 13

Incident at Morales

Incident at Morales is a multistage video case study developed by the National Institute for Engineering Ethics (NIEE). It involves a variety of ethical issues faced by the consulting engineer of a company that is in a hurry to build a plant so that it can develop a new chemical product that it hopes will give it an edge on the competition. Issues include environmental, financial, and safety problems in an international setting.

Interspersed between episodes are commentaries by several engineers and ethicists involved in the production of the video. Information about ordering the video is available from the NIEE or the Murdough Center for Engineering Professionalism (<http://www.depts.ttu.edu/murdoughcenter/>). The full transcript of the video and a complete study guide are available online from the Murdough Center.

CASE 14

Innocent Comment?

Jack Strong is seated between Tom Evans and Judy Hanson at a dinner meeting of a local industrial engineering society. Jack and Judy have an extended discussion of a variety of concerns, many of which are related to their common engineering interests. At the conclusion of the dinner, Jack turns to Tom, smiles, and says, “I’m sorry not to have talked with you more tonight, Tom, but Judy’s better looking than you.”

Judy is taken aback by Jack’s comment. A recent graduate from a school in which more than 20 percent of her classmates were women, she had been led

to believe that finally the stereotypical view that women are not as well suited for engineering as men was finally going away. However, her first job has raised some doubts about this. She was hired into a division in which she is the only woman engineer. Now, even after nearly one year on the job, she has to struggle to get others to take her ideas seriously. She wants to be recognized first and foremost as a good engineer. So, she had enjoyed “talking shop” with Jack. But she was stunned by his remark to Tom, however innocently it might have been intended. Suddenly, she saw the conversation in a